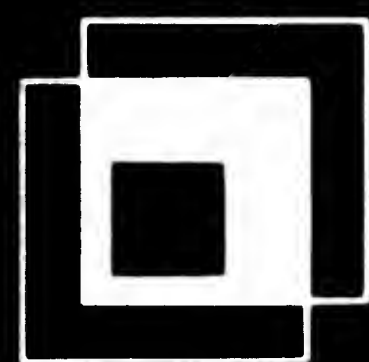


**U. S.  
OFFICIAL GAZETTE  
UNITED STATES  
PATENT OFFICE  
VOL. 908  
MARCH  
1973**

**MICRO PHOTO DIVISION**



**BELL & HOWELL**



# OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

March 6, 1973

Volume 908

Number 1

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## PATENT NOTICES

### Certificates of Correction for the Week of Mar. 6, 1973

Re. 27,393	3,660,676.	3,679,354	3,692,721
Re. 27,506	3,660,913	3,679,445	3,692,776
D. 224,038	3,661,630	3,679,466	3,692,801
3,443,997	3,661,952	3,679,701	3,692,943
3,515,875	3,661,959	3,679,840	3,692,965
3,545,360	3,661,993	3,679,870	3,693,200
3,554,278	3,663,009	3,679,977	3,693,245
3,586,901	3,663,634	3,679,982	3,693,322
3,599,131	3,664,238	3,680,254	3,694,430
3,599,463	3,665,424	3,680,274	3,694,500
3,609,297	3,665,588	3,680,283	3,694,536
3,612,440	3,665,901	3,680,587	3,694,552
3,613,678	3,666,446	3,680,591	3,694,649
3,613,733	3,666,450	3,681,179	3,694,816
3,614,171	3,666,565	3,681,204	3,694,817
3,615,213	3,666,863	3,681,420	3,695,056
3,615,439	3,667,282	3,681,439	3,695,230
3,615,443	3,667,444	3,681,685	3,695,360
3,615,573	3,667,602	3,681,855	3,695,688
3,618,091	3,668,193	3,682,031	3,695,695
3,620,272	3,668,693	3,682,087	3,695,768
3,622,917	3,669,938	3,682,320	3,695,894
3,624,530	3,670,111	3,682,630	3,695,995
3,625,052	3,670,462	3,682,939	3,696,302
3,625,512	3,670,672	3,682,988	3,696,503
3,626,130	3,671,214	3,683,051	3,696,808
3,627,922	3,671,238	3,683,371	3,696,937
3,628,410	3,671,514	3,683,817	3,696,988
3,628,626	3,671,782	3,684,041	3,697,180
3,629,169	3,671,847	3,684,116	3,697,552
3,630,549	3,671,942	3,684,548	3,697,607
3,632,188	3,672,676	3,684,549	3,697,684
3,632,358	3,672,740	3,684,784	3,697,687
3,632,550	3,672,817	3,684,948	3,698,002
3,632,568	3,672,969	3,685,308	3,698,330
3,633,169	3,673,080	3,686,016	3,698,422
3,634,861	3,673,219	3,686,048	3,698,564
3,635,724	3,673,255	3,686,130	3,698,722
3,636,237	3,673,399	3,686,289	3,698,872
3,637,367	3,673,544	3,686,715	3,698,926
3,637,436	3,674,095	3,687,056	3,698,974
3,637,669	3,674,454	3,687,514	3,699,050
3,638,111	3,674,561	3,687,555	3,699,087
3,640,393	3,674,680	3,687,906	3,699,167
3,641,061	3,674,799	3,687,919	3,699,440
3,642,581	3,675,186	3,688,010	3,699,541
3,643,122	3,675,563	3,688,235	3,699,542
3,644,454	3,675,654	3,688,279	3,699,821
3,644,873	3,675,980	3,688,565	3,700,340
3,647,193	3,676,097	3,688,875	3,700,365
3,647,249	3,676,113	3,689,001	3,700,497
3,649,826	3,676,205	3,689,166	3,700,637
3,651,579	3,676,478	3,689,470	3,700,684
3,654,258	3,676,695	3,689,499	3,700,691
3,654,736	3,676,714	3,689,535	3,700,695
3,655,999	3,676,783	3,689,554	3,700,706
3,656,104	3,677,009	3,689,603	3,701,114
3,656,114	3,677,725	3,689,611	3,701,129
3,656,301	3,677,747	3,689,677	3,701,292
3,656,354	3,677,755	3,690,364	3,701,411
3,657,179	3,677,920	3,690,434	3,701,412
3,658,269	3,678,187	3,690,749	3,701,640
3,658,636	3,678,549	3,691,186	3,701,806
3,658,701	3,678,672	3,691,308	3,702,018
3,658,901	3,678,887	3,691,521	3,703,508
3,658,948	3,678,998	3,691,797	
3,659,285	3,679,025	3,692,486	
3,660,440	3,679,324	3,692,540	

### Disclaimers

3,453,356.—*Raymond W. Kent, Jr. and Kenneth R. Hock*, Midland, Mich. MIXING OF FILAMENTARY REINFORCING MATERIAL WITH THERMOPLASTIC RESINS. Patent dated July 1, 1969. Disclaimer filed May 24, 1972, by the assignee, *The Dow Chemical Company*.

Hereby enters this disclaimer to claims 1-4, inclusive, of said patent.

3,527,892.—*Jurgen Kok*, Bedford, Mass. AUTOMATIC ALARM SYSTEM. Patent dated Sept. 8, 1970. Disclaimer filed Dec. 7, 1972, by the assignee, *DASA Corporation*, consenting.

Hereby enters this disclaimer to claims 1 and 2 of said patent.

### Adverse Decisions in Interferences

In the designated interferences involving the indicated claims of the following patents final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,011,016, E. M. Roschke, SUBSCRIPTION RECEIVER, decided July 28, 1967, Interference No. 94,050, claim 27.

Patent No. 3,284,423, E. C. Knapp, PRESSURE-SENSITIVE CREEP-RESISTANT RESIN COMPOSITION, decided March 16, 1970, Interference No. 96,664, claims 1, 2, and 8.

Patent No. 3,299,389, A. A. Vercesi and R. R. Segerdahl, VARIABLE RESISTANCE POTENTIOMETER OF THE TYPE HAVING A CONDUCTIVE PLASTIC TRACK ON AN ELECTRICALLY INSULATING BASE, decided July 27, 1961, Interference No. 97,036, claims 1 and 2.

Patent No. 3,321,449, H. A. Vogel, POLYBICYCLOARYLSULFONES, decided November 24, 1971, Interference No. 96,500, claims 1 to 9.

Patent No. 3,324,051, J. Lal, POLYMERIZATION OF EPOXIDES AND EPISULFIDES, decided May 20, 1970, Interference No. 96,813, claims 1, 2, 3, 5, 8, 9, 10, 12, 14, 15, 18, 19, and 20.

Patent No. 3,329,920, A. A. Vercesi and R. R. Segerdahl, VARIABLE RESISTANCE POTENTIOMETER, decided June 27, 1971, Interference No. 97,035, claim 3.

Patent No. 3,436,622, R. M. Warner, COMPOUND CHANNEL INSULATED GATE TRIODE, decided September 19, 1972, Interference No. 97,185, claims 1 to 6.

Patent No. 3,461,375, W. Nestler and E. Kallenback, CIRCUIT ARRANGEMENT FOR TWO-STAGE ENERGIZATION OF LOAD, decided February 29, 1973, Interference No. 97,420, claims 1, 2, 3, 4, 5, 6, and 8.

Patent No. 3,622,709, G. S. Tjaden, SUPERVISORY CIRCUIT FOR TELEPHONE LINES, decided Dec. 22, 1972, Interference No. 98,021, claim 7.

## PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner  
WILLIAM FELDMAN, Deputy Assistant Commissioner

### CONDITION OF PATENT APPLICATIONS AS OF FEBRUARY 20, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
<b>CHEMICAL EXAMINING GROUPS</b>	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director.....	12-16-71
Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director.....	1-03-72
Heterocyclics; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director.....	9-20-71
Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director.....	10-21-71
Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director.....	11-01-71
Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	
<b>ELECTRICAL EXAMINING GROUPS</b>	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director.....	7-03-72
Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director.....	5-31-72
Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Rocket Fuels; Rocket Fuels; Rocket Fuels.	
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director.....	4-03-72
Communications; Multiplexing Techniques; Facsimile; Data Processing; Computation and Conversion; Storage Devices and Related Arts.	
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director.....	12-03-71
Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director.....	12-27-71
Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	
DESIGNS, GROUP 290—R. L. CAMPBELL, Director.....	5-26-71
Industrial Arts; Household, Personal and Fine Arts.	
<b>MECHANICAL EXAMINING GROUPS</b>	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director.....	3-03-72
Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director.....	1-03-72
Manufacturing Processes; Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director.....	4-10-72
Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director.....	3-06-72
Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director.....	10-26-71
Joints; Fasteners; Rod; Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	

**Expiration of patents:** The patents within the range of numbers indicated below expire during March 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

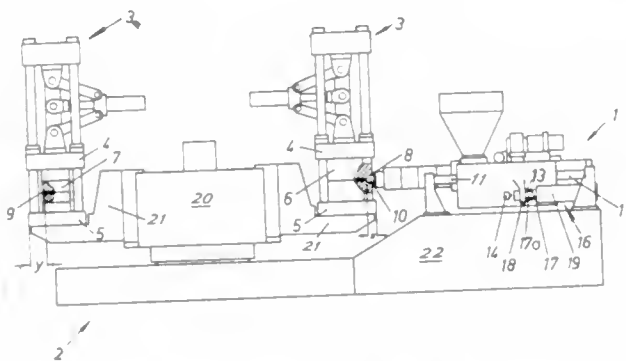
Patents..... Numbers 2,736,898 to 2,740,116, inclusive  
Plant Patents..... Numbers 1,457 to 1,466, inclusive

# REISSUES

MARCH 6, 1973

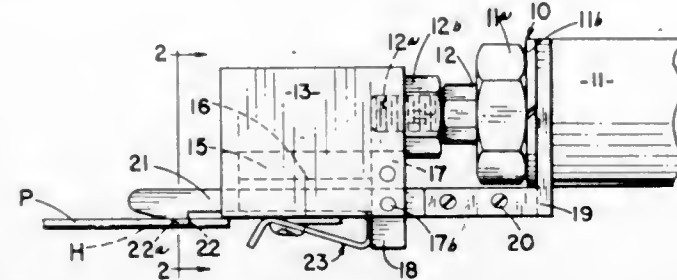
Matter enclosed in heavy brackets **[ ]** appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

**27,590**  
**CONTROL DEVICE FOR INITIATING THE INJECTING PROCESS OF INJECTION MOLDING MACHINES**  
Manfred Niklarz, Rinteln, Germany, assignor to Stubbe Maschinenfabrik G.m.b.H., Kalletal-Kalldorf, near Vlotho, Germany  
Original No. 3,566,445, dated Mar. 2, 1971, Ser. No. 742,352, July 3, 1968. Application for reissue July 27, 1971, Ser. No. 166,647  
Claims priority, application Germany, July 5, 1967, P 15 83 702.2  
Int. Cl. B28b 17/00  
U.S. Cl. 425—149 4 Claims



A control device for initiating the injection step of an injection molding machine cycle, wherein the injection nozzle and the mold are moved toward and pressed against each other by means of a feed unit.

**27,591**  
**TOOL FOR ASSEMBLING SPRING METAL C-CLIPS TO PANELS**  
Robert A. Munse, Troy, Mich., assignor to Microdot Inc., New York, N.Y.  
Original No. 3,501,827, dated Mar. 24, 1970, Ser. No. 673,608, Oct. 9, 1967. Application for reissue Nov. 9, 1970, Ser. No. 87,768  
Int. Cl. B23p 19/04  
U.S. Cl. 29—225 11 Claims

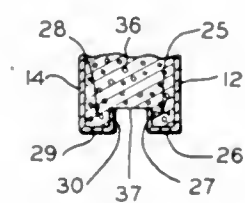


A tool for applying spring metal C-clips having a nut in one arm to an apertured panel has a power operated reciprocal ram provided with a head to which a clip is applied in such position that when the ram advances the clip is forced over the edge of the panel, the arms of the clip opening to engage opposite faces of the panel. The tool has a locator arm which has a hook at its outer end to engage in a hole in the panel to guide the ram operation and cause the clip to be properly positioned with its nut in alignment with the panel hole.

**27,592**  
**NOVEL PROCESS FOR THE PREPARATION OF TRANS-CHRYSANTHEMUMIC ACID**  
Jacques Martel, Bondy, Chanh Huynh, Le Raincy, Edmond Toromanoff, Paris, and Gerard Nominé, Noisy-le-Sec, France, assignors to Roussel-UCLAF, Paris, France  
No Drawing. Original No. 3,445,499, dated May 20, 1969, Ser. No. 454,691, May 10, 1965. Application for reissue Mar. 22, 1971, Ser. No. 127,019  
Claims priority, application France, May 26, 1964, 975,870, 975,871  
Int. Cl. C07c 147/06, 148/08, 51/09  
U.S. Cl. 260—464 11 Claims

A novel process for selectively producing d,l-trans chrysanthemic acid which has the same configuration as the naturally occurring said acid which is useful as an intermediate for pyrethrum esters widely used as insecticides and to novel intermediates formed therein.

**27,593**  
**FOAMED CORE LAMINATED STRUCTURE AND METHOD**  
Frederick V. Gondeck, Lester E. Hickox, Thomas E. Kennedy, Arthur Perez, and James F. Thompson, Niles, Mich., assignors to Clark Equipment Company  
Original No. 3,432,378, dated Mar. 11, 1969, Ser. No. 421,291, Dec. 28, 1964. Application for reissue Apr. 5, 1971, Ser. No. 131,202  
Int. Cl. B32b 3/02, 3/30  
U.S. Cl. 161—44 9 Claims



A laminated core construction utilizes a supporting frame or form when inserting plastic material between two opposed, supported facings. The supporting form has a blocking means to form the edge construction between the facings that bends the ends of the facings to form two side-by-side channels. The blocking means, which is removed after setting of the core, extends between the two channels to form a generally U-shaped end portion with the laminated core structure providing the only connecting means between the two opposed facings.

**27,594**  
**TIP-OVER SHUT-OFF FOR GAS HEATERS**  
Gerard L. Power, Dearborn Heights, Mich., assignor to Insto-Gas Corporation, Detroit, Mich.  
Original No. 3,314,411, dated Apr. 18, 1967, Ser. No. 458,219, May 24, 1965. Application for reissue June 23, 1971, Ser. No. 156,043  
Int. Cl. F23n 5/24; F24c 3/12  
U.S. Cl. 126—85 R 6 Claims

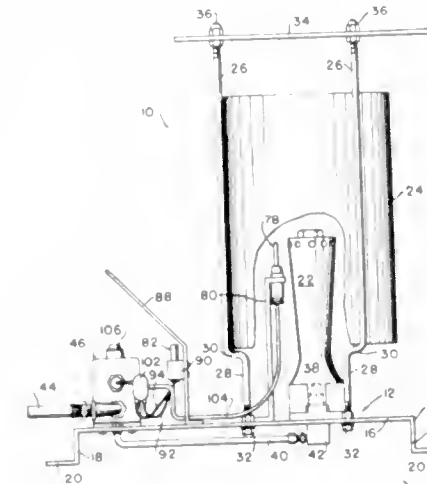
A portable heater assembly having a gas burner. A valve in the gas line to the burner is normally held open by an electromagnet when the burner is operating. A

MARCH 6, 1973

U. S. PATENT OFFICE

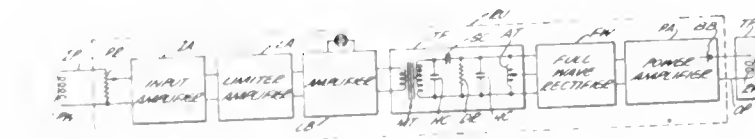
5

mercury switch is operative to deenergize the electromagnet in response to tipping of the heater assembly from



upright position, whereupon the valve is closed by a spring to shut off the burner.

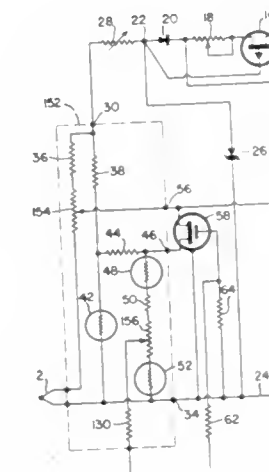
**27,595**  
**FREQUENCY-SHIFT TELETYPEWRITER**  
Robert H. Weithrecht, Redwood City, Calif., assignor to R. H. Weithrecht Company  
Original No. 3,507,997, dated Apr. 21, 1970, Ser. No. 574,217, Aug. 22, 1966. Application for reissue Apr. 5, 1972, Ser. No. 241,463  
Int. Cl. H04b 1/38  
U.S. Cl. 178—66 R 13 Claims



A transmitter and receiver are disclosed for a teletypewriter. The frequency-shift receiver responds to mark-

frequency signals above a predetermined threshold to reduce the gain of the receiver during mark intervals, so that the receiver will not respond to spurious space-frequency signals, e.g., echoes. This is accomplished by a limiter amplifier in conjunction with a filter tuned to the space-frequency.

**27,596**  
**TWO-WIRE MV/V. TRANSMITTER**  
Edward T. E. Hurd III, Cinnaminson, N.J., assignor to Honeywell Inc., Minneapolis, Minn.  
Original No. 3,562,729, dated Feb. 9, 1971, Ser. No. 670,822, Sept. 8, 1967. Application for reissue May 10, 1971, Ser. No. 141,736  
Int. Cl. G08c 19/04  
U.S. Cl. 340—210 11 Claims



There is disclosed a voltage (millivolts)-to-current transducer which transmits a current signal to a remote central station, which includes a power supply for a utilization device at the remote location, over a two-wire transmission line. The transmission line carries both the signal current from the transmitter to the remote station and the total power supply for the transmitter.



## PLANT PATENTS

GRANTED MARCH 6, 1973

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,314

### ROSE PLANT

David L. Armstrong, Upland, Calif., assignor to  
Armstrong Nurseries, Inc., Ontario, Calif.  
Filed Apr. 15, 1971, Ser. No. 134,519  
Int. Cl. A01h 5/00

U.S. Cl. Plt.—20 1 Claim

A new variety of rose of the hybrid tea class which bears very large blooms on strong, medium-length stems. The blooms are usually borne singly, but sometimes two or three appear on a stem in an irregular cluster. The flower, which is of double petalage, may span as much as 6 inches when fully open, and may contain as many as 50 petals. The plant blooms freely outdoors and nearly continuously during the growing season. The general color effect of the newly opened flower is strong purplish red. Its fragrance is a moderate to strong damask.

3,315

### ROSE PLANT

David L. Armstrong, Upland, Calif., assignor to  
Armstrong Nurseries, Inc., Ontario, Calif.  
Filed Apr. 15, 1971, Ser. No. 134,518  
Int. Cl. A01h 5/00

U.S. Cl. Plt.—22 1 Claim

A rose plant of the floribunda class which bears blooms that are large for this class, on normal medium-length stems. Most blooms occur in irregular clusters of three to four, or more, flowers, although some blooms may be borne singly. The flower may span as much as four inches when fully open, and usually contains from 20 to 25 quite broad petals. The plant blooms freely outdoors, and nearly continuously during the growing season. The general color effect of the newly opened flower is yellow-pink and red, the yellow being notable. The fragrance is a blend of damask rose and spice, and is moderately penetrating to strong.

3,316

### CARNATION PLANT

Teruo Yukawa, 1913 Hackett Ave.,  
Mountain View, Calif. 94040  
Filed July 19, 1971, Ser. No. 134,830  
Int. Cl. A01h 5/00

U.S. Cl. Plt.—73 1 Claim  
1. The new and distinctive variety of carnation plant substantially as herein described and illustrated.

## PATENTS

GRANTED MARCH 6, 1973

## GENERAL AND MECHANICAL

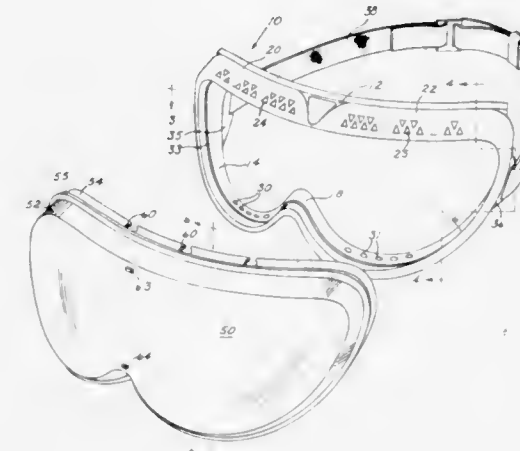
3,718,937

### DOUBLE LENS GOGGLE AND METHOD OF MANUFACTURE

Robert P. Smith, Evergreen, Colo., assignor to R. P. Smith Company, Evergreen, Colo.  
Filed Dec. 19, 1969, Ser. No. 875,767  
Int. Cl. A61f 9/02

U.S. Cl. 2—14 N

6 Claims



A double lens goggle, having a frame for conforming to the face of the user, has a sealed, double lens assembly including one lens with a lateral, peripheral flange having a circumferential groove into which the second lens is mounted, and the flange provides means for securing the lens assembly to the frame. A vent system provides an air flow in the air space in contact with the user's eyes.

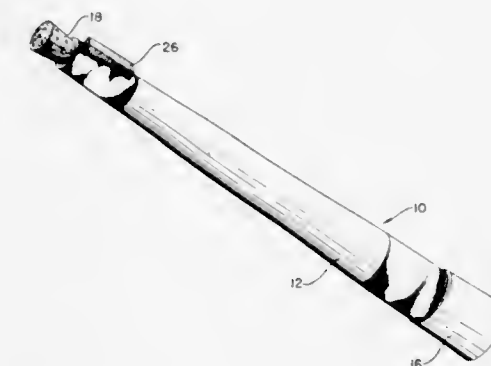
3,718,938

### COMBINED SHARPENERS FOR KNIVES AND FISH HOOKS AND HOOK DISGORGER

Mike C. Blume, Box 1125, Kissimmee, Fla.  
Filed June 21, 1971, Ser. No. 154,833  
Int. Cl. B25f 1/04

U.S. Cl. 7—1 H

4 Claims



A multi-purpose hand tool including a steel honing rod which is telescopically received with a hollow handle tube for

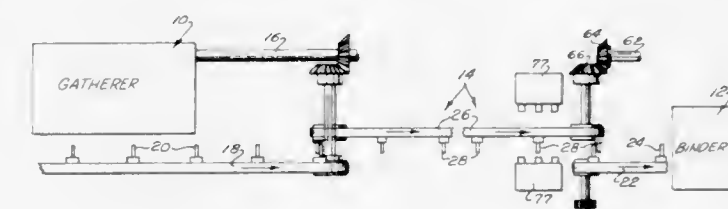
3,718,939

### GATHERER-BINDER TRANSFER SYSTEM

Henry R. Mebus, Nazareth, Pa., assignor to Harris-Intertype Corporation, Cleveland, Ohio  
Filed May 14, 1971, Ser. No. 143,532  
Int. Cl. B42c 19/00

U.S. Cl. 11—1 R

11 Claims



A transfer mechanism for transferring signatures from a gatherer to a binder with the transfer mechanism including a transfer conveyor driven in synchronism with the gatherer conveyor and the binder infeed conveyor until the gatherer stops whereupon the transfer conveyor is driven by the binder until the transfer conveyor is clear of signatures. Thereafter, the transfer conveyor automatically stops and is locked in proper timed relationship with the stopped gatherer conveyor while the binder continues operating at a constant speed whereby restarting of the gatherer enables the gatherer to come up to binder speed and be synchronized with the binder before any signatures are conveyed to the binder.

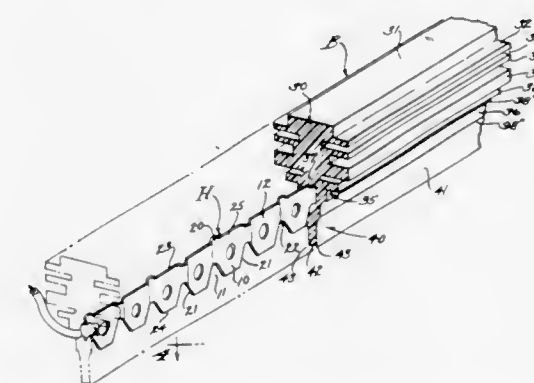
3,718,940

### HEATED WIPER BLADE

Gerd B. Bode, 935 El Camino Real, San Francisco, Calif.  
Filed June 24, 1971, Ser. No. 156,305  
Int. Cl. B60s 1/04

U.S. Cl. 15—250.06

9 Claims



A blade for window wipers and the like wherein an electrical resistance element extends therethrough for heating the

wiping lip; said electrical resistance element being characterized by a thin membrane comprised of flat plate sections joined by flexible coupling sections and thereby adapted to be independently bendable within the wiper blade body and all without distortion of said body which remains universally bendable to conform to the changing compound curvatures over which it is to wipe; and said membrane having maximum heat transfer and reinforcing features as related to the wiper blade body for a most direct and effective heat transfer to the working surface that is to be defrosted and wiped clean.

3,718,941

**WINDSHIELD WIPER FOR CIRCULAR HEADLAMPS**  
Hans-Christian Deutscher, Ludwigsburg, and Kurt Bauer, Kleiningersheim/Wurttemberg, both of Germany, assignors to SWF-Spezialfabrik für Autozubehör Gustav Rau GmbH, Bietigheim, Germany

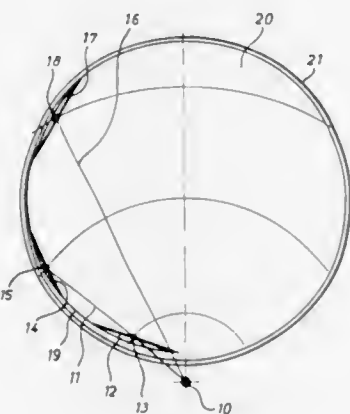
Filed Oct. 8, 1971, Ser. No. 187,733

Claims priority, application Germany, Dec. 3, 1970, P 20 59 527.1

Int. Cl. B60s 1/32

U.S. Cl. 15—250.23

11 Claims



A windshield wiper for a circular headlamp, includes a first long wiper arm with a yoke pivotally connected to its outer end which is engageable with the wiper blade, and a second wiper arm carrying two longitudinally spaced yokes which are pivotally connected to the associated shorter arm and engage the wiper blade at longitudinally spaced inward locations. The wiper arms are oscillatable about a common pivot through separate oscillation angles with the shorter arm being operated through a longer oscillation angle range backwardly and forwardly than the longer arm so as to cause the blade moved thereby to curve around the circular frame of a circular headlight when it moves from side to side.

3,718,942

**CASTER ASSEMBLY WITH INTEGRAL HORN AND PINTLE AND METHOD OF MAKING SAME**

Herbert Arenson, 9999 West 75th Street, Shawnee Mission, Kans.

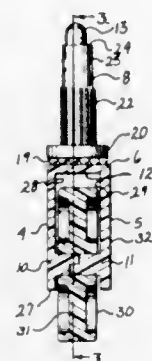
Continuation-in-part of Ser. No. 3,431, Jan. 16, 1970, abandoned. This application Aug. 14, 1970, Ser. No. 63,814  
Int. Cl. B60b 33/00

U.S. Cl. 16—37

7 Claims

A caster of molded parts and method of making same wherein the caster includes an integral pintle and horn having axle portions all molded of a plastic composition and mounting a wheel. A mounting member for supporting the pintle in a leg of furniture or the like, such as a sleeve having a flange at one end and a thickened portion at the other end for engaging a shoulder on the pintle to retain the sleeve and pintle assembled. The method includes the molding of the pintle and horn

in an integral structure substantially in its final shape with the horn and arm portions thereof preferably having axle portions extending from the arms, spreading the arm portions to permit



3,718,943

**PINLESS HINGE**

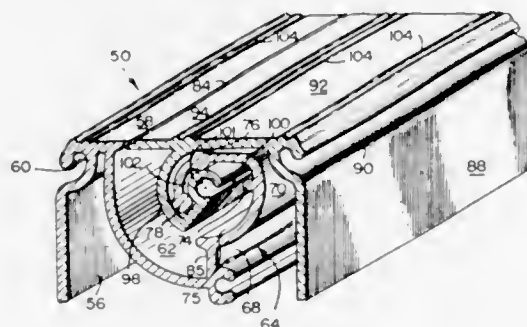
Leopold Bustin, 194 Emmons Road, Flanders, N.J.

Continuation-in-part of Ser. No. 860,373, Sept. 23, 1969, abandoned. This application Sept. 24, 1970, Ser. No. 74,979

Int. Cl. E05d 1/04

U.S. Cl. 16—178

8 Claims



A pinless hinge wherein a spirally configured hollow receiver has engaged therein an arcuate engaging member which is movable along and in the spiral hollow of the receiver for relative swinging movement between the receiver and engaging member. The pinless hinge includes a plurality of limit stops, one of which receives most of the load thereby minimizing damage to the other limit stops which serve functions in addition to this stopping. A plurality of beads is located in the relative path of movement between the receiver and engaging member to improve the fit therebetween eliminating play. The receiver may be constructed in any of several shapes to simultaneously engage a plurality of engaging members.

3,718,944

**TEXTILE FIBER COMBING MACHINES**

Edward Watson Clark, 9 Ambleside Avenue, Bradford, England

Filed Sept. 11, 1970, Ser. No. 71,594

Claims priority, application Great Britain, Sept. 17, 1969, 9,755/69

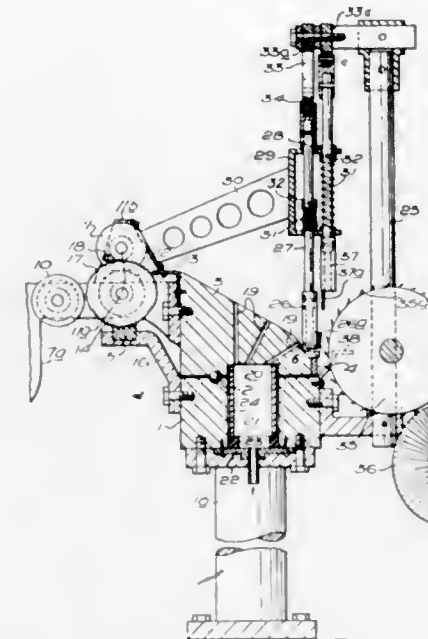
Int. Cl. D01g 19/02

U.S. Cl. 19—123

13 Claims

A textile fiber combing machine in which the fibers to be combed are carried at a plurality of stations around a bed-ring

on a rotary circular ring over which they are drawn and to which they are intermittently clamped by nip blocks and ini-



tially combed by a rotary cylinder, the fibers being then combed by pins on the nip blocks and given a reverse feed by a knife engaging a groove in the rotary ring.

3,718,945

**SLINGS, TOW-ROPS AND THE LIKE**

Pierre Brindejone de Treglode, 14 rue Dailly, 92 Saint-Cloud, France

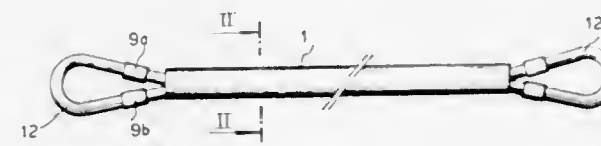
Filed Oct. 8, 1970, Ser. No. 79,205

Claims priority, application France, Oct. 13, 1969, 6935549; Sept. 16, 1970, 7034193

Int. Cl. A44b 31/00; B66c 1/12

U.S. Cl. 24—73

6 Claims



A cargo sling, tow-rope or the like comprises two cables embedded in a continuous elastomeric sheath of generally elliptical cross-section, these cables being disposed substantially in the longitudinal plane containing the major axis of the ellipse and in a substantially symmetrical relationship with the longitudinal centerline of the sheath; the cables extend beyond the sheath on at least one end, their projecting extremities being interconnected to form a loop or to engage an attachment such as an extension cable or a coupling member. The cables may be provided with deformations inside the sheath, such as undulations or shoulders, to prevent relative longitudinal slippage. The sheath can be produced by extrusion about the juxtaposed cables.

3,718,946

**QUICK RELEASE CARGO TIE DOWN**

Waymond S. Lunsford, Clayton; Max W. Watts, Tiger, and Kenneth W. Mason, Clayton, all of Ga., assignors to The Aid Corporation, Clayton, Ga.

Filed Nov. 3, 1971, Ser. No. 195,204

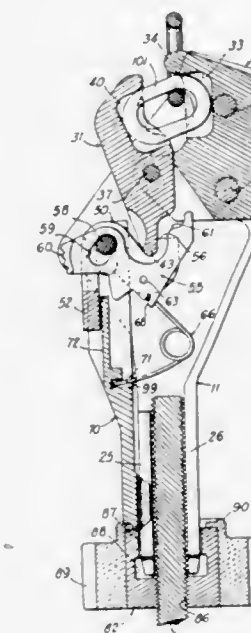
Int. Cl. A43c 11/00; B65d 63/00

U.S. Cl. 24—73 HH

13 Claims

A quick release cargo tie-down device for use in securing a link of a cargo tie-down chain in position relative to stationary

anchor means. The cargo tie-down device includes a pair of block members defining opposing socket portions detailed in dimensions for receiving opposite arcuate end portions of a chain link, with the block members being movable relative to each other for operation between a closed chain link retaining position and an opened chain link releasing position. Latching lever means is operatively associated with the block members for preventing relative displacement of the block members, to thereby latch the block members in the chain link retaining position. The quick release cargo tie-down device includes two latch releasing lever means operable independently of each other, with one of the latch releasing levers being operable for effecting release of the latching lever to permit a chain link to be removed from the opposed socket means when the



cargo tie-down device is not under tension and with the second latch releasing lever being operable for effecting the release of the chain when the device is operating under tension. A single spring means is operatively associated with the latching lever and the latch releasing levers for biasing the latching lever to a latched position and for biasing the latch releasing levers to inoperable positions. The quick release cargo tie-down device includes a selectively adjustable collar means having an internally threaded opening operable for receiving externally threaded means of a hook member, with the selectively adjustable collar means operable for effecting displacement of the hook member relative to the chain retaining block members, whereby the effective tension applied to a cargo tie-down chain can be adjusted.

3,718,947

**TIE DOWN ROPE**

Paul W. Huber, 5440 Woodcrest Drive, Salt Lake City, Utah 84117

Filed May 21, 1971, Ser. No. 145,709

Int. Cl. A44b 21/00

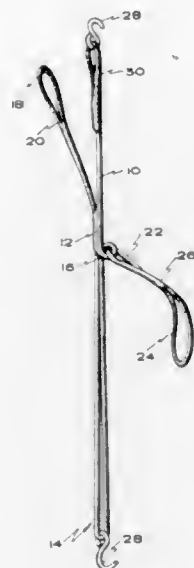
U.S. Cl. 24—73 HH

11 Claims

A tie down device which includes an elongated braided rope having a first connecting end and an opposite end passed through spaced strands of said rope forming a sleeve therein proximate a mid-portion of said rope thereby forming a loop on one side of said sleeve, and release means secured to the mid-portion of said rope proximate



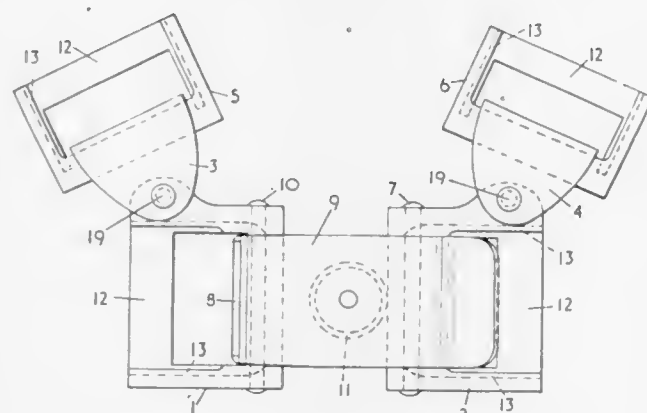
the one side of the sleeve for removing locking pressure pin, the latter is guided along a precisely defined path, such as applied to the rope by the sleeve when the rope is under that there results greater ease of travel of the slider body



tension in a tie down mode and thereby allow the rope to slide back through the sleeve.

### 3,718,948 SAFETY HARNESSSES

Clement Rahmin Dartois, 10 Herbert Crescent (Off Hans Crescent), London SW. 1, England  
Filed June 9, 1969, Ser. No. 831,311  
Claims priority, application Great Britain, June 12, 1968, 27,889/68  
Int. Cl. A44b 11/25, 17/00  
U.S. Cl. 24—75 6 Claims



A half buckle for a safety belt having a frame with an abutment at one side, a member slidable in the frame and having a slot generally parallel to the abutment. A belt is looped around the portion of the slidable member on the other side of the slot from the abutment and, when tension is applied to the belt, is trapped against the abutment.

### 3,718,949

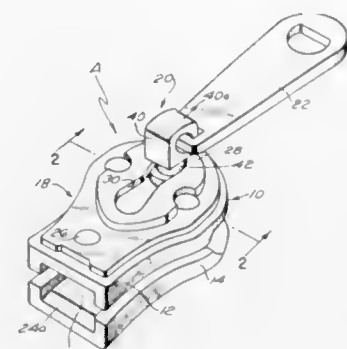
**SLIDER CONSTRUCTION FOR SEPARABLE FASTENERS**  
Gerald F. Harlam, and Marian A. Okolowicz, both of Providence, R.I., assignors to Pilling Chain Co. Inc., West Barrington, R.I.

Filed April 13, 1971, Ser. No. 133,512  
Int. Cl. A44b 19/26

U.S. Cl. 24—205.15 R

5 Claims

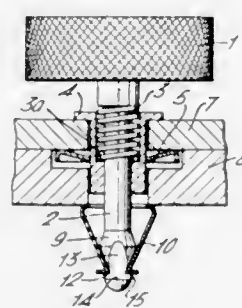
A slide fastener including a cast slider body to which is attached a cast plate member, the plate member having a generally longitudinally extending slot formed therein for slidably receiving a rotatable swivel pin to which a tab device is attached, the plate member and slot formed therein being so fashioned that upon manipulation of the tab device and swivel



around corners and the like, thereby effectively improving upon the reliability of the fastener assembly.

### 3,718,950 FASTENING DEVICE FOR DETACHABLY SECURING TWO MEMBERS TOGETHER

John Bertil Engstrom, Helsingor, Denmark, assignor to T. Praestmark, Copenhagen, Denmark  
Filed Jan. 12, 1972, Ser. No. 217,145  
Claims priority, application Denmark, Jan. 27, 1971, 341/71  
Int. Cl. A44b 17/00  
U.S. Cl. 24—217 9 Claims



A fastening device for detachably securing together a member, such as a plate member, having a stud rotatably and axially movably mounted therein, and another member which may also be a plate member, and which is provided with one or more detent members adapted to cooperate with one end of the stud. At the other end the stud may for example be provided with a head, which may be similar to a screw head, and a spring member is biasing the stud axially in relation to the plate member in which it is mounted and tends to move the head of the stud away from the associated plate member. The end of the stud adapted to cooperate with the detent members is provided with axially spaced shoulders preferably forming parts of notches into which the said detent members may snap so as to lock the stud, when the stud is moved axially against the force exerted by the spring member. The said shoulders are shaped in such a manner that the stud may be locked merely by depressing the head thereof despite of its angular position, and released by rotating the stud in any direction.

### 3,718,951 ROPE CLAMP

Max Pasbrig, Casa Luce-Via all'Eco, Orselina, Switzerland  
Filed Jan. 15, 1971, Ser. No. 106,664  
Claims priority, application Germany, Jan. 19, 1970, P 20 02 184.5

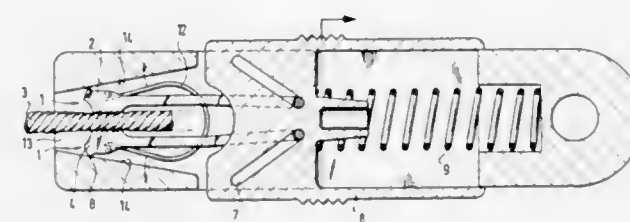
Int. Cl. F16g 11/04

U.S. Cl. 24—126

7 Claims

The specification describes a rope clamp with at least one clamping body, which can be moved between wedge-shaped

guiding faces. A rear part of the clamping body remote from the rope is constructed as a pivoting edge or is rounded and on actuation of the clamp the clamping body slides into its clamping position with the rear part on an associated guiding face comes into engagement with the rope. Following this the clamping body swings about the pivoting edge as a pivot axis until the whole clamping face lies against the rope.



The clamping face is so arranged that in the clamping position the front edge of the clamping face lies behind, in terms of the pulling direction, a line drawn perpendicular to the direction of pulling through the axis of rotation or at the most lies on this axis. Furthermore for actuating the clamp to release it the clamping body is first swung about its axis of rotation formed by its pivot edge before it begins its sliding movement on the guiding face.

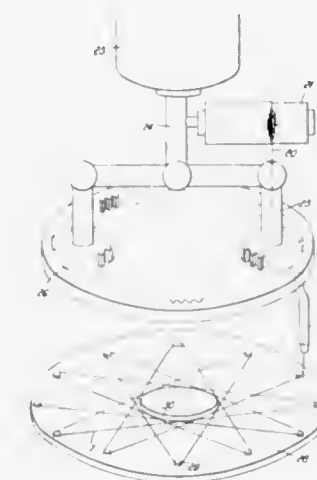
### 3,718,952

#### EPICYCLIC WEAVING OF FIBER DISCS

Jack Palfreyman, Tansley, Nr. Matlock, Derbyshire; Henry Edward Middleton, Derby, and Alan Anthony Baker, Mickleover, Derby, all of England, assignors to Secretary of State for Defence, London, England  
Division of Ser. No. 735,411, June 7, 1968, Pat. No. 3,632,460.  
This application March 13, 1970, Ser. No. 24,404  
Int. Cl. D06c 3/08

U.S. Cl. 28—15

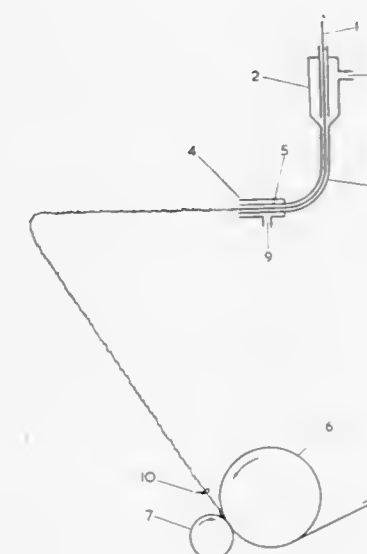
5 Claims



An apparatus for winding one or more fibers under tension onto a former is used for making a turbine or compressor rotor for a gas turbine engine. The apparatus includes an epicyclic system having an annulus wheel means and at least one planet wheel means which can be rolled about a circumference of the annulus wheel means to define an epicycloid path of travel. A guide means is operatively associated with one of the planet wheel means for guiding one or more fibers from a source of supply onto a former, and the guide means is arranged so that its end nearer the former follows a substantially epicycloid motion as dictated by the rolling of the planet wheel means about the circumference of the annulus wheel means.

3,718,953  
**HEAT TREATMENT OF YARNS**  
Robert Reid Coats, John Michael Greenway, and William Glen, Harrogate, England, assignors to Imperial Chemical Industries Limited, London, England  
Filed July 13, 1970, Ser. No. 54,236  
Claims priority, application Great Britain, July 28, 1969, 37,790/69; Jan. 8, 1970, 1,006/70  
Int. Cl. D02g 1/00 11 Claims

U.S. Cl. 28—72.1



Process and apparatus for heat treating yarns wherein a yarn entrained in a gaseous stream is brought into contact with a surrounding annular stream of heated gas and thereafter the yarn tension is allowed to fall.

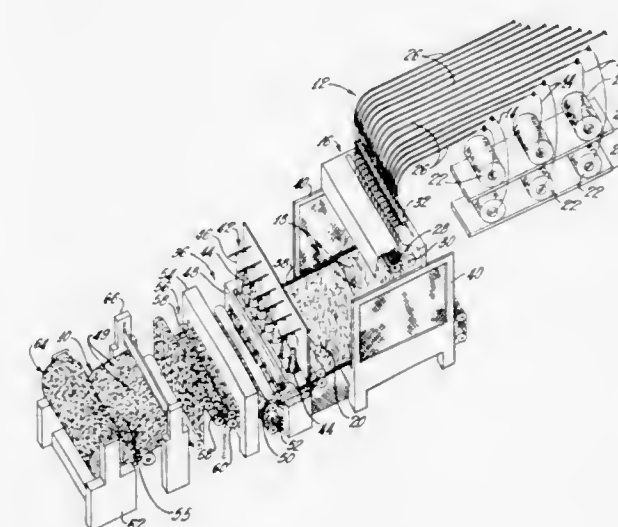
### 3,718,954

#### METHOD FOR PRODUCING A NONWOVEN REINFORCEMENT STRUCTURE

Thomas E. Philipps, Granville, Ohio, assignor to Owens-Corning Fiberglas, Toledo, Ohio  
Division of Ser. No. 823,459, May 9, 1969, Pat. No. 3,614,936.  
This application Dec. 24, 1970, Ser. No. 101,217  
Int. Cl. B32b 7/08

U.S. Cl. 28—77

5 Claims



A nonwoven structure and method of making it where the structure includes short lengths of linear material such as glass strand united by nonadhesive means into a coherent body.



3,718,955

**METHOD OF MANUFACTURING SEMICONDUCTOR CAMERA TUBE TARGETS**

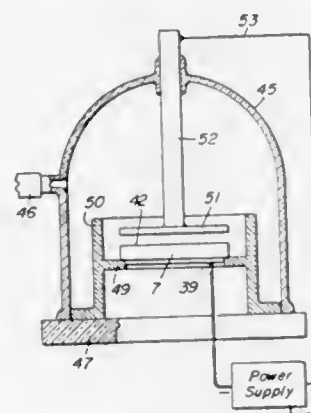
Rowland W. Redington and Pieter J. van Heerden, Schenectady, N.Y., assignors to General Electric Company

Filed Sept. 19, 1960, Ser. No. 56,799

Int. Cl. H01j 9/20

U.S. Cl. 29—25.11

11 Claims



1. The method of depolarizing the surface of semiconductor photoconductive camera tube target having a front side for viewing a scene so that current may be conducted by an electron beam scanning the back side of said target and through said target without being impeded by a dipole surface layer on the target, comprising the steps of adding a material operative when added to the semiconductor to impart p-type conductivity characteristics thereto, and bombarding the side of the target which is to be scanned by the electron beam with a stream of noble gas ions in order to increase acceptor levels in the semiconductor surface and render the surface comparably p-type with the interior of the semiconductor.

3,718,956

**BUILT-UP SLEEVE ROLL FOR ROLLING AND METHOD OF MAKING THE SAME**

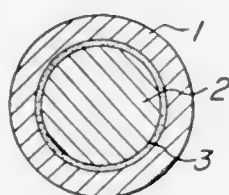
Yasuhiro Sekimoto, and Itsuo Korenaga, both of Kitakyushu, Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Oct. 7, 1971, Ser. No. 187,278

Int. Cl. B21b 31/03

U.S. Cl. 29—132

4 Claims



In a built-up sleeve for the use of rolling the inner surface of the cylindrical sleeve and the outer surface of the shaft on which the sleeve is mounted are coated with a binder containing hard tough and sharp angled particles of the diameter in average of not less than 0.05 mm (350 mesh in granularity). After being coated with the binder, the cylindrical sleeve and the shaft are fitted together by shrinkage fit or expansion fit. The bending of the shaft and slippage of the sleeve are well prevented by the construction as above.

3,718,957

**METHOD OF SECURING A THREADED ELEMENT IN A HIGH CENTRIFUGAL FORCE FIELD**

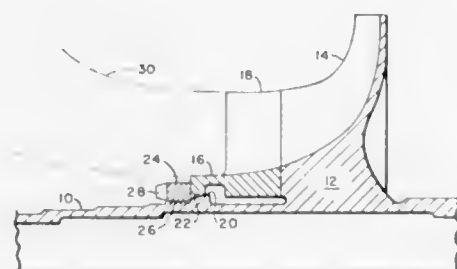
Wayne C. Shank, Williamsport, Pa., assignor to Avco Corporation, Williamsport, Pa.

Filed Sept. 3, 1970, Ser. No. 69,408

Int. Cl. B21k 3/04; B23p 15/02, 15/04

U.S. Cl. 29—156.8 CF

1 Claim



A method for securing a threaded element on a shaft comprising the steps of machining the threads on the element to a predetermined interference fit with the shaft on which it will be secured. The nut is heated to enable threading onto the shaft. The predetermined interference fit is selected so that when the element is cooled an internal hoop stress is generated that is sufficiently large to prevent loosening by circumferential enlargement of the element in a high centrifugal force field.

3,718,958

**ROTARY CUTTING TOOL**

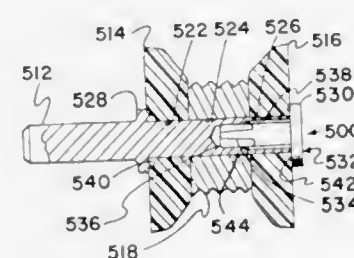
William S. Brucker, 1500 Providence Road, Towson, Md. 21204

Filed May 7, 1971, Ser. No. 141,236

Int. Cl. B23d 71/00; B26d 1/12

U.S. Cl. 29—103 R

6 Claims



A rotary cutting tool for producing bevelled or otherwise molded edges on furniture and the like, comprising a unitary shank-mounted peripheral-cutter having fixed conical guides at each end sloped to form between them an included angle of 90°; both assembled and one-piece embodiments are disclosed.

3,718,959

**ROLL FOR DEWATERING PRESSES OF PAPER MAKING MACHINES**

Vaino Sailas, Kansakoulu, Vaajakoski, Finland

Filed Feb. 11, 1971, Ser. No. 114,640

Int. Cl. B21b 27/02

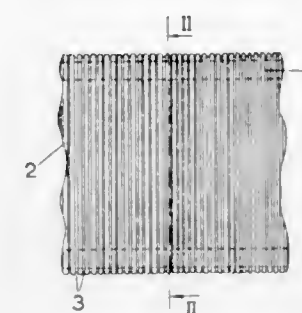
U.S. Cl. 29—121 H

2 Claims

A roll for dewatering presses of paper making machines consists of a roll body having a coating consisting of a strip or

of rings. The outer surface of the roll is provided with grooves. The invention is particularly characterized in that the strip has

Data is included to demonstrate the mechanical and electrical characteristics of joints made between aluminum and copper employing a novel cadmium zinc bonding composition.



a longitudinal side elbow and that the rings have annular side ribs.

3,718,960

**MACHINE FOR MANUFACTURING HELICAL FIN TUBES**

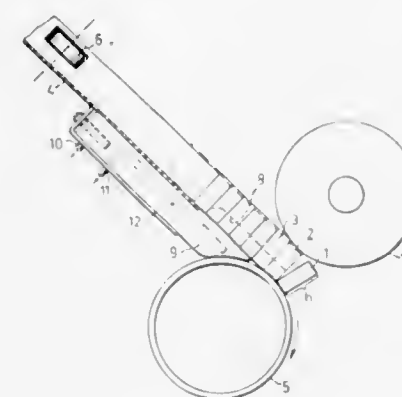
Sten Hilding Soderstrom, Ulvsatersvagen 9, and Olof Cardell, Strandvagen 1, both of Sollentuna, Sweden

Filed Dec. 11, 1970, Ser. No. 97,245

Int. Cl. B23p 15/26, 15/16

U.S. Cl. 29—157.3 AH

10 Claims



A process of manufacturing fin tubes consisting in cutting series of metal plates of desired length from metal strips, feeding said plates in a guide towards the outer periphery of a tube and fastening the plates e.g. by welding by their end edges in a circular or helical row onto the outer surface of the tube, so that the length of the plates corresponds to the height of the fin formed of the plates, thus permitting the adjustment of the height of the fin solely by cutting metal plates of different length from one single strip or strips of the same width. A machine for performing the process consists of a device for feeding loose metal plates cut from a strip of determined width in a row into a gutter-like guide, means for moving said plates along said guide in desired spacing relation towards the outer periphery of a tube, means for rotating said tube and possibly also for longitudinal displacement thereof relative to said gutter-like and means for welding said metal plates with their end edges onto the tube in a row to form a fin thereon.

3,718,961

**ELECTRICAL CONNECTION BETWEEN DISSIMILAR METALS**

John L. Harper, deceased, late of Sharon, Pa. (by Ann K. Harper, executrix)

Division of Ser. No. 742,268, July 3, 1968, abandoned. This application Nov. 12, 1970, Ser. No. 89,095

Int. Cl. B32b 15/20

U.S. Cl. 29—191

2 Claims

A method and material for providing a good electrical and mechanical joint between aluminum and copper is described.

3,718,962

**HIGH TEMPERATURE METALLIC DIFFUSION COATING**

David J. Levine, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 780,177, Nov. 29, 1968, Pat. No. 3,617,360. This application Sept. 28, 1970, Ser. No. 76,278

Int. Cl. B32b 15/00

U.S. Cl. 29—195

3 Claims

Improved oxidation and sulfidation resistance can be imparted to a high temperature metallic diffusion coating diffusion bonded with metallic surface, such as nickel, cobalt or iron base alloy surface, by embedding in a coating outer portion between about 5 and 50 volume percent of oxide particles of up to about 20 microns in size and thermally stable to at least about 2,000°F.

3,718,963

**METHOD AND APPARATUS FOR REMOVING SCREEN WIRE MEMBERS FROM MULTI-LEVEL SCREEN DECK ASSEMBLIES**

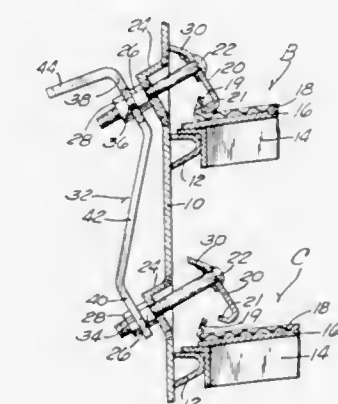
George C. Hawkins, 9636 North Riverside Drive, Mequon, Wis., and James H. Cutts, 5450 North Long Island Drive, Milwaukee, Wis.

Filed Nov. 25, 1970, Ser. No. 92,763

Int. Cl. B23p 19/00

U.S. Cl. 29—200 D

4 Claims



The screen wire members are removed by first loosening the nuts on the clamp bar holding bolts and then moving the bolts axially inwardly to thereby move the clamp bars to a non-holding position. This is accomplished by the use of a plurality of clamp bar tools which are fastened to the ends of pairs of vertically spaced bolts, the lower of which is at the level where the screen wire member is to be removed and the upper of which is at the next higher level of the multi-screen deck assembly.

3,718,964

**UNIVERSAL TOOL FOR HOLDING THE EYES OF LEAF SPRINGS**

Ronald J. Warezak, 304 Annison, Union Lake, Mich.

Filed March 8, 1971, Ser. No. 121,811

Int. Cl. B23p 19/00, 19/04

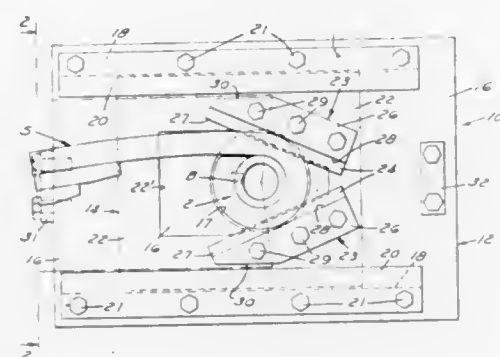
U.S. Cl. 29—200 P

10 Claims

The jig-like tool has a horizontal rectangular base plate of substantial area which is fixed in use on top of which plate parallel, laterally spaced side guide way and top restraining elements are fixedly mounted. A rectangular slide plate rests atop the base plate, being laterally and vertically restrained by said way and guide elements, and thus confined with reasonable side and top space clearance for longitudinal sliding movement on the base plate. Elongated and laterally spaced, block-



like wear and guide plate units are fixedly mounted on the slide plate, with inner surfaces of their respective wear and guide parts converging angularly for a wedging engagement of a leaf spring eye between upright guide surfaces of the units,



the eye being supported on their horizontal wear surfaces. The wear and guide blocks are fixedly mounted to the top of the slide plate by a series of upright studs; and end stops on the fixed base plate and guide-way sub-assembly prevent separation therefrom of the slide, wear and guide plate sub-assembly.

3,718,965

## PIERCE NUT INSTALLATION HEAD

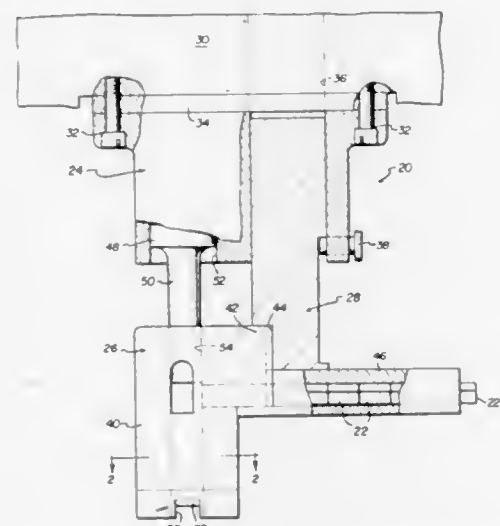
Jerry H. Steward, Bloomfield Hills, Mich., assignor to Multifastener Corporation, Detroit, Mich.

Filed June 3, 1971, Ser. No. 149,516

Int. Cl. B23q 7/10; B23p 19/00

U.S. Cl. 29—211 D

9 Claims



The disclosure relates to an installation head apparatus, particularly suitable for securing a piercing fastener in a panel. The disclosed installation head includes a reciprocating plunger and a guide housing having a passage which receives the plunger and a plurality of pierce nuts in vertically stacked relation. The preferred embodiment of the guide housing provides an interference fit at the pierce nut corners to retain the nuts in the guide passage and explosion channels at the open end of the pierce nut passage which, in the event a pierce nut is fractured during the installation, receives the pierce nut fragments, guides the fragments away from the passage and prevents damage to the pierce nuts remaining in the passage.

3,718,966

## TUBE EXTRACTING MECHANISM

Charlie D. Miller, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed July 16, 1971, Ser. No. 163,219

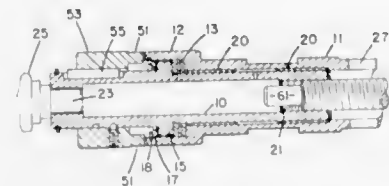
Int. Cl. B23p 19/04

U.S. Cl. 29—234

7 Claims

The invention has to do with a mechanism for extracting heat exchanger tubes from heat exchangers. A drawbar has

threaded engagement with a sleeve journaled in a housing. A tube pulling tap is connected to the drawbar and initially extends outwardly from the housing for threaded engagement with the tube. The sleeve is provided for a connection to a power driver such as an impact wrench. Means is provided to restrain rotation of the drawbar and tap relative to the hous-



3,718,967

## METHOD OF CONSTRUCTING A FERRULE UNIT FOR FISHING RODS

Milton J. Stevens, 1812 Crestmont Court, Glendale, Calif.

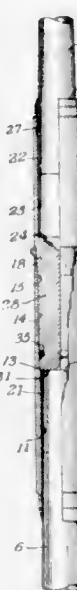
Division of Ser. No. 54,217, July 13, 1970, Pat. No. 3,614,143.

This application Feb. 16, 1971, Ser. No. 115,763

Int. Cl. B23p 3/00, 25/00

U.S. Cl. 29—458

2 Claims



A ferrule unit for connecting sections of a fishing rod formed of male and female ferrules that have a telescopic interfit which is on an extremely small taper and is cushioned by an O-ring provided on the end of the male ferrule and engaged with the tapered surface of the female ferrule, and a method for producing such a ferrule unit.

3,718,968

## METHOD FOR CONNECTING A WIRE TO A COMPONENT

S. Donald Sims, Huntington, and Raymond W. Forestieri, Greenlawn, both of N.Y., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Feb. 14, 1969, Ser. No. 799,469

Int. Cl. B23k 1/20, 31/02

U.S. Cl. 29—482

7 Claims

The method comprises deforming the end of the wire as by heating it above the melting point with a laser beam and per-

mitting it to solidify into a sphere to raise the vaporization point of the end. The wire is placed into contact with the com-

removal or addition of conductive material thereto or therefrom and measuring the displacement of a free portion of the conductive member while it is in motion in response to a



ponent and the wire and the component are heated by a laser beam to provide a fusion weld.

3,718,969

## PLASTIC ENCAPSULATED SEMICONDUCTOR ASSEMBLIES

Eugene E. Segerson, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

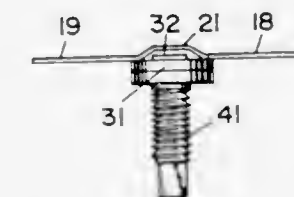
Division of Ser. No. 722,471, April 18, 1968, Pat. No.

3,560,808. This application Sept. 21, 1970, Ser. No. 74,104

Int. Cl. B01j 17/00

U.S. Cl. 29—588

3 Claims



A plastic encapsulated, high-frequency power transistor assembly having a metallized ceramic base and a metallic heat sink is fabricated by a method which includes the use of a thin, substantially flat lead frame member having at least four inwardly projecting, substantially coplanar electroconductive leads and a bridging portion integral therewith connecting the ends of two of said leads. The lead ends are bonded to corresponding metallized areas of the ceramic base, one of said metallized areas having a centrally extended configuration adapted for die bonding of the semiconductor unit. The assembly is then completed by the attachment of a metallic stud to the opposite side of the ceramic base, wire bonding of the emitter region to the bridging portion of the lead frame, wire bonding of the base region to the remaining lead, and a final step of plastic encapsulation.

3,718,970

## ELECTROMECHANICAL TRANSDUCER PROCESS

Robert B. Stanish, Chicago, Ill., assignor to Vibronics Research Co., Lombard, Ill.

Division of Ser. No. 417,108, Dec. 9, 1964, which is a continuation-in-part of Ser. No. 193,520, May 9, 1962, Pat.

No. 3,246,259. This application Nov. 13, 1968, Ser. No.

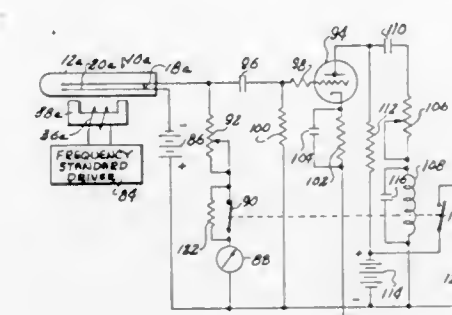
842,033

Int. Cl. G01r 4/00; G05f 4/00

U.S. Cl. 29—593

8 Claims

A method of manufacturing a device such as a resonant reed device having an enclosed mechanically displaceable conductive member with a controlled atmosphere within the enclosure, the method including steps of passing a substantial electric current through the member, the current being sufficient in magnitude to alter the mass of the member by the



3,718,971

## WIRE CUTTER

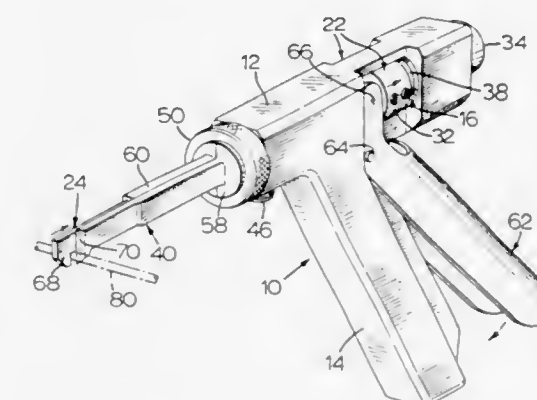
John McLean, Carleton Place, Ontario, and Louis Donald Charron, Greely, Ontario, Canada, assignors to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Feb. 1, 1971, Ser. No. 111,430

Int. Cl. B26b 13/04

U.S. Cl. 30—241

2 Claims



A wire cutter in which a pair of laterally abutting blade members with offset cutting jaws are slidable one along the other and also rotatable as a unit about their common axis to alter the shearing plane of the jaws with respect to the main body of the tool.

3,718,972

## DENTAL CONSOLE

Shirl S. Fox, Menlo Park, and David M. Hershkowitz, Palo Alto, Calif.; said Fox assignor to Dental Designs, Palo Alto, Calif.

Filed Apr. 12, 1971, Ser. No. 132,979

Int. Cl. A61c 19/02

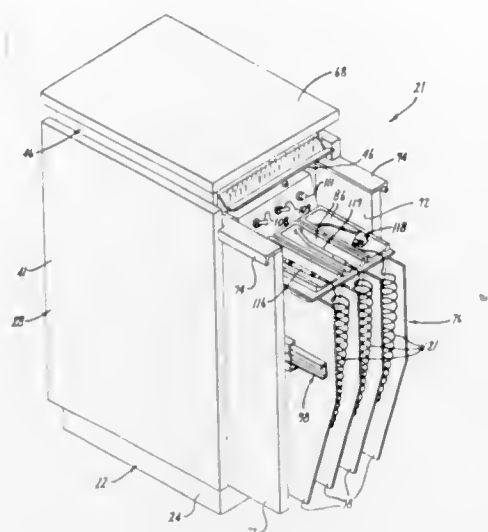
U.S. Cl. 32—22

14 Claims

Dental console having a cabinet with a plurality of dental instruments mounted in the cabinet and with the cabinet being adapted to be connected to a source of at least first and second fluids. A plurality of separate



trays are mounted in the cabinet with one of the dental instruments being mounted in each tray. Switch means is



associated with each tray for controlling the supply of fluid to the dental instrument carried by the tray.

3,718,973

## DENTAL SYSTEM

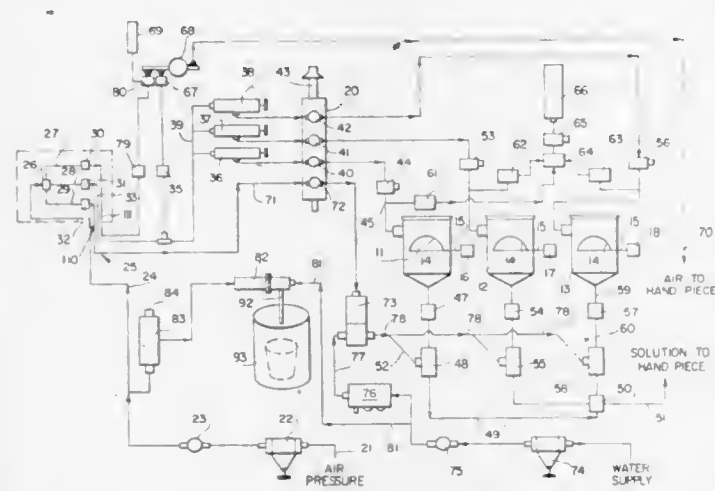
Robert W. Slater, 50 Longstaff St., and Joseph B. Barker, 2 Newell St., both of, Jacksonville, N.C.

Filed May 1, 1970, Ser. No. 33,643

Int. Cl. A61c 19/02

U.S. Cl. 32—22

29 Claims



The specification discloses a system for use in dental prophylaxis. Containers of pumice, fluoride, and a polishing agent are provided with a discharge means to force these dental solutions from their respective containers and through a flexible conduit to a dental hand piece. The hand piece is equipped with a rotating applicator for applying the dental solution to a dental patient. A selector control valve means is provided to select the appropriate container and the solution therein.

3,718,974

## DENTAL HANDPIECE DRIP CONTROL SYSTEM

Dean H. Buchtel; Kenneth R. Lappin, and John A. Maurer, all of Canton, Ohio, assignors to The Weber Dental Manufacturing Company, Canton, Ohio

Filed Sept. 20, 1971, Ser. No. 181,671

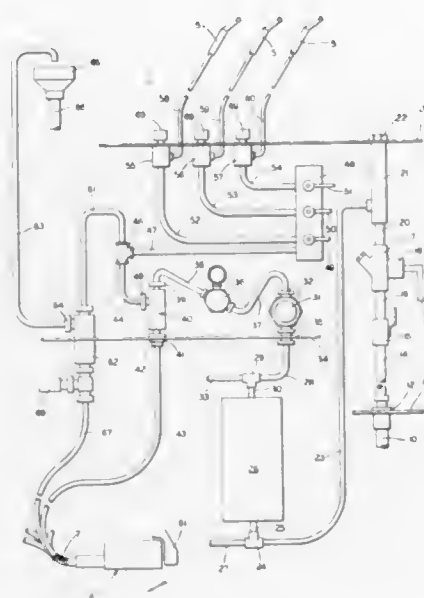
Int. Cl. A61c 19/02

U.S. Cl. 32—22

8 Claims

A control system for exhausting coolant water which is trapped within a dental handpiece coolant water supply line upon deactuation of the handpiece to eliminate drip at the

handpiece. Compressed air which actuates a coolant water supply valve is exhausted into a branch line upon closing of the supply valve. The exhaust air opens a valve positioned between the water coolant line and drain facilities. The trapped coolant water flows into the drain through the open



exhaust valve reducing the trapped water and pressure in the coolant water supply line. The exhaust air is relieved slowly through a choke after opening the exhaust valve, permitting the exhaust valve to close slowly enabling a sufficient quantity of trapped water to be exhausted.

3,718,975

## PERSPECTIVE DRAFTING MACHINE

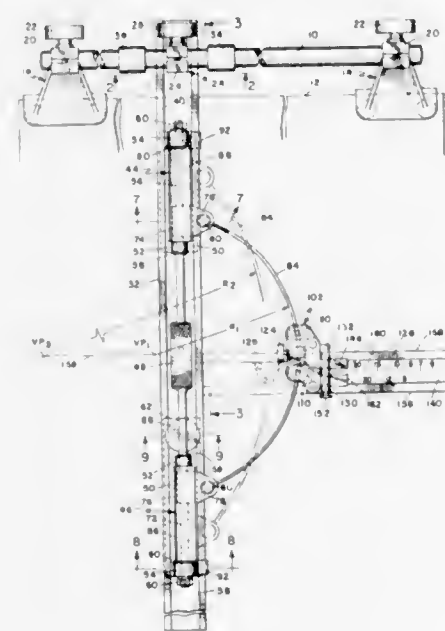
Charles S. Ross, 2626 Coronado Avenue, No. 74, Imperial Beach, Calif.

Filed July 2, 1971, Ser. No. 159,191

Int. Cl. B43l 13/14

U.S. Cl. 33—77

9 Claims



A perspective drafting machine which can be set at any position on a drawing board and adjusted to any selected horizon line. The straight edge or scale is carried on a travelling head which moves along an arcuate guide beam, the radius of the arc being easily adjustable to provide the required vanishing point in the perspective. Means is provided on the scale for setting the radius quickly and accurately. The arcuate guide beam is mounted on a carriage which moves along a track, and the entire beam, head and scale assembly can be swung to either side of the track to provide vanishing

points toward opposite sides of the board, without losing any settings.

3,718,976

## APPARATUS FOR MEASURING STRAND

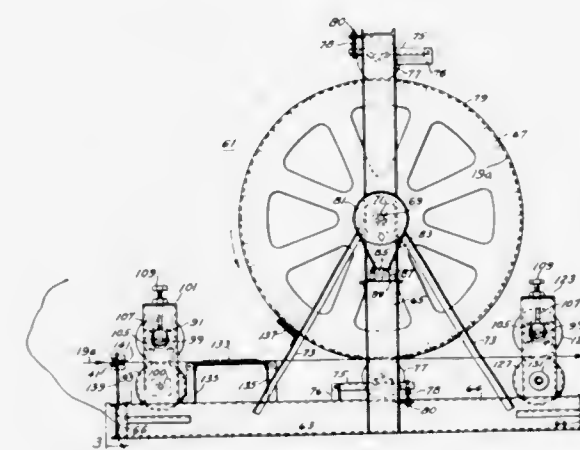
Charles R. Nippert, Sr., Allentown, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Division of Ser. No. 668,782, Sept. 19, 1967, Pat. No. 3,556,167. This application Aug. 13, 1970, Ser. No. 63,533

Int. Cl. G01b 3/12, 5/04

U.S. Cl. 33—129

2 Claims



Wire strand is fabricated and subsequently severed into measured lengths of strand at locations determined on a wire of the strand during fabrication by passing the wire between rearwardly urged tension rolls, around a measuring wheel, and between unidirectional tension rolls.

3,718,977

## SURFACE INDICATOR

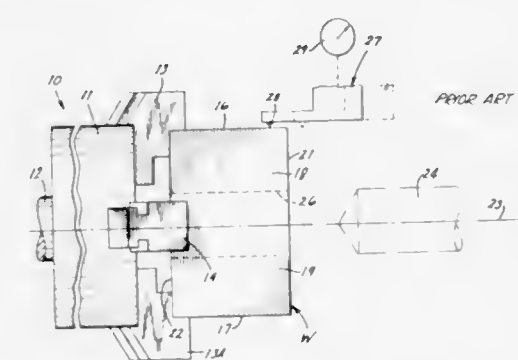
David M. Kraklau, St. Joseph, and John H. Taylor, Sodus, both of Mich., assignors to Advance Products Corporation, Harbor, Mich.

Filed May 24, 1971, Ser. No. 146,052

Int. Cl. G01b 5/14

U.S. Cl. 33—172 D

5 Claims



A method and apparatus for locating the center of a non-circular, such as a rectangular, face of a workpiece to permit the boring or drilling of an opening in the workpiece at the center of said face. The workpiece is adapted to be mounted in a rotatable chuck and locating blocks are firmly held, as by permanent magnets, against diametrically opposite surfaces of the workpiece adjacent said face. The locating blocks have planar reference surfaces which project beyond the said face of the workpiece. An indicating device is mounted near the said face of the workpiece and has a radially outwardly extending contact point disposed to engage the reference surfaces. The workpiece is rotated by the chuck to enable the contact point to engage the reference surfaces, and the workpiece is radially adjusted by the chuck until the reference surfaces are equidistant from the rotational axis.

3,718,978

## PIPELINE SURVEY VEHICLE

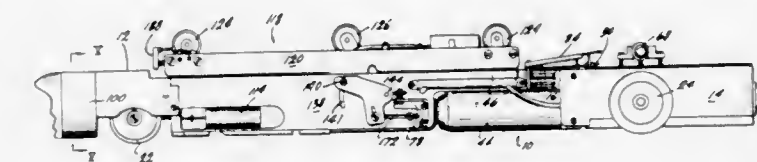
Barry D. Van Koeveering, 211 Russell Street; William M. Blough, Jr., 313 W. Bennett Street, both of Saline, Mich.; Fred H. Bunnell, 719 Woodfield Dr., Jackson, Mich.; William B. McDowell, 7416 Ledgewood Dr., Fenton, Mich., and George E. McDowell, 1730 Ivywood, Ann Arbor, Mich.

Filed Oct. 16, 1970, Ser. No. 81,261

Int. Cl. G01b 7/28, 7/34

U.S. Cl. 33—174 L

17 Claims



The invention is directed to a vehicle adapted to be inserted within a pipeline or conduit, such as a buried gas main, having pipeline characteristic sensing means mounted upon the vehicle for sensing the pipe deflection in a vertical plane, leaks, cracks, corrosion or other pipeline characteristics. The vehicle is self-propelled and is self-steering. Self-steering is accomplished by means of a gravity operated sensing device which will maintain the vehicle in a predetermined vertical orientation at all times. Traction of the vehicle drive wheels is augmented by friction producing means engaging the upper region of the pipe and biasing the drive wheels into firm engagement with the pipe lower region inner surface. Control of the vehicle and recording of the pipeline characteristics is achieved remotely through electric conductors affixed to the vehicle.

3,718,979

## BOW-SIGHT

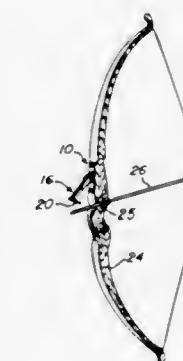
Harry W. Allen, 6220 Apache Street, Dayton, Ohio

Filed Dec. 19, 1968, Ser. No. 785,253

Int. Cl. F41g 1/00, 5/00

U.S. Cl. 33—265

3 Claims



A simple but effective bow-sight featuring a broad bow hugging base, a pivoted arm, and a sighting screw arranged transverse to said arm. The arm and said base having a functional calibrated relation enabling highly accurate sighting and substantially instantaneous correction of range, as needs require.

3,718,980

## MEASURING CONSTRUCTION

George Poulos, 3020 Pearl St., Franklin Park, Ill.

Filed May 20, 1970, Ser. No. 39,105

Int. Cl. B43l 7/06, 13/00

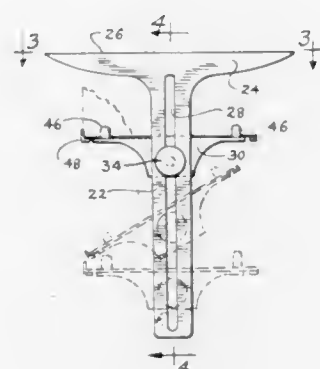
U.S. Cl. 33—174 G

4 Claims

A measuring device for use in determining the span between two objects and for use in marking a piece of material whereby



the material can be cut to a desired size for filling the span. Said device comprising a longitudinally extending main body portion having a transversely extending edge member located at one end of the body portion. A slot extends longitudinally of the body portion, and a guide member is attached to the body portion and is movable along said slot. The guide member defines a first surface for engaging the edge of an object, and



the body portion can then be moved relative to the guide member for engagement of its transverse edge with the object on the opposite side of the span. Subsequent to this, the guide member can be placed in engagement with a piece of material which is to be employed for filling the span. The transverse edge then serves as a means for locating a mark or scoreline to achieve accurate severing of the piece of material.

3,718,981

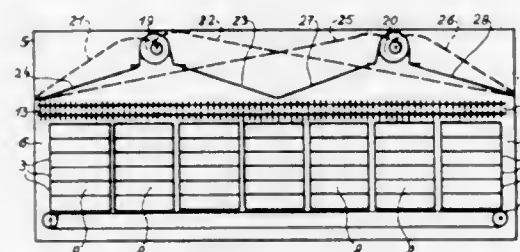
#### METHOD AND APPARATUS FOR COOLING FOODS CONTAINED IN PORTION CONTAINERS

Ernst Breuning, Frühlingsweg 6, 7016 Gerlingen-2, Germany  
Filed Oct. 13, 1970, Ser. No. 80,403

Int. Cl. F26b 3/00

U.S. Cl. 34—33

4 Claims



In the cooling of foods, particularly yogurt, stored in portion containers, the containers are arranged in groups in air permeable receptacles and the receptacles are stacked before being introduced into a tunnel whose interior is cooled to change the temperature of the food. The stacks introduced into the tunnel have cross sectional areas approximating the tunnel cross sectional area, and the receptacles have air flow openings in either their side walls or their bases. The stacks in the tunnel are uniformly traversed by a cooling air flow provided by a radial blower, and the air current flowing to the interior of the stacks flows through air flow passages formed at least by the exterior surfaces of the stacks and the interior surfaces of the tunnel. The air current is directed through one or more heat exchangers before it traverses the stacks. The tunnel may be divided into twin tunnels and, when several radial blowers are used, the various air currents may be mixed for uniformity of temperature.

#### 3,718,982 EXCESS LINT INDICATOR FOR A CLOTHES DRYER

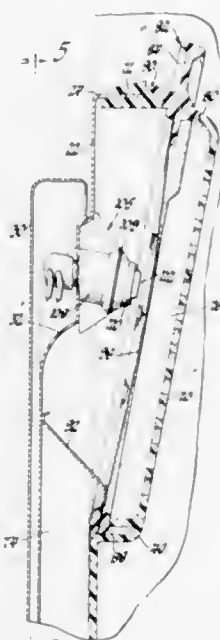
Homer W. Deaton, Centerville, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 27, 1971, Ser. No. 193,039

Int. Cl. F26b 21/06

U.S. Cl. 34—82

4 Claims



A domestic clothes dryer has a circulating airflow duct system including a tumbling drum and a lint filter for filtering lint from air leaving the tumbling drum. An excess lint indicating system includes a visible signal light on the dryer and an operating switch therefor. The switch is operated by a pressure actuated surface which reposes against the cloth-like screen of the filter whereby the screen forces the switch as lint accumulates to energize the signal light.

3,718,983

#### SHEET DRYING APPARATUS

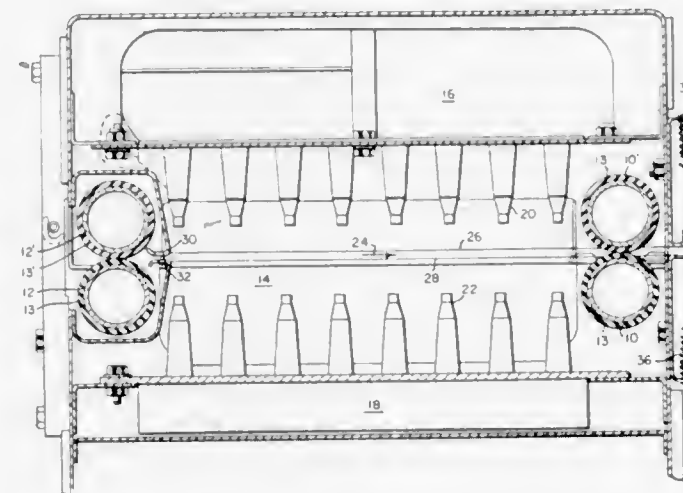
John Arnold Crowell, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 7, 1971, Ser. No. 141,190

Int. Cl. F26b 13/00

U.S. Cl. 34—156

14 Claims



Sheet material, such as photographic film, may be dried efficiently in an apparatus comprising a drying chamber, having first and second plenums, each of said plenums having an array of nozzles for directing high velocity air at the respectively opposite sheet surfaces,

first and second sets of conveying rolls arranged so as to provide a path for sheet material between the respective arrays of nozzles of said plenums and spaced so as to contact sheet material moving through said path, and a plurality of filamentary guides on at least one side of said path.

#### 3,718,984 FREE-STANDING AUDIO-VISUAL-RESPONSE TEACHING SYSTEM

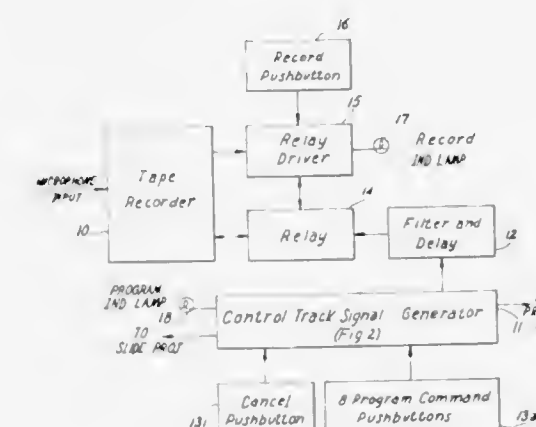
Terry L. Hewitt, Schenectady, N.Y., assignor to General Electric Company

Filed Apr. 1, 1971, Ser. No. 130,397

Int. Cl. G09b 7/06

U.S. Cl. 35—9 A

21 Claims



A programming component generates self-clocking digital control signals and records them on one track of a magnetic tape and records analog signals on another track for providing audio information to the student. The tape is then utilized in a response component which responds to the digital control signals to provide automatic operations such as remotely operating one or two visual display devices (i.e., a slide projector), for presenting to the student material in lecture form and, or, multiple-choice problems. The response component includes electronic logic circuitry for determining the correctness of the student's response to the problems. A pushbutton assembly on the response component permits the student to advance the tape in accordance with the tape recorded program and to indicate his answers to the problems. The response component is intended for individualized instruction with totalling of the student's right and wrong responses being done on counters mounted on the response component.

3,718,985

#### GROUP INSTRUCTION AUDIO-VISUAL TEACHING SYSTEM

Terry L. Hewitt, Schenectady, N.Y., assignor to General Electric Company

Filed Apr. 1, 1971, Ser. No. 130,391

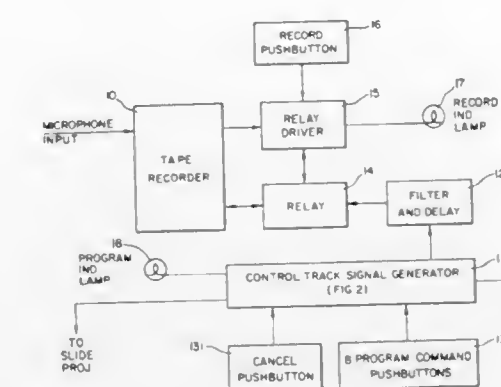
Int. Cl. G09b 7/06

U.S. Cl. 35—9 A

18 Claims

A programming component generates self-clocking digital control signals and records them on one track of a magnetic tape and records analog signals on another track for providing audio information to a group of students. The tape is then utilized in a response component which responds to the digital control signals to provide automatic operations such as remotely operating one or two visual display devices (i.e., a slide projector), and for presenting to the students over a loudspeaker, material in lecture form and, or, multiple-choice questions.

The response component is operated by the instructor and includes multiple lamps which display to the in-



structor the correct answers to the multiple-choice questions.

#### 3,718,986 SCANNED AUDIO-VISUAL-RESPONSE TEACHING SYSTEM

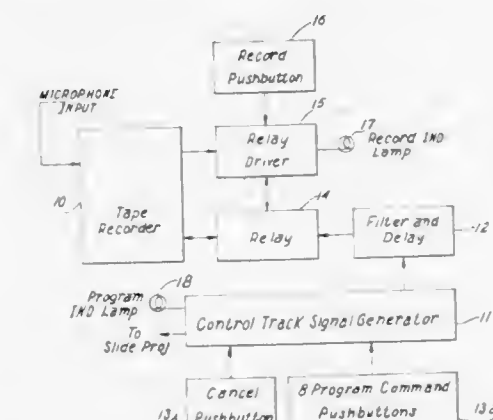
Terry L. Hewitt, Schenectady, N.Y., assignor to General Electric Company

Filed Apr. 1, 1971, Ser. No. 130,386

Int. Cl. G09b 7/06

U.S. Cl. 35—9 A

19 Claims



A programming component generates self-clocking digital control signals and records them on one track of a magnetic tape and records analog signals on another track for providing audio information to the student. The tape is then utilized in a response component which responds to the digital control signals to provide automatic operations such as remotely operating a visual display device (i.e. a slide projector), for presenting to the student material in lecture form and/or multiple-choice problems. The response component includes electronic logic circuitry for determining the correctness of the student's response to the problems. A pushbutton assembly on the response component permits the student to advance the tape in accordance with the tape recorded program and to indicate his answers to the problems. The response component is interconnected with a data collection and analysis component for recording the student's responses for subsequent computer processing.

3,718,987

#### AIRCRAFT SOUND SIMULATION SYSTEM

Fred F. Carver, Chenango Forks, N.Y., assignor to Singer General Precision, Inc., Binghamton, N.Y.

Filed Sept. 10, 1970, Ser. No. 71,018

Int. Cl. B64g 7/00; G09b 9/08

U.S. Cl. 35—12 Q

7 Claims

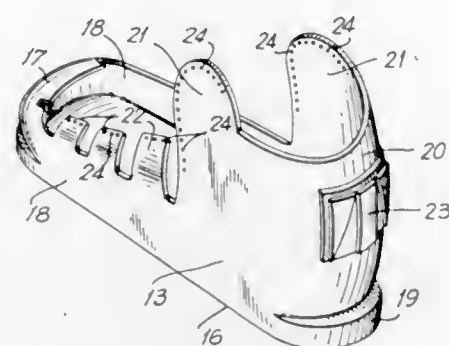
Sound generation apparatus to simulate the sounds made by a jet engine. By adding the outputs of two nominally identical







comprised of a dissimilar material having generally flexible and preferably abrasion resistance characteristics to provide flexibility at selected locations and also provide an exterior more members to be interconnected. The link structure distributes any bending stress applied to the structure over a greater length than thus over a greater area of material and con-



surface capable of resisting surface wear and abrasion. The invention is concerned with the boot construction as well as the method of forming the same.

### 3,718,995 HINGE BOOT

Josef Graup, Klingenberg Ch-8260,  
Stein am Rhine, Switzerland

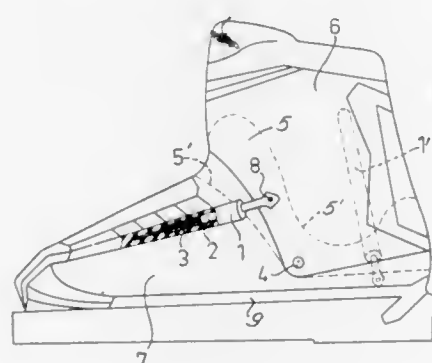
Filed June 21, 1971, Ser. No. 154,845

Claims priority, application Austria, June 23, 1970,  
A 5,626/70

Int. Cl. A43b

U.S. Cl. 36—2.5 AL

8 Claims



A ski boot, especially of synthetic material, having a first upper section comprising the tip portion of the boot and at least a part of the heel portion of the boot and also having a second upper section overlapping with said first upper section and being adapted to receive the ankle portion of a foot, said first and second upper sections being pivotally connected to each other with the pivot axis located near the sole while cushioning means are interposed between and connected to said first and second upper sections.

### 3,718,996 FLEXIBLE LINKAGES

Marcus Luther Austin, 53 Park Avenue, Bedford, England

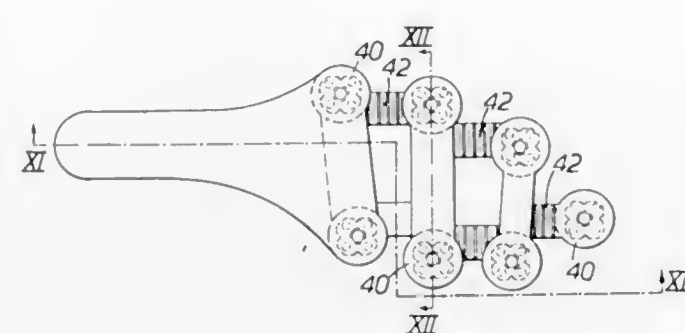
Filed Feb. 1, 1971, Ser. No. 111,533

Int. Cl. A43c 15/00

U.S. Cl. 36—67 B

13 Claims

A flexible linkage for supporting, reinforcing or similar purposes comprising a link structure which in section is of corrugated form and extends between and is connected with two or



sequently the resultant bending moment at any point along the length of the link is less than would be the case for a plain or non-corrugated link.

3,718,997

### STEAM-DRY TRAVEL IRON

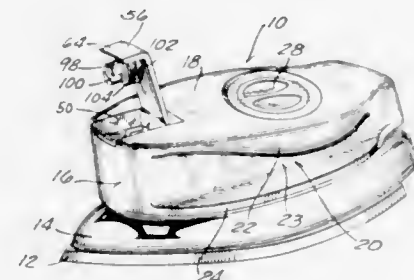
Willard G. Murphy, Macon, Mo., assignor to McGraw-Edison Company, Elgin, Ill.

Filed Jan. 11, 1971, Ser. No. 105,579

Int. Cl. D06f 75/34

U.S. Cl. 38—90

17 Claims



An electric steam-dry travel iron having no separable components that must be assembled or removed between storage and operating conditions either dry or with steam, particularly a low silhouette handle solid in appearance having a wide convexly crowned top wall and contoured side walls including an intermediate finger receiving troughs between enlarged upper grip rims and enlarged lower lips that protectively overlie the metallic casing of the iron, the handle actually being hollow and defining a water reservoir with a fill opening releasably closed by a closure cap hinged to the handle and with a rotatable steam selector knob mounted in the closure cap, the handle heel and iron casing being generally coplanar to provide a support for the iron in its non-operating upright position, and a 110 or 220 voltage selection switch recessed in the handle heel.

With increased use of permanent press garments, there is an increasing demand for an all-purpose steam and/or dry iron which might be small and lightweight enough to serve as a touch-up travel iron. Travel irons typically have required collapsible portions such as the handle, or detachable portions such as a water reservoir tank, and consequently either are not sufficiently durable for an all-purpose iron or are not convenient because of numerous accessory parts. Conventional steam irons generally are too large and heavy for effective use as a travel iron.

### 3,718,998 SEAR LEVER FOR ELIMINATING DOUBLING

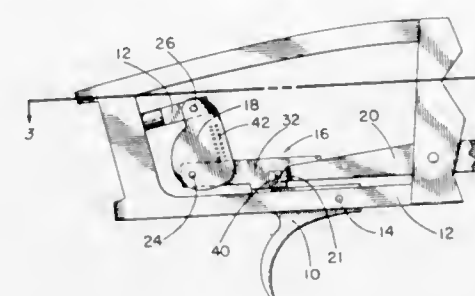
Thomas J. Hartog, Ogden, Utah, assignor to Browning Industries, Inc., Morgan, Utah

Filed Nov. 4, 1971, Ser. No. 195,600

Int. Cl. F41c 11/10, 19/00

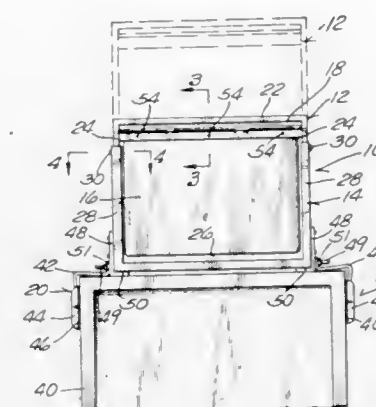
U.S. Cl. 42—42 R

12 Claims



A sear lever for a double barrel firearm single trigger firing mechanism includes a control surface extending over the lifting surface of the sear lever which coacts with the firearm's first sear, the control surface being juxtaposed to the lifting surface at an acute angle such that the firearm's first sear moves against the control surface until the firearm's inertia block moves the sear lever away from the end of the first sear during counter recoil.

is held in a fixture rotatably mounted on the upper frame and is free to swing, thereby reducing resistance to wind and minimizing the vulnerability of the display assembly to wind



damage. A mounting assembly is arranged to permit the display assembly to be removably mounted onto a support structure, such as atop a gas pump.

### ERRATUM

For Class 42—42 R see:  
Patent No. 3,718,998

### 3,718,999 IDENTIFICATION DEVICES

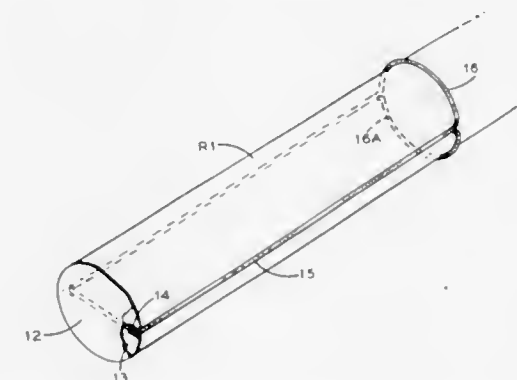
Guy Voyce, 255 East 49th Street, New York, N.Y.

Filed Oct. 30, 1970, Ser. No. 85,661

Int. Cl. G09f 3/14

U.S. Cl. 40—309

1 Claim



Identifications which may be detachably mounted on various articles, more particularly articles of tubular form such as rolled drawings, wall paper, textiles and the like; in the form of tab means for carrying on the outer surface thereof various informative indicia, together with resilient means extending from the tab means for frictionally engaging inner or outer surface portions of the article; the tab means being located at one end of the article.

### 3,719,000 PLACARD HOLDING DISPLAY ASSEMBLY

Otto R. Finger, Mequon, Wis., assignor to Display Corporation International, Milwaukee, Wis.

Filed Dec. 18, 1970, Ser. No. 99,450

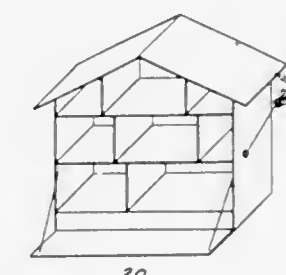
Int. Cl. G09f 7/22

U.S. Cl. 40—125 H

7 Claims

A display assembly which includes two frames, one telescoped inside the other. An upper frame holds a display placard and can be adjustably raised and lowered to accommodate display placards of various sizes. The display placard

A doll house of rigid board material arranged to be supported from a wall by flexible hangers. The hangers are attached so as to participate in locking together the separable walls and floors of the doll house and are so located as to stabilize the doll house in the hung position by forcing it against the supporting wall. Removable floors are positioned in semi-rigid extruded plastic channels bonded to the walls of the doll house. Removable partitions are positioned in similar channels bonded to the floors. Walls and back are made separable through connections employing loose-pin hinges. A folding shelf to serve as a staging area for dolls and furnishings is provided at the bottom of the doll house. The walls and back are locked to the bottom floor by concealed catches to permit use of the doll house in the conventional bottom supported position without the flexible hangers. The preferred embodiment has three floors and eight rooms, is thirty inches high by thirty inches wide by nine inches deep, and is separable into flat panels of maximum dimensions of thirty inches by ten inches. All connections are such that the doll house may be assembled without the use of tools.



### 3,719,001 DOLL HOUSE FOR CITY CHILDREN

John C. Archer, 86 Prospect Park West, Brooklyn, N.Y.

Filed Dec. 22, 1969, Ser. No. 887,091

Int. Cl. A63b 33/00

U.S. Cl. 46—12

2 Claims



3,719,002

MUSICAL TOY

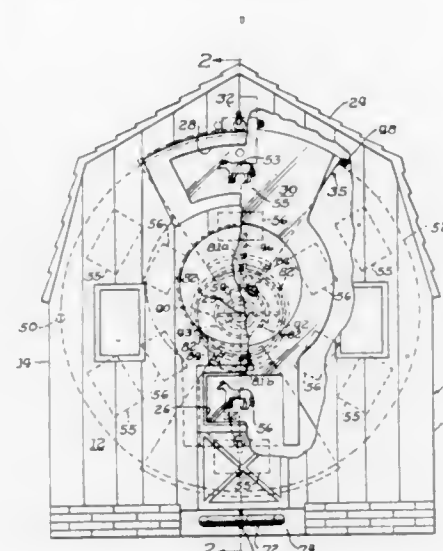
Hans Jernstrom, Northbrook, Ill., assignor to Sidney A. Tarrson Company, Dowagiac, Mich.

Filed June 11, 1971, Ser. No. 152,262

Int. Cl. A63h 33/00

U.S. Cl. 46—1 R

9 Claims



A simulated toy barn having a picture disc driven by a spring motor which includes a musical movement. The disc has illustrations of farm animals which may be viewed through openings in the front wall, and a shutter which alternately opens and closes for exposing and covering the illustrations as they pass in front of the openings. The shutter is driven through a slip clutch integral with the disc.

3,719,003

TOY BUILDING SET

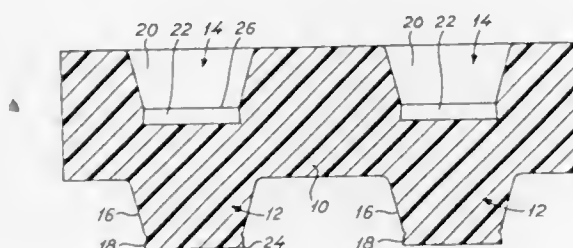
Finn Skjoldborg, 6753 Agerbaek, Agerbaek, Denmark

Filed May 10, 1971, Ser. No. 141,760

Int. Cl. A63h 33/08

U.S. Cl. 46—25

11 Claims



A toy building set comprising blocks made of a firm, somewhat resilient material, preferably of a rigid foam plastics, and adapted to be interconnected thereby that at least one tenon protruding from the surface of one block is brought to engage a corresponding recess in another block. Each said tenon comprising an inner part and an outer part. Said inner part having a length of between 60 and 90 percent, preferably between 75 and 85 percent, of the height of the tenon taken from the surface of the block and being provided with side faces outwardly approaching the longitudinal axis of the tenon, said inner part of the tenon preferably being formed as a truncated cone or as the frustum of a pyramid. Said outer part of said tenon having a length of between 40 and 10 percent, preferably between 25 and 15 percent of said height of said tenon and being provided with side faces forming an angle of less than 180°, but greater than 120° with the said side faces of said inner part of said tenon. Each said recess being over a depth corresponding to said height of said tenon conform with the latter and having the same dimensions as the said tenon.

3,719,004

CATTLE GUARDS

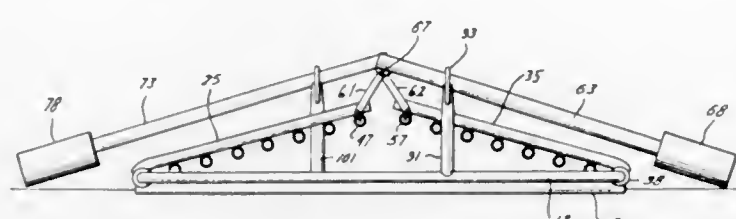
William E. Shivers, P.O. Box 183, Centerville, Tex.

Filed July 8, 1971, Ser. No. 160,624

Int. Cl. E05f 13/04

U.S. Cl. 49—131

2 Claims



Cattle guards having oppositely disposed pivotal racks, elevatable at the centers where the two racks are adjacent, whereby when the racks are pivotally elevated they present an obstacle to traverse by cattle and horses, and the like. The racks are elevated by weights, the weights being overcome by traverse of the racks by a motor vehicle, or the like, so that the racks are depressed to present a flat surface for passage of the vehicle. After the vehicle has passed the cattle guard, the racks are moved pivotally upward again by the weights.

3,719,005

DOOR OPERATOR REVERSING CONTROL

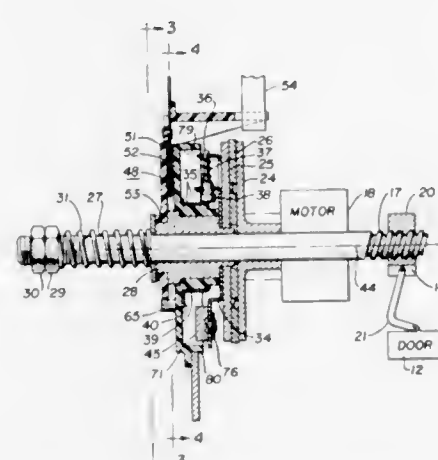
Alvin J. Carli, Sebring, Ohio, assignor to The Alliance Manufacturing Company, Inc., Alliance, Ohio

Filed Jan. 13, 1972, Ser. No. 217,605

Int. Cl. E05f 15/16

U.S. Cl. 49—28

17 Claims



A garage door motor driven operator is disclosed which is capable of opening or closing the garage door and capable of automatically reversing the direction of movement of the door when it is moving in the closing direction should the door strike an obstruction which slows or stops the door. A load switch is sensitive to a slow-down of the door such as when an overload condition slows the door. This load switch gives a first impulse to control the motor energization circuit to stop the door. A torque switch is urged in a first direction by gravity acting on a weight and is urged in the opposite direction by a one-way clutch acting only in the closing direction of the door. Hence when the door is stopped there is no more torque through the one-way clutch and the gravity actuated weight actuates the torque switch to give a second impulse to again energize the door to establish a door opening movement. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

3,719,006

SKATE SHARPENING MACHINE

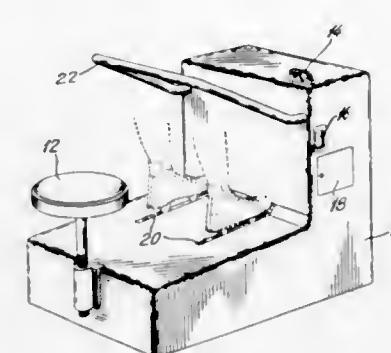
Roland Vezeau, Montreal, Quebec, Canada, assignor to Paul Smith and Joseph Julien Morel, Montreal, Quebec, Canada, a fractional part interest to each

Filed Aug. 3, 1970, Ser. No. 60,419

Int. Cl. B24b 19/00

U.S. Cl. 51—34 A

11 Claims



A skate sharpening machine including a housing and means for clamping the blade of the skate at a fixed position on the housing. A carriage is slidably mounted in the housing and carries a power-driven grinder. The carriage is arranged to be moved back and forth in the housing and guide means conforming to the shape of the bottom of the blade are provided for guiding the grinder whereby the grinder follows the shape of the bottom of the blade when moved back and forth by the carriage.

so held by abrading the exposed edges with an implement maintained at a predetermined angle to the exposed edges



by virtue of the alignment guide presented by the two edges themselves.

3,719,009

SANDBLASTING MOTOR STATOR SLOTS

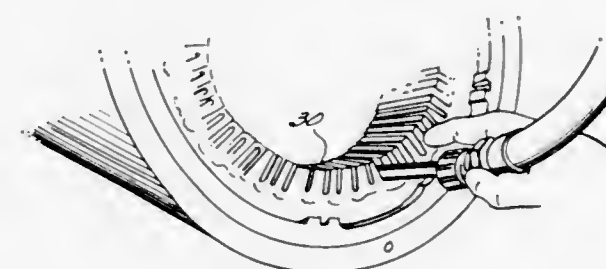
Thomas L. Thompson, 1138 Nishey Lake Road S. W., Atlanta, Ga.

Filed Sept. 20, 1971, Ser. No. 182,096

Int. Cl. B24c 1/00

U.S. Cl. 51—319

1 Claim



3,719,007

WIRE STRIPPER WHEEL FOR TOUGH PLASTIC

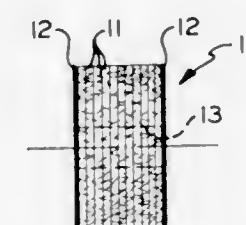
Ralph E. Bevard, Fayetteville, N.Y., assignor to The Eraser Company, Inc., Syracuse, N.Y.

Filed Oct. 2, 1971, Ser. No. 186,012

Int. Cl. B24d 5/00, 7/00, 11/00

U.S. Cl. 51—207

3 Claims



A wire stripper wheel, of the type having a plurality of layers of woven glass fibers impregnated with and bonded together with a rubber substance, has an additional layer at each end formed with a hard bonding substance such as epoxy resin or polyester. The hard layers cut through tough plastic insulation and hold the glass fibers compressed so they do not fray endwise of the wheel.

Method of removing material such as burned shellac, paper residue, insulation, dirt, grease, etc. from stator slots of electric motors preparatory to rewinding with a nozzle having an oblong hollow ceramic member which is force fitted at one end into a rubber stopper and having its other end beveled for fitting into the slots and a metal coupler for connecting the member to a suitable sand blasting source. The beveled end and oblong shape permit the nozzle to be easily inserted in the stator slots and to effectively remove the material in a short period of time without damage to the exterior of the slots in contrast to a nozzle having other shapes. Broken or worn ceramic members can be easily and quickly replaced by removal from the stopper and force fitting a new ceramic member in place.

3,719,008

SKI SHARPENING VISE

Michael A. Mayers, P.O. Box 144,

Kingston, N.H. 03848

Filed May 26, 1971, Ser. No. 146,892

Int. Cl. B24b 19/00; C22b 11/00

U.S. Cl. 51—228

2 Claims

A clamping arrangement for holding a pair of snow skis while sharpening in which a plurality of fixed uprights from an elongated base are arranged to distort the skis against their inherent elasticity with the skis spaced parallel and resting on edge; and a method for sharpening skis

3,719,010

COPING AND SUPPORT THEREFOR

John B. Hickman, Birmingham, Mich., assignor to W. P. Hickman Company, Inc., Troy, Mich.

Filed April 19, 1971, Ser. No. 135,080

Int. Cl. E04d 1/36

U.S. Cl. 52—60

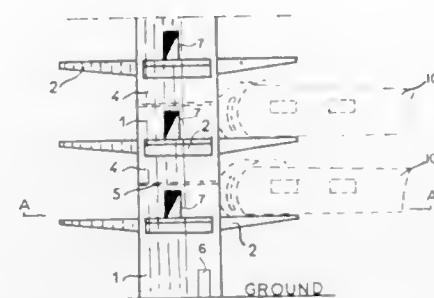
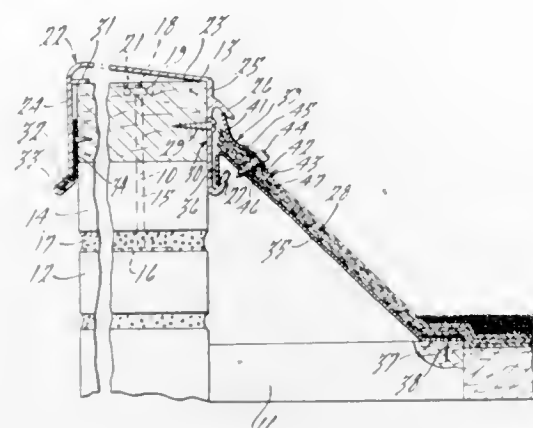
7 Claims

The coping is of inverted U-shape to extend over the top of a parapet, wall or the like which projects upwardly above the



roof deck. The coping is associated with a reglet which is supported on the inner face of the wall to provide a clamp and

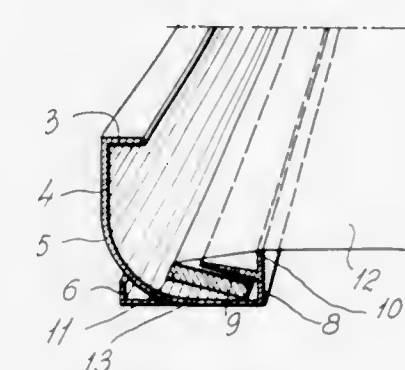
outwardly from the tower. A light-weight self-supporting building unit is mounted and supported on each platform. The



tower includes passages for access from the ground to the individual building units.

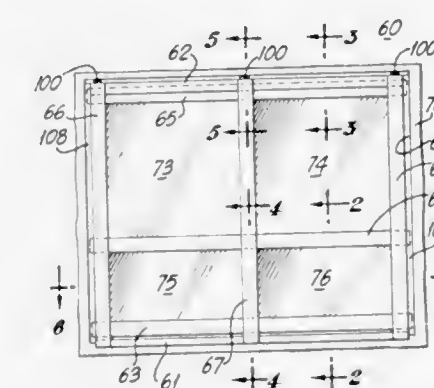
seal for the roofing material. The reglet may be extruded in unit relation with the coping or may be a separate element onto which the coping hooks to be supported thereby.

**3,719,013**  
**MOULDING FOR SUSPENSION MOUNTING AND DECORATION PURPOSES**  
Owe H. Blick, 11 Grindtorpsvagen, 183 32 Taby, Sweden  
Filed Feb. 12, 1971, Ser. No. 114,971  
Int. Cl. F04b 1/347; F04c 3/32  
U.S. Cl. 52-222 7 Claims



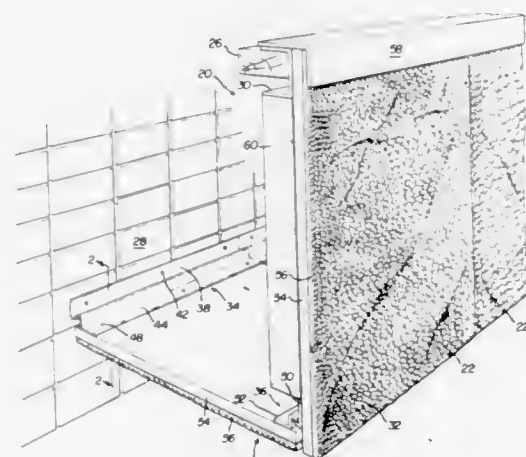
A moulding for attachment to a wall or ceiling and receiving a strip wrapped in the end portion of a wet stretched or elastic ceiling covering or supporting a coffered ceiling for decorative purpose.

**3,719,014**  
**WALL SYSTEM**  
Ronald D. Sukolics, Elkhart, Ind., assignor to American Metal Climax, Inc., New York, N.Y.  
Filed Aug. 3, 1971, Ser. No. 168,610  
Int. Cl. E04b 2/88  
U.S. Cl. 52-235 14 Claims



There is provided an improved wall system wherein the structural portions of the vertical mullions are separate from the remaining portion of the wall. Thus, there is provided a structural mullion portion with horizontal

**3,719,011**  
**FRAMELESS FASCIA-SOFFIT ASSEMBLY**  
Cornelis J. De Lange, Farmington, Mich., assignor to Cement Enamel Development, Inc.  
Filed Oct. 26, 1971, Ser. No. 191,983  
Int. Cl. E04b 2/88  
U.S. Cl. 52-73 10 Claims



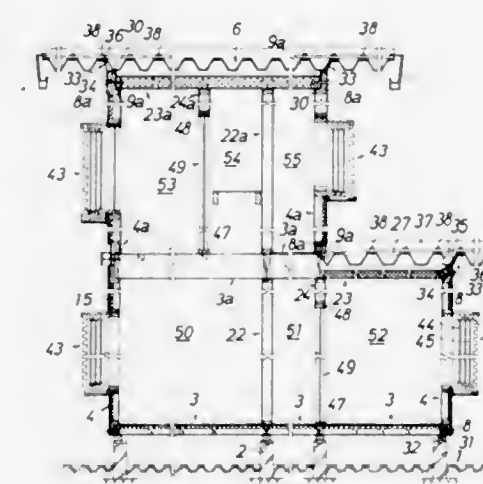
This disclosure relates to an architectural fascia-soffit assembly which is formed of a plurality of self-supporting pre-finished panels and providing a monolithic external appearance without internal framing. The vertical fascia panels are secured adjacent their upper ends to the supporting structure and the soffit panels are slidably supported between brackets secured to the free end of the fascia panel and the structural support, permitting quick assembly without skilled labor.

**3,719,012**  
**TOWER-CONSTRUCTION WITH OVERHANGS TO SUPPORT LIGHT-WEIGHT DWELLINGS**  
Felciai Laurent, 34, Place Jean Bart, 59 Dunkerque, France  
Filed July 24, 1970, Ser. No. 57,947  
Claims priority, application France, April 29, 1970, 7015657  
Int. Cl. E04b 1/34; E04h 1/02  
U.S. Cl. 52-73 7 Claims

A building comprising a central tower, and cantilever platforms located above the ground and extending horizontally

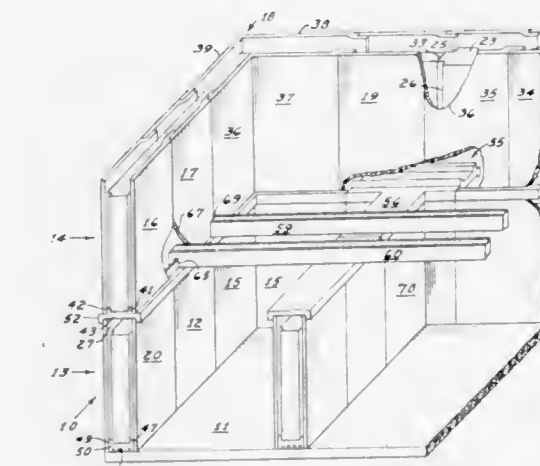
through members wherein the interior mullion portion snaps to the structural mullion portion to lock the through horizontal members in position. The shape of the structural portion may be varied without changing the other members of the system.

**3,719,015**  
**PREFABRICATED HOUSE**  
Chiyozi Misawa, Tokyo, Japan, assignor to Misawa Homes Co., Ltd., Tokyo, Japan  
Filed Sept. 27, 1971, Ser. No. 184,007  
Claims priority, application Japan, July 9, 1971, 46/51369  
Int. Cl. E04b 2/72, 5/02  
U.S. Cl. 52-236 10 Claims



A prefabricated house comprising first story floor panels laid on foundation pedestals and fastened to said foundation pedestals by anchor bolts, first story wall panels individually having a frame formed at the coupling end with a notch joined to the frame of said first story panels at least by a bonding agent, second story floor panels individually joined to a notch formed in said first story wall panels at least by a bonding agent, second story wall panels individually joined to the coupling edge of said second story floor panels at least by a bonding agent, and a ceiling panel joined to the notches formed in the frames of said second story wall panels at least by a bonding agent, all said panels being completely united.

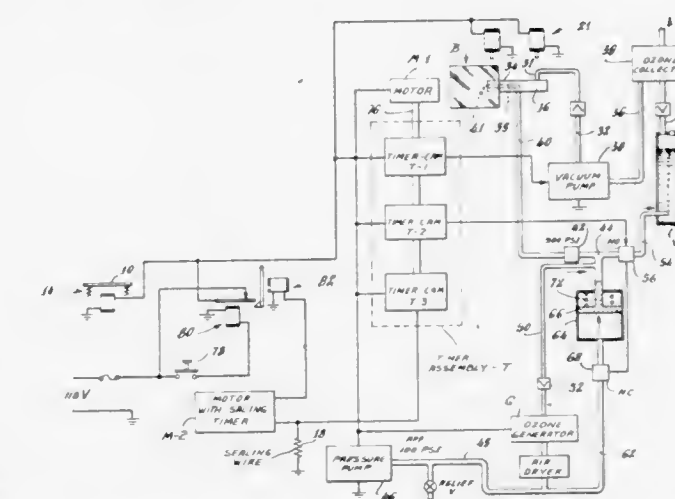
**3,719,016**  
**BUILDING PANELS AND CHANNELS**  
Russell H. Randolph, 4622 Devon Drive, Indianapolis, Ind.  
Filed Sept. 3, 1970, Ser. No. 69,193  
Int. Cl. E04b 2/08  
U.S. Cl. 52-236 6 Claims



Prefabricated panels are erected with channels for constructing a building. Each panel has two fiber glass walls

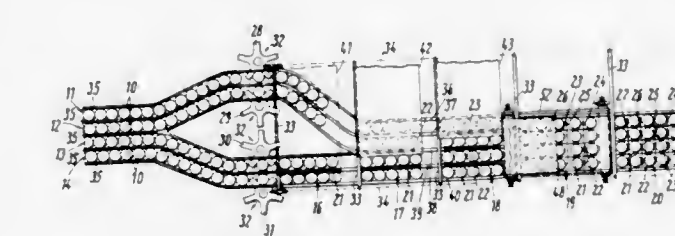
spaced apart by insulating material with offset flanges for interlocking with the adjacent panel. U-shaped channels mounted to the floor concealingly extend into the bottom of the panels. Cap channels cover the top of each panel, forming a raceway, and also serving as a mounting for the second-story panels. Corner panels and channels are provided, as well as T-shaped panels and channels. Rafters having fiber glass walls separated by insulating material fit over the channels to support the second floor.

**3,719,017**  
**STERILIZING AND PACKAGING DEVICE**  
Jonathan S. Shapiro, Stamford, Christ J. Verses, Fairfield, and Eskil L. Karlson, Stamford, Conn., assignors to Pollution Control Industries Inc., Stamford, Conn.  
Filed Oct. 16, 1970, Ser. No. 81,255  
Int. Cl. B65b 31/04  
U.S. Cl. 53-21 FC 9 Claims



An article to be sterilized is placed in a container from which air is withdrawn and replaced with a sterilizing medium, preferably ozone mist, to which all surfaces of the article are exposed, and the container is sealed leaving the article in the sterilizing medium. The exhausting and refilling and sealing are performed automatically, in timed relation, and the exhausting and refilling steps may be repeated one or more times before the sealing step.

**3,719,018**  
**METHOD AND APPARATUS FOR PACKING ARTICLES WITH LONGITUDINAL AND CROSS-MEMBERS**  
Heinz Focke, Moorstrasse 64, 3090 Verden, and Jurgen Brethauer, Friedrich-Ebert-Str. 35, 2800 Bremen, both of Germany  
Filed Feb. 18, 1971, Ser. No. 116,352  
Claims priority, application Germany, Dec. 17, 1970, P 20 62 203.1  
Int. Cl. B65b 21/06  
U.S. Cl. 53-26 14 Claims



A method and apparatus for inserting longitudinal members and cross-members between rows of articles. The articles are



formed into longitudinal rows on a conveyor and then formed into groups of a fixed number of transverse rows. After the groups are formed the longitudinal members and cross-members are mechanically inserted between the rows. The group with the members inserted between the rows is then passed to a packaging station.

3,719,019

## CONTINUOUS MOTION PACKAGING MACHINE

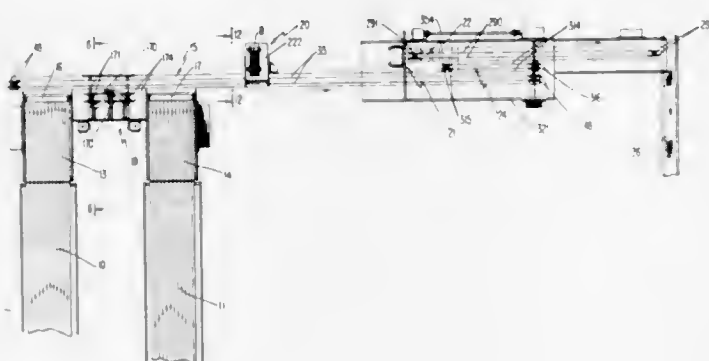
Robert J. Albrecht, River Edge, Arthur J. Griner, Wyckoff, and Frank V. N. Hoagland, Fair Lawn, N.J., assignors to Nabisco, Inc.

Filed Apr. 27, 1971, Ser. No. 137,124

Int. Cl. B65b 35/30, 35/50

U.S. Cl. 53—159

22 Claims



Machinery wherein articles received from a pair of continuously driven plural line infeed conveyors are stacked in two rows upon a main conveyor continuously moving perpendicularly to the infeed conveyors, and groups of these stacks of articles are moved from the conveyor into synchronously moving cartons. An elongated vacuum head repetitively removes articles from the first infeed conveyor and stacks them in a row along the adjacent edge of the main conveyor. This first row is moved transversely across the main conveyor by cam operated pushers moving synchronously with the main conveyor. A second vacuum head at the second infeed conveyor forms the second row of stacked articles. A second set of pushers moves groups of the stacks transversely of the main conveyor through moving chutes into the cartons. The chutes and cartons are carried by conveyors parallel to and synchronized with the main conveyor. The cartons are stored flat in a stack, are removed singly, opened, and gripped between conveyor mounted supports. After being filled, the flaps of the carton are closed and sealed.

3,719,020

## APPARATUS FOR SUPPLYING SLUGS OF COOKIES IN PRESELECTED SIDE-BY-SIDE GROUPS FOR BAGGING

Richard C. Talbot; Edward Rose, both of Skokie, and Robert A. Roth, Chicago, all of Ill., assignors to Peters Machinery Company, Chicago, Ill.

Filed Aug. 20, 1971, Ser. No. 173,473

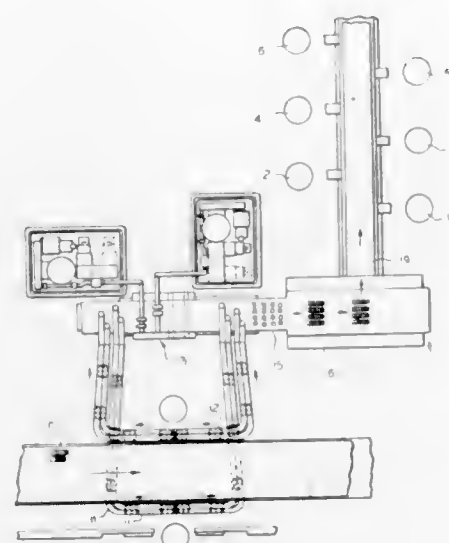
Int. Cl. B65b 35/32, 39/00

U.S. Cl. 53—159

26 Claims

Apparatus for bagging slugs of cookies in side-by-side relation, in preselected groups including a slug conveyor for supplying slugs of cookies from a sandwiching and counting apparatus to a series of bagging or wrapping stations, so arranged

as to accommodate the selection of any desired number of stations, and to supply the cookies in a continuous supply to the



preselected stations in groups of two, three or four side-by-side groups of cookies, with the number of cookies in each slug preselected by the operator of the machine.

3,719,021

## PACKAGING MACHINE

Harry Rosenberg, Philadelphia, Pa., assignor to New Jersey Machine Corporation, Hoboken, N.J.

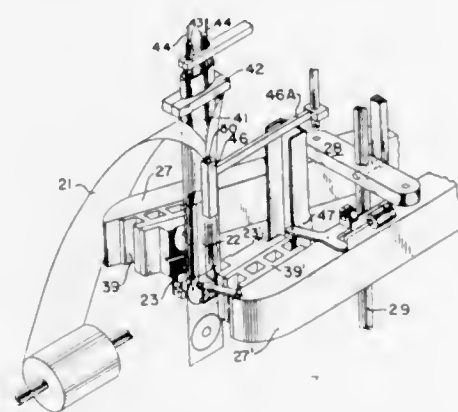
Division of Ser. No. 498,354, Oct. 20, 1965, Pat. No.

3,589,913. This application Feb. 11, 1971, Ser. No. 114,635

Int. Cl. B65b 9/08

U.S. Cl. 53—180

6 Claims



Sealing jaws are constructed and operated to form packages from ply material by a two stage sealing operation. In the first state the jaws while located at one position form an incomplete package having a material receiving chamber. The jaws and plies are then advanced to a second position where mechanism fill the chamber of the incomplete package with the product to be contained in the package. The jaws are then returned to the first position where they perform the second stage to complete the package and simultaneously perform the first stage in the formation of a succeeding package. Means are provided to open the receiving chamber while the incomplete package is still held by the jaws to enable the product to be inserted therein. A saw tooth cutter is employed to weaken the ply material between adjacent packages and to completely sever a predetermined number of them.

3,719,022

## DEVICE FOR FILLING FOODSTUFF INTO NETTED CONTAINERS

Vittoria Cherio and Giuseppe Mignone, both of Valle

San Matteo, Cisterna d'Asti, Italy

Filed Nov. 4, 1971, Ser. No. 195,619

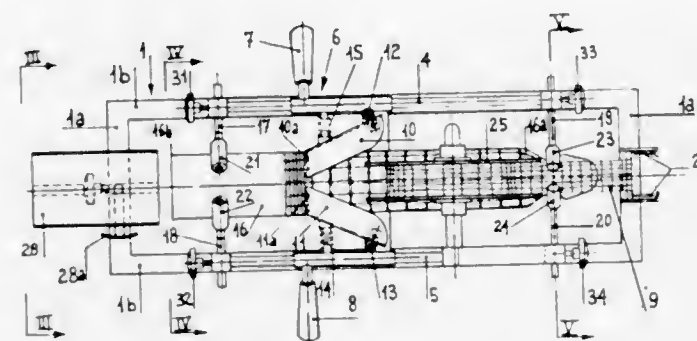
Claims priority, application Italy, Nov. 7, 1970,

70,711/70

Int. Cl. B65b 5/04

U.S. Cl. 53—255

6 Claims



A device for filling foodstuff into netted containers, which comprises a filler tube centrally positioned on a supporting frame, the tube being telescopically mounted and having thereabout a continuously fed and gathered netting which, as the ram of the tube extrudes the foodstuff therefrom, disengages itself from the tube and becomes uniformly filled with the extruded foodstuff.

3,719,023

## APPARATUS FOR ASEPTICALLY FILLING INITIALLY COVERED CONTAINERS

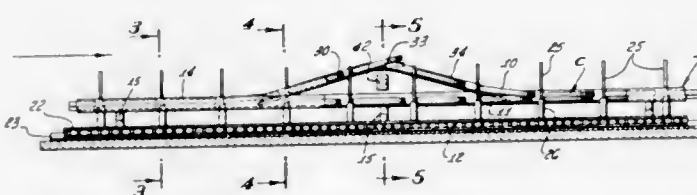
Daniel E. Richardson, 16910 Bollinger Drive, Pacific Palisades, Calif.

Filed April 21, 1971, Ser. No. 135,882

Int. Cl. B65b 43/40

U.S. Cl. 53—381 A

16 Claims



Covered containers are moved along guides, each cover being automatically elevated from its associated container body while being maintained in alignment with and directly over such body, enabling a suitable material to be dispensed into the open container body, whereupon simultaneous movement of the container body and cover along the guide continues with the cover descending back to its position closing the body, the cover being maintained in alignment with and directly over the body during its descent.

3,719,024

## NON-GIRTH SADDLE ASSEMBLY

Stacy F. Searl, 1689 National, Space 41, Chula Vista, Calif.

Filed Nov. 8, 1971, Ser. No. 196,636

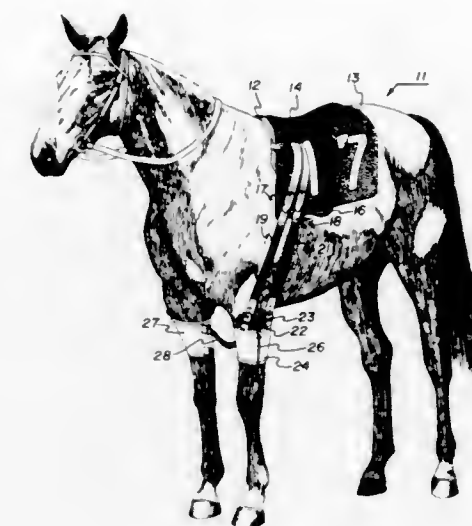
Int. Cl. B68c 01/02, 01/14

U.S. Cl. 54—44

3 Claims

A non-girth saddle assembly adapted for being removably attached to a horse's front legs. The saddle has first and

second leg bands attached to the horse's first and second front legs, respectively, with at least first and second straps coupled



between the saddle and the first and second leg bands, respectively. The saddle carries conventional stirrups with a pad and blanket attached to the saddle.

3,719,025

## RESOLVING GAS MIXTURES

Gerhard Heinze, Schildgen, and Reiner Sarnes, Nellingen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen and J. F. Mahler, Apparate-Und Ofenbau Kommandite-Gesellschaft, Esslingen, Germany

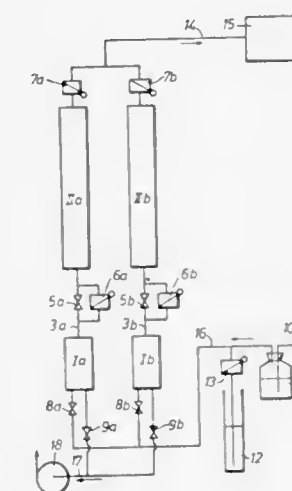
Filed Nov. 8, 1971, Ser. No. 196,604

Claims priority, application Germany, Nov. 11, 1970, P 20 55 425.0

Int. Cl. B01d 53/04

U.S. Cl. 55—31

10 Claims



In the resolution of air containing water vapor by the pressure-variation technique wherein the air is passed successively through first and second separation zones, the water vapor being removed from the air in the first zone and the nitrogen being selectively removed from the balance of the air mixture in the second zone, the air leaving the second zone being enriched in oxygen and improvement which comprises intermittently discontinuing passage of the air the first and second zones, reducing the pressure in the first zone relative to the second zone by withdrawing air from said first zone, whereby the nitrogen adsorbed in said second zone is desorbed, passes into said first zone, replaces the water vapor therein and the now desorbed, previously adsorbed water vapor in the first



zone is withdrawn from the first zone, discontinuing the reduction of pressure in said first zone, reinitiating passage of air to said first zone and from there into said second zone, and temporarily delaying the flow of air from said first zone into said second zone so that the pressure in said first zone builds up prior to build-up of pressure in said second zone. The delay of air flow can be due to a complete interruption of flow or a throttling of flow from the first to the second zone. Other gas mixtures may be similarly resolved.

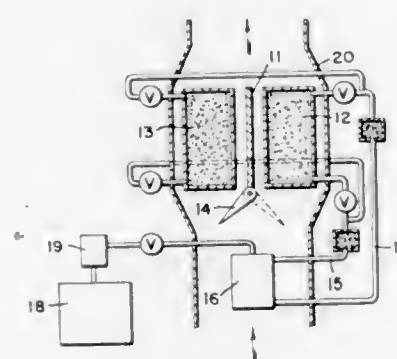
3,719,026

**SELECTIVE SORPTION OF NON-POLAR MOLECULES**  
Leonard B. Sand, Holden, Mass., assignor to Zeochem Corporation, Worcester, Mass.

Filed June 1, 1971, Ser. No. 148,508  
Int. Cl. B01d 53/04; B01j 11/40

U.S. Cl. 55—33

8 Claims



This invention relates to a process for the extraction of non-polar substances from mixtures of polar and non-polar substances by sorbing the non-polar substances on aluminum-deficient molecular sieve zeolites.

3,719,027  
**HYDROCARBON STRIPPING PROCESS**

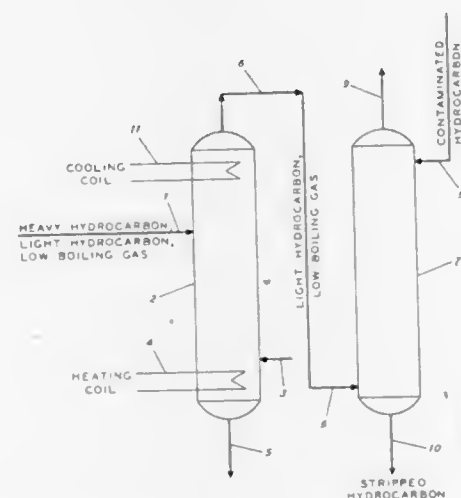
Arnold I. Salka, Walnut Creek, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 862,163, Sept. 26, 1969, Pat. No. 3,637,485. This application Feb. 1, 1971, Ser. No. 119,367

Int. Cl. B01d 19/00

U.S. Cl. 55—51

3 Claims



A process for stripping a first and a second hydrocarbon stream, wherein said first hydrocarbon stream comprises a very low boiling gas, light hydrocarbons, and heavier hydrocarbons, and said second hydrocarbon stream contains a contaminant and heavy hydrocarbons, which comprises:

- stripping said first hydrocarbon stream in a first stripping column to obtain a stripper stream comprising said heavier hydrocarbons and an overhead stream comprising said very low boiling gas and light hydrocarbons,
- using said overhead stream to strip said contaminant out of said second hydrocarbon stream in a second stripping column, and
- maintaining the first stripping column at a pressure at least 10 psi higher than the pressure in the second stripping column.

3,719,028

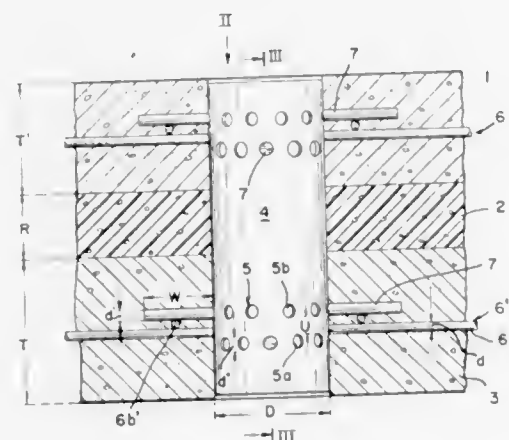
**MOBILE AIR POLLUTION REDUCTION SYSTEM AND METHOD**

Ralph J. Brooks, 186 Clearview Avenue, Langhorne, Pa.  
Filed June 16, 1971, Ser. No. 153,581

Int. Cl. B01d 47/06

U.S. Cl. 55—85

28 Claims



A mobile air pollution reduction method and system which may be incorporated in a truck body to be disengaged from a main chassis and left at an operating station. In place, the unit is connected through inlet and exhaust conduits to a chimney, stack or flue. The inlet conduit includes an interrupt mechanism to deflect waste gases into the unit. Gases injected to the unit are forced through a predetermined path where they are subjected to a high pressure fluid stream which capture solid particles contained in the gases within the intercepting fluid. The cleansed gases and contaminated fluid are directed to a sump where the fluid is cleaned and recirculated through the system. The gases are passed through a final filter and exhausted to the atmosphere. Before being recirculated the fluid may be passed into a cooling system. Where incoming waste gases are only partially burned, a combustion chamber may be added to the system to ignite remaining unburned particles in the waste gases.

3,719,029  
**PROCESS FOR TREATING GASEOUS PRODUCTS OBTAINED BY THERMAL CRACKING OF HYDROCARBONS**

Yuichi Suzukawa; Hisashi Kono; Kenji Terai; Atushi Kuribayashi; Yutaka Tamura; Hiroshi Fujii, and Muneki Saito, all of Ube, Japan, assignors to Ube Industries, Ltd., Ube-shi, Yamaguchi-ken, Japan

Filed March 23, 1971, Ser. No. 127,224  
Int. Cl. B01d 47/06

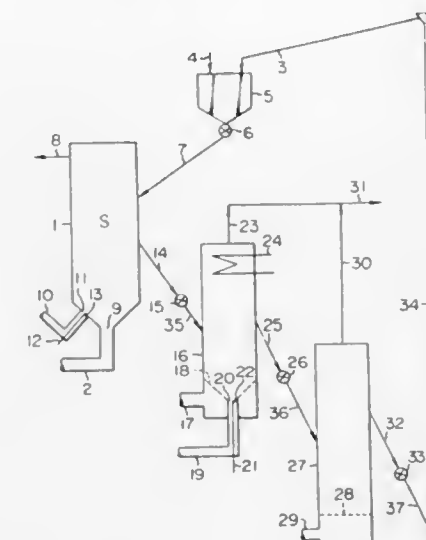
U.S. Cl. 55—91

6 Claims

A process for removing from a cracked gas product carbon and tar contained therein, which comprises spouting a high temperature cracked gas product containing carbon and tar, formed by thermal cracking of a hydrocarbon, from the bottom of a vessel in which inorganic solid particles are con-

tained, thus forming a spouted bed of the solid particles in the vessel, and spraying water or a liquid hydrocarbon in the so formed spouted bed of the solid particles to thereby quench

ing hoppers attached at the bottom of the precipitator chamber, the corona discharge being produced by an array of corona discharge points connected to a high voltage source



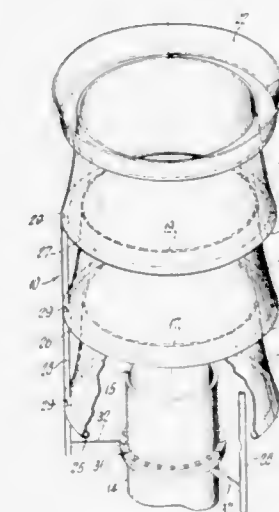
the cracked gas product and to simultaneously allow the carbon and tar contained in the cracked gas product to stick and adhere onto the surface of the solid particles.

and a grounded electrode grid positioned below the corona points near the hopper entrance either in the hopper or in the chamber.

3,719,032  
**INDUCTION CONDENSER**  
George H. Cash, 8 Holly Lane, Londonderry, N.H.  
Filed Oct. 26, 1971, Ser. No. 192,017  
Int. Cl. B01d 45/02

U.S. Cl. 55—264

10 Claims



A plurality of low pressure venturis mounted at the top of a stack draw in ambient air to condense vapors in the stack effluents, thus eliminating or minimizing offensive opaque smoke and vapor plumes. Water soluble gases and heavy particulates are also condensed and removed.

3,719,030  
**PLASTIC POWDER SPRAYING RECOVERY METHOD AND APPARATUS**

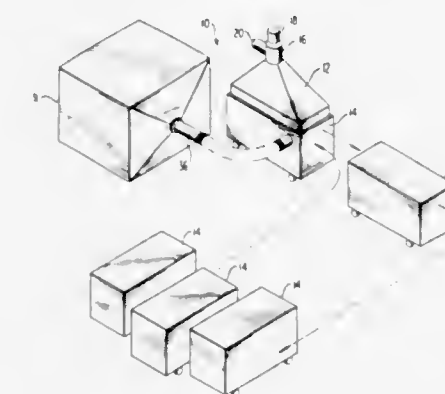
James C. Blankemeyer, Columbus Grove; Daniel E. Blankemeyer, Ottawa, and Robert L. Blankemeyer, Fort Jennings, all of Ohio, assignors to Metokote Precision, Inc., Lima, Ohio

Filed March 12, 1971, Ser. No. 123,515

Int. Cl. B01d 46/04

U.S. Cl. 55—97

9 Claims



A method and apparatus for reclaiming excess powder spray in a coating process utilizes portable filtering units connected between a spray booth and an exhausting hood. Flexible bellows and a camming lock permit a rapid connection of a different filtering unit for each color plastic or type of plastic to prevent contamination.

3,719,031  
**ELECTRIC FIELD DIRECTED CONTROL OF DUST IN ELECTROSTATIC PRECIPITATORS**  
Peter C. Gelfand, Lebanon, Pa., assignor to Envirotech Corporation, Salt Lake City, Utah

Filed June 8, 1971, Ser. No. 151,005

Int. Cl. B03c 3/00

U.S. Cl. 55—136

7 Claims

In an electrostatic precipitator, a downwardly directed corona discharge is produced at the entrance to dust collect-

3,719,033  
**DEVICE FOR REGULATING THE HUMIDITY OF THE AIR IN A MUSICAL INSTRUMENT**

Jean A. Den Boer, Wittevrouwensingel 94, Utrecht, Netherlands

Continuation-in-part of Ser. No. 668,483, Sept. 18, 1967, abandoned. This application July 19, 1971, Ser. No. 163,745  
Claims priority, application Netherlands, Sept. 22, 1966, 66/13380

Int. Cl. B01d 53/04

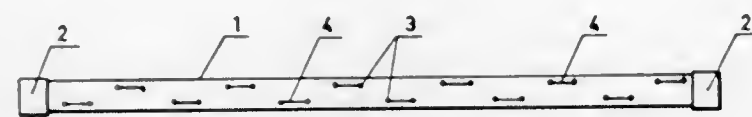
U.S. Cl. 55—387

7 Claims

A device for regulating the humidity of the air in a piano, comprising a container with apertures, filled with a moisture



absorbing material, said material being a mixture of diatomaceous earth, asbestos powder and viscose sponge and being saturated with water by immersing the container in



water, whereafter the container is mounted in the piano. The apertures are characterized by the presence of two larger openings connected by a slot of capillary size.

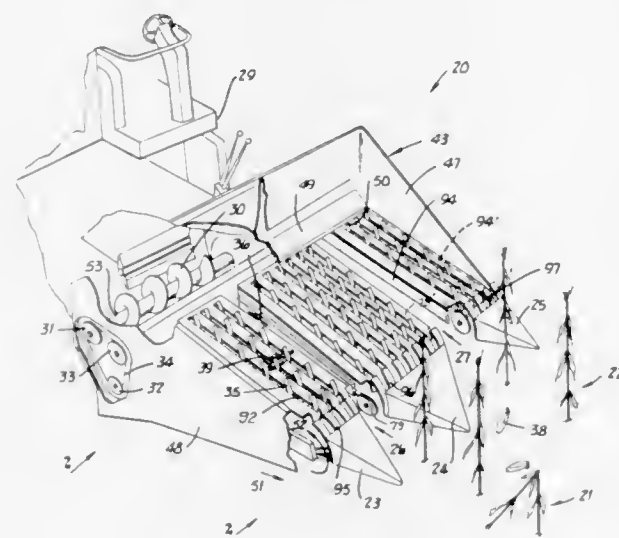
3,719,034

## HARVESTER SWEEPER

Roger J. Lange, R. R. 1, Brockton, Ill.  
Filed Sept. 8, 1970, Ser. No. 70,307  
Int. Cl. A01d 45/02

U.S. Cl. 56—119

5 Claims



A sweeping device for incorporation into a harvester to pick ears of corn off the ground. Rows of flexible fingers are attached to bars supported between endless chains. Sprockets drive the chains thereby forcing the fingers across the ground and through slotted support plates to a shucking mechanism. Slotted wrap around plates are attached to the front of the harvester trapping the ears of corn as they are lifted off the ground by the fingers.

3,719,035

## TEXTILE APPARATUS

Reginald Selby Gilchrist, 131 Handside Lane, Welwyn Garden City, England

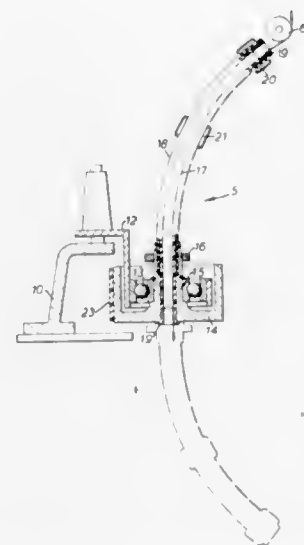
Filed May 5, 1971, Ser. No. 140,372  
Int. Cl. D02g 1/04; D01h 13/28

U.S. Cl. 57—77.3

13 Claims

The specification discloses methods and apparatus for twisting, and specifically false twisting, yarns wherein a travelling yarn is constrained to take up a curved path in contact with a rotating curved tube. This causes the yarn to be twisted by en-

gagement with the interior surface of the tube. All parts of the yarn in contact with the tube are twisted at substantially the



same speed since the contact path is substantially parallel to the rotary axis of the tube.

3,719,036

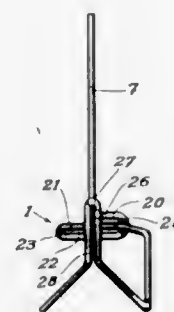
## DEVICE FOR USE IN CONNECTION WITH SPINNING AND TWISTING MACHINES FOR GUIDING THE THREAD FROM THE DRAFTING MECHANISM TO THE SPINDLE

Gunther Preisser, Strassburger Allee 39, 407 Rheydt-Odenkirchen, Germany

Filed Dec. 14, 1970, Ser. No. 97,716  
Claims priority, application Germany, Oct. 15, 1969, P 19 51 891.3; Sept. 26, 1970, P 20 47 541.6  
Int. Cl. D01h 13/04; B65h 57/08

U.S. Cl. 57—106

14 Claims



A thread guide for guiding the thread in a spinning and twisting machine during the vertical travel of the thread from the drafting mechanism to the spindle, the guide comprising superimposed pairs of guide bars that receive the thread between the bars of each pair with one pair of bars generally parallel to the length of the machine and the other pair of bars generally perpendicular to the length of the machine.

3,719,037

## WORKWATCH

David R. Williams, East Moriches, N.Y., assignor of a fractional part interest to The Raymond Lee Organization, Inc., New York, N.Y.

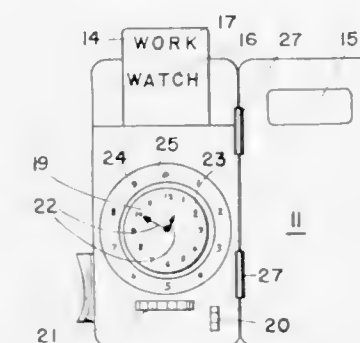
Filed May 24, 1972, Ser. No. 256,461  
Int. Cl. G04f 7/04

U.S. Cl. 58—74

5 Claims

A stop watch for the purpose of computing the charge for personal services, and particularly services of a repair

nature which are charged in proportion to the time involved. The watch is fitted with a clip for attachment to a pocket or belt, with a hinged cover which encloses and protects the operating reset and winding controls and also enclose the transparent watch face. A colored or



marked metal flag protrudes above the top of the device when the watch is in the recording position. Rings, with markings that convert the indicated elapsed time to a money charge, may be snapped into the circular bezel surrounding the watch face.

3,719,038

## WATCHCASE

Hans Ulrich Klingenberg, St. Niklaus near Merzliigen, Switzerland

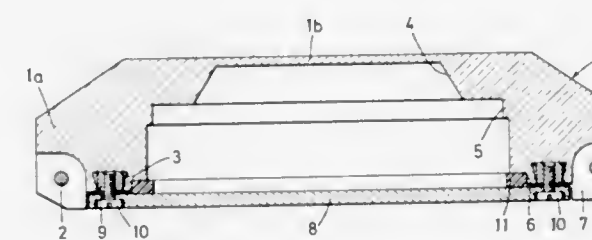
Filed June 21, 1971, Ser. No. 154,761

Claims priority, application Switzerland, June 25, 1970, 9665/70

Int. Cl. G04b 37/00, 39/00

U.S. Cl. 58—88 R

3 Claims



A comprehensive member combining both the case-band and the glass is made out of one piece of a homogeneous translucent material. The peripheral wall of this member surrounds the watch movement and it is thick enough to be practically opaque and to hide the movement edge. The central portion of this member is, on the contrary, made thin enough to form a screen allowing time reading.

3,719,039

## FLUID ANALOG CONTROL APPARATUS

George R. Howland, South Bend, Ind., assignor to The Bendix Corporation

Original application Nov. 18, 1968, Ser. No. 776,832, now Patent No. 3,587,606. Divided and this application Jan. 22, 1971, Ser. No. 109,001

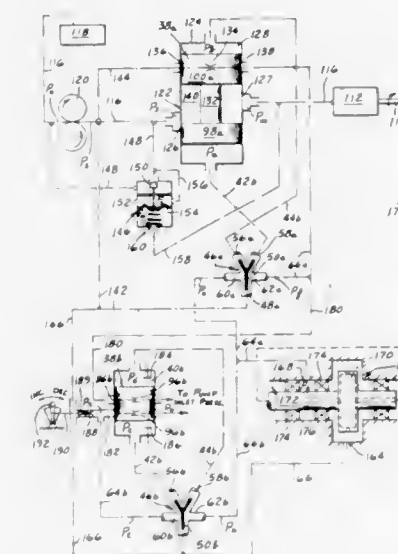
Int. Cl. F02c 9/04

U.S. Cl. 60—39.28 R

6 Claims

A bridge circuit having at least two parallel flow paths each of which paths are provided with a pair of series flow restrictions having a common flow area ratio. A floating or integrating piston connected to vary the effective flow area of one of the restrictions is responsive to the fluid pressure intermediate each pair of series restrictions which pressures are varied in accordance with variations in effective flow area of one or more of said restrictions in response to an associated input signal or signals applied thereto. Motion of the piston in response

to a pressure differential between the intermediate pressures results in a corresponding change in flow area of the one restriction connected thereto to establish equalization of the intermediate pressures. A plurality of variable area parallel flow restrictions each of which is controlled by an associated input signal may be substituted for one of the restrictions. The position of the piston provides an output position which is a function of the sum, product or



ratio of the various inputs controlling the restrictions. In addition, the piston may be connected to control the effective flow area of a restriction in a second bridge circuit similar to that described to extend the central functions of the fluidic system as desired. Pure fluid amplifying devices are suitably connected in the fluid circuitry to provide signal amplification thereby improving response of the piston.

3,719,040

## GAS GENERATOR AND TUBULAR SOLID CHARGE CONSTRUCTION THEREFORE

Heinrich Hofmann, Grobenzell, Germany, assignor to Messerschmitt-Bolkow GmbH, Ottobrunn near Munich, Germany

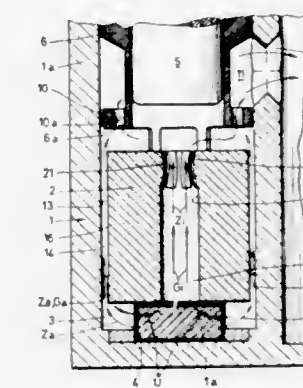
Division of Ser. No. 806,898, March 13, 1969. This application Dec. 10, 1970, Ser. No. 97,029

Claims priority, application Germany, April 30, 1968, P 17 51 268.4

Int. Cl. F02k 9/04

U.S. Cl. 60—39.47

7 Claims



A device for generating gases such as a combustion chamber of a rocket engine includes a solid fuel propellant in the form of a substantially cylindrical hollow main charge having a central bore therethrough and located within the combustion chamber at a spaced location from the interior walls thereof and between a detonating charge and a priming



charge. The end of the main charge facing the detonating charge is located adjacent an outlet for the combustion chamber and it is formed in a manner to ensure that some of the ignition and combustion gases which are formed by ignition of the center of the main charge will flow downwardly through the opposite end of the main charge past the priming charge and around the outside of the main charge to cause and maintain ignition of this outside portion of the main charge. The remaining portion of the gases will flow directly from the end of the charge adjacent the detonator to the outlet. To accomplish the desired flow conditions, the main charge itself is formed with a total or partial constriction or nozzle portion at its end which is adjacent the combustion chamber outlet.

3,719,041

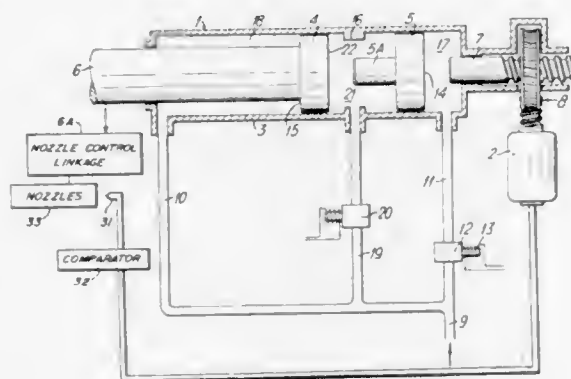
### TEMPERATURE-RESPONSIVE CONTROL FOR GAS TURBINE ENGINES

Mark Gary Sedgwick Barnard, Kenilworth, and Leslie Airey, Farnborough, both of England, assignors to The Secretary of State for Defence, London, and Leyland Gas Turbines Limited, Solihull, both of England

Filed Feb. 5, 1971, Ser. No. 112,885  
Int. Cl. F02c 9/00

U.S. Cl. 60—39.25

6 Claims



A two-shaft gas turbine engine having variable-area nozzles and a power-operated nozzle-actuating mechanism the rate of movement of which is so correlated with the operation of feedback control means, activated by an error signal derived from the difference between the engine operating temperature and a preset datum, that the time needed for completion of a movement of the nozzles sufficient to produce a significant increase in the operating temperature exceeds the time during which the feedback control means is in operation.

The nozzle actuating mechanism comprises a cylinder containing a primary piston connected to the nozzles, a movable stop, and a free piston between the primary piston and the stop. A motor activated by the feedback control means regulates the position of the stop.

3,719,042

### FUEL INJECTION MEANS

John Chamberlain, Lake Park, Fla., assignor to United Aircraft Corporation, East Hartford, Conn.

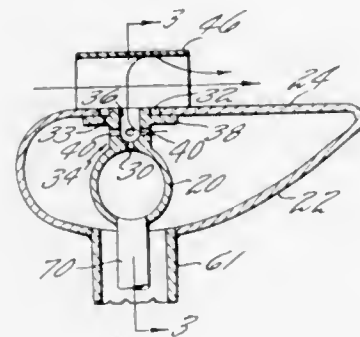
Filed Aug. 4, 1970, Ser. No. 60,824  
Int. Cl. F02k 3/10; F23r 1/04

U.S. Cl. 60—39.74 R

8 Claims

A fuel injecting means is disclosed wherein a dual injection manifold is positioned in a burner, said dual manifold having an annular inner fuel manifold within an outer air, or gas, manifold. Separate fuel and gas manifolds are located on the exterior of said burner and direct their respective flows to the proper manifold of the dual manifold by a plurality of pairs of conduits including a coaxial conduit section extending from the casing of the burner into the dual manifold. The inner conduit of said coaxial conduit being connected to the fuel manifold

and the outer conduit being connected to the air, or gas, manifold. The inner manifold of said dual manifold having a plurality of openings each opening being axially aligned with an opening in the outer manifold so that the fuel and air, or gas, flow are directed through a common



opening into the burner onto a splash plate. A splash plate is spaced from each opening on said outer manifold. In a modification a passageway is provided between each opening in the inner manifold and the edge of said wall portion of said second manifold.

3,719,043

### VACUUM POWERED SPRING BRAKE

Maxwell L. Cripe, South Bend, Ind., assignor to

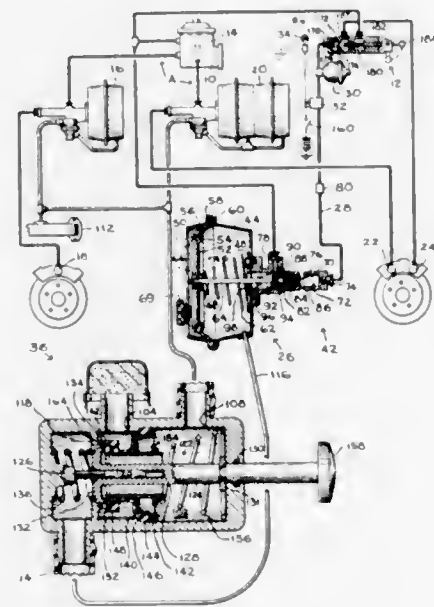
The Bendix Corporation

Filed Mar. 19, 1971, Ser. No. 126,020

Int. Cl. F15b 7/00; F16d 65/24; B60t 13/00

U.S. Cl. 60—54.5 P

5 Claims



A dual power braking system having a service brake and spring brakes for emergency and parking, with the spring brake being normally rendered inoperative by a fluidic pressure force overcoming a spring to prevent rotatable frictional surfaces from contacting. To operate the spring brake, an actuator valve diverts the flow of fluid under pressure from acting on the spring which urges the frictional surfaces together to bring about braking. An indicator connector to the fluid supply conduit going to the spring brakes will indicate the pressure mode available. When the indicated pressure mode is below a predetermined value, a pump will be engaged to pressurize the operating fluid. The pump is controlled by an operator who manually regulates a valve to alternately supply vacuum and atmospheric pressure to the front chamber of

a pump housing. The housing is divided by a diaphragm and atmospheric pressure is freely available on the rear of the diaphragm. By alternately supplying vacuum and atmospheric pressure to the front chamber, the diaphragm and an attached piston contained in a bore will reciprocate to pressurize the fluid going to the supply conduit. The operator will be required to manually modulate the valve until the pressure mode is sufficient to hold the frictional surfaces out of contact.

3,719,044

### HYBRID BRAKE BOOSTER CONTROL VALVE

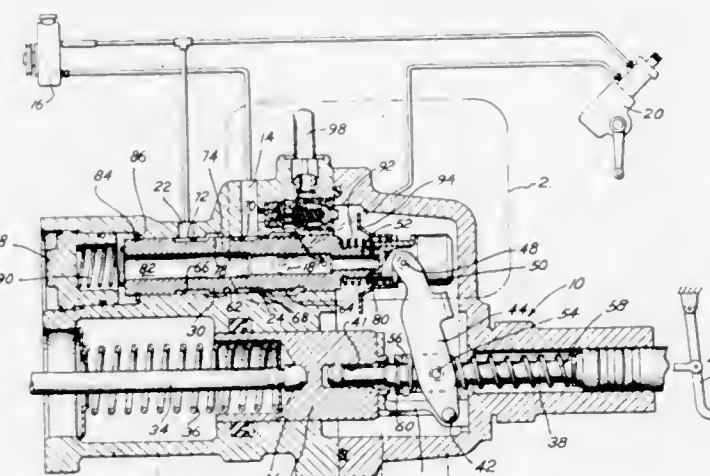
Lloyd G. Bach, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Aug. 18, 1971, Ser. No. 172,803

Int. Cl. F01b 25/00; F15b 1/02

U.S. Cl. 60—51

10 Claims



A hydraulic brake booster is disclosed which is normally operated by fluid pressure delivered to the booster from the vehicle's power steering pump. However, an auxiliary fluid supply is also provided which delivers pressurized fluid to the booster when the vehicle's power steering pump fails to operate, due either to a malfunction of the latter or to termination of operation of the vehicle's engine while the vehicle is in motion. The auxiliary fluid supply includes an accumulator which is charged by pressurized fluid from the power steering pump while the latter operates normally. A conduit is provided which communicates the accumulator directly into the booster pressure chamber. A control valve is provided which controls communication of fluid from the accumulator to the pressure chamber. The control valve is operated by the operator-operated spool which also controls fluid communication between the power steering pump and the booster upon actuation of the spool valve after operation of the power steering pump terminates. The control valve is responsive to the fluid pressure level in the pressure chamber such that the control valve remains closed as long as high pressure fluid exists in the pressure chamber, but may be easily operated when a relatively low pressure level exists in the pressure chamber.

3,719,045

### TURBINE-GENERATOR AND CONDENSER BASE FOR SHIPBOARD INSTALLATION

Herbert N. Hoffman, Lunenburg, Mass., assignor to

General Electric Company

Filed Mar. 26, 1971, Ser. No. 128,287

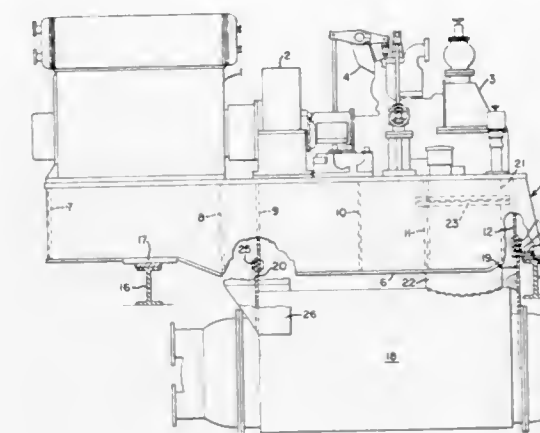
Int. Cl. F01k 9/00

U.S. Cl. 60—95 A

4 Claims

A design of an attachment of a condenser to the base structure of a turbine-generator set whereby the condenser provides torsional rigidity to the base, the design being such that no accurate machining or accurate fitting

of the attachment surfaces is required and such that the assembly of the condenser to a completely assembled tur-



bine-generator set can be performed with the latter resting on its intended foundation, such as the hull of a ship.

3,719,046

### ROCKET ENGINE COOLING SYSTEM

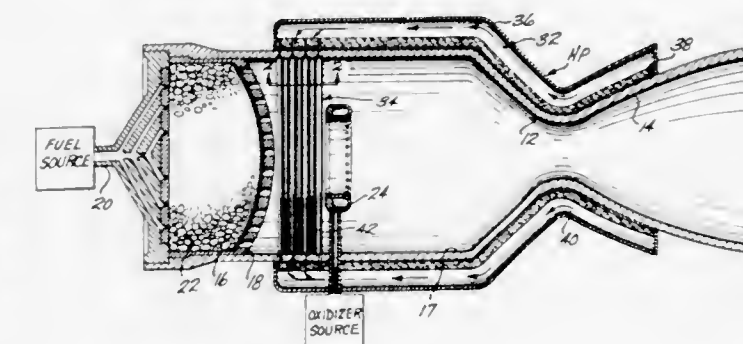
George S. Sutherland, Mercer Island, and Donald L. Emmons, Issaquah, both of Wash., assignors to Rocket Research Corporation, Redmond, Wash.

Filed July 2, 1970, Ser. No. 52,020

Int. Cl. F02k 9/02, 11/02

U.S. Cl. 60—206

13 Claims



An oxidizer, such as nitrogen tetroxide or fluorine, is introduced into a reaction chamber in the path of the decomposition products of hydrazine and reacts therewith to form high temperature, high thrust propulsive gases. A heat pipe surrounds the reaction chamber and includes a wick saturated with a volatile liquid, such as liquid lithium, which liquid is vaporized thereby removing heat from the chamber wall. The vaporized fluid is directed through a heat exchanger and is therein condensed back into a liquid state.

3,719,047

### CONTROL DEVICES FOR GAS TURBINE POWER PLANTS

Jean Paul Francois Gilbert Briotet, Le Mee-sur-Seine, and Armand Ravagli, Ivry, both of France, assignors to Societe Nationale D'Etude et de Construction de Monteurs d'Aviation, Paris, France

Filed Feb. 3, 1971, Ser. No. 112,272

Claims priority, application France, Feb. 4, 1970, 7003923

Int. Cl. F02k 11/00

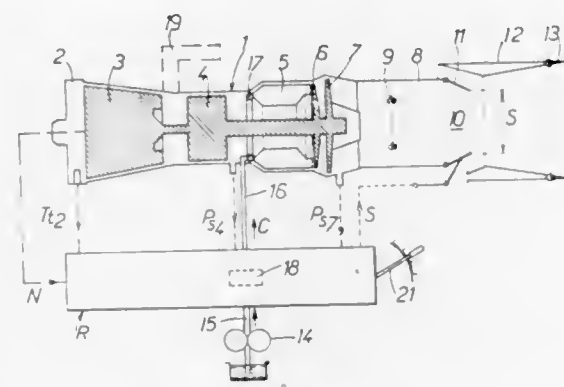
U.S. Cl. 60—239

12 Claims

A control device for a gas turbine power plant of the type comprising a compressor, a combustion chamber supplied with air coming from the compressor and with fuel, a turbine supplied with combustion gases coming from the combustion



chamber, and a nozzle which discharges the combustion gases coming from the turbine, said control device comprising means for metering the fuel flow to the combustion chamber and means for varying the cross-sectional area of the nozzle, wherein the means for varying the cross-sectional area of the nozzle is controlled as a function of the fuel flow rate C



delivered to the combustion chamber, the static air pressure  $P_a$  at exit from the compressor, and the static gas pressure  $P_g$  at the turbine exit, so that at least under certain conditions of operation, an output quantity defined by the expression  $c/(\beta P_a - P_g)$ , in which  $\beta$  designates a constant coefficient of reduction, has a desired predetermined value.

3,719,048

#### OFFSHORE STRUCTURE WITH STATIC AND DYNAMIC STABILIZATION SHELL

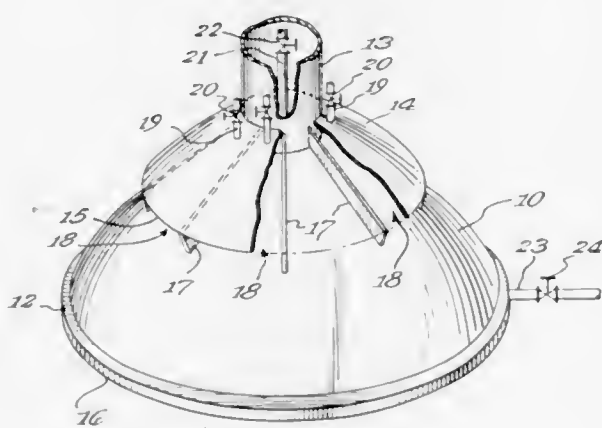
Christian Arne, Chicago, and Erik E. Brogren, Glen Ellyn, both of Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Nov. 18, 1971, Ser. No. 199,855

Int. Cl. B65g 5/00; E02b 17/00

U.S. Cl. 61—46.5

16 Claims



An offshore structure floatable to a site for positioning by submergence on the floor of a body of water and subsequently raising it having a domed roof shell enclosing a volume therebelow, said roof shell being open at the bottom and having a peripheral ballasting ring which provides a substantial righting moment against significant tilting of the structure while the ballasting ring is at least partly above water level, a stabilization shell mounted adjacent to the upper part of the roof shell in fixed position relative thereto by connecting means joined to the roof shell, said stabilization shell being open at the bottom and enclosing a volume between the shells, a plurality of spaced apart bulkheads extending vertically between the two shells thereby dividing the space between the shells into compartments, and means to remove air from beneath the roof shell and from said compartments in submerging the structure.

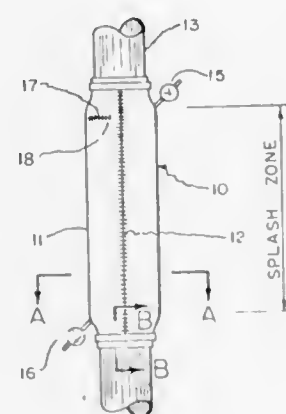
#### 3,719,049 CORROSION PREVENTING APPARATUS AND METHOD Clarence W. Shaw, Metairie, and George R. Smith, Ponchatoula, both of La., assignors to Donald W. Durant, Covington, La., by said Smith

Filed Dec. 22, 1969, Ser. No. 873,755

Int. Cl. E02d 5/60; E04b 1/64

U.S. Cl. 61—54

5 Claims



The present invention pertains to a splash zone coating system for the protection of metallic surfaces subject to active corrosion. More specifically, the present invention pertains to novel means for covering and coating metallic structures, e.g., pipe leg supports of an offshore oil well structure, from seawater corrosion in the splash zone of the structure which is that area subjected to intermittent contact by seawater.

3,719,050

#### SOIL STABILIZATION METHOD

Hiroshi Asao, Yokohama; Takeshi Hihara, Zushi; Seiji Endo, Yokosuka; Chikashi Furuya, Kashiwa, and Kouhei Sano, Yokohama, all of Japan, assignors to Toho Chemical Industry Co., Ltd., Tokyo, Japan

Filed June 1, 1970, Ser. No. 42,477

Int. Cl. E02d 3/14; E21b 33/138

U.S. Cl. 61—36 R

20 Claims

A soil stabilization method comprising injecting a polyurethane prepolymer having terminal isocyanate groups, alone or in admixture with water, obtained by the reaction of compound having at least two terminal hydroxy groups and a polyoxyalkylene chain having a molecular weight of from 300 to 20,000 with a polyisocyanate compound in a molar amount at least equal to the number of said hydroxyl groups and reacting said polyurethane prepolymer with water in the soil to solidify the same. The gelling time of said polyurethane prepolymer is shortened by the addition of a basic material and prolonged by the addition of an acidic material or a chelate compound. Said method provides simultaneously an excellent soil stabilizing effect and a water-cutting off effect. Injection of a mixture of said polyurethane prepolymer and inorganic materials, for example, clay, cement and the like into the soil results in the formation of an elastomer which has extremely excellent strength and is strongly adhered to the soil, whereby the soil is markedly improved.

3,719,051

#### TRANSPORTABLE REFRIGERATION SYSTEM Stephen F. Malaker, Mountainside, N.J., assignor to Romaine Corporation, Mountainside, N.J.

Continuation-in-part of application Ser. No. 8,537, Feb. 4, 1970. This application Oct. 26, 1971, Ser. No. 192,128

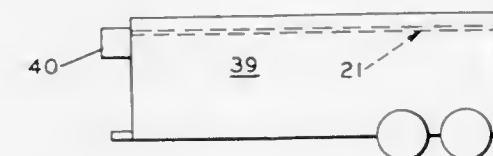
Int. Cl. F25p 9/00; F25d 17/00

U.S. Cl. 62—6

9 Claims

A transportable refrigeration system for cooling an enclosed area comprises a transportable vehicle having an enclosed area to be cooled, and a tube array disposed in the area serves as the cooler. It consists of two spaced

concentric tubes with the outer tube closed on one end. This array serves to feed liquid refrigerant (B.Pt. 50° C. to -50° C.), mainly by capillary action, through the annular space between the tubes, wherein evaporation of the refrigerant effects a cooling action and the space within the inner tube serves to collect separated vapor emitted by the refrigerant during the cooling operation. An enclosed condenser-accumulator containing a multiplicity of condensing surfaces and having a thermal connection serves as the condenser and receptacle for the refrigerant. It has an opening near its bottom designed



to be connected with the outer tube at the other end of the tube array. An extension on the inner tube of the other end of the array leads to the upper portion of the condenser-accumulator for passing the refrigerant vapor over the condensing surfaces, and the condensed refrigerant collected at the bottom is fed into the annular space of the array for recirculation. A driven two-cylinder cryogenic engine operating on a modified Stirling cycle and using a fixed gas as the working fluid and disposed outside the area to be cooled and having a cold head in thermal connection with the condenser-accumulator, serves as the cooling means for the refrigerant vapor.

3,719,052

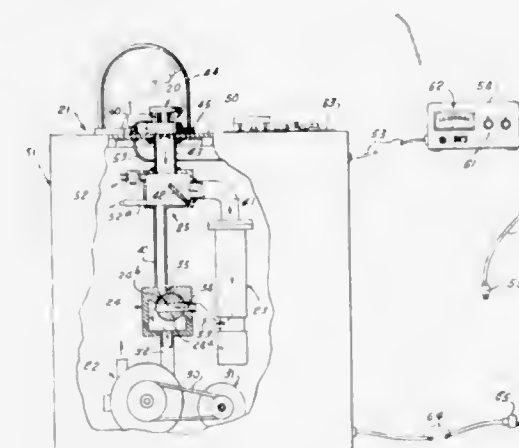
#### VACUUM SYSTEM COLD TRAP

Gerald W. White, 5835 Elm Lawn, Dallas, Tex.

Filed May 4, 1971, Ser. No. 140,135

Int. Cl. B01d 5/00

U.S. Cl. 62—3



A cold trap for use in a vacuum system for minimizing migration of oil and other molecular particles therein. In each form of cold trap disclosed thermoelectric devices are used to produce cold surfaces on optically dense baffles for the condensation process. In particular, Peltier cells are connected with condensation plates within the vacuum space and with a heat sink for dissipation of heat energy removed from the cold condensation plates. The Peltier cells have cold junctions connected with the condensation plates and hot junctions connected with the heat sink. In one form of the device, the condensation plates are supported within the vacuum working space of a bell jar connected with an oil diffusion pump for producing a high vacuum in the bell jar by a conduit member defining a flow passage around the plates. A heat sink base on which the Peltier cells are mounted is connected with a heat dissipating base plate around the conduit between the bell jar

and the oil diffusion pump. In another form of particle condensation apparatus, a baffle assembly connected with the cold junctions of Peltier cells is supported in a conduit between an oil diffusion pump and a space in which a vacuum is induced by the pump. The hot junctions of the cells are connected with a member cooled by a fluid, such as water or liquid nitrogen. A still further form of condensation apparatus or trap for use in a vacuum system includes plates cooled by Peltier cells and disposed within the pellet material of a molecular sieve form of cold trap.

3,719,053

#### LIQUEFACTION AND PURIFICATION SYSTEM

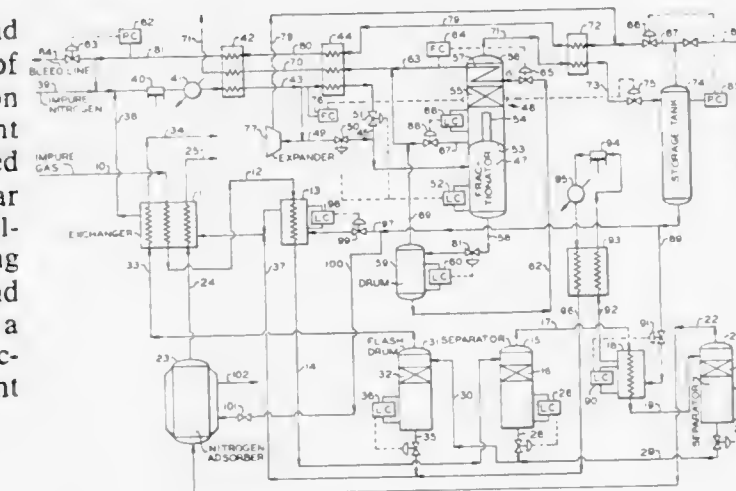
Salvador S. De Marco, and Ernest A. Harper, Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Oct. 23, 1969, Ser. No. 868,711

Int. Cl. F25j 3/00, 3/02, 3/08

U.S. Cl. 62—38

4 Claims



Helium is purified utilizing liquid nitrogen as the refrigerant, the resulting nitrogen vapors being mixed with impure nitrogen, compressed, cooled and purified. In the purification of the nitrogen by fractionation, the liquid bottoms product is cooled and utilized to condense the overhead vapors in the column. The column is of novel design having a system of liquid level controllers and a flow controller to effect the desired nitrogen purification in an efficient manner.

3,719,054

#### LIQUEFIED GAS VAPORIZER ATTACHMENT FOR A PRESSURE BOTTLE

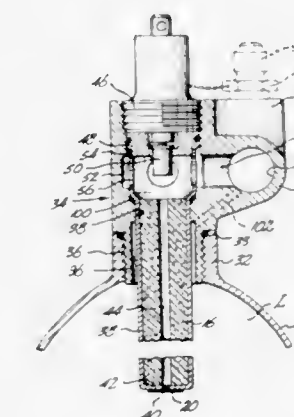
Lyle D. Galbraith, Redmond, Wash., assignor to Rocket Research Corporation, Redmond, Wash.

Filed Aug. 24, 1970, Ser. No. 66,382

Int. Cl. F17c 7/02

U.S. Cl. 62—50

25 Claims



The attachment is securable to the outlet of a storage bottle for liquefied CO<sub>2</sub> or other pressure liquefied gases. It houses a



breech containing a solid fuel grain. Combustion gases flow from the breech through the storage bottle outlet into the liquefied gas. The added heat rapidly vaporizes the liquefied gas. The vapor pressure eventually opens a closure for an outlet passageway leading through the breech. This causes the combustion process to depressurize at a rate sufficient to cause extinguishment of the burning fuel grain and also provides a flow of coolant over the grain burning surface which ensures extinguishment.

3,719,055

### CONTINUOUS BELT FREEZER HAVING REMOVABLE COMPARTMENTS

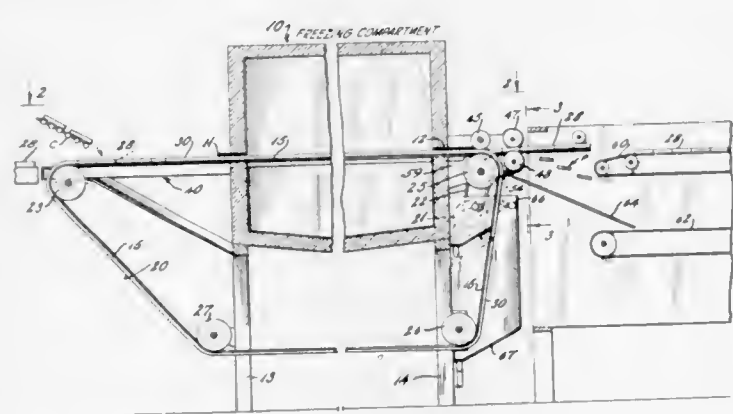
Gail C. Shapley, Seattle, Wash.; William J. Wakatsuki, Bridgeton, N.J., and William J. Scheffer, Waynesboro, Pa., assignors to Frick Company, Waynesboro, Pa.

Filed April 14, 1971, Ser. No. 133,976

Int. Cl. F25d 13/06

U.S. Cl. 62—63

5 Claims



A continuous belt type freezer has a flat belt and one or more grid units of substantial length and breadth which are placed on the belt to form pockets for a product prior to being frozen, the individually frozen product units being separated from the belt and the grid as the belt moves downwardly and the grid continues forwardly from the discharge end of the freezer.

3,719,056

### METHOD AND APPARATUS FOR CONTROLLING FREEZERS

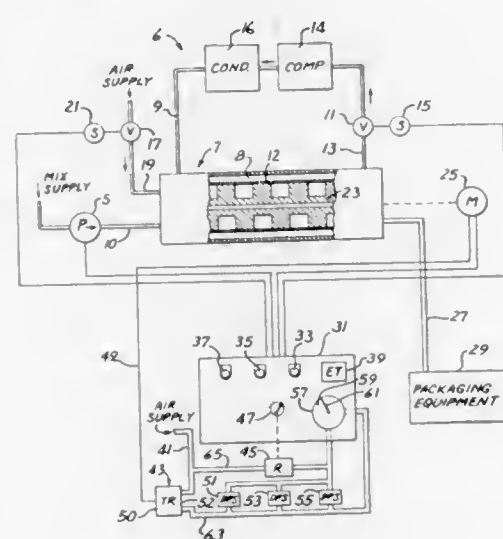
Walter L. Hock, Skokie, Ill., and Abraham Simon, Haver-town, Pa., assignors to Kraftco Corporation, New York, N.Y.

Filed Nov. 17, 1971, Ser. No. 199,634

Int. Cl. F25c 7/10

U.S. Cl. 62—70

22 Claims



A method and apparatus are provided to permit quick stopping and subsequent restarting of freezers while pre-

serving the immediate usability of the product being frozen. The stopping and the restarting of the freezers is related to the stiffness of the mix being frozen. In freezers having a plurality of freezing tubes, accommodation is made for the stopping and restarting according to the individual requirements of the mix in each separate tube.

3,719,057

### TWO-STAGE REFRIGERATION SYSTEM HAVING CRANKCASE PRESSURE REGULATION IN HIGH STAGE COMPRESSOR

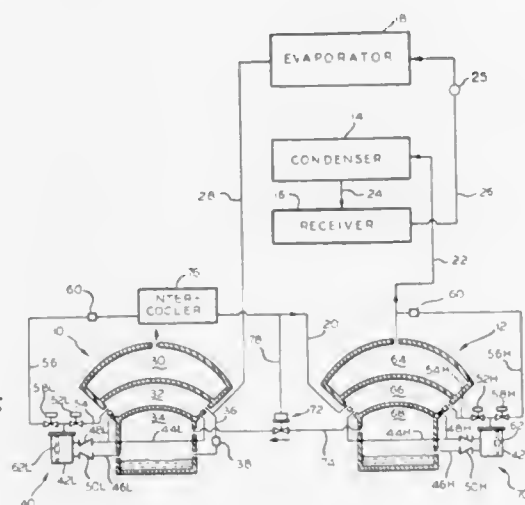
Whitney I. Grant, Muskego, Wis., assignor to Vilter Manufacturing Corporation, Milwaukee, Wis.

Filed Oct. 8, 1971, Ser. No. 187,800

Int. Cl. F25b 31/00

U.S. Cl. 62—193

9 Claims



A two-stage refrigeration system including a condenser, a receiver, an evaporator, a low-stage dry-wall compressor and a high-stage dry-wall compressor, the low-stage compressor including an oil-draining assembly for automatically draining oil from the suction chamber to the crankcase chamber, and a pressure-equalizing connection between the suction chamber and the crankcase chamber, the high-stage compressor having an oil-draining assembly for automatically draining oil from the high-stage suction chamber to the high-stage crankcase chamber, and a pressure connection between the high-stage crankcase chamber and the low-stage crankcase chamber; and a pressure-responsive regulating valve interposed in the connection between the high-stage suction chamber and the low-stage crankcase chamber, the pressure-responsive valve being connected to respond to the high-stage suction chamber pressure to maintain a predetermined pressure differential of one pound per square inch between the high-stage suction chamber and the high-stage crankcase chamber.

3,719,058

### VEHICLE AIR CONDITIONING APPARATUS

James J. Waygood, Dallas, Tex., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed March 16, 1971, Ser. No. 124,860

Int. Cl. F25b 5/00

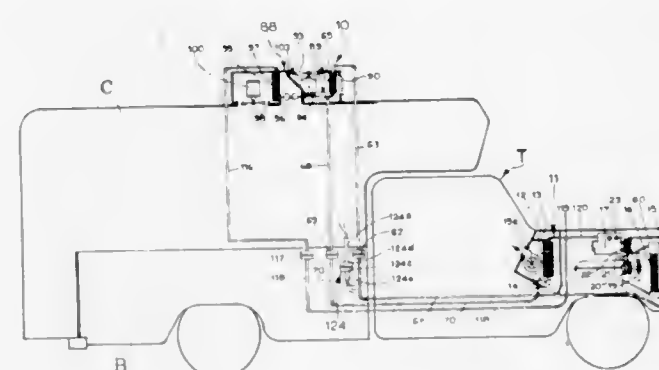
U.S. Cl. 62—200

11 Claims

An air conditioning apparatus having an auxiliary air conditioning apparatus mountable on a structure connectable to a vehicle, such as a camper mountable on the vehicle or a trailer towable by the vehicle, or mountable on a larger vehicle such as a motor home or van having a primary and a secondary space which are preferably cooled by separate means. The auxiliary apparatus has an evaporator, means for circulating air from the interior of such structure or the secondary space of the large vehicle through the evaporator and back into the

interior or such secondary space, and a condenser through which air from the atmosphere is circulated to cool refrigerant fluid; and a primary air conditioning apparatus mountable on the vehicle which includes a compressor, a primary condenser and a primary evaporator, the two condensers being connected in a series to cool the refrigerant fluid compressed by the compressor and the evaporators being connected in parallel and so arranged that both will always be supplied with liquid refrigerant during operation of the apparatus. The ap-

paratus also includes suitable control means for selectively operating the auxiliary and primary air conditioning apparatus for cooling the interior of the vehicle and such structure or the primary and secondary spaces of a large vehicle, which may be the space occupied by the driver of the large vehicle and a separate or connecting secondary space, and means for independently operating the primary air conditioning apparatus without the auxiliary apparatus being physically connected thereto.



paratus also includes suitable control means for selectively operating the auxiliary and primary air conditioning apparatus for cooling the interior of the vehicle and such structure or the primary and secondary spaces of a large vehicle, which may be the space occupied by the driver of the large vehicle and a separate or connecting secondary space, and means for independently operating the primary air conditioning apparatus without the auxiliary apparatus being physically connected thereto.

3,719,059

### COOLING APPARATUS

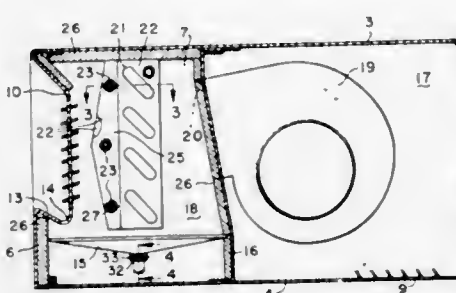
Thomas C. Cavis, Onalaska, Wis., assignor to The Trane Company, La Crosse, Wis.

Filed Apr. 20, 1970, Ser. No. 30,151

Int. Cl. F25d 21/14

U.S. Cl. 62—285

6 Claims



A fan coil air cooling unit having a generally rectangular housing with air inlet and outlet apertures is shown. The air cooling heat exchanger is supported intermediate the inlet and outlet apertures by but thermally insulated from the sidewalls of the housing to thereby reduce moisture condensation on the exterior sidewalls of the housing. The outlet aperture of the housing provided with a recessed grill also for purposes of mitigating condensate formation at the grill surfaces. The grill overhangs a drain pan to permit condensate which is formed at the

3,719,060

### HIGHLY ELASTIC ANNULAR COUPLER ELEMENT

Dietrich Fessel; Heinz Hiersig; Fritz Kinzler, all of Dusseldorf; Werner Russmann, Leverkusen, and Helmut Schulz, Witten-Bommern, all of Germany, assignors to Lohmann & Stalder-Aktiengesellschaft, Witten am Ruhr, Germany

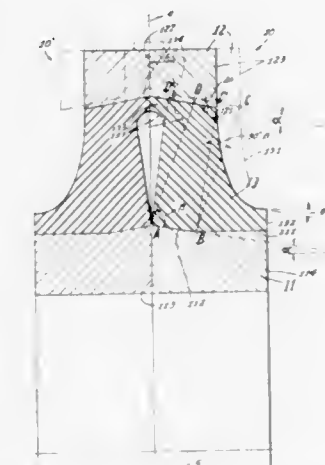
Filed March 11, 1971, Ser. No. 123,141

Claims priority, application Germany, March 11, 1970, P 20 12 627.6

Int. Cl. F16d 3/16

U.S. Cl. 64—11 R

11 Claims



A highly elastic coupling element with inner ring, outer ring of different axial width and rubber insert; the inner ring-rubber insert interface being part conical, part cylindrical, the other interface being essentially conical at similar cone angles. Upon axial displacement of the rings for compensating shrinkage tensile stress, the profile of the insert has rectangular contour, oblique as between the two conical interface portions and integral with a hyperbolically contoured portion of the insert for providing transition between the differently wide rings.

3,719,061

### SAFETY DEVICE FOR FLAT KNITTING MACHINE

Wilhelm Hadam and Jurgen Ploppa, Reutlingen, Germany, assignors to H. Stoll and Company, Reutlingen, Germany

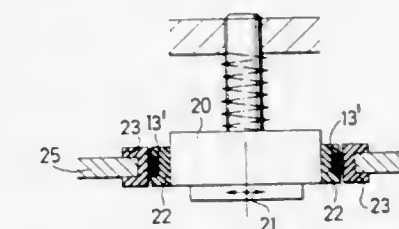
Filed Nov. 17, 1971, Ser. No. 199,533

Claims priority, application Germany, Nov. 17, 1970, P 20 56 391.1; Apr. 28, 1971, P 21 20 824.2

Int. Cl. D04b 35/10

U.S. Cl. 66—157

23 Claims



In a flat knitting machine, a safety device for sensing large disturbances or reaction forces to cut off the machine and hence prevent damage thereto. The safety device includes piezoelectric pressure bodies strategically located to convert pressure forces into electrical signals. An electrical circuit senses the electrical signals and, if the signals are of sufficient magnitude, causes the machine to



cut off. The electrical circuit may include a comparator to compare signals from the piezoelectric body or bodies or a semi-conductor which transmits a current to a relay to cut off the knitting machine drive only when it is triggered by a peak voltage from the piezoelectric body.

3,719,062

# APPARATUS FOR THE CONTINUOUS TREATMENT OF ESPECIALLY THICK, VOLUMINOUS TEXTILE MATERIALS WITH LARGE WIDTHS

Heniz Fleissner, near Frankfurt am Main, Germany, assignor to Vepa AG, Basel, Switzerland

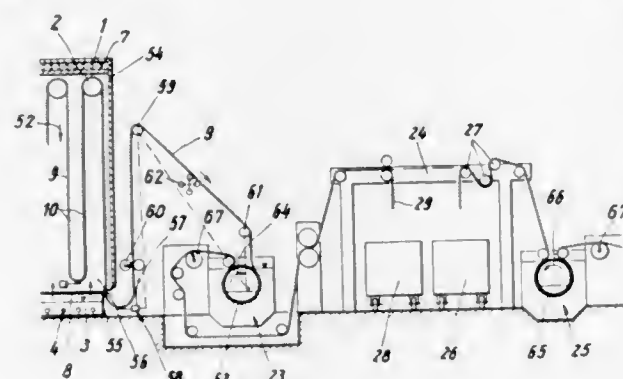
Filed May 28, 1970, Ser. No. 41,311

Claims priority, application Germany, Jan. 19, 1970, P 20 02 144.7

Int. Cl. D06c 1/10

U.S. Cl. 68—5 E

11 Claims



The present disclosure relates to a steamer apparatus for the dyestuff fixing of textile materials made of natural and synthetic fibers which comprises a heat-insulated treatment chamber containing a plurality of conveying rollers disposed in the upper portion thereof, and containing a drive means associated therewith, heating means disposed within said treatment chamber, inlet means for introducing the material to be treated to said treatment chamber and outlet roller means disposed at substantially the same level as said conveying roller but outside of the treatment chamber, said outlet roller means communicating with the drive means of the last conveying roller.

3,719,063

# DEVICE FOR PREVENTION OF AUTOMOBILE THEFT

Manuel Fouces, and Juan M. Fouces, both of 2416 Mandell, Houston, Tex.

Filed July 1, 1971, Ser. No. 158,785

Int. Cl. G05g 5/00

U.S. Cl. 70—202

5 Claims



A device for preventing the theft of an automobile may comprise a support for attachment to an automobile and a jaw

assembly mounted on the support for fastening the acceleration pedal assembly of an automobile in a non-depressed position. The jaw assembly may be attached to a rod member for opening and closing the jaws. The rod may be provided with teeth for engaging a locking device to hold the jaws in the closed or fastening position.

3,719,064

# COMBINATION LOCK WITH LINEALLY MOVABLE CAM FOLLOWERS AND NONSEQUENTIALLY ACTING TUMBLER HOLDERS

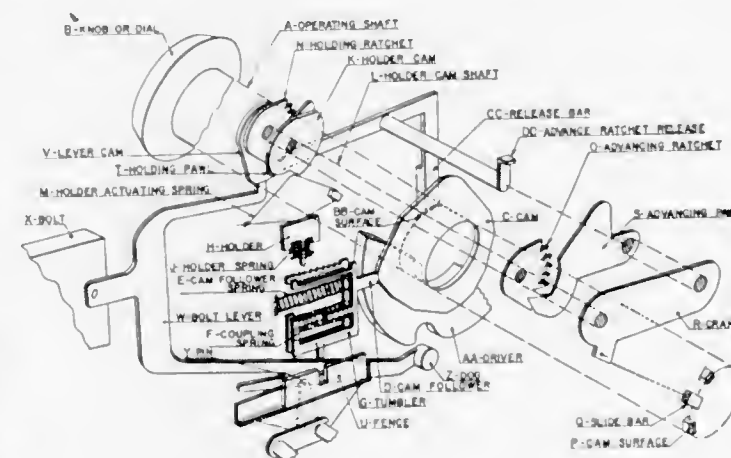
Anthony J. Potzick, Cincinnati, Ohio, assignor to The Mosler Safe Company, Hamilton, Ohio

Filed Sept. 20, 1971, Ser. No. 181,853

Int. Cl. E05b 37/00

U.S. Cl. 70—299

53 Claims



A combination lock having lineally movable cam followers that position corresponding tumblers. The tumblers are engageable with corresponding fences when arrested in proper positions. A spring resiliently couples each tumbler to a corresponding cam follower, and tends to cause them to move together lineally. Holders are actuated individually to prevent motion of the corresponding tumblers. The holders make edgewise engagement with the tumblers, and cam them into discrete positions. Randomly oriented holder cams operate in nonsequential order to actuate the holders to arrest the corresponding tumblers. The holder cams are rotated incrementally by a ratchet and pawl.

A bolt operating lever is held out of contact with the driver, and in turn holds the fences away from the tumblers, until all the tumblers have been engaged by the respective holders. The fences can be released with a key to permit them to be rearranged to change the combination, only when the bolt is withdrawn. The operating shaft is biased concentrically toward an axially centered position.

3,719,065

# VARIABLE ORIFICE DIE AND CONTROL THEREFOR

Francis Joseph Fuchs, Jr., Princeton Junction, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed March 9, 1971, Ser. No. 122,319

Int. Cl. B21c 3/06

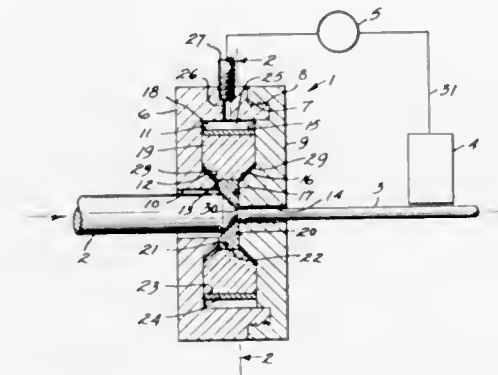
U.S. Cl. 72—9

1 Claim

Fluid-pressure operable segments surrounding rod-deforming die are controlled by wire-diameter sensing device. As die

wear occurs, sensing device responds to increased wire diameter and raises fluid pressure to advance segments inwardly

workpiece. Means are provided for adjusting the shaft-supported rolls vertically to deflect a workpiece in a vertical plane, and other means are provided for moving the same rolls axially in order to deflect the workpiece in a



against die thereby to constrict die and decrease diameter of die orifice.

3,719,066

# PIERCING ROLLING APPARATUS FOR PRODUCING ROLLED MATERIAL FREE FROM SURFACE TORSION

Toyohiko Okamoto, Osaka; Chihiro Hayashi, Takarazuka and Masaru Nishiguchi, Osaka, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

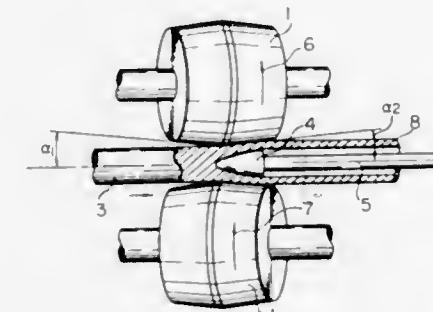
Filed Oct. 28, 1970, Ser. No. 84,663

Claims priority, application Japan, Nov. 5, 1969, 44/88937; Jan. 16, 1970, 45/4729

Int. Cl. B21b 19/04, 17/10

U.S. Cl. 72—97

4 Claims



A piercing rolling apparatus utilizing the principle of the Stiefel Mannesmann type piercing mill and having two main rolls axes of which incline with each other vertically at the feed angle  $\beta$  with respect to the longitudinal axis of the material to be rolled and cross with each other horizontally at the cross angle  $\gamma$  with respect to the longitudinal axis of the material. A seamless steel pipe free from surface torsion is obtained by adjusting these angles  $\beta$  and  $\gamma$ .

3,719,067

# STRAIGHTENING MACHINE

Odd J. Skawden, Bellefonte, Pa., assignor to Sutton Engineering Company, Pittsburgh, Pa.

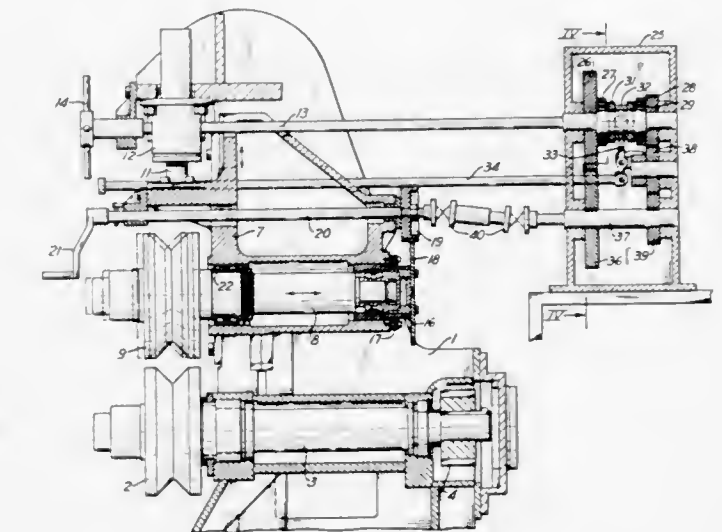
Filed Dec. 13, 1971, Ser. No. 207,060

Int. Cl. B21d 3/02

U.S. Cl. 72—164

7 Claims

A straightening machine has upper and lower rows of laterally spaced rolls with parallel horizontal axes. Extending away from one side of the rolls in one row are supporting shafts that are supported for rotation and axial adjustment. The other rolls are driven to carry an elongated metal workpiece along between the two rows of rolls, which are provided with peripheral grooves for the



horizontal plane also. Means operatively connecting the vertical adjusting means with the horizontal roll-moving means permit both to be adjusted simultaneously in a single operation.

3,719,068

# METHOD OF MANUFACTURING AN ARTICLE HAVING A CYLINDRICAL PERIPHERAL WALL AND INTEGRAL THIN-WALLED PORTIONS INWARDLY THEREOF

Seiya Hashimoto, Tokyo; Soji Takahashi, Kodaira; Yasuhiro Hattori, Tokyo, and Kuninori Imai, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

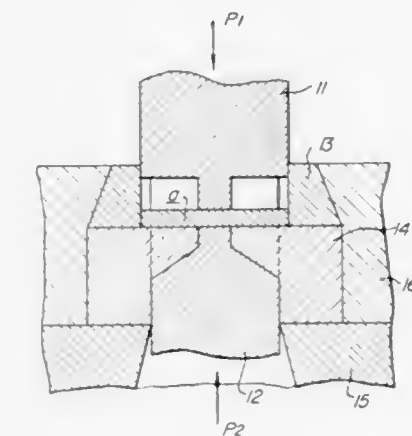
Filed April 7, 1971, Ser. No. 131,893

Claims priority, application Japan, April 10, 1970, 45/30188

Int. Cl. B21c 23/20

U.S. Cl. 72—254

4 Claims



A method of manufacturing at once an article having a cylindrical peripheral wall and integral thin-walled portions inwardly thereof from a circular blank of a sheet material with a single stroke of pressing operation. In the first part of the stroke, the blank is subjected to a rearward extrusion to form the blank into a semi-finished article having the peripheral wall and the thin-walled portions with a thin bottom wall being left with the semi-finished article. In the remaining part of the stroke, the bottom wall is punched out of the semi-finished article to thereby provide a finished article.



3,719,069

## APPARATUS FOR CONVEYING AN ELONGATED WORKPIECE

Rudolf Liebergeld, Gernotstrasse 51-55, 85 Nurnberg, Germany

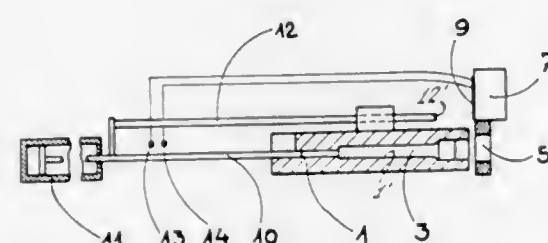
Filed Aug. 14, 1970, Ser. No. 63,784

Claims priority, application Germany, Aug. 16, 1969, P 19 41 735.0

Int. Cl. B21c 35/00; B21d 45/00

U.S. Cl. 72-427

3 Claims



An apparatus for conveying an elongated workpiece into or out of a press has an ejector and conveying grippers, the grippers being movable lengthwise of the die as well as transversely thereof; the movement of the gripper during ejection movement of the workpiece is related to and dependent upon the motion of the ejector.

3,719,070

## DOUBLE SEALED TUBULAR CONNECTOR APPARATUS

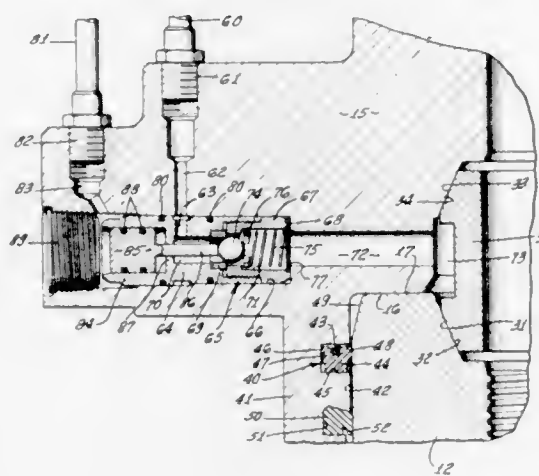
James W. E. Hanes, Ventura, Calif., assignor to Vetco Offshore Industries, Inc., Ventura, Calif.

Filed March 9, 1971, Ser. No. 122,304

Int. Cl. G01m 3/04

U.S. Cl. 73-37

10 Claims



An underwater tubular connector having a primary seal and a secondary seal for preventing leakage through the connector between its interior and exterior. Both seals are effected automatically in response to bringing companion connector members into coupled relation, any trapped fluid between the seals being permitted to escape through a hydraulic monitoring line extending to a vessel floating at the water surface, the monitoring line also being usable for applying fluid pressure to the region between the seals to test them for leakage. A valve controlled from the vessel determines the flow of fluid through the monitoring line, selectively permitting or preventing flow of fluid from the region between the seals through the monitoring line to control and sensing devices on the vessel, to enable such region to be continuously or selectively monitored and fluid to escape therefrom to prevent its being trapped.

3,719,071

## MEASUREMENT OF GAS TEMPERATURE VARIATIONS IN A GAS TURBINE ENGINE

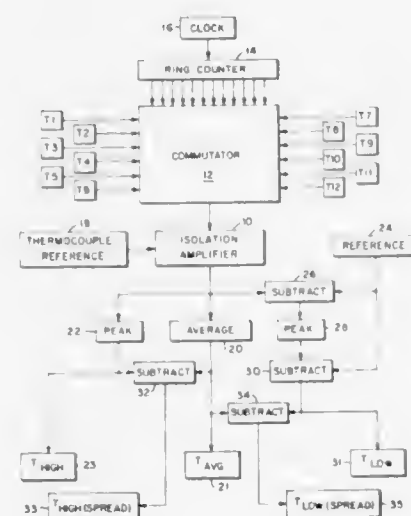
Rudolph Hohenberg, Trumbull, Conn., assignor to Avco Corporation, Stratford, Conn.

Continuation of Ser. No. 809,615, March 21, 1969, abandoned. This application Aug. 30, 1971, Ser. No. 176,286

Int. Cl. G01k 7/04, 13/02; G01m 15/00

U.S. Cl. 73-341

6 Claims



A plurality of thermocouples is positioned in the exhaust gas stream of a gas turbine engine. The voltage generated by each thermocouple is sensed and the average temperature and the highest and lowest temperatures are derived. In addition, the differences between the average temperature and the highest and lowest temperatures, respectively, are used to provide an indication of the temperature spread sensed by the thermocouples.

3,719,072

## DEVICES FOR SENSING THE RELATIVE LOCATION OF TWO BODIES

Brian Frederick Cooke, Knutsford, England, assignor to The Nuclear Power Group Limited, Knutsford, England

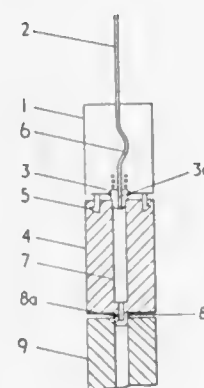
Filed Oct. 30, 1970, Ser. No. 85,479

Claims priority, application Great Britain, Dec. 9, 1969, 59,945/69

Int. Cl. G01b 13/00

U.S. Cl. 73-37.5

4 Claims



A device for sensing the relative location of two bodies has means for supplying a flow of fluid to a passage in at least one of the bodies whereby when the two bodies are located correctly with respect to one another, the flow of fluid is interrupted and means are provided for sensing the interruption of fluid flow.

3,719,073

## MASS FLOW METER

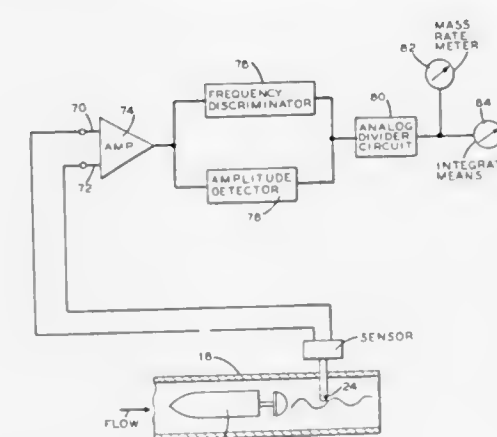
Roger F. Mahon, New Brunswick, N.J., assignor to American Standard Inc., New York, N.Y.

Filed Sept. 14, 1970, Ser. No. 71,951

Int. Cl. G01f 1/00

U.S. Cl. 73-194 B

1 Claim



The invention relates to mass flow measurements. A cylindrical body having a curved nose at one end and a flat base at the other end is connected to a disc of smaller diameter, with the disc being centered coincident with the longitudinal axis of the body and being spaced axially from the base thereof. This assembly, when aligned axially at midstream of a flowing fluid with the nose pointed upstream, generates a downstream wake in which the fluid traces an oscillatory flow pattern. The mass flow of the fluid is determined from the frequency and amplitude of the oscillations. The frequency varies directly with the velocity of the fluid flow whereas the amplitude varies with the product of the fluid density and the square of the flow velocity. The device produces desirable low pressure losses and has a simple internal geometry.

3,719,074

## ROTATING-WAVE ROTATION DETECTOR AND METHOD OF OPERATING SAME

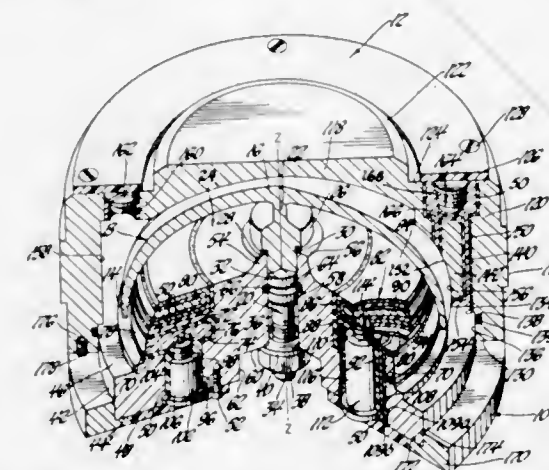
David D. Lynch, Greendale, Wis., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 1, 1970, Ser. No. 77,067

Int. Cl. G01c 19/56

U.S. Cl. 73-505

8 Claims



A bell-like high-Q member having sides capable of being flexed in a radial vibration pattern defining an anti-nodal region that is free to rotate about the sides in proportion to the rotation of the sides about an input axis. A forcer is mounted adjacent and encircling the periphery of the sides and is effective at the instantaneous angular position of the anti-nodal region to parametrically excite and exercise the sides. Sensor means are located adjacent the periphery and along radii fixed with respect to the bell sides to measure the pattern rotation with respect to bell rotation.

3,719,075

## VISCOSITY MEASURING DEVICE

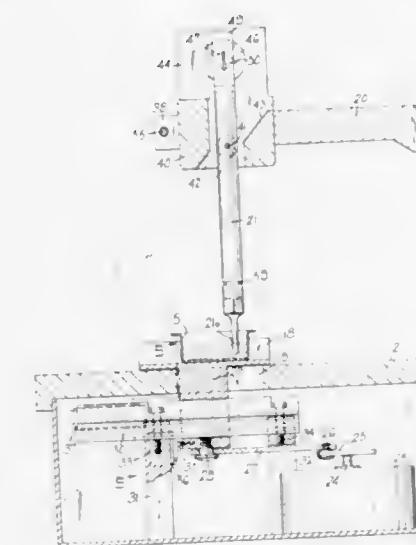
Nicholas Mandrona, Stratford, and Warren R. Jewett, Orange, both of Conn., assignors to Medical Sciences International, Inc., Milford, Conn.

Filed Oct. 19, 1970, Ser. No. 81,844

Int. Cl. G01n 11/10

U.S. Cl. 73-54

12 Claims



This disclosure relates to apparatus for measuring the viscosity and change in viscosity of fluids, such as blood. A member carrying a container of a fluid sample is reciprocated while a pendulum extends therein. When the viscosity of the fluid changes sufficiently, motion is imparted to the pendulum and predetermined motion thereof is detected to indicate a given viscosity of the fluid.

3,719,076

## APPARATUS FOR THE HOLOGRAPHIC ANALYSIS OF OSCILLATING OBJECTS

Francois Mottier, Zurich, Switzerland, assignor to Brown Boveri &amp; Company Limited, Baden, Switzerland

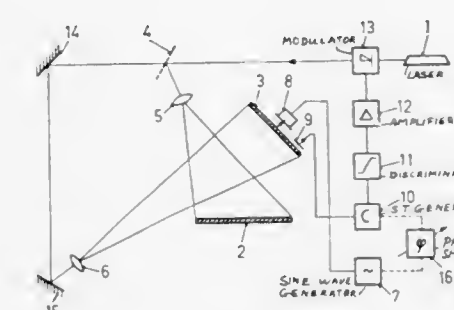
Filed June 23, 1971, Ser. No. 158,652

Claims priority, application Switzerland, July 1, 1970, 10038/70

Int. Cl. G01h 9/00; G02b 27/00

U.S. Cl. 73-71.3

1 Claim



A method and apparatus for holographic analysis of oscillating objects, in which the recording laser beam, either before or after being split into reference and object beams, is amplitude modulated according to the function:

$$\sum_{k=0}^n \cos [k z_0 \sin (\omega t + \phi)]$$

where  $z_0$  is an adjustable amplitude,  $\omega$  is the angular frequency of oscillation of an object,  $\phi$  is a phase constant, and  $n$  is the ordinal number of the greatest amplitude of the oscillating object to be detected.

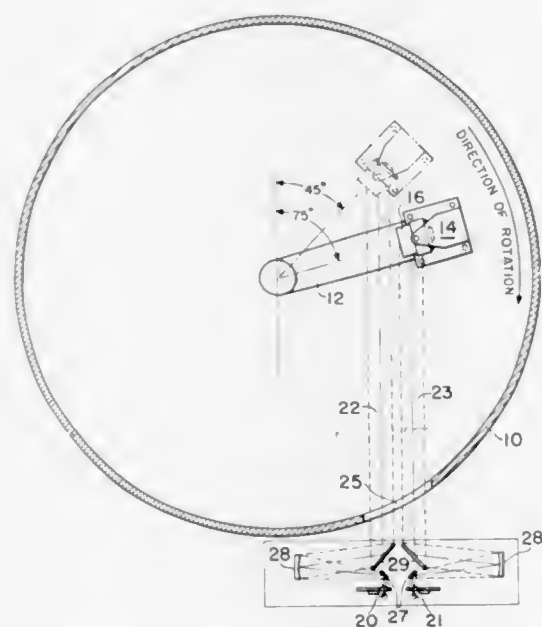


### 3,719,077 APPARATUS FOR TESTING INFRARED SENSITIVE FUZES

David C. Haupt, Riverside, and Walter F. Smith, Alta Loma, Calif., assignors to the United States of America as represented by the Secretary of the Navy  
Filed Dec. 6, 1960, Ser. No. 75,071  
Int. Cl. G01f 5/14

U.S. Cl. 73-167

6 Claims



1. Apparatus for testing influence fuzes of the infrared sensitive type that have optical detecting channels and arming and detonation means for detonating the fuze when the optical detecting channels properly receive infrared radiation of selected bandwidths; said test apparatus comprising centrifuge means for exerting acceleration forces on such a fuze sufficient to cause the fuze arming means to arm, target simulating means for subjecting certain of the fuze detecting channels to a number of gradually increasing steps of infrared radiation within specified values of intensity and bandwidth as required for fuze operation, wherein when the fuze detecting channels detect the proper infrared radiation the fuze can detonate, and means for recording when said fuze detonates in relation to the values of intensity of infrared radiation.

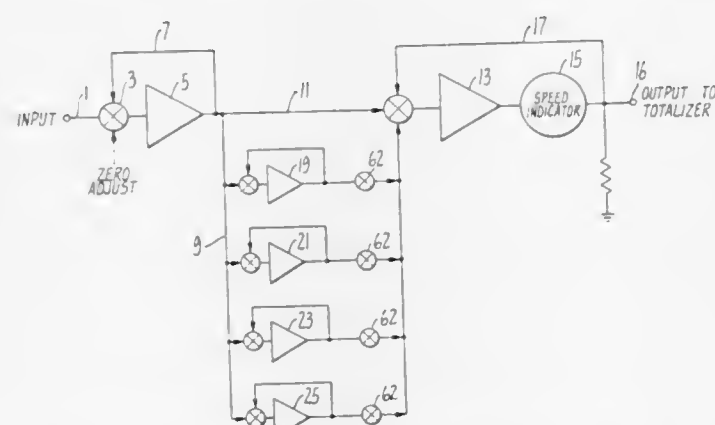
### 3,719,078 LINEAR OUTPUT BOAT SPEEDOMETER

Harvey L. Pastan, Chestnut Hill, Mass., assignor to The Eastern Company, Naugatuck, Conn.

Filed Aug. 16, 1971, Ser. No. 172,131  
Int. Cl. G01c 21/12

U.S. Cl. 73-181

2 Claims



A boat speedometer including an electronic circuit combined with a force velocity measuring transducer which has a

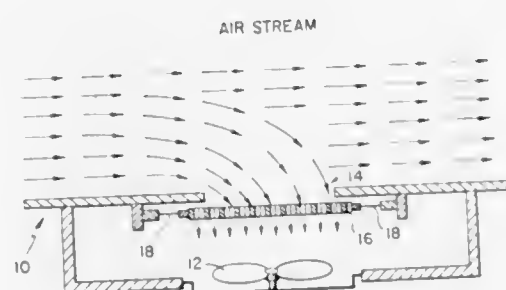
non-linear output to convert the output to a voltage which is directly proportional to speed. In the described embodiment, the transducer output signal is approximately 5 volts at zero speed and varies as the 1.9th power of speed up to a maximum signal level of 7.5 to 8 volts and this is converted to a voltage directly proportional to speed.

### 3,719,079 AIR MOMENTUM ANEMOMETER

Wallace E. Howell, P. O. Box 243, Lexington, Mass.  
Filed April 5, 1971, Ser. No. 131,120  
Int. Cl. G01f 1/00

U.S. Cl. 73-194 R

13 Claims



A device for the measurement of horizontal wind velocity, especially low wind velocity. The horizontal component of momentum of the airstream is displaced from its normal flow. This is accomplished by either injecting an air jet into the airstream to displace the horizontal component of momentum, or withdrawing from the airstream the horizontal component of momentum by passing the airstream over an inlet into which inlet is drawn the horizontal component of the momentum flux of the airstream. The momentum of the air is converted to a force which is thus sensed and measured by a transducer, and since the force transduced is proportional to the first power of wind speed, large forces which may be accurately measured at low wind speeds are achieved.

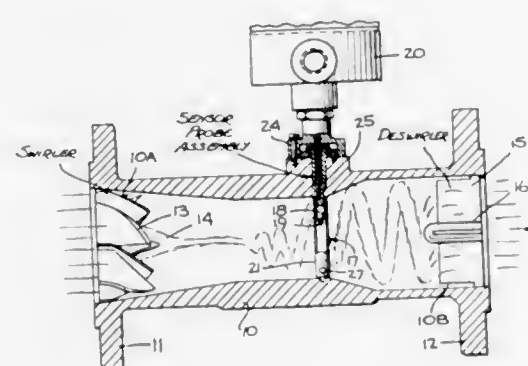
### 3,719,080 SENSOR PROBE AND SHIELD ASSEMBLY FOR SWIRL-TYPE FLOWMETER

Thomas H. Burgess, Horsham, Pa., assignor to Fischer & Porter Co., Warminster, Pa.

Filed June 7, 1971, Ser. No. 150,278  
Int. Cl. G01f 1/00; G01p 5/00

U.S. Cl. 73-194 B

7 Claims



A swirl-type flowmeter whose output frequency is a function of fluid-flow rate. The inlet section of the meter flow tube is provided with a set of fixed swirl blades which impart a swirling motion to incoming fluid, the swirling fluid being caused to precess in an enlarged section of the tube. The

precessional motion is detected by a thermistor probe and shield assembly to produce voltage pulses whose frequency depends on flow rate. This assembly is constituted by a probe extending transversely into the tube and supporting a bead-type thermistor at a point adjacent to the inner wall of the tube. Surrounding the probe and the thermistor is the upper end portion of an elongated tubular shield whose lower end portion has an access port therein which is oriented to capture a small sample of the precessing fluid and to conduct it in the direction of the thermistor to a discharge port beyond the thermistor, whereby the thermistor is responsive to the precessional motion but is otherwise effectively isolated from the mass of fluid flowing through the tube and from destructive particles borne by the fluid.

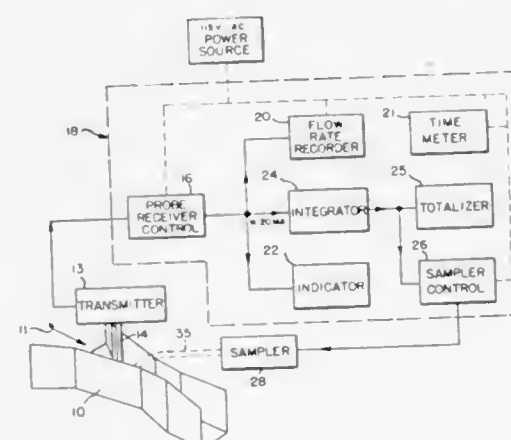
### 3,719,081 WASTEWATER SAMPLER

Lewis G. Lynn, and David A. Quadrini, both of Rochester, N.Y., assignors to Tri-Aid Sciences, Inc., Rochester, N.Y.

Filed Dec. 16, 1971, Ser. No. 208,644  
Int. Cl. G01h 1/12

U.S. Cl. 73-198

15 Claims



Effluent is discharged into a flume to flow past a selectively operable sampler device, and an adjacent probe, which develops and transmits to a remote control point a 4 to 20 milliamp signal the amplitude of which is proportionate to the effluent flow rate. At the control point the signal is applied to an integrator which produces an output voltage proportionate to the quantity (gallons) of effluent that has passed the probe in a preceding interval. Each time this voltage reaches a predetermined value a threshold circuit resets the integrator and pulses a first register to record the quantity of effluent for a given period, and simultaneously pulses a presettable counter, which produces a sampler enabling signal every time the counter reaches zero and resets. This enabling signal momentarily energizes a solenoid in a remote sampler to cause it to pump a sample of wastewater from the flume to a sample receptacle.

### 3,719,082 AIR VELOCITY MEASURING SYSTEM

Alfred A. Obermaier, Barrington, and Martin J. Pierman, Mount Prospect, both of Ill., assignors to Alnor Instrument Company, Div. of Illinois Testing Laboratories, Inc., Chicago, Ill.

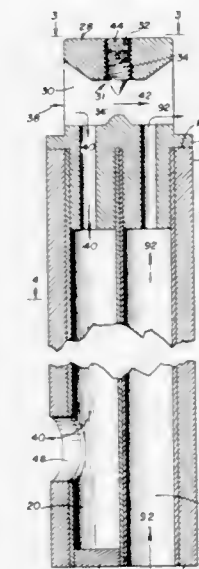
Continuation of Ser. No. 687,084, Nov. 13, 1967. This application March 29, 1971, Ser. No. 129,103  
Int. Cl. G01f 5/00

U.S. Cl. 73-202

24 Claims

An air velocity measuring system having a probe adapted to be placed into a flow of air and coupled to a measuring ap-

paratus. The probe is specially constructed and precalibrated to track a pitot standard under varying static pressure conditions. The measuring apparatus may be a flow meter having a moving vane which is responsive to the air passing through the probe. In the preferred embodiment of the invention a range adjusting switch is coupled between the probe and the measuring apparatus and enables the system to have a plurality of



ranges by placing a resistance, in the form of one of a plurality of needle valves, into the path of the air flow to the measuring apparatus. In the preferred embodiment, the probe, the range adjusting switch and the measuring apparatus are calibrated to form a system. Once calibrated, the individual elements of the system are interchangeable with the corresponding elements of other of similarly calibrated mass produced systems, without requiring subsequent recalibration of each system.

### 3,719,083 FLOWMETERS

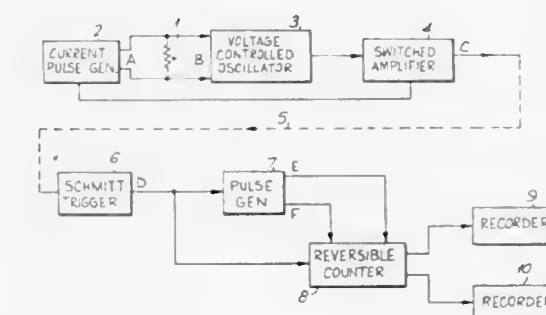
William Meldrum Morris, Edinburgh, Scotland, and Norman Matheson Lindsay, Edgware, England, assignors to National Research Development Corporation, London, England  
Filed March 29, 1971, Ser. No. 128,713

Claims priority, application Great Britain, April 1, 1970, 15,546/70

Int. Cl. G01f 1/00; G01p 5/10

U.S. Cl. 73-204

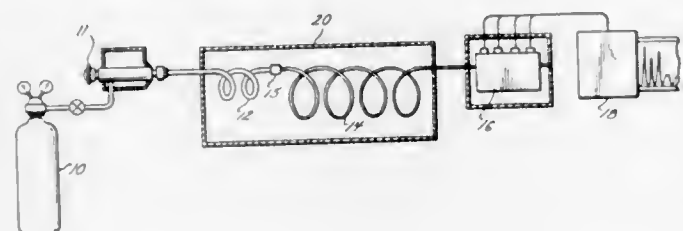
4 Claims



A flowmeter comprises an electrically resistive sensing element which is heated electrically while exposed to a stream of fluid. The heating power is supplied in the form of a train of identical pulses spaced so that thermal equilibrium between the sensing element and the fluid is achieved before each pulse. Variations in the fluid flow rate are detected by sensing variations in the rate of change of resistance of the sensing element during a pulse.

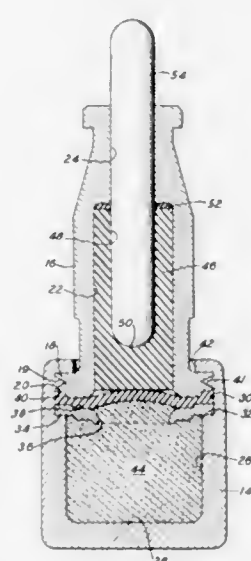


**3,719,084**  
**MEANS FOR SEPARATING ORGANICS CONTAINING FROM ONE TO TWENTY CARBONS COMPRISING SERIES CONNECTED PACKED AND CAPILLARY COLUMNS**  
 John Q. Walker, Edwardsville, Ill., assignor to McDonnell Douglas Corporation, St. Louis, Mo.  
 Filed Sept. 21, 1970, Ser. No. 73,755  
 Int. Cl. G01n 31/08; B01d 15/08  
 U.S. Cl. 73—23.1 14 Claims



An apparatus for separating and/or identifying complex mixtures including organics containing from one to twenty carbon atoms and having widely differing boiling points in a continuous process using two different series connected tandem packed and open tubular columns and without the use of subambient temperature programming, backflushing or carrier gas switching techniques. The apparatus is in the nature of a gas chromatograph having substantially expanded operating and detection ranges as compared to existing devices used for the same or similar purposes and as such the present device has broad uses as a research and as a routine analysis tool and can be used to separate and identify the presence of constituents in gaseous, liquid and solid states. Furthermore, while the main use of the present device is in connection with organic substance analysis it can also be used to separate and/or detect the presence of certain inorganic substances as well.

**3,719,085**  
**THERMAL POWER ELEMENT**  
 Boyd P. Sliger, Concord, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.  
 Filed Nov. 23, 1970, Ser. No. 91,647  
 Int. Cl. G01k 5/34  
 U.S. Cl. 73—368.3 4 Claims



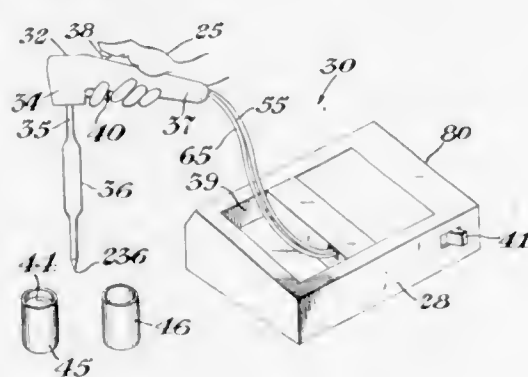
A thermal power element is constructed of a pair of generally hollow casing members with a thermally responsive charge in one casing member and with a sealed plunger protruding from the other casing member. The two casing members are joined together to form a unitary structure by means of interengaging flange elements securely locked together to prevent relative movement between the casing members.

**3,719,086**  
**LIQUIDS SAMPLER WITH PROBE-BATHING CHAMBER**  
 John D. Bannister; Joseph C. Peters, and Michael Jordan, all of Needham Heights, Mass., assignors to Damon Corporation, Needham Heights, Mass.  
 Filed Jan. 12, 1971, Ser. No. 105,803  
 Int. Cl. G01n 1/14  
 U.S. Cl. 73—423 A 16 Claims



Clinical or like apparatus for introducing samples of liquids successively from plural liquid vessels into a conduit by means of a movable probe, has a probe-bathing fluid-containing system through which the probe slidably passes as it moves between the sampling and other positions. In the sampling position, the probe extends beyond the bathing container to immerse the probe inlet end in a vessel of sample liquid. The probe is retractable from this position to draw the probe inlet end into the bathing container, where it is immersed in a bath of liquid, typically for cleansing the probe and/or for the aspiration into the probe of the bathing liquid. Pneumatic sealing in the bathing container allows the probe to slide freely relative to it without leakage of the bathing liquid out of the container, and gas scavenging of the probe as it again passes out of the bathing container removes the bathing liquid from it, for preventing contamination of the sample liquids.

**3,719,087**  
**PIPETTING APPARATUS AND METHOD**  
 Ralph E. Thiers, 2033 Lander Drive, Woodland Hills, Calif.  
 Continuation-in-part of Ser. No. 860,775, Sept. 24, 1969, Pat. No. 3,607,082, Continuation-in-part of Ser. No. 541,306, April 8, 1966, Pat. No. 3,475,128. This application July 23, 1970, Ser. No. 57,720  
 Int. Cl. B011 3/02  
 U.S. Cl. 73—425.6 29 Claims



An automatic pipetting apparatus comprises a hand-holdable pipet-operating apparatus which includes means for releasably coupling a plurality of interchangeable pipets to a

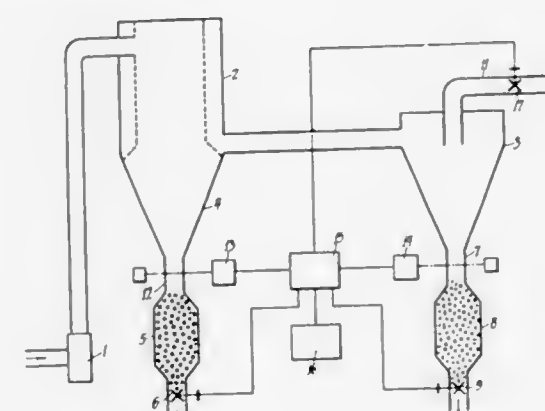
low-dead-space valving structure. The valving structure operates the pipets by selectively sealing or applying suction or pressure to a pipet. A pipet driving subassembly including pressure and suction pumps is coupled to the pipetting apparatus by flexible tubes, permitting continuous application of suction and pressure to the pipet-operating apparatus as well as free movement of the pipet-operating apparatus with respect to the pipet driving subassembly.

**3,719,088**  
**WELL SURVEY INSTRUMENT HOUSING**  
 Euan Noble, Calgary, Alberta, Canada, assignor to Schlumberger Technology Corporation, New York, N.Y.  
 Filed Dec. 9, 1970, Ser. No. 96,405  
 Int. Cl. E21b 47/00; G01d 11/24  
 U.S. Cl. 73—431 4 Claims



A pressure instrument housing to be used in obtaining improved pressure survey recordings in a well bore having corrosive fluids is provided with pressure entry passages and narrow upwardly-extending channels to prevent displacement by gravity separation of corrosion inhibitor fluids contained in the carrier body.

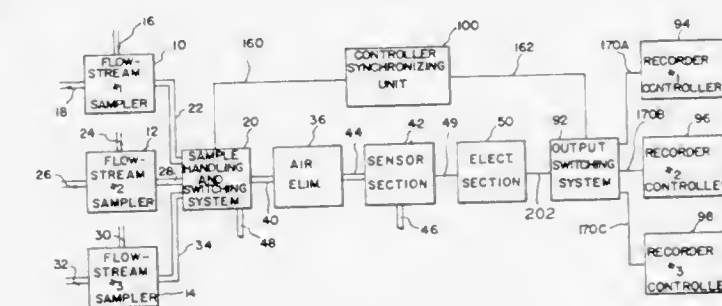
**3,719,089**  
**DETERMINATION OF PARTICLE SIZE DISTRIBUTION**  
 Denis Fletcher Kelsall, Beaumaris, and Clifford John Restarick, Caulfield, Victoria, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, East Melbourne, Victoria, Australia  
 Filed Aug. 11, 1970, Ser. No. 62,990  
 Claims priority, application Australia, Aug. 14, 1969, 59519/69  
 Int. Cl. G01n 15/02  
 U.S. Cl. 73—432 PS 6 Claims



In a method for determining the particle size distribution in a fluid stream wherein the concentration of one size fraction is

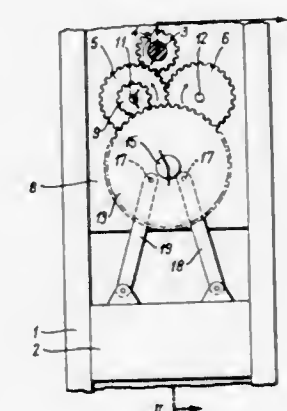
compared with that of another, the concentration of a given fraction is determined by determining the rate of accumulation of the material of that fraction over a series of successive short time intervals.

**3,719,090**  
**METHOD AND APPARATUS FOR MEASUREMENT OF PARTICLE SIZE AND PERCENT SOLIDS IN MULTIPLE PROCESS FLOWSTREAMS**  
 Robert E. Hathaway, Boulder, Colo., assignor to Autometrics Co., Boulder, Colo.  
 Filed March 8, 1971, Ser. No. 121,879  
 Int. Cl. G01n 15/02  
 U.S. Cl. 73—432 PS 13 Claims



Method and apparatus for measurement of particle size and percent solids in multiple process flowstreams. A plurality of process flowstreams are presented to one sensing system adapted to measure particle size and percent solids in a liquid-solids slurry in a manner to permit generation of electrical output data representative thereof in a sequence and identifiable with the process flowstreams being measured. The electrical output data is sequentially applied to electrical controls associated with a flowstream to regulate particle size and percent solids therein.

**3,719,091**  
**PRESS WITH OVERHEAD DRIVE**  
 Max Drummer, Heiningen; Micheal Wolfgang, Goppingen; Werner Munch, Goppingen, and Rupert Riegert, Goppingen, all of Germany, assignors to L. Schuler GmbH, Goppingen, Germany  
 Filed March 4, 1970, Ser. No. 16,535  
 Claims priority, application Germany, March 4, 1969, P 19 10 850.0  
 Int. Cl. F16h 21/22  
 U.S. Cl. 74—44 13 Claims



In a press, particularly a transfer press, having a multi-point drive to the ram from pairs of crank wheels, the crank wheels in each pair are arranged coaxially in oppositely rotating pairs and are connected to spaced points on the ram by mirror image linkages which may be a simple connecting rods or compound linkages. In a transfer press, each tool may be mounted on a separate ram provided with such a drive.



3,719,092

## END PLATE FOR GYROSCOPE ROTOR

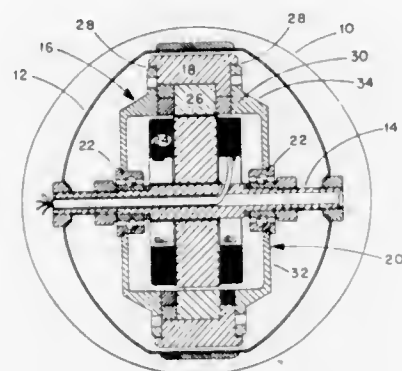
Charles E. Quinby, Grand Rapids, Mich., assignor to Lear Siegler, Inc., Grand Rapids, Mich.

Filed April 7, 1970, Ser. No. 26,209

Int. Cl. G01c 19/00

U.S. Cl. 74—5

7 Claims



Support disc or end plate for massive rim of gyroscope rotors that eliminates the cross-coupling effect of radial load causing axial deflection and the resulting change in anti-friction bearing loading. The end plate includes a marginal edge portion having cut-outs defining flexural elements which yield in plane of marginal edge portion rather than in plane perpendicular thereto.

3,719,093

## LOCK UP CLUTCH CONTROL

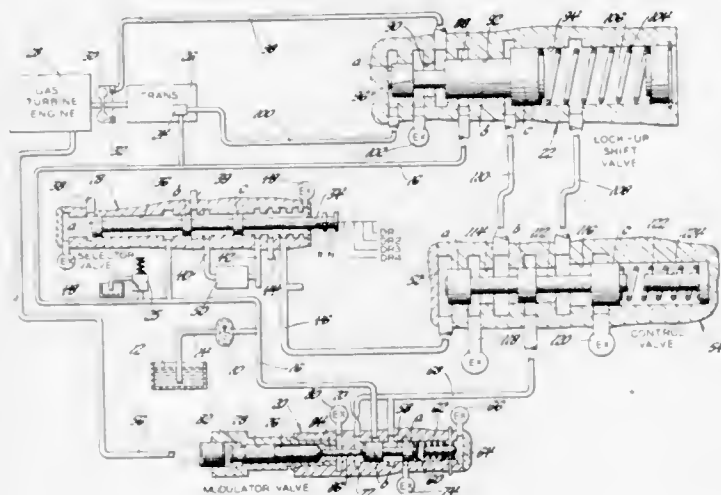
John O. Edmunds, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 5, 1971, Ser. No. 169,377

Int. Cl. F16h 47/08; B60k 21/02

U.S. Cl. 74—645

3 Claims



A control for a transmission having a fluid coupling and a lock up clutch for selectively providing a fluid or mechanical input from a gas turbine engine. A shift valve controls the engagement and disengagement of the lock up clutch in response to a transmission output governor signal or a manual signal in cooperation with the governor signal. The manual signal is controlled by a control valve which also supplies a disengagement bias pressure to the shift valve when the manual signal is not directed to the shift valve. The manual signal is generated in response to an engine operating parameter, such as torque demand, and acts on the shift valve in such a manner as to prevent engagement of the lock up clutch at zero vehicle speed above a predetermined value of the operating parameter.

3,719,094

## VIBRATION GENERATOR

Eberhard Borsutzki, P.O. Box 466, Harburger Strasse 122, D 2130-Rotenburg (Wumme), and Gerhard Liehmann, Quellenweg 12, D445 Laxten-Lingen, both of Germany

Continuation of Ser. No. 858,082, Sept. 15, 1968, abandoned.

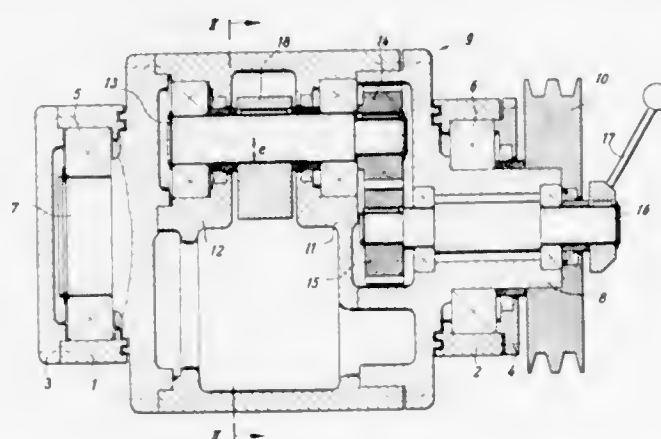
This application Aug. 31, 1971, Ser. No. 176,754

Claims priority, application Germany, Sept. 13, 1968, P 17 58 966.7

Int. Cl. B06b 1/16

U.S. Cl. 74—87

9 Claims



A vibration generator, in particular for soil compacting machines or the like, comprises an unbalance mass which is rotatably eccentrically journaled on a crank mounted on a drive shaft and having a driving wheel in operative connection with a stationary mating wheel, concentric with the drive shaft and rotatable thereabout, characterized in that the driving wheel and mating wheel have the same dimensions so that, in operation, the driving wheel of the unbalance mass rolls on the stationary mating wheel and causes the distance between the center of gravity of the unbalance mass and the drive shaft to traverse a maximum and minimum off-set by 180° or 0° for each rotation.

3,719,095

## STEERING-WHEEL COVER

Karl Meier, Wolfsburg, Germany, assignor to Kamei, Auto-Komfort Wolfsburg K. Meier KG, Wolfsburg, Germany

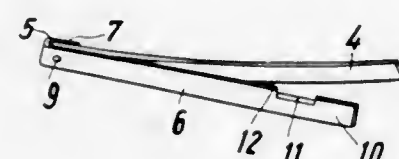
Filed Dec. 20, 1971, Ser. No. 210,036

Claims priority, application Germany, Dec. 19, 1970, G 46 993.1

Int. Cl. B62d 1/06

U.S. Cl. 74—558

7 Claims



A steering-wheel cover comprising an endless perforated band is wrapped around a toroidal steering wheel and a lace attached to one edge of the band is wound around the wheel to hold the cover in place. The end of the lace carries a rigid metal strip or needle whose end is bent over the lace end so that it lies normally parallel to the lace. By means of this strip the lace end can be threaded through perforations on the cover for best holding characteristics. Spaced from the end of the strip opposite the bent-over end and inward of a longitudinal edge of the strip there is a cutting edge by means of which the free end of the lace is cut off. Advantageously the bent-over end of the metal strip is provided for best securing of the lace end.

3,719,096

## ELECTRONIC SHIFT CONTROL FOR A TRANSMISSION

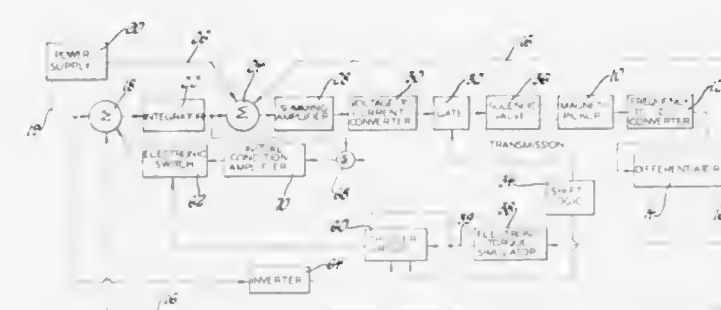
Richard L. Sprague, and David S. Dennis, both of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 27, 1971, Ser. No. 193,041

Int. Cl. F16h 3/74; B60k 21/00

U.S. Cl. 74—752 D

4 Claims



A transmission having a clutch controlled multi-ratio gear train driven through a torque converter includes an electronic control regulating pressure applied to an oncoming clutch during ratio change. The control primarily regulates the clutch pressure according to a desired acceleration of a rotatable member of the transmission such as a sun gear which accelerates during a shift. However, due to a low responsive characteristic of the torque converter, the initial part of the shift is controlled according to a simulated transmission output torque electronically derived from sun gear acceleration.

3,719,097

## MECHANICAL APPARATUS

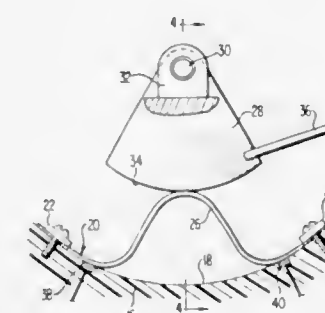
Donald F. Wilkes, Albuquerque, N. Mex., assignor to Rolamite, Incorporated, San Francisco, Calif.

Filed April 29, 1970, Ser. No. 32,886

Int. Cl. F16h 21/44

U.S. Cl. 74—100

21 Claims



The apparatus includes a guide surface which supports a flexible elongated element in a lobe arching away from the guide surface. Portions of the element on opposite sides of the lobe frictionally engage the surface to prevent the lobe from collapsing. The lobe is capable of progressing along the element to displace the lobe relative to the guide surface. The flexible elongated element is in the form of a thin flexible band. The guide surface may be either flat or concave. Preferably, the band is secured to the guide surface at positions spaced apart from each other a distance substantially greater than the length of the lobe in the band. The lobe may be caused to progress along the guide surface by lifting the band away from the guide surface at either end of the lobe, or by applying a force to the apex of the band in a direction extending longitudinally of the band.

3,719,098

## PULLEY BELT ASSEMBLY

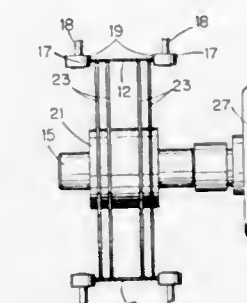
Howard K. Graves, Cleveland, Ohio, assignor to Olin Corporation, New Haven, Conn.

Filed March 22, 1971, Ser. No. 126,535

Int. Cl. F16h 55/36; F16g 1/00; F16h 7/18

U.S. Cl. 74—216.5

15 Claims



A flat belt pulley transport employs spaced pulleys each constructed as a set of radially slotted discs which are flexible in response to transverse forces imparted between the belt and pulley. The belt is retained on the pulleys by spaced non-rubbing guides which deflect the belt back to tracking position whenever a transverse movement of the belt occurs. The flexible ribs of the discs minimize both lateral forces tending to detrack the belt and corresponding resistance to restoring forces from the guides. Where a sprocket drive is used the sectors between slots are also flexible in the direction of belt motion to compensate for sprocket and hole misalignment.

3,719,099

## DRIVE WHEEL FOR FRICTION MINE HOIST

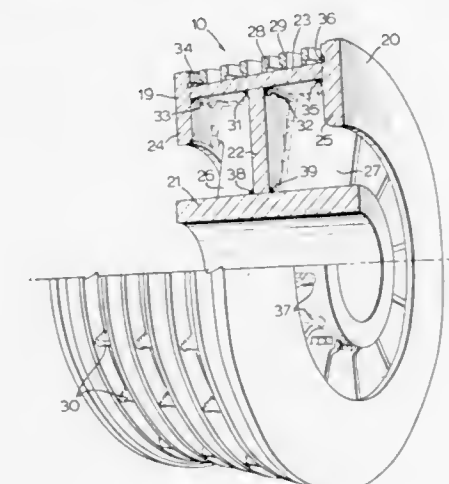
Peter de Hertel Eastcott, and James Ernest Welch, both of Peterborough, Ontario, Canada, assignors to Canadian General Electric Company Limited, Toronto, Ontario, Canada

Filed Jan. 29, 1971, Ser. No. 110,989

Int. Cl. F16h 55/40

U.S. Cl. 74—230.3

1 Claim



A drive wheel for a friction mine hoist. The wheel has a shaft adapted for rotation in bearing on a horizontal axis, a hub on the shaft coaxial with respect thereto, a flat ring secured to the periphery of the hub concentric with the hub with its flat faces at right angles to the axis of rotation, a cylindrical rim encircling the ring coaxial with the axis of rotation, an annular flange on each end of the rim having an inner portion projecting radially inward in spaced relation to the hub and shaft, a plurality of flat ribs located in angularly spaced relation between the hub, ring, rim and flanges with their flat sides directed radially and axially, and tread retaining structure on the periphery of the rim. The ring, rim, flanges and

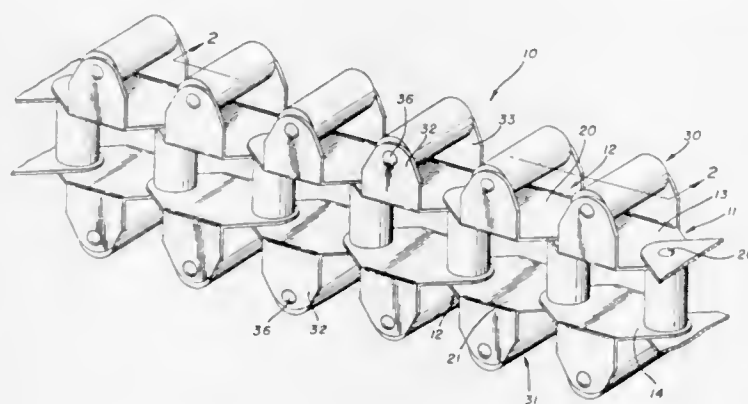


spokes are rigid members welded together and the welded structure is secured to the hub in a way which results in a very stiff wheel structure.

### 3,719,100 ROLLER CHAIN

Dick T. Myers, Austin Drive R.F.D. No. 2, Willard, Ohio  
Filed March 8, 1971, Ser. No. 121,873  
Int. Cl. F16g 13/02  
U.S. Cl. 74—246

11 Claims

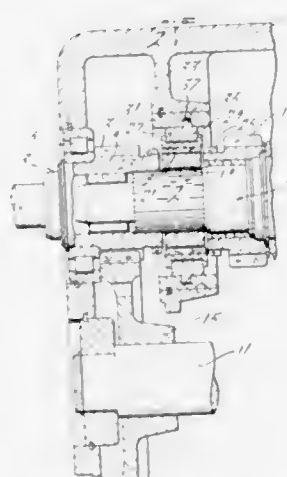


A roller chain comprising a plurality of link members. The link members have spaced plates, and first rollers are mounted to extend between the plates. Second roller means are mounted on flanges extending from the plates, and the axes of the first and second rollers are nonparallel.

### 3,719,101 CLUTCH ACTUATOR FOR A GEARED POWER TRANSMISSION MECHANISM

Eric John Banks, Thorpe Bay, England, assignor to Ford Motor Company, Dearborn, Mich.  
Filed Aug. 30, 1971, Ser. No. 176,085  
Claims priority, application Great Britain, Oct. 7, 1970, 47,636/70  
Int. Cl. F16h 5/08  
U.S. Cl. 74—337.5

2 Claims

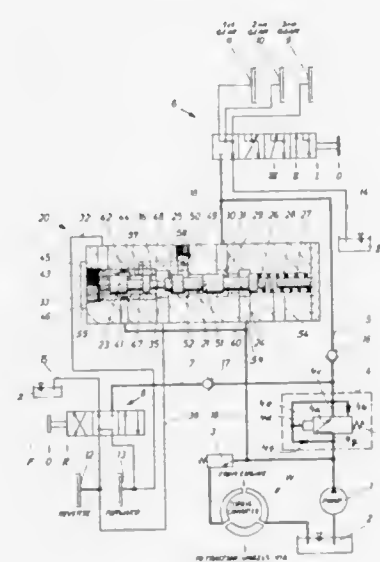


A transmission clutch adapted to connect selectively a rotary gear member of a transmission mechanism to either a torque delivery shaft or a companion gear member during ratio changes comprising an actuator having an externally splined clutch element within an internally splined clutch sleeve, the former being connected to one torque delivery member, adjacent clutch elements carried by two other torque delivery members, a cam sleeve surrounding the internally splined clutch sleeve and pressure operated servo means for angularly adjusting the cam sleeve to effect axial shifting movement of the internally splined sleeve into and out of clutching engagement.

### 3,719,102 CONTROL SYSTEM FOR HYDRAULIC CLUTCHES OF REVERSIBLE GEAR-SHIFT MECHANISM

Fritz Leber; Karl-Gottfried Seumel, both of Friedrichshafen, and Gunther Mohrle, Ailingen-Berg, all of Germany, assignors to Zahnradfabrik Friedrichshafen Aktiengesellschaft, Friedrichshafen, Germany  
Claims priority, application Germany, Feb. 27, 1971, P 21 09 371.0  
Filed Feb. 28, 1972, Ser. No. 229,862  
Int. Cl. B60k 21/00  
U.S. Cl. 74—364

7 Claims

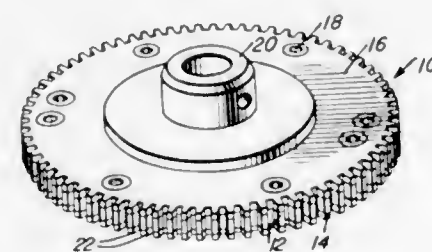


A hydraulic gear-shift mechanism for an automotive vehicle includes several gear clutches for the establishment of different speed ratios and a pair of directional clutches for choosing between forward and reverse drive. Both sets of clutches are actuable by way of a pressure-responsive throttle valve, via respective selectors, yet in the neutral position of the directional selector a bypass is opened for the direct actuation of a selected gear clutch at high pressure. The closing of the bypass is controlled, in response to the back pressure from either directional clutch, by a blocking piston in a cylinder also containing a switching piston which responds to the same back pressure to direct supplemental oil from a branch of the bypass to the actuated directional clutch in order to compensate for leakage losses.

### 3,719,103 LAMINATED GEAR CONSTRUCTION

George W. Streander, Alamogordo, N. Mex., assignor to Design Systems, Inc., Alamogordo, N. Mex.  
Filed Oct. 7, 1971, Ser. No. 187,438  
Int. Cl. F16h 55/12, 55/18  
U.S. Cl. 74—445

7 Claims



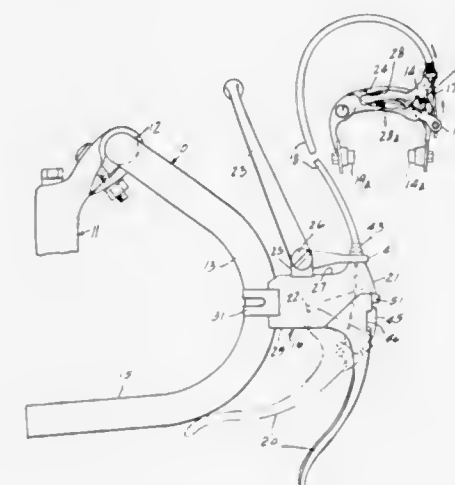
A gear body including an edge portion of predetermined configuration and of laminated construction including a

center ply of plastic material and a pair of opposite side plies constructed of more rigid material. The aforementioned edge portion of the gear body has gear teeth formed therein with each of the gear teeth composed of aligned gear teeth segments formed in the three plies of the edge portion and with the gear tooth segments formed in the center plastic ply of the gear body including tooth segments defining surfaces projecting at least slightly outwardly beyond the corresponding tooth segment defining surfaces comprising the gear teeth formed in the opposite side plies of the gear body.

### 3,719,104 BICYCLE BRAKE APPLYING DEVICE

Walter Dian, Downers Grove, Ill., assignor to Excel, Inc., Franklin Park, Ill.  
Filed Sept. 17, 1971, Ser. No. 181,378  
Int. Cl. G05g 11/00  
U.S. Cl. 74—489

10 Claims



Bicycle brake actuator for drop type handle bars, such as are employed on lightweight touring types of bicycles. The brake actuator includes a main hand brake lever operable when the hands are on the hand grips of the handle bars, and an auxiliary brake lever movable relative to the main brake lever and operable by the hands when on the cross bar of the handle bar. In one form of the invention, either hand brake lever may be operated without affecting operation of the other lever. In another form of the invention, the main hand brake lever and auxiliary hand brake lever operate together when applying the brakes by the main hand brake lever and application of the brakes by the auxiliary hand brake lever has no effect on movement of the main hand brake lever.

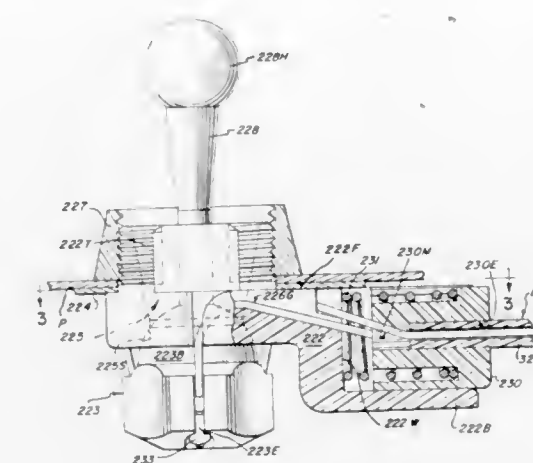
### 3,719,105 REMOTE SWIVEL MOVEMENT CONTROL

Laurence G. Horwitt, New Haven, and Donald J. Mattis, Norwalk, both of Conn., assignors to Nelmor Incorporated, Warren, Mich.  
Continuation-in-part of Ser. No. 1,177, Jan. 7, 1970, Pat. No. 3,618,420. This application Oct. 7, 1971, Ser. No. 187,303  
Int. Cl. F16c 11/14  
U.S. Cl. 74—501 M

4 Claims

A remote actuator control for producing swivel movement for transmission through flexible cables utilizes a stationary socket-type member and a movable ball member in an arrangement wherein the cable ends are guided through the support member in spaced relation to anchor at points on the ball member which are remote from its ball surface. A manual actuator projects from the ball and through the socket member to a location where it is accessible to an operator. In this ar-

angement, the cable ends are masked from view from the operator side of the control and the control includes mounting

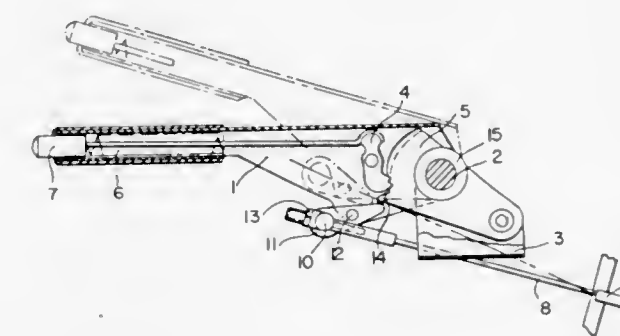


connections which seal off the unit against passage of dirt or fluid and which prevent insertion of small foreign objects that might impair the operation of the unit.

### 3,719,106 VARIABLE RATIO OPERATING LEVER

Hans O. Schroter, Robert-Koch-Strasse 18, Munich, Germany  
Filed May 3, 1971, Ser. No. 139,667  
Claims priority, application Germany, May 2, 1970, P 20 21 504.7  
Int. Cl. G05g 11/04  
U.S. Cl. 74—518

7 Claims



A variable ratio operating lever is pivotally mounted so as to be moveable between release and braking positions and has a control lever pivotally mounted thereon. An actuating element is connected to the control lever and extends to the linkage or other apparatus which is to be operated. One end of the control lever abuts a stationary stop when the operating lever is in its release position and the control lever is pivoted by the stop when the operating lever is moved from its release position so that the distance between the longitudinal axis of the actuating means and the operating lever pivot is rapidly decreased to a minimum.

### 3,719,107 TWO-STAGE THROTTLE VALVE FOR AN AUTOMATIC TRANSMISSION

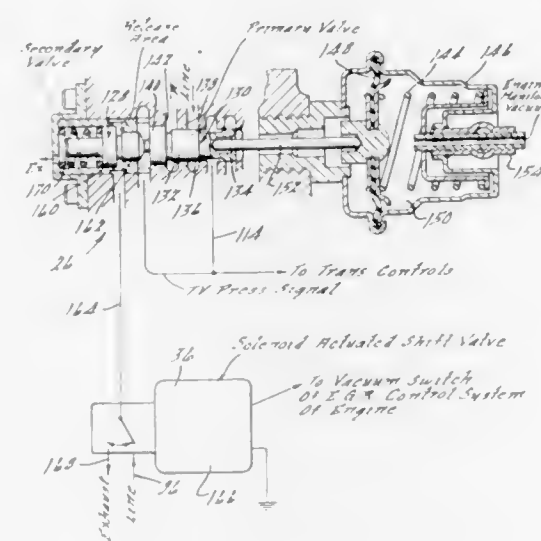
Edwin F. Jagdmann, Northville, and George E. Lemieux, Livonia, Mich., assignors to Ford Motor Company, Dearborn, Mich.  
Filed Nov. 2, 1971, Ser. No. 195,030  
Int. Cl. B60k 21/02  
U.S. Cl. 74—843

4 Claims

A throttle valve system for an automatic power transmission mechanism in an automotive vehicle driveline



having an internal combustion engine with an exhaust gas recirculation control, said throttle valve system being adapted to produce a pressure signal that is related functionally to the magnitude of the engine torque and including a diaphragm actuator that is subjected to engine intake manifold pressure and a secondary throttle valve that



modifies the valve actuating forces of the diaphragm actuator to compensate for the effect of the exhaust gas recirculation control system on the engine intake manifold, thereby tending to maintain the desired relationship between engine torque and the output pressure signal of the throttle valve system.

3,719,108

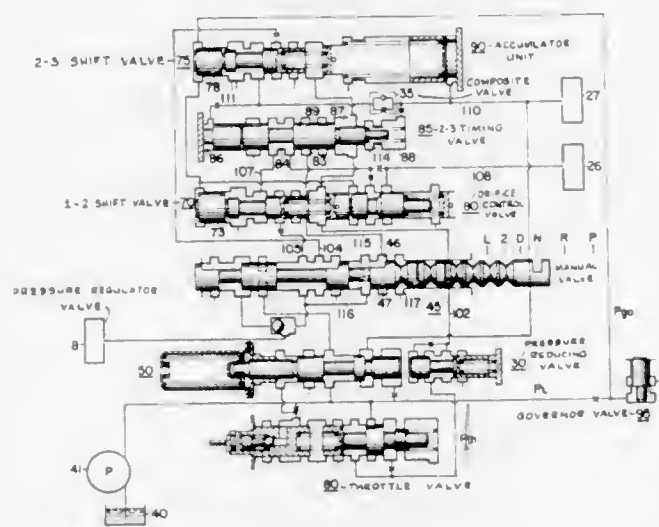
#### HYDRAULIC CONTROL SYSTEM FOR AN AUTOMATIC TRANSMISSION

Ichio Sakai, Aichi-ken, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan  
Filed July 30, 1971, Ser. No. 167,621

Claims priority, application Japan, July 31, 1970, 45/66565  
Int. Cl. B60k 21/00

U.S. Cl. 74—869

1 Claim



In a hydraulic control system for the automatic transmission of a vehicle, an arrangement is provided for controlling the supply and release of pressurized oil to a first hydraulic servo

for operating the vehicle under high speed conditions and to a second hydraulic servo for operating the vehicle under low speed conditions. The hydraulic control system includes oil passages connected to the first and second hydraulic servos, a speed-change valve, a timing valve and a manual valve. Based on a signal determined by the running speed of the vehicle the speed-change valve controls the flow of pressurized oil to the first hydraulic servo. The timing valve is in communication with both the first and second hydraulic servos and opens and closes flow to the second hydraulic servo. The timing valve includes a valve housing which forms separate oil chambers and a valve body which is displaceable within the housing for controlling the flow of oil therethrough. The manual valve has a number of positions for selecting the desired speed condition of the vehicle and the oil passages provide communication between the manual valve and the timing valve. Ordinarily, when operating under high speed conditions and the pressurized oil supplied to the first servo drops below a predetermined value corresponding to the engine output of the vehicle, the valve body is displaced so that pressurized oil is supplied to the second hydraulic servo through one of the oil chambers in the timing valve. However, if the valve body becomes stuck the usual supply of pressurized oil cannot be directed to the second servo and to assure that proper low speed conditions are provided, pressurized oil is supplied to the timing valve through the manual valve and then is conveyed through the proper oil chamber and oil passage to the second hydraulic servo.

3,719,109

#### RASP AND METHOD FOR ITS MANUFACTURE

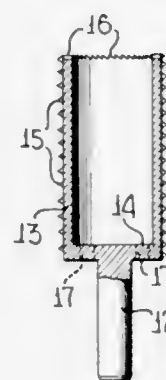
Carl Zenses, Duppelstrasse 58, Remscheid-Haddenbach, Germany

Continuation-in-part of application Ser. No. 681,704, Nov. 9, 1967. This application Aug. 3, 1970, Ser. No. 60,575

Int. Cl. B21k 21/00

U.S. Cl. 76—101 A

10 Claims



There is provided a rasp in the form of a cylindrical rasp body open at one end and closed at its other end with a shaft projecting from the closed end and adapting the rasp for mounting on a driving motor, rasp cutting serrations being angularly disposed on the end surface of the cylindrical wall at the open end of the body. The body may have thereon a flange-like widening at the open end of the body and equipped with rasp cutting media and this widening may be integral or formed on an insert mountable in the hollow of the body, or the rasp optionally may include a spring projected centering plunger in the hollow of the insert, or it may include a spiral drill projecting axially a predetermined distance beyond the open end of the body and forming an integral part of the mounting shaft.

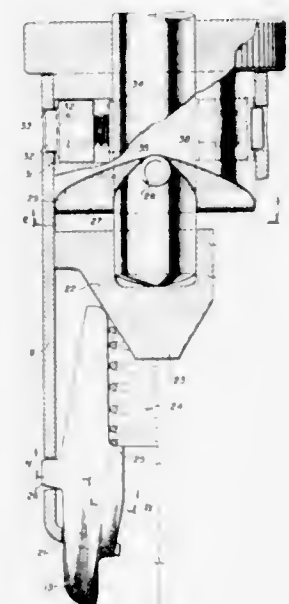
3,719,110  
WRENCH

Gabriel M. LaPointe, Worcester, Mass., assignor to Parker Mfg. Company, Worcester, Mass.

Filed Oct. 22, 1970, Ser. No. 83,264

Int. Cl. B25b 13/32

U.S. Cl. 81—116



This invention relates to a wrench and, more particularly, to a tool for turning a nut or the like and including a plurality of clamping fingers or jaws.

#### 3,719,111 MARKING DEVICE FOR TORQUE APPLYING TOOL

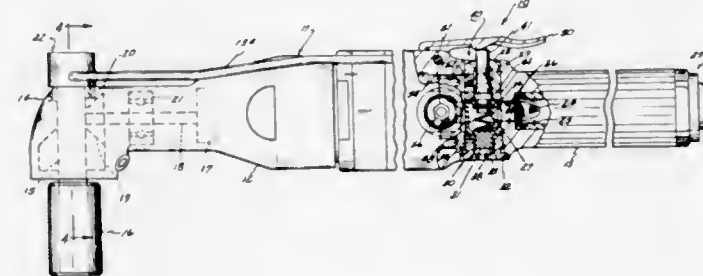
Jon A. Study, Grosse Pointe Woods, Mich., assignor to Carco, Inc., Detroit, Mich.

Filed May 27, 1971, Ser. No. 147,455

Int. Cl. B25b

U.S. Cl. 81—52.5

10 Claims



A marking device adapted to operate in conjunction with a tool of the type for applying a predetermined torque to a rotatable fastening member to mark the fastening member to indicate a completed application of the predetermined torque. The torque applying tool delivers the predetermined torque to the rotatable fastening member through a hollow rotatable work spindle which, in turn, is driven by a fluid motor. Suitable valving means are provided to selectively direct pressure fluid to the fluid motor to drive the same. The marking device comprises a valve member disposed in the hollow portion of the rotating spindle and responsive to a pressure fluid signal generated by the torque applying tool upon the completed application of the predetermined torque to eject a marking fluid onto the fastening member. In other embodi-

ments of the invention the marking device is mounted on the exterior of the tool and at a position which is remote from the tool.

3,719,112

#### DEVICE FOR TURNING AN ELEMENT

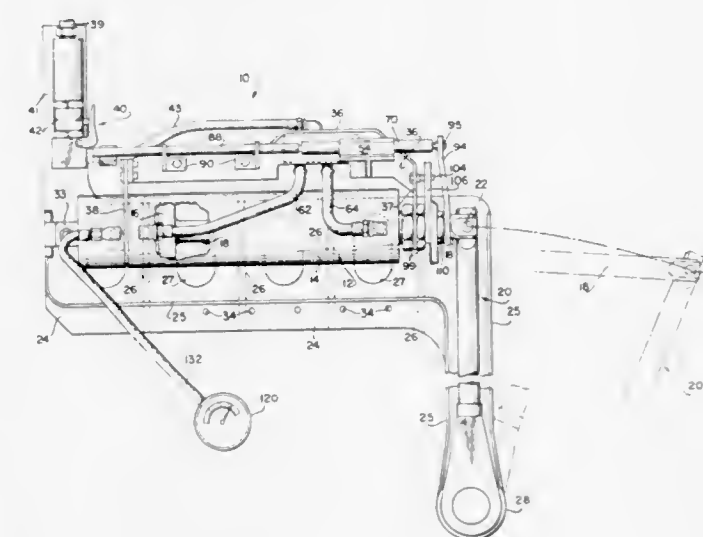
Kenneth C. Kaelon, Rosemead, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Aug. 24, 1970, Ser. No. 66,481

Int. Cl. B25b 13/46

U.S. Cl. 81—57.39

10 Claims



An assembled device for turning or torquing an element such as a nut, bolt or the like, comprising a pneumatic actuator operatively connected to a ratchet wrench, both being peculiarly tied to an anchoring or bar. A pneumatic source of pressure, such as air, is provided for operation of the actuator which includes a piston. A valve conveys fluid to the actuator and is operatively connected to a positioning mechanism provided for automatically actuating the valve to transmit the pneumatic pressure developed by the fluid flow to alternate sides of the piston in order to obtain reciprocation of the wrench about its element. This mechanism includes an assembled displaceable rod, operatively connected to the wrench, and a compressible spring for storing energy transferable to an arm which actuates the valve between its alternate positions. The mechanism stores sufficient energy during either half-cycle of such reciprocation to snap the arm at each end of travel of the wrench's angular rotation. The valve may be locked in either of its alternate positions by a detent means holding the arm in a corresponding one of its two positions. A cylinder means for directly measuring the force developed by the pneumatic actuator is mounted between the latter and the reaction bar to which it is connected, and a gauge is provided to record the force required to turn the element.

3,719,113

#### PENETRABLE BED USED FOR CUTTING SHEET MATERIAL AND METHOD FOR TREATING SAME

Heinz Joseph Gerber, and David Raymond Pearl, both of West Hartford, Conn., assignors to Gerber Garment Technology, Inc., East Hartford, Conn.

Filed Dec. 3, 1970, Ser. No. 94,882

Int. Cl. B26d 7/08, 7/10

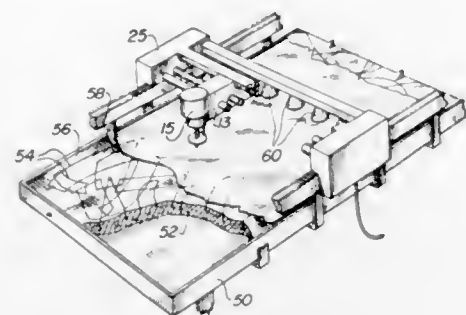
U.S. Cl. 83—56

17 Claims

A bed of material provides a supporting surface for supporting sheet material during a cutting process. The bed is used in combination with a cutting apparatus having a cutter and a means for moving the cutter and the bed with respect to each other. The supporting surface is penetrated and cut during the sheet material cutting operation. At least the top layer of the



bed material is of such a nature that it may be restored to a substantially uncut or healed condition after having been penetrated and cut to the point where its capacity for properly supporting sheet material is impaired. This restoration may be accomplished by subjecting the bed material to a restoring in-



3,719,114

## WEB TRIMMER CONTROL

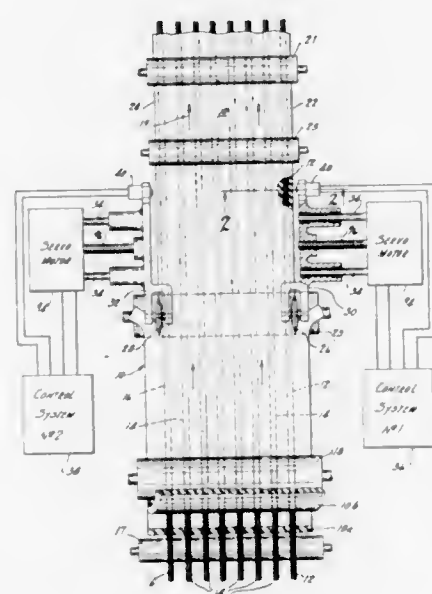
George Vischulis, W172 N9409 Shady Lane,  
Menomonee Falls, Wis. 53240

Filed Oct. 29, 1971, Ser. No. 193,637

Int. Cl. B23d 19/00

U.S. Cl. 83—74

11 Claims



Apparatus and control means therefor for trimming excess material from the edges of a tire web having a multiplicity of steel wires embedded between two laminated sheets of rubber and running parallel to the edge comprises: a trimming blade for cutting excess material from the edge, a detector head including an oscillator coil located downstream of the blade and adjacent to the trimmed edge of the web for sensing the location of the outermost wire. Both the blade and the detector head are mounted in fixed positions on a supporting structure or carriage which is adjustably movable transversely to the web so the blade can maintain a constant dimension between the outermost wire and the trimmed edge of the web. The

carriage is movable by a screw drive mechanism which is powered by a servo-motor. An oscillator circuit energizes the oscillator coil in the detector head and changes in amplitude of coil oscillation voltage caused by lateral movement of the outermost wire toward or away from the detector head (indicating a change in the desired constant dimensions) are sensed by a detector circuit, integrated and amplified to provide control signals representative of dimensional changes and employed to control energization of the servo-motor to move the carriage and maintain a constant distance between the blade and the outermost wire.

3,719,115

## PORTABLE PUNCH

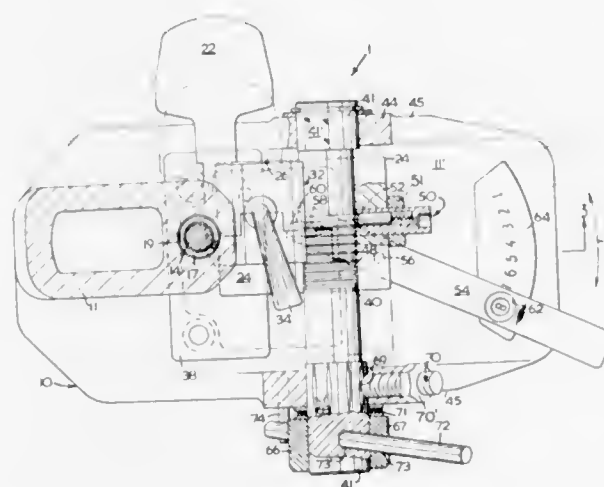
George Muri, Montreal, Quebec, Canada, assignor to DBM Industries Limited, Montreal, Quebec, Canada

Filed May 19, 1971, Ser. No. 144,925

Int. Cl. B26d 7/06; B26f 1/12

U.S. Cl. 83—414

11 Claims



A portable key punch is described for removing material from a blank by cutting to provide a selected profile on the blank. A punch element is provided with the blank being supported upon a carrier in a predetermined orientation relative to the punch element, said carrier being supported for guided movement in two directions at 90° to one another. Adjustability is derived from a single positioning element, preferably in the form of a single shaft. This positioning element is provided with two series of notches or indentations spaced in a predetermined format to provide a multiplicity of possible profiles for the blank. That element is movable longitudinally thereof and rotationally about an axis that is offset from its own axis. Adjusting means are coupled to this positioning element and are manually operable to select the positioning needed of that element to enable the carrier and blank to be moved in a manner allowing the profile selected to be cut into said blank.

3,719,116

## UNDERWATER SAW FOR TREE AND STUMP REMOVAL

Cyril Burton, Sunrise Valley Trailer Park, and Douglas Steeves, 1908-12th Ave., both of Prince George, British Columbia, Canada

Filed Sept. 22, 1971, Ser. No. 182,612

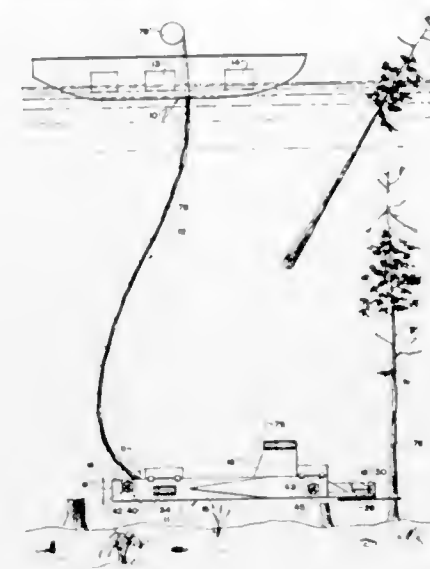
Int. Cl. B27b 5/02; B63c 11/48

U.S. Cl. 83—483

16 Claims

An underwater component is connected to a surface vessel by means of a flexible umbilical connection which includes an anchor cable, hydraulic lines, control lines, and television and light connections. The component includes hydraulically operated propellers for controlling the attitude and position of

the component, a television camera and light source for viewing the underwater scene from the surface vessel and a pair of



saw blades rotating in a horizontal plane by hydraulic motors to cut off trees and stumps under water.

3,719,117

## PUNCH HOLDER

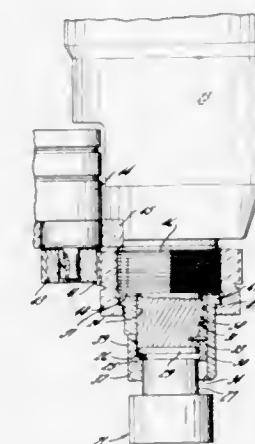
Robert W. Mauk, and William B. Scott, both of W. A. Whitney Corp., 650 Row Street, Rockford, Ill.

Filed July 29, 1971, Ser. No. 167,326

Int. Cl. B26d 1/06

U.S. Cl. 83—698

14 Claims



A punch press includes a tubular punch holder telescoped on the lower end of a reciprocable ram for up and down movement between (a) a clamped position in which the end of the ram holds a punch locked within the holder and (b) a released position in which the end of the ram is retracted upwardly relative to the holder to allow the punch to be removed from the holder. Formed in the side of the holder is an entryway correlated in size and shape to that of the punch so that the punch may be inserted into and removed from the holder by being moved radially in and out of the holder when the latter is in the released position.

3,719,118

## PIANO INSTRUCTION DEVICE

John P. Colburn, 360 Sherman Ave.,  
Council Bluffs, Iowa

Continuation-in-part of application Ser. No. 99,027, Dec. 17, 1970. This application July 13, 1971, Ser. No. 162,122

The portion of the term of the patent subsequent to Sept. 12, 1989, has been disclaimed

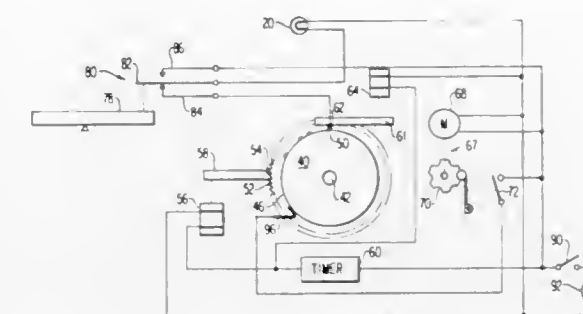
Int. Cl. G09b 15/08

U.S. Cl. 84—478

10 Claims

A device to teach pupils to read music and identify notes on a keyboard instrument and promote efficiency

in the performance of musical exercises is presented. The device includes a scale representation visually displaying notes as flashing lights, a keyboard representation visually displaying keys to be played as flashing lights said representations selectively controlled by an electromechanical signal device for successively displaying preselected



3,719,119

## DRIFT PIN ALIGNMENT CLAMP

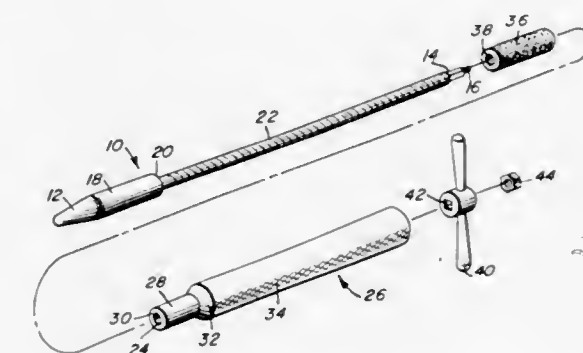
Richard K. Straub, R.D. No. 2, Douglass Road, Beaver Falls, Pa.

Filed May 17, 1971, Ser. No. 144,177

Int. Cl. F16d 13/06

U.S. Cl. 85—70

4 Claims



A drift pin alignment clamp comprising first and second insert members threadably engaging each other with a compressible rubber collar mounted therebetween for expansion due to compression created by threading the first and second members toward each other, the first and second members and rubber collar each being adapted to be inserted through construction beam apertures to aid in their alignment and to secure the beams in flush engagement with each other by expanding the rubber collar after insertion. The first insert member has a tapered tip portion which aids in the insertion when the beams are initially slightly out of alignment, and a tightening knob at the end opposite the tip for easily expanding the rubber collar after insertion.

3,719,120

## ROCKET LAUNCHING SYSTEM

Alton P. Elder, Klamath Falls, Oreg., and Vincent J. Taylor, China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed June 29, 1970, Ser. No. 50,516

Int. Cl. F41f 3/04

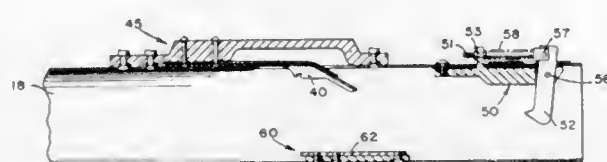
U.S. Cl. 89—1.814

3 Claims

A rocket launcher having a plurality of launcher tubes mounted within a substantially cylindrical housing. The hous-



ing is of relatively "thin-wall" construction except for the front and rear reinforced bulkheads joined by a top rib or strongback. The front and rear bulkheads are of laminated construction. The firing circuit is grounded through the intervalometer except when switched to a "fire" position. A stop member has been added to prevent the detent stop device



from exceeding its elastic limit when blast off occurs. The rib of the rocket stop has been made extremely close to the peripheral distance between the extremities of adjacent fins to more accurately position the rockets in the tubes and a stray voltage test jack and safety switch has been added to the firing circuit.

3,719,121

## REDUCING APPARATUS AND METHOD

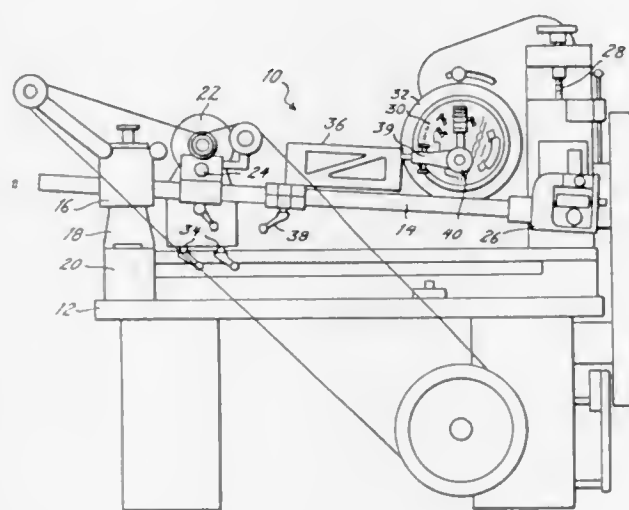
Roy E. Okell, Broomall, and Harold Kirkham and Kathleen E. Kirkham, Upper Darby, Pa., assignors to Franklin Mint Corporation, Yeadon, Pa.

Filed June 5, 1970, Ser. No. 43,897

Int. Cl. B23c 1/18

U.S. Cl. 90—13.7

8 Claims



Apparatus and method are disclosed for optically scanning a picture and reproducing a die of the picture on a reduced scale. The picture must have true shade depth.

3,719,122

## CONTROL MEANS AND A METHOD OF CONTROLLING THEREBY

John Maximilian Jules Varga, Brighthouse, England, assignor to Carding Specialists (Canada) Limited

Continuation-in-part of application Ser. No. 887,388, Dec. 22, 1969. This application Oct. 22, 1971, Ser. No. 191,807

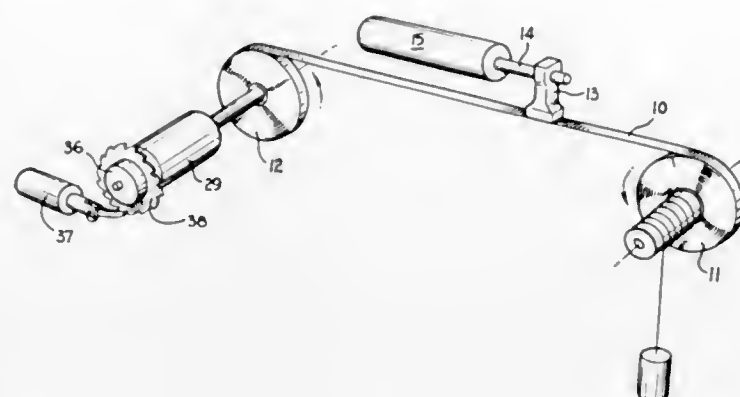
Int. Cl. F15b 21/02; G05b 19/10; B23q 35/00

U.S. Cl. 91—37

31 Claims

A control means for a machine including a pre-recorded programme containing element in, for example, magnetic tape form, and at least one movable scanning head located adjacent the element and connected to a part of the machine to be moved in accordance with the programme, there being on the programme containing element or as-

sociated with it a reference signal containing element arranged to be scanned by an additional head so that signals from the scanning heads may be passed to a com-



parator to enable the moving part to be stopped, reversed and otherwise controlled and for corrections to be made in the manner in which the machine part is moved.

3,719,123

## FRICTIONAL LOCK FOR DUAL RATIO PEDAL DEVICE

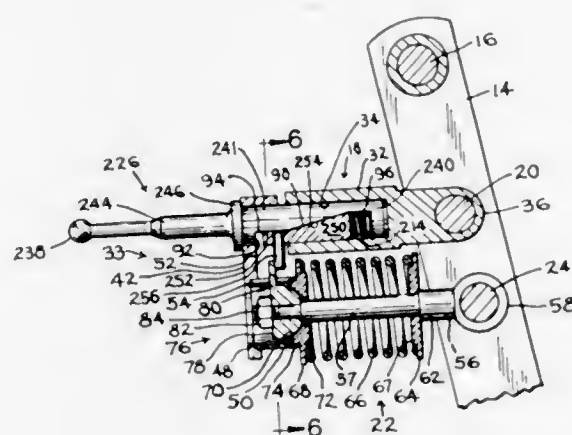
Maxwell L. Cripe, South Bend, Ind., assignor to The Bendix Corporation

Filed May 27, 1971, Ser. No. 147,494

Int. Cl. F15b 13/10, 7/00

U.S. Cl. 91—391

17 Claims



A brake activating mechanism for transmitting a dual ratio input force in response to an operational force needed to activate a servomotor. A lever arm pivotally attached to a support has a first and second force transmitting member pivotally located at different distances on the lever arm. The first force transmitting member is slidably attached to a valve rod which operates the servomotor. A side projection is fixed to the valve rod. The second force transmitting member has a first resilient member which surrounds a shaft which moves through the side projection as the resilient member is compressed and transmits an input force to the side projection. A second resilient member responsive to the movement of the shaft positions a locking wedge to frictionally engage the first force transmitting member with the valve rod when a predetermined operative force is required to activate the servomotor. When the first force transmitting member is frictionally engaged and combined with the second force transmitted through the first resilient member, an additive output force sufficient to activate the servomotor for energizing a master cylinder can be produced.

3,719,124

## SERVO-STEERING SYSTEM FOR VEHICLES

Klaus Katz, and Manfred Bulow, both of Stuttgart, Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

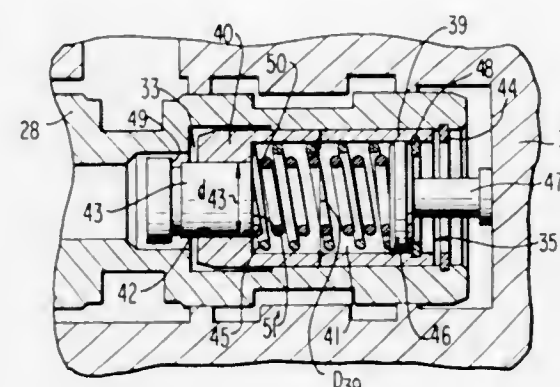
Filed March 1, 1971, Ser. No. 119,720

Claims priority, application Germany, Feb. 28, 1970, P 20 09 574.3

Int. Cl. F15b 13/14

U.S. Cl. 91—434

25 Claims



A servo-steering system for vehicles with a servo-motor assisting the manual force at the steering wheel which is controlled by way of a control slide valve in dependence on a transmitter element responding to the movements of the steering wheel; a reaction pressure derived from the load pressure and counteracting the manual force is rendered effective between the valve spool and a respective reaction piston supported against the valve housing; the reaction piston consists of a first piston part that is adapted to be supported fixedly at the valve spool and elastically at the valve housing, and of a second piston part movable relative to the first piston part, which is adapted to be supported against the valve housing by elastic means; after overcoming the elastic means for the second piston part, the latter is fixedly supported at the valve spool by the reaction pressure.

3,719,125

## FORCE ADJUSTABLE ACTUATOR

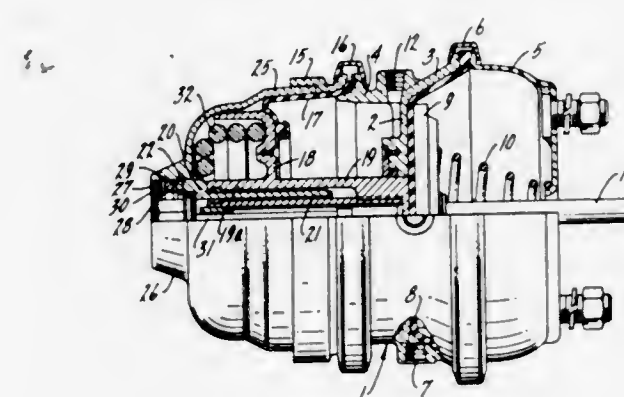
Joseph L. Cannella, Melrose Park, Ill., assignor to The Berg Manufacturing Company, Des Plaines, Ill.

Filed May 18, 1971, Ser. No. 144,543

Int. Cl. F01b 31/00

U.S. Cl. 92—133

2 Claims



A brake actuator including a brake-applying spring and means for adjusting the force of said spring throughout its excursion.

3,719,126

## PHOTOGRAPHIC APPARATUS FOR USE WITH PERCUSSIVE MULTILAMP PHOTOFLASH UNITS

Dieter Engelsmann, Unterhaching, and Rolf Schroder, Munich, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

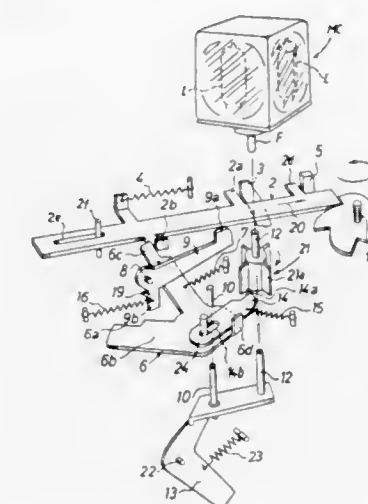
Filed July 28, 1971, Ser. No. 166,703

Claims priority, application Germany, July 30, 1970, P 20 37 967.3

Int. Cl. G03b

U.S. Cl. 95—11.5

17 Claims



A photographic camera for use with indexible percussive multilamp photoflash units wherein the lamps can be fired in response to transmission of mechanical impacts to firing cartridges or the like. The camera body contains a three-armed driving lever which is pivotable from an uncocked to a cocked position whereby one of its arms receives motion from the film transporting and/or shutter cocking mechanism and another arm indexes the photoflash unit by way of a pawl. When the camera release is actuated to free the driving lever for movement to the uncocked position under the action of a spring, the third arm of the driving lever strikes against an impeller which causes the firing of a lamp, either directly or indirectly through the intermediary of a further impeller in the photoflash unit. The impeller is blocked in response to detachment of the photoflash unit from its socket in the camera body.

3,719,127

## SPECTRAL ZONAL INFORMATION STORAGE AND RETRIEVAL

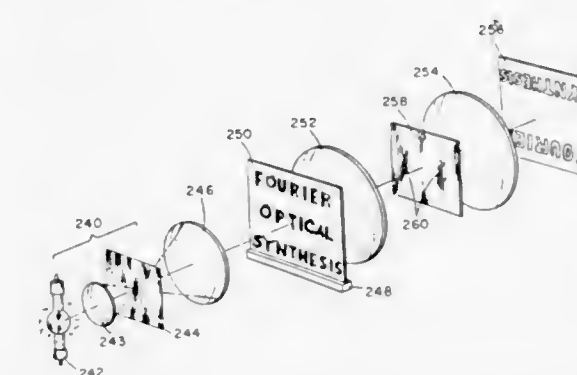
Peter F. Mueller, Concord, Mass., assignor to Technical Operations, Incorporated, Burlington, Mass.

Continuation-in-part of Ser. No. 726,455, May 3, 1968, Pat. No. 3,664,248, which is a continuation-in-part of Ser. No. 564,340, July 11, 1966, abandoned. This application April 1, 1971, Ser. No. 130,163

Int. Cl. G03b 33/00

U.S. Cl. 95—12.2

3 Claims



This disclosure depicts methods and means for implementing a novel optical information processing technique utilizing



a phenomena (herein termed Fourier optical synthesis) involving effecting a complex amplitude addition of diffraction spectra characterizing two or more object functions. The processed object functions may represent totally different scenes, or color separation functions of a common colored scene. The disclosure stresses novel mosaic three zone spectral zonal encoding filters and methods of color information storage and retrieval using the novel filters.

3,719,128

**SHIFTABLE LIGHT MASK FOR CAMERA LENS**

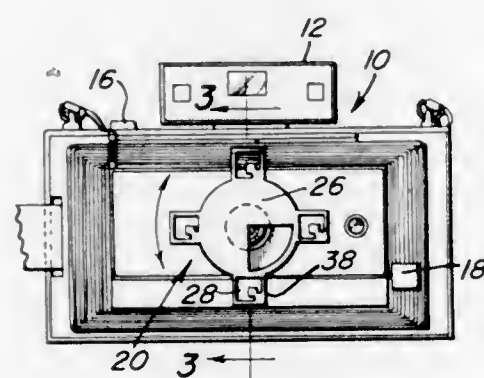
Roger R. Simmons, 2515 Yale, Alamogordo, N. Mex.

Filed April 19, 1971, Ser. No. 135,097

Int. Cl. G03b 19/02

U.S. Cl. 95—36

4 Claims



A structure basically resembling a lens cap and releasably frictionally engageable over the lens barrel of a particular design of camera. The end wall is, however, provided with a slightly less than one-quarter sector opening for registry with a one-quarter sector of the associated camera lens. The structure is designed for adjustable rotation relative to the associated lens barrel and the opening in the end wall thereof may therefore be successively registered with four one-quarter sectors of the associated lens so that the lens may be effectively masked in a manner enabling a single frame of film to have the four corner portions thereof successively exposed with the result that each film frame may be utilized to produce four different photographs.

3,719,129

**DRIVE MECHANISM**

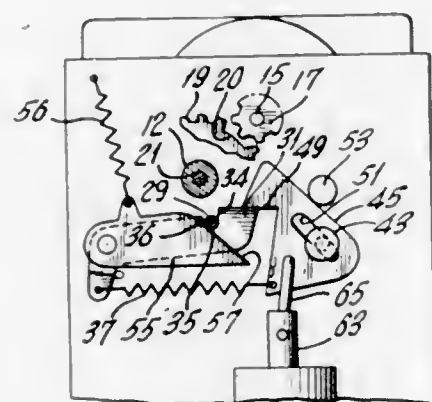
Harold Gallina, 40 Parkview Avenue, Belleville, N.J.

Filed June 10, 1971, Ser. No. 151,849

Int. Cl. G03d 13/04

U.S. Cl. 95—53 R

13 Claims



A drive mechanism which includes a drive gear continuously driven by a drive motor, a spur gear having a plurality of

teeth removed from a portion of the periphery thereof, and novel controls for engaging and disengaging the driven gear from the drive gear. The controls include a spring biased element positively locking the spur gear as the spur gear is disengaged from the drive gear, a trigger releasing the spur gear from the locked position, and an actuating element moving the spur gear into engagement with the driving gear as the trigger releases the spur gear from the locked position. The controls are adapted to permit the drive gear to rotate the spur gear through a predetermined angle and then apply a positive brake to the spur gear each time the trigger is actuated regardless of the length of time during which the trigger is actuated and at a wide range of repetition rates of trigger actuation. The mechanism may further include a photographic shutter coupled to the controls for actuating the shutter in synchronism with the operation of said controls.

3,719,130

**PHOTOGRAPHIC FILM MAGAZINE COMBINED WITH A CODED MULTIPURPOSE FILM STRIP AND FOCUSING SCREEN**

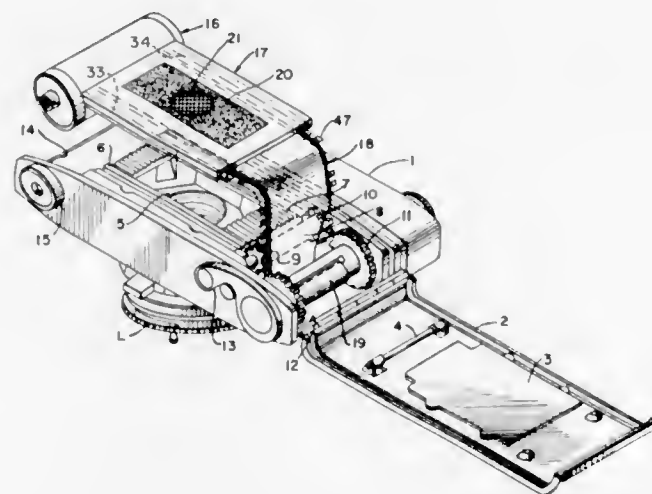
Blanton Scott, Jr., 4250 E. Capitol St., Apt. 104, Washington, D.C. 20019

Filed Oct. 20, 1970, Ser. No. 82,301

Int. Cl. G031 3/00

U.S. Cl. 95—44 R

44 Claims



Focusing apparatus for a camera having a lens, an image focal plane, and an openable back, to aid in focusing the camera for taking photographs, including an image-focus pressure plate having means thereon for resolving an image, and a film strip divided longitudinally into a plurality of divisions each including adhesive sealing means and a photosensitized exposure portion, a transparent window portion and an opaque enclosure portion. The film strip is adapted to be drawn from a spool or film magazine having adhesive clearance channel means across the image focal plane of the camera, and the image-focus pressure plate is adapted to overlie the film strip and image plane, so that with the camera back opened and a window portion of the film strip aligned with the image-focus pressure plate, an image projected through the camera lens can be focused on the image-focus pressure plate and visually observed to aid in focusing the camera, said enclosure portions and sealing means of the film shielding the photosensitized portions to prevent exposure thereof when the camera back is thus opened, and said image-focus pressure plate and film strip being constructed such that photographs can be taken with the image-focus pressure plate in position in the camera.

3,719,131

**PHOTOGRAPHIC SHUTTER WITH ELECTRONIC TIMING DEVICE**

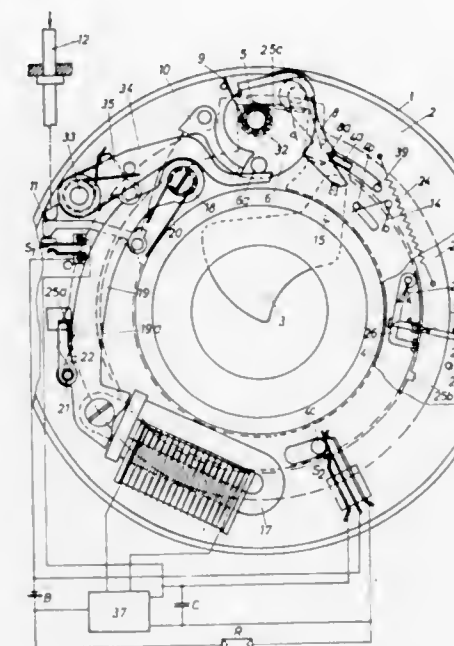
Jörg Sohn, Calmbach, Black Forest, Germany, assignor to Prontor-Werk Alfred Gauthier G.m.b.H., Calmbach, Black Forest, Germany

Continuation of abandoned application Ser. No. 766,606, Oct. 10, 1968. This application May 10, 1971, Ser. No. 142,023

Int. Cl. G03b 9/14

U.S. Cl. 95—53 E

3 Claims



A photographic shutter is provided having a reciprocating sector driving member and electro-magnetic unit for locking the driving member in the open position. Electronic timing apparatus is provided for determining the time the electro-magnetic unit holds the driving member locked in the open position. Advantageously the control member cooperates with two independently controllable locking members and the electro-magnetic unit for locking and unlocking the driving member. The control member is operable to be coupled to the driving member in the open position of the sectors.

3,719,132

**ADAPTOR FOR ADJUSTMENT OF VISIBILITY IN VIEWFINDER OF A PHOTOGRAPHIC CAMERA**

Fumio Urano, Tokyo-to, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

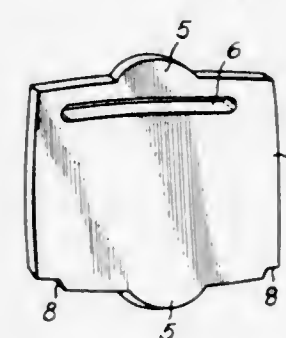
Filed July 21, 1971, Ser. No. 164,682

Claims priority, application Japan, July 30, 1970, 45/76016

Int. Cl. G03b 13/12, 13/02

U.S. Cl. 95—11 V

4 Claims



An adaptor for adjustment of visibility in the viewfinder of a photographic camera. A lens provides adjustment of the visibility. The lens has a pair of locking projections on the periphery thereof disposed in opposition to each other. A slit in the lens extends adjacent to the portion of the periphery

from which one of the projections projects and provides a reduced resiliency to the lens allowing the projections to be collapsed inwardly. A viewfinder eyepiece frame has an opening. A step-like portion in the opening serves to expand the opening. At least two locking grooves are formed on opposing portions of the opening such that the projections are engaged into the grooves.

3,719,133

**LITHOGRAPHIC PLATE DEVELOPING APPARATUS**

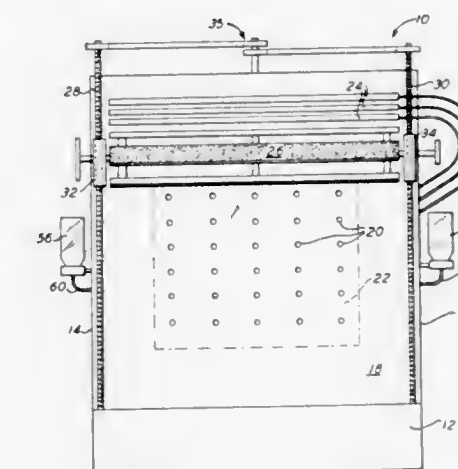
Edward F. Haracz, 4-12 Orono Street, Clifton, N.J.

Filed Feb. 18, 1972, Ser. No. 227,533

Int. Cl. G03d 5/04

U.S. Cl. 95—89 R

9 Claims



Developing of lithographic plates is accomplished on apparatus providing for applying the various chemicals used in the developing process by moveable applicators and spreading contact members. The applicators and spreading contact members move cyclically back and forth over the surface of the lithographic plate and are selectively operable to apply and spread any given chemical or water to the surface during any given cycle of the applicator and contact member assembly.

3,719,134

**VENTILATING SYSTEM FOR VEHICLES**

Hans Korinth, Sindelfingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

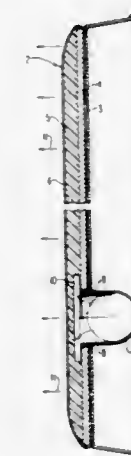
Filed Dec. 29, 1970, Ser. No. 102,415

Claims priority, application Germany, Dec. 30, 1969, P 19 65 574.4

Int. Cl. B60h 1/24

U.S. Cl. 98—2

8 Claims



A heating and/or ventilation system for vehicles, in particular for motor vehicles in which air is supplied by means of a



blower through ducts, lines or the like into the vehicle interior; the discharge apertures of the lines, channels or the like are thereby arranged behind cover parts of the vehicle interior or behind cushioned parts in the vehicle interior and the supplied air is distributed on all sides inside the cover parts or cushion parts and is discharged from the same through a large number of apertures.

3,719,135

**INSTALLATION FOR CONTROLLING THE TEMPERATURE OF VEHICLE INTERIOR SPACES**  
Werner Breitschwerdt, Stuttgart-Botnang; Gunter Gmeiner, Sindelfingen, and Albert Stolz, Sindelfingen, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

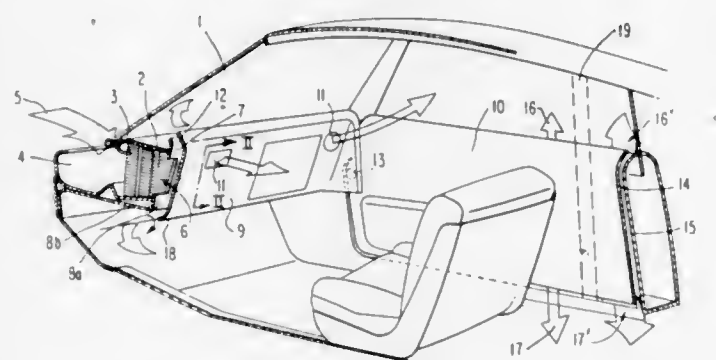
Filed July 31, 1970, Ser. No. 60,000

Claims priority, application Germany, Aug. 2, 1969, P 19 39 434.4

Int. Cl. B60h 1/24

U.S. Cl. 98—2.07

27 Claims



An installation for controlling the temperature of vehicle interior spaces, particularly of passenger motor vehicles which include an air conduction channel system adapted to be connected with the vehicle heating system and located within the area below the windshield, and a terminal wall arranged in front of the vehicle passengers approximately between the lower edge of the windshield and the upper boundary of the foot space; at least a part of the air guide channel system is constructed as a cross channel located directly behind the terminal wall which is in communication with an air guide channel and preferably extends over the entire width and height of the terminal wall; the terminal wall itself may be constructed of deformable material and may be adapted to be pivoted down along the lower edge thereof.

3,719,136

**METHOD AND MEANS FOR PROVIDING A CLEAN AREA**

Ernest E. Criddle, Ottawa, Ontario, Canada, assignor to Her Majesty the Queen in Right of Canada as represented by the Minister of National Defence

Filed Sept. 21, 1970, Ser. No. 73,776

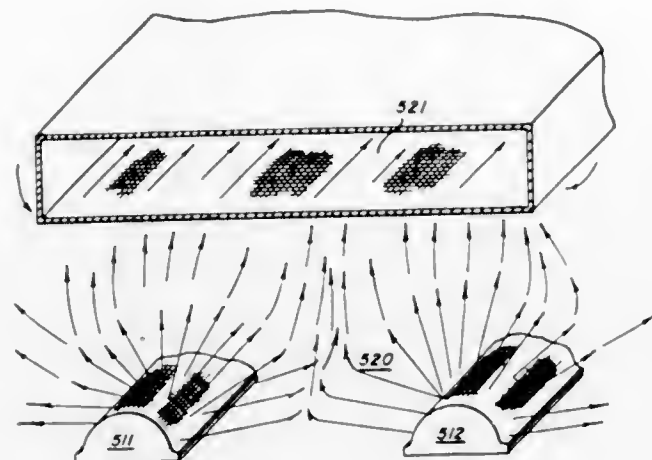
Int. Cl. F24f 9/00

U.S. Cl. 98—36

7 Claims

A method and means for providing a particulate free area. In the past clean rooms have been created by positioning diffusers for clean air, or filters which clean the air, immediately adjacent the area to be cleaned. The clean air was beamed across the area to be cleaned and an operator who had to approach the clean area from an up-wind side contaminated the clean area. Also, diffusers and filters were of such a massive construction that frequently they limited access to the operating area. The inventor provides tubular diffuser means which are spaced about the area to be cleaned and low velocity clean air is diffused through the periphery of the diffuser means in such a fashion that currents directed inwardly towards the work area from opposite sides thereof directionally

influence each other and create a resultant current substantially normal to and away from said area. In this



3,719,137

**RANGE VENTILATING SYSTEM**

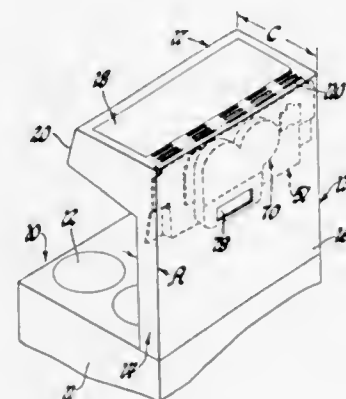
Ira L. Gould, Hamilton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 1, 1971, Ser. No. 203,737

Int. Cl. F23j 11/00

U.S. Cl. 98—115 K

6 Claims



A venting system for a high console range incorporating a pair of propeller fans for operation in a restricted hollow riser between the range cooktop and the high console hood. The fans may be used interchangeably in either a room air recirculating system or a vented to the outside atmosphere system by virtue of the fan blades being located in side-by-side orifices in a vertical shroud wall forming a fan blade plenum chamber providing fan blade housing means in conjunction with either a removable air guide directing the air to a room vent operative with the recirculating system or a removable double-lobed shroud enclosing the fan blades for exhausting air by ducting through a building wall to the atmosphere. The adaptable housing thereby alters the fans' axial characteristics to provide mixed radial and axial air flow.

3,719,138

**FROZEN SANDWICH AND PROCESS FOR PREPARING SAME**

Philip H. Blaetz, Barrington, and Orin K. Corbige, Glenview, both of Ill., assignors to Kraftco Corporation, New York, N.Y.

Filed Feb. 9, 1970, Ser. No. 9,985

Int. Cl. A21d 13/00, 15/00

U.S. Cl. 99—192

15 Claims

A filled sandwich is provided which is suitable for heating in a vertical position without loss of filling and which may be re-

heated from a frozen condition without excessive browning of the exterior surface of the sandwich. To prevent browning the frozen sandwich is treated by applying moisture to the exterior surfaces of the sandwich while the sandwich is frozen. Thereafter, the sandwich is returned to frozen storage. During subsequent heating of the sandwich from the frozen state the excess moisture acts to cool the exterior surface of the bread slices during heating until the interior of the sandwich is heated.

3,719,139

**HIGH-SPEED PRINTER WITH SELECTIVELY OPERABLE PRINT HAMMER**

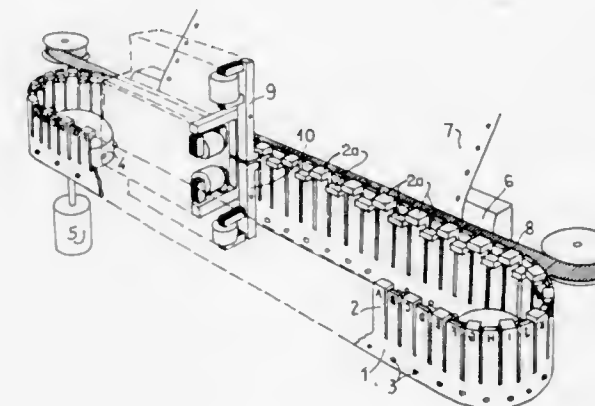
Adriano Niccolai, Cornaredo (Milan), Italy, assignor to Honeywell Information Systems S.p.A., Turin, Italy

Filed July 14, 1970, Ser. No. 54,814

Int. Cl. B41j 1/20, 9/14

U.S. Cl. 101—93 C

4 Claims



A high-speed printer wherein the type-carrier member is provided with staggered rows of projections on the reverse side of each type character, and wherein a plurality of hammers operating at a print position selectively cooperate with the projections of a respective row.

3,719,140

**STENCIL HAND STAMP WITH FLUID-CONTAINING HANDLE AND TORSION-SPRING SUPPORTS**

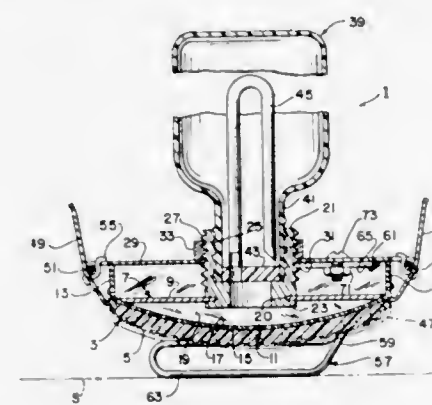
Larry F. Hammel, Herrin, Ill., assignor to Diagraph-Bradley Industries, Inc., Herrin, Ill.

Filed July 27, 1970, Ser. No. 58,494

Int. Cl. B41k 1/22

U.S. Cl. 101—125

4 Claims



A hand stamp printing implement or duplicator having an inking pad with a convexly curved bottom face with clamps for holding a stencil in place on said face and a pair of spring-biased supports at the ends of the pad for holding the pad lifted off a surface with the

bottom of the pad facing downwardly and in position for being moved down toward said surface for contact of the stencil with said surface and rocking of the pad over said surface.

3,719,141

**METHOD AND APPARATUS FOR SCREEN PRINTING TILES**

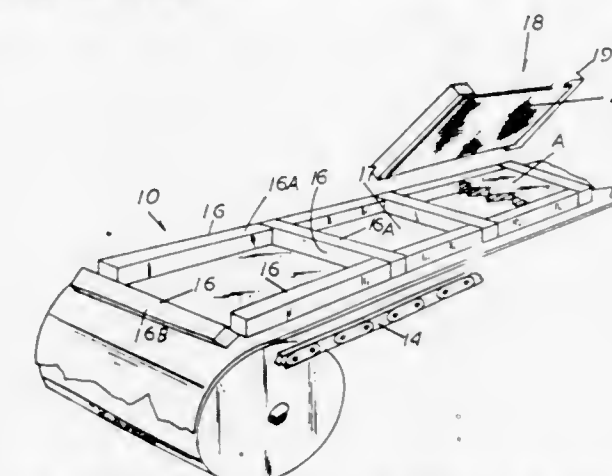
David Jaffa, Fairlawn, N.J., and James D. Miller, Dalton, Ga., assignors to Precision Screen Machines Inc., Hawthorne, N.J.

Filed Feb. 19, 1971, Ser. No. 116,770

Int. Cl. B41m 13/00; B41m 1/12

U.S. Cl. 101—126

9 Claims



This disclosure is directed to a method and apparatus for screen printing tile by detachably securing to a conveyor a series of positioning bars at spaced intervals for snugly receiving and retaining therebetween a tile to be printed. The height of the respective positioning bars is disposed co-planar to the surface of the tile to be printed so that the edge of the printing screen overlies the positioning bars to prohibit smearing or slurring of the printing ink along the edge portions of the tile.

3,719,142

**AUTOMATIC PLATE CLAMPING AND DISCHARGING DEVICE FOR USE IN OFFSET PRINTING PRESS**

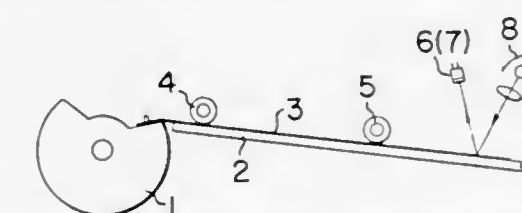
Takeshi Abe, Setagaya-ku, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Ota-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 855,452, Aug. 19, 1969, abandoned. This application Nov. 24, 1971, Ser. No. 201,815

Int. Cl. B41f 27/06

U.S. Cl. 101—216

7 Claims



In an offset printing plate having an automatic plate clamping and discharging device, light reflected from or transmitted through both side edges of a plate feed passageway and/or plate cylinder is intercepted by a pair of photoelectric effect elements whereby mis-alignment of the plate edges provides a detectable different electrical output in each photoelectric element. When the printing plate is fed under normal conditions and/or when the printing plate is correctly clamped around the plate cylinder, only a clamp means for clamping the plate around the plate cylinder is actuated. When the plate is fed under abnormal conditions and/or is not correctly clamped, a plate discharge means is also actuated in addition to the clamp means so that the plate which is once clamped, is removed from the plate cylinder and discharged out of the printing press. The plate clamp means as well as discharge means are controlled by electronic circuit means.



### 3,719,143 DISPOSABLE INKING DEVICE FOR PRINTING APPARATUS

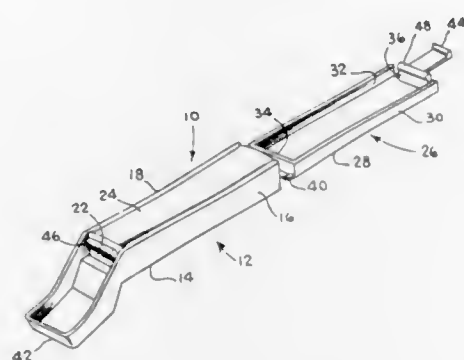
Walter T. Labore, Stamford, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed Nov. 23, 1970, Ser. No. 91,840

Int. Cl. B41H 31/24

U.S. Cl. 101—335

5 Claims



An inking device for use in conjunction with a printing apparatus such as a postage metering machine which is disposable when the ink supply is exhausted. A one piece plastic unit has a holding element for an ink absorbing pad and a cover member for enclosing the pad. The cover member being connected to the holding element by means of a frangible hinge connection which facilitates ready removal of the cover member from the holding element for use of the ink device.

### 3,719,144 SAFETY TWO-COMPONENT DETONATOR

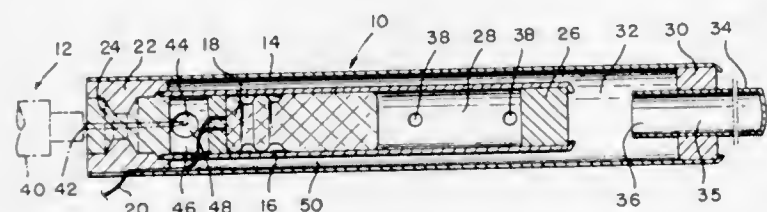
Elvin W. Tlam, Redmond, Wash., assignor to Explosives Corporation of America, Issaquah, Wash.

Filed Aug. 23, 1971, Ser. No. 174,062

Int. Cl. F42b 3/14

U.S. Cl. 102—28 R

9 Claims



There is a first detonator unit containing a first explosive mix component. This first unit has an inner and outer casing defining, respectively, first and second-stage detonating chambers, with a squib mounted in the first detonating chamber. There is a second unit which is a syringe containing a second explosive mix component which is injected into the detonator unit to mix with the first component to form an explosive liquid mix in the detonating unit.

### 3,719,145 RECOVERY DEVICE EJECTION BAFFLE SYSTEM FOR MINATURE ROCKETS

Lawrence W. Brown and Leroy E. Piester, Phoenix, Ariz., assignors to Centuri Engineering Company, Inc.

Filed July 21, 1971, Ser. No. 164,522

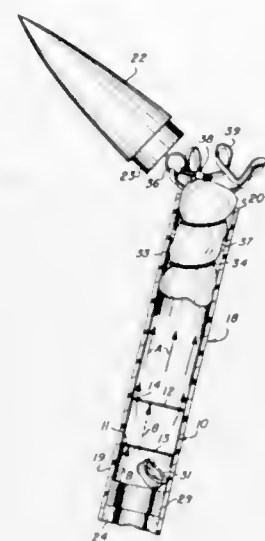
Int. Cl. F42b 13/38

U.S. Cl. 102—34.4

7 Claims

A baffle system for operatively controlling the pyrogenic gas pressure front created by the ejection charge of a

rocket engine to eject the recovery device from the body of a miniature rocket. The baffle system, which may be permanently secured within the rocket body, cools the



pyrogenic gas and separates the ignescent particles therefrom and directs the pressure front thereafter directly against the recovery device.

### 3,719,146 AERIAL FLARE WITH DROGUE PARACHUTE

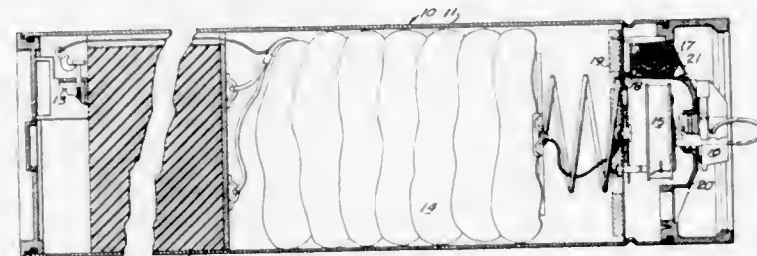
James R. Thurston, Brigham City, Utah, assignor to Thiokol Chemical Corporation, Bristol, Pa.

Filed June 11, 1971, Ser. No. 152,204

Int. Cl. F42b 25/04

U.S. Cl. 102—35.6

7 Claims



A specially designed drogue parachute is attached to the housing of an aerial flare to inhibit spinning, which otherwise impairs functioning of timing mechanisms when such flares are deployed with extensive free falls, as from high altitudes. The open end of the sack-like parachute has a reinforcing ring that also functions as a spring to open the parachute when it is deployed.

### 3,719,147 HIGHWAY FLARE

Frederick W. Toporek, 1150 E. Lincoln St., Woodburn, Oreg. 97071

Filed Dec. 16, 1970, Ser. No. 98,520

Int. Cl. C06d 1/04, 1/10

U.S. Cl. 102—37.8

4 Claims

A highway flare for emergency use having a base member of circular configuration and having an inclined surface on an edge thereof for being used as a wheel stop

separately or in conjunction with being used as a highway flare, and having a circular opening in the middle thereof for receiving a telescopic arrangement of interlocking tubes of oval configuration, locking when they are turned into each other, and having at the other end of the telescopic arrangement a flare support means from which



there is supported a flare and a flare reflector of metal, screened material, or the like, for reflecting the illumination of the flare. The flare may be disposable so that after use a new flare element can be inserted therein. The aluminum reflector may be of cone configuration for protecting the flare from coming in contact with foreign bodies.

### 3,719,148 PRIMER FOR ELECTRIC AND PERCUSSION FUSES FOR CARTRIDGE AMMUNITION

Heinz Gawlick, Furth/Bayern, and Helmut Bendler, Erlangen-Speldorf, both of Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany

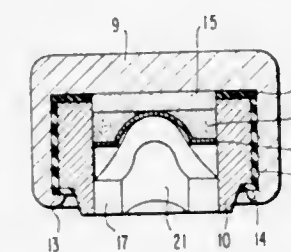
Filed July 10, 1970, Ser. No. 53,774

Claims priority, application Germany, July 11, 1969, P 19 35 376.5

Int. Cl. F42b 9/08; F42c 11/00, 19/12

U.S. Cl. 102—46

15 Claims



The present disclosure relates to a primer for electric and percussion priming for use in accordance with the spark-gap principle which comprises a metallic capsule provided with a closed bottom, a thrust ring disposed inside of the metallic capsule and completely insulated therefrom by insulating means, and a gap charge provided inside the thrust ring and adjacent the closed bottom of the metallic capsule, the metallic capsule acting as a first lead electrode to the gap charge and the thrust ring acting as a second lead electrode for the gap charge.

### 3,719,149 TWO CHANNEL OPTICAL FUZE WITH INFRARED SENSING BRIDGE

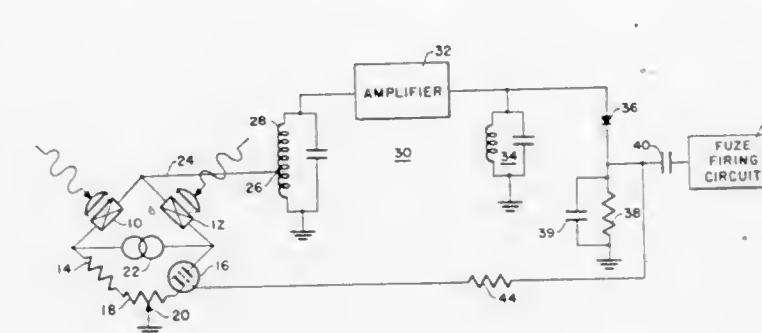
George F. Masin, Anaheim, Calif., assignor to the United States of America as represented by the Secretary of the Navy

Filed July 27, 1962, Ser. No. 214,171

Int. Cl. F42b 5/08

U.S. Cl. 102—70.2 R

2 Claims



This invention entails a high frequency bias to an infrared sensing bridge arrangement. When energy impinges on either sensor, the bridge becomes unbalanced, and a signal is sent which activates a fuze firing circuit.

### 3,719,150 MOBILE TRACK TAMPER

Josef Theurer, Vienna, and Ekkehardt Benda, Linz-Urfahr, Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

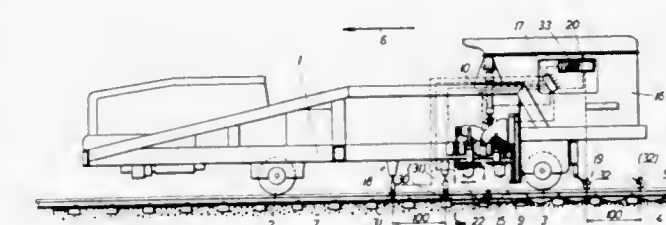
Filed Dec. 10, 1970, Ser. No. 96,678

Claims priority, application Austria, Dec. 19, 1969, 11,908/69

Int. Cl. E01b 27/16

U.S. Cl. 104—12

14 Claims



A mobile track tamper comprises a tamper unit associated with each rail. Each tamper unit includes two groups of vibratory and vertically adjustable surface tamping tools, the distance between the two groups of tools of each unit being variable. The tamping tools of each group are arranged to tamp the ballast in adjacent cribs simultaneously.

### 3,719,151 AUTOMOBILE CONVEYOR

Dan A. Andersen, Duarte, Calif., assignor to Chem-Therm Mfg. Co., Monrovia, Calif.

Continuation of abandoned application Ser. No. 822,888, May 8, 1969. This application June 9, 1971, Ser. No. 151,537

Int. Cl. B61j 3/04

U.S. Cl. 104—172 B

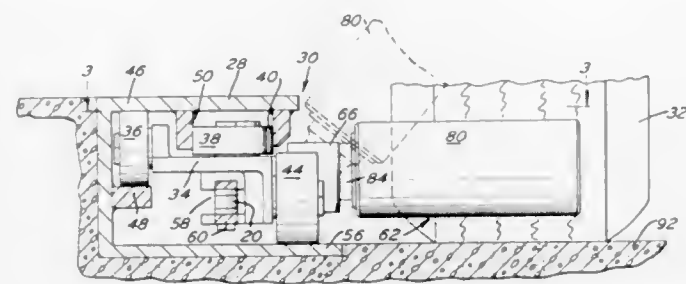
8 Claims

An automobile conveyor is disclosed, comprising an endless chain supported by a pair of spaced sprockets to provide a drive flight and a return flight, and a guide track is disposed adjacent and partly encloses the drive flight. Drive members are coupled to the chain at spaced points thereon, the drive members comprising a dolly



member affixed to the drive chain, and pusher means coupled to the dolly member adapted to drivingly contact the wheel of an automobile. The pusher means comprises an axle pivotally coupled to the dolly member for rotation about a horizontal axis, and a roller member

cylinder piston systems are respectively arranged on opposite sides of the truck while each of the cylinder piston systems has a cylinder pivotally connected to one of said members and has a piston pivotally connected to the other one of said members, each cylinder and piston of one and the same cylinder piston



3,719,152

# RAILROAD CAR WITH FLUID SIDE BEARING ANTISWAY MEANS

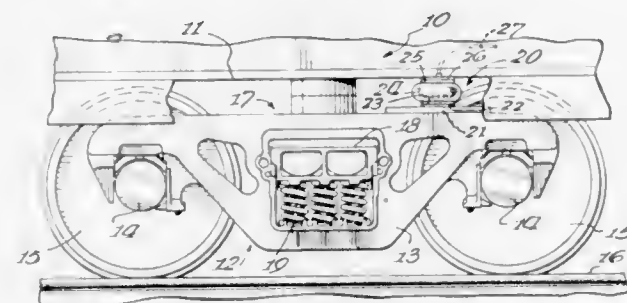
Lynn J. Harter, Hobart, Ind., assignor to Thrall Car Manufacturing Company, Chicago Heights, Ill.

Filed June 12, 1969, Ser. No. 832,626

Int. Cl. B60g 21/06; B61f 5/14, 5/24

U.S. Cl. 105—164

6 Claims



Disclosed is an improved railroad freight car having means for minimizing sway of the car during movement over rails. The car has a side bearing walled structure between each wheel truck side frame and the car floor structure. Each walled structure defines an enclosed chamber of variable volume containing a fluid. The car has a conduit communicating with the enclosed chamber and a reservoir tank containing fluid under superatmospheric pressure. The conduit transports fluid from the chamber to the tank upon reduction in volume of the enclosed chamber due to increased pressure on the chamber through swaying of the car body to that side, and transports fluid from the tank to the chamber upon increase of the chamber volume due to decreased pressure on the chamber through swaying of the car body to the other side.

3,719,153

# HYDRAULICALLY DAMPENED CAR BOGIE

Friedrich Schumacher, Mulheim, Germany, assignor to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Germany

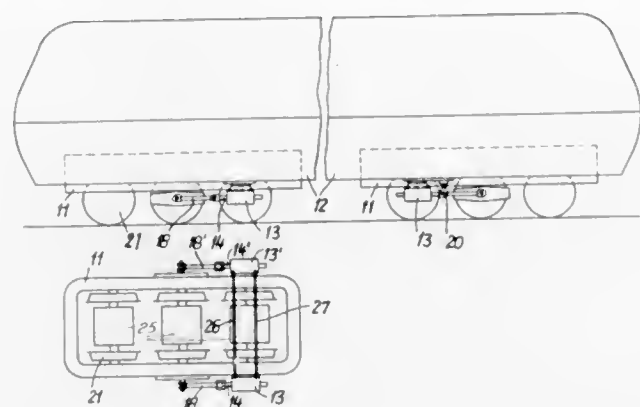
Filed Jan. 7, 1971, Ser. No. 104,646

Int. Cl. B61f 3/10, 5/16, 5/50

U.S. Cl. 105—182 R

6 Claims

In combination with the truck center pin-free truck forming a first member of a rail vehicle and with a main frame resiliently supported by said truck and forming a second member of the vehicle. Two double acting fluid operable



3,719,154

# RESILIENT SIDE BEARING ASSEMBLY

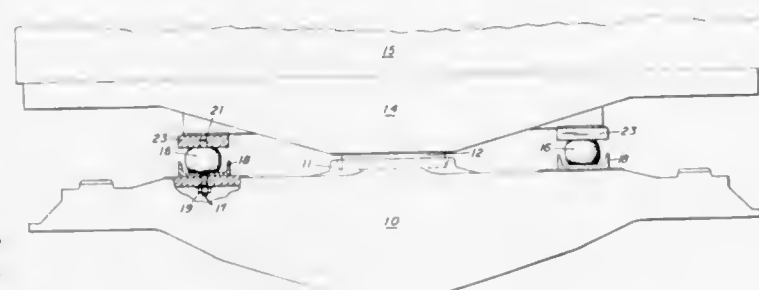
David J. Reynolds, Upper Arlington, Ohio, assignor to Buckeye Steel Castings Company, Columbus, Ohio

Filed April 13, 1971, Ser. No. 133,535

Int. Cl. B61f 5/14, 5/24; F16c 17/04

U.S. Cl. 105—199 CB

10 Claims



Side bearings for a railway freight car having an elastomeric body disposed between the body bolster and the truck bolster. The assembly includes a rigid metal channel member which limits the displacement or distortion of the elastomeric material under compression and thereby limits the swinging movement of the car body relative to the truck bolster.

3,719,155

# RAILWAY FLAT CAR HAVING STUB CENTER SILLS

Walter E. O'Leary, Creve Coeur, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Oct. 9, 1970, Ser. No. 79,466

Int. Cl. B61d 15/00

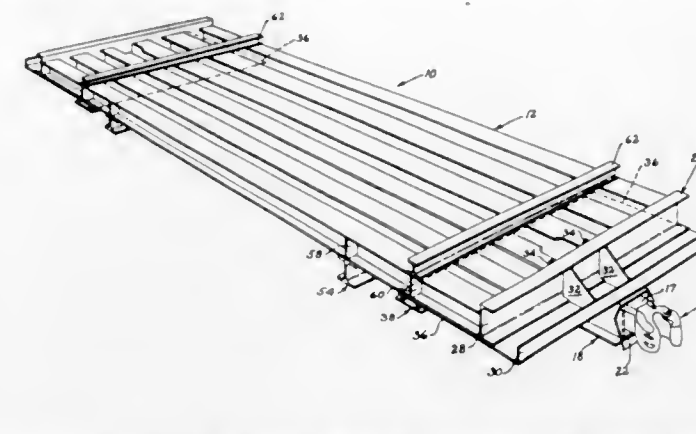
U.S. Cl. 105—367

9 Claims

A railway flat car having a plurality of spaced beams extending longitudinally of the car, each beam being of generally uniform dimensions and forming an upper lading support surface especially for relatively heavy items such as steel ingots, slabs, coils, billets, and the like. A shear plate is secured beneath the beams adjacent each end of the car and a stub

center sill structure is secured beneath the shear plate adjacent each end of the car. The center sill structure terminates

assistant, and smooth outer surface. A stiffening assembly is positioned within the shell and reinforces the pallet assembly. The outer shell is formed of sheet material, preferably a ther-



3,719,156

# TURNTABLE TIE-DOWN WINCH

Keith W. Broling, Olympia, Ill., assignor to Portec, Inc., Chicago, Ill.

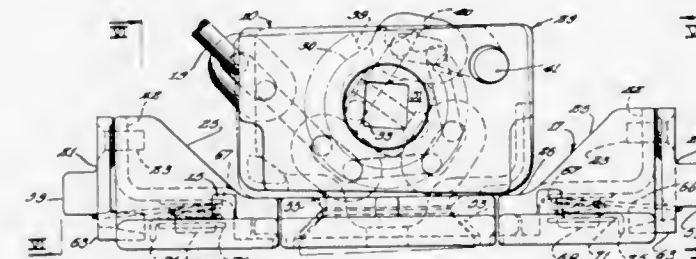
Continuation of Ser. No. 815,132, April 10, 1969, abandoned.

This application March 3, 1971, Ser. No. 120,714

Int. Cl. B60p 7/08; B61d 45/00

U.S. Cl. 105—369 A

15 Claims



Turntable tie-down winch for tying lading to freight vehicles. The winch includes a winch block having a flexible tie-down adapted to be wound thereon and is mounted for adjustable movement along a channel extending along the deck of the vehicle. The winch is mounted on a base for adjustable movement about a vertical axis and for limited movement along said axis and is freely adjustable about said vertical axis as tension is relieved from the flexible tie-down and is locked from turning movement by an interengaging connection between the winch and base as tension is taken up on the tie-down, to bring the interengaging connection into locking engagement. Locking devices are mounted on opposite ends of the base for the winch and normally extend over the edge portions of the base and automatically engage the tops of retaining flanges of the channel and hold the winch in position as the winch is elevated in its channel by pulling upwardly on the flexible tie-down.

## ERRATUM

For Class 105—366 D see:  
Patent No. 3,719,794

3,719,157

# PALLET ASSEMBLY

Humberto L. Arcocha; Paul W. Dullabaun, and Fred E. Lauffer, all of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

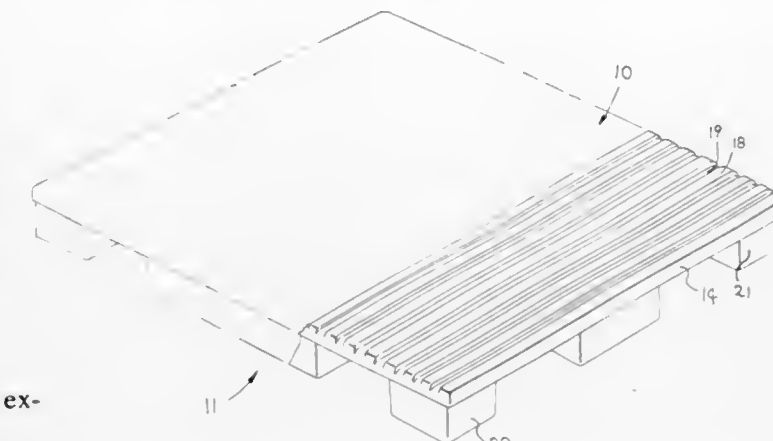
Filed Sept. 21, 1970, Ser. No. 74,006

Int. Cl. B65d 19/00

U.S. Cl. 108—51

1 Claim

A pallet assembly having an outer shell formed from sheet material. The outer shell provides a water-tight, moisture-re-



mally formable plastic. Supporting pads are formed in the bottom shell. The supporting pads are reinforced with a foamed hardened plastic.

3,719,158

# TRANSPLANTING MACHINE

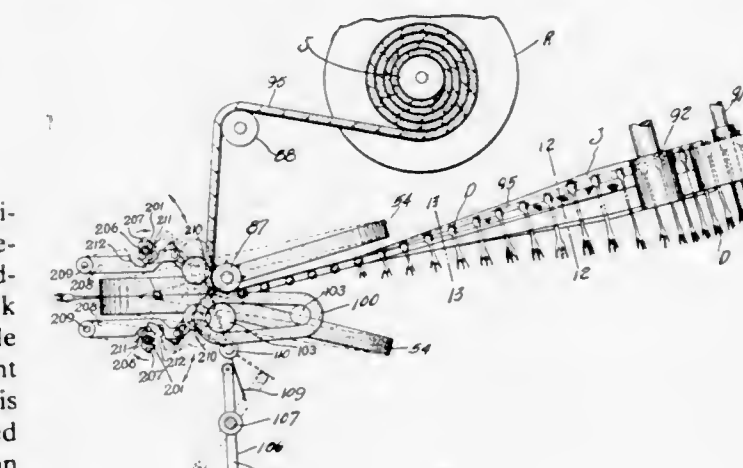
Herbert C. O. Roths, 316 Wilson Drive, St. Louis, Mich.

Continuation-in-part of Ser. No. 545,366, April 26, 1966, abandoned. This application Feb. 14, 1968, Ser. No. 705,351

Int. Cl. A01c 11/02

U.S. Cl. 111—2

11 Claims



This invention relates to an automatic transplanting machine which is adapted to receive a plant-loaded magazine thereon. A pair of side-by-side convergent resilient endless belts which are provided to receive the plants from the plant-loaded magazine have a downward path of travel leading to a position adjacent the ground. The endless belts then diverge to release the plants.

3,719,159

# FLUID PRESSURE CONDITION WARNING DEVICE

Robert L. Davis, Mogadore, Ohio, assignor to The

General Tire & Rubber Company

Filed Dec. 30, 1971, Ser. No. 214,090

Int. Cl. B60c 23/02

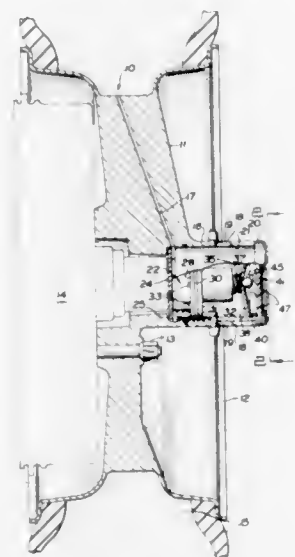
U.S. Cl. 116—34

12 Claims

A device responsive to fluid pressure for detecting and indicating visually and acoustically the presence of an unacceptable pressure condition such as the underinflation of an automobile tire. The device when used on an automobile wheel is symmetrical about the axis of the wheel to assure proper wheel balance. A permanent magnet is



moved in response to fluid pressure in such a way that when an unacceptable pressure condition is sensed, a steel indicator ball is released from a normal visible position to provide an indication of an unsafe tire inflation



level. The ball in its released condition, causes a rattling or other audible signal to provide warning to the vehicle operator if the condition occurs while the vehicle is moving.

3,719,160

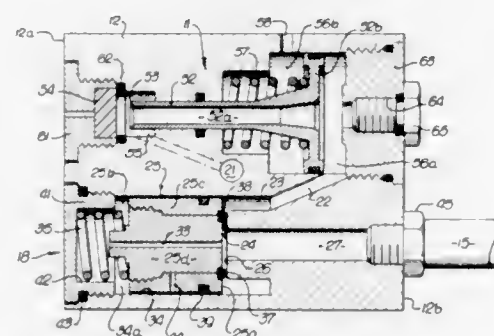
# AUDIO RESERVE ALARM MECHANISM FOR SELF-CONTAINED BREATHING APPARATUS

Raymond A. Christianson, Inglewood, Calif., assignor to Under Sea Industries, Inc., Compton, Calif.

Filed March 1, 1971, Ser. No. 122,594  
Int. Cl. G01H 19/12

U.S. Cl. 116—70

30 Claims



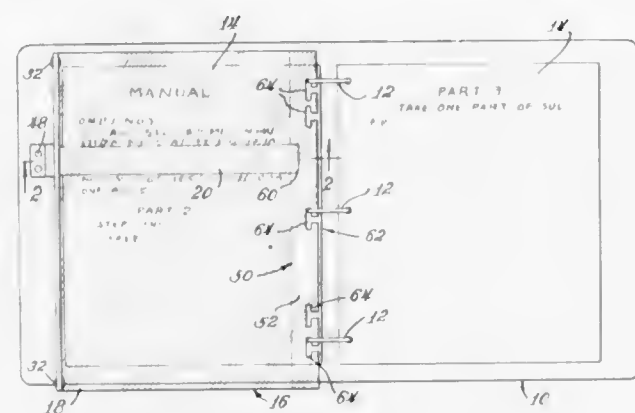
An audio alarm mechanism warns a diver using a self-contained underwater breathing apparatus (scuba) that the air tank pressure has dropped to reserve level. The mechanism includes an oscillator piston having one end which cooperates with an annular seat to gate air flow between the scuba first and second stage regulators. When the air tank pressure is sufficiently high, a stem spaces the piston away from the seat to allow unimpeded air flow to the mouthpiece and to prevent oscillation of the piston. When the tank pressure drops, the stem retracts, permitting oscillation of the piston at an audio frequency. Oscillation is sustained by feedback of the outlet pressure via a passageway to an actuating chamber at the other end of the piston. The resultant acoustic vibrations are transmitted both through the air supply hose and through the water to warn the diver to begin his ascent.

3,719,161  
LINE GUIDE DEVICE  
John Wegner, Des Plaines, Ill., assignor to Edanbob Corporation, Chicago, Ill.

Filed Dec. 3, 1971, Ser. No. 204,536  
Int. Cl. B42d 9/00

U.S. Cl. 116—119

14 Claims



A line guide device designed to be used with a ring binder and having a flexible transparent flat sheet that is laid over a printed page in the ring binder. An elongated metallic strip is attached to one side margin of the transparent sheet in a perpendicular relationship. A line guide bar has a magnet member secured to one end in a perpendicular relation, and the magnet member by magnetic attraction holds the line guide bar to the metallic strip as the line guide is shifted up or down on the transparent sheet.

3,719,162

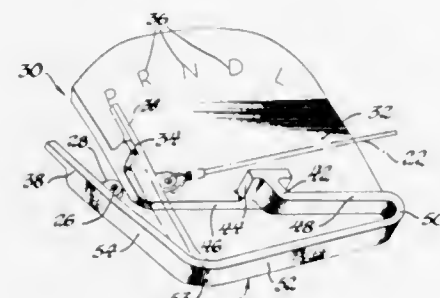
# SHIFT INDICATOR MECHANISM

Donald M. Herod, Davison, Mich., and Barry E. English, Luton, England, assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 26, 1970, Ser. No. 83,748  
Int. Cl. G09f 9/00

U.S. Cl. 116—124

6 Claims



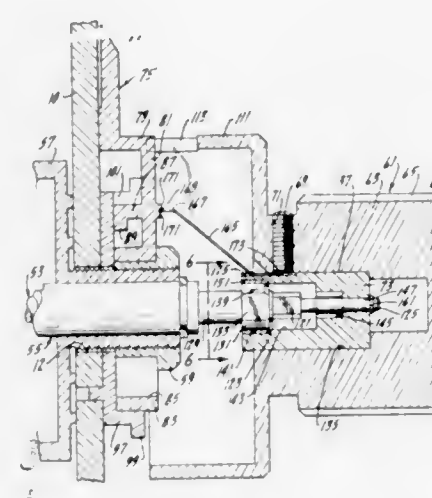
A one-piece shift indicator mechanism for an automotive instrument panel including a base member having a plurality of shift selector symbols formed thereon, a fixed abutment member formed on the base member adjacent an edge thereof, a shaped flexible spring member extending in a predetermined path from the fixed abutment member and terminating in a pointer, a stop member formed on the base member adjacent an edge thereof, the pointer being manually positionable against the stop member and movable to a position adjacent any one of the plurality of shift selector symbols in response to manually-actuated movement of the flexible spring member against the spring force thereof via a cable connected thereto from the conventional shift tube, the shaped flexible spring member having a plurality of bend portions formed therein so that the pointer may be moved relative to the abutment member, to cause the end of the pointer to follow a path which is symmetrical about the midpoint of the shift selector symbols.

3,719,163  
CONTROL KNOB FOR MULTITURN ROTARY SWITCH  
Leo Jedynak, and Vlas Gussaras, both of Madison, Wis., assignors to Oak Electro/Netics Corp., Crystal Lake, Ill.

Filed Nov. 5, 1971, Ser. No. 196,023  
Int. Cl. G09f 9/00

U.S. Cl. 116—133

18 Claims



A control knob for use with a multiturn rotary switch in which means are provided for moving an indicating member radially of the switch shaft to show switch positions over several turns of the shaft.

3,719,164

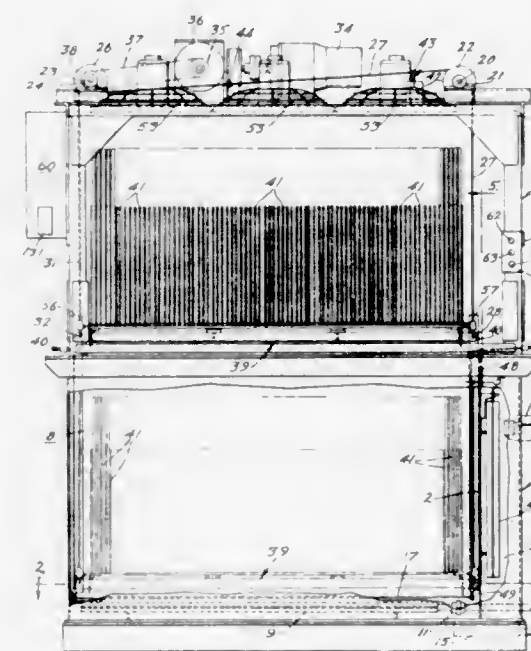
# DIP COATING APPARATUS INCLUDING FLUID DOCTOR MEANS

George E. Hoffman, Media, and John D. Tench, Springfield, both of Pa., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Continuation of Ser. No. 826,431, May 21, 1969, abandoned.  
This application May 10, 1971, Ser. No. 141,941  
Int. Cl. B05c 11/06

U.S. Cl. 118—6

4 Claims



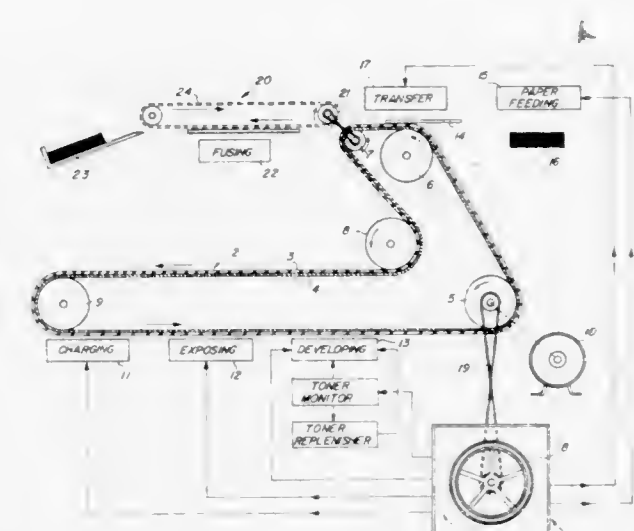
In the coating of sheet articles such as corrugated cardboard container blanks by immersing the articles in a bath of molten coating material, air is blown over the articles while they are being withdrawn from the bath, the air flow being in the same direction as the flow of coating material as it drains from the articles. Means correlate article immersion and actuation of the air flow.

3,719,165  
TUNER CONCENTRATION CONTROL APPARATUS  
William Trachienberg, and Theodore H. Morse, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 3, 1971, Ser. No. 177,600  
Int. Cl. B05c 11/00; G03g 13/00

U.S. Cl. 118—7

4 Claims

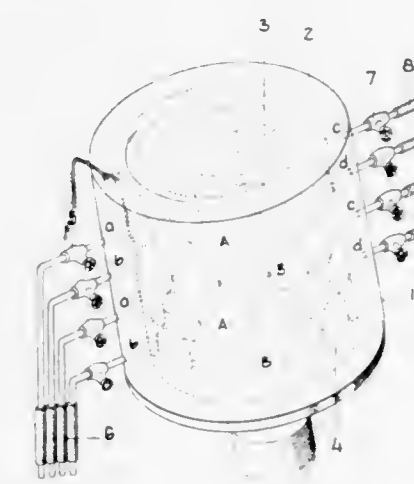


An apparatus adapted for use in an electrographic magnetic brush development station for maintaining the concentration of toner in the developer mixture at a substantially constant level. Toner concentration is monitored by sampling the self-biasing potential generated by the brush as it periodically contacts uncharged areas of the electrographic recording element. Such potential has been found to be inversely proportional to the concentration of toner in the developer mixture.

3,719,166  
COATING APPARATUS  
Reinhard Gereth, Heilbronn, Germany, assignor to Licentia Patent-Verwaltungs G.m.b.H., Frankfurt am Main, Germany  
Filed Dec. 10, 1970, Ser. No. 96,903  
Claims priority, application Germany, Dec. 17, 1969, P 19 63 207.6  
Int. Cl. C23g 13/08

U.S. Cl. 118—48

6 Claims



Vapor deposition apparatus includes a coating chamber having a plurality of vertically aligned gas inlet means each one of which is diametrically opposed to an exhaust means. Each aligned inlet and exhaust means pair is aligned with a separate row of semi-conductor substrates supported on a vertically extending, rotatable susceptor.



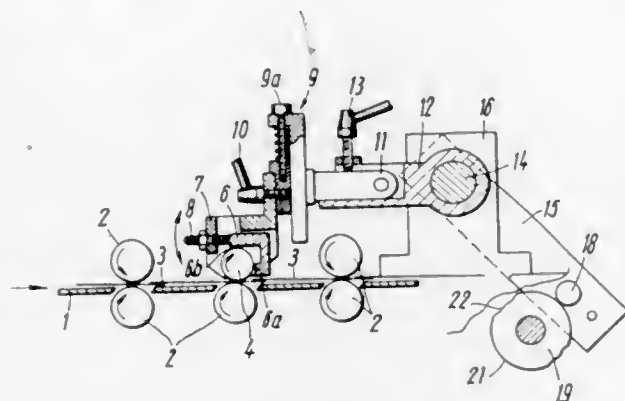
### 3,719,167 DEVICE FOR APPLYING ADHESIVE TO ENVELOPES, BAGS OR THE LIKE

Bruno Pahlitzsch, Gneisenaustrasse 67, Berlin, Germany  
Filed July 9, 1970, Ser. No. 53,554

Claims priority, application Germany, July 17, 1969,  
P 19 37 081.1  
Int. Cl. B05c 1/02

U.S. Cl. 118—211

6 Claims



A gumming roller for applying self-sealing latex adhesive to a series of overlapping envelopes is rotated in opposition to the direction of conveyance of the envelopes so that all or nearly all of the adhesive is wiped off the roller onto their exposed flaps. The roller is cyclically lifted, together with an associated adhesive reservoir off the envelopes to produce two separate bands of adhesive on each envelope, one band on the flap and another band on the body of the envelope.

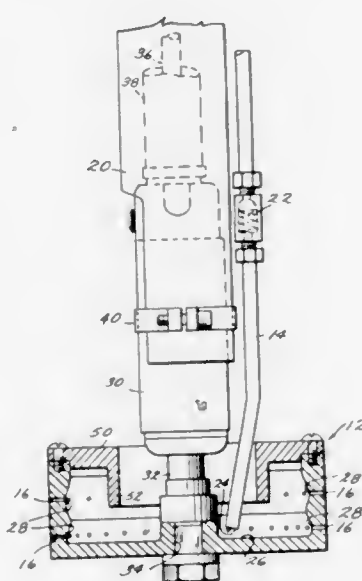
### 3,719,168 SYSTEM FOR APPLYING UNIFORM LAYER OF A FLOWABLE MATERIAL TO A SUBSTRATE

Robert B. Kazee, Bellaire, Tex., assignor to Kadale Equipment Company, Houston, Tex.

Filed March 22, 1971, Ser. No. 126,456  
Int. Cl. B05c 7/02

U.S. Cl. 118—306

9 Claims



A system for dispensing and applying a uniform layer of liquid or flowable material is described. The system includes a distributor unit from which droplets of the material can be propelled by centrifugal force, and means are provided for spinning the distributor unit at relatively high rpm's. The distributor unit includes a cylindrical chamber into which flowable material is received for distribution therefrom, and the cylindrical chamber is provided with annular channels as-

sociated with spaced rows of openings which penetrate the wall of the cylindrical chamber. The system is especially useful for coating lining compounds or interior surfaces of pipes.

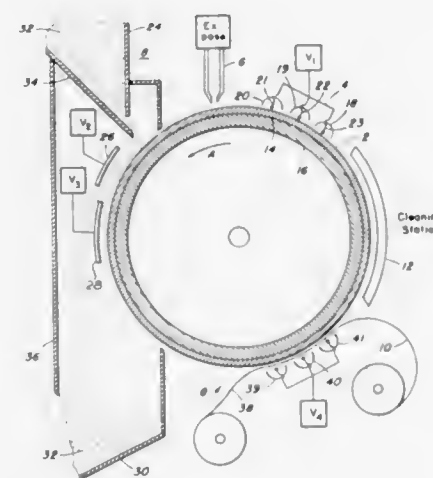
### 3,719,169 PLURAL ELECTRODE DEVELOPMENT APPARATUS

Ronald L. Cade, Fairport, and John F. Knapp, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 7, 1971, Ser. No. 141,240  
Int. Cl. G03g 13/00; B05b 5/02

U.S. Cl. 118—636

5 Claims



Development electrode apparatus is provided in accordance with the teachings of the present invention wherein at least two development electrodes are employed at a developing station in electrophotographic apparatus. The first development electrode presented to a latent electrostatic image undergoing development displays characteristics which are optimum for high rates of developer flow and hence only reduced development of portions of a latent electrostatic image exhibiting low charge densities and extended areas is achieved but may be accompanied by optimum cleaning. The second development electrode presented to the latent electrostatic image to be developed displays characteristics which are optimized to complete low contrast and extended area development; however, as the majority of developer material is removed, no inhibition of the developer flow occurs at said second development electrode.

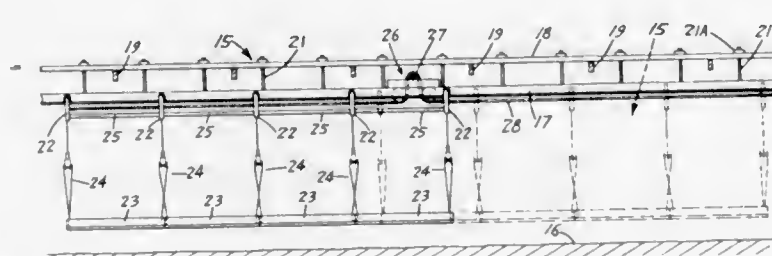
### 3,719,170 MOVABLE FEED BUNK

Maurice L. Peterson, Kerkhoven, Minn.

Filed Feb. 18, 1971, Ser. No. 116,538  
Int. Cl. A01k 05/02

U.S. Cl. 119—52 AF

14 Claims



An animal and poultry feeding apparatus having feed bunks movably suspended from an overhead rail. A plurality of spaced U-shaped hangers, longitudinally spaced from each other with rigid struts, support upright suspension members connected to the ends of the feed bunks. The suspension

members each have a flexible cable and a winch so that the elevation of the feed bunks can be changed. An elongated chain supported on the hangers and connected to the end hangers is trained over a motor driven wheel. Rotation of the wheel moves the chain pulling the end hangers toward the wheel, thereby moving the feed bunks along the rail.

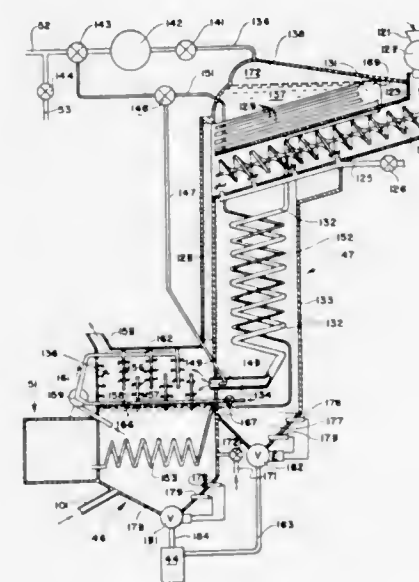
### 3,719,171 BURNER FOR COMBUSTIBLE MATERIAL

Frederick J. Brooks, San Rafael, Calif., assignor to Astrotronic Research, Ltd., North Vancouver, British Columbia, Canada

Division of Ser. No. 707,810, Feb. 23, 1968, Pat. No. 3,597,308. This application March 29, 1971, Ser. No. 128,990  
Int. Cl. F23g 7/00

U.S. Cl. 122—2

6 Claims



Refuse is immersed and agitated in water in a tank to segregate components by specific gravity. Light and heavy components are separately removed from the tank and separately processed. Medium weight components are primarily paper and fiber pulp stock. Such stock is purified, then processed into pulp board in a mill. Water drained from the mill is filtered and recycled. Combustible refuse is used as fuel to burn contaminated refuse and to produce steam from some of the water. The steam is used to clean certain components, to purify pulp stock, and to form "potable" water by condensation. Sludge settling from the tank, the filter and the burner is used for fertilizer. Many other useful by-products are recovered.

### 3,719,172 BOILER SYSTEMS OF THE WATER TUBE TYPE

Anthreas Nicholas Charcharos and Clifford Williamson, Whetstone, England, assignors to British Nuclear Design & Construction Limited, Whetstone, England

Filed Feb. 13, 1970, Ser. No. 11,056

Claims priority, application Great Britain, Feb. 14, 1969, 8,202/69

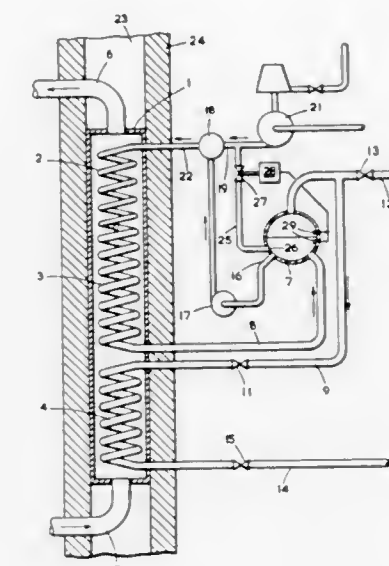
Int. Cl. F22b 1/18

U.S. Cl. 122—7 R

3 Claims

A boiler system includes economiser, evaporator and superheater water/steam tube sections 2, 3, 4 disposed within a casing 1, the economiser and evaporator tube sections 2, 3 being connected together in series inside the casing. The high temperature end of the evaporator section 3 is connected to a steam drum 7 disposed outside

the casing, and the top of the steam drum is connected to the low temperature end of the superheater section 4. Provision is made for the recirculation of water from the steam drum to the low temperature end of the economiser section 2 by way of a recirculating pump 17. A further



connection 25, controlled by a valve 27, may be provided between the steam drum 7 and a boiler feed line 19 for assisting the maintenance of the water level in the steam drum. For use with a nuclear reactor the casing may be adapted to be disposed in a pod 23 defined within the thickness of a wall 24 of the reactor pressure vessel.

### 3,719,173 HEAT EXCHANGING APPARATUS

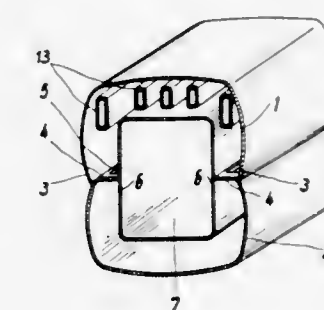
Hans Viessmann, Im Hain, 3559 Battenberg/Eder, Germany  
Filed Oct. 12, 1971, Ser. No. 188,072

Claims priority, application Germany, Feb. 9, 1971, P 21 05 989.2

Int. Cl. F22b 7/12

U.S. Cl. 122—149

5 Claims



A heat exchanger assembly consisting of a housing and a combustion chamber and ducts provided in the housing for a fluid or gas medium which is to be heated is disclosed. The assembly consists of a central combustion chamber, and two or more arcuately-shaped shell sections enclosing the central combustion chamber and defining the ducts. One of the shell sections has inwardly directed flanges secured to walls of the central combustion chamber with edges of the remaining shell sections being secured to walls of the other of the shell sections, and the flanges are provided with apertures to provide communication between the ducts formed.



3,719,174

**ROTARY PISTON INTERNAL COMBUSTION ENGINE, ESPECIALLY OF TROCHOIDAL CONSTRUCTION**

Heinz Lamm, Esslingen-St. Bernhard, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

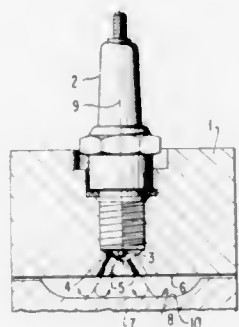
Filed Feb. 13, 1970, Ser. No. 11,154

Claims priority, application Germany, Feb. 15, 1969, P 19 07 747.5

Int. Cl. F02b 53/12

U.S. Cl. 123—8.09

19 Claims



A rotary piston internal combustion engine, especially of trochoidal construction, in which a spark plug, mounted in the engine casing, projects with its electrodes into a plug chamber which in turn, is in communication with the combustion chamber, whereby the communication is formed by two firing channels that terminate in the combustion chamber offset in the direction of the longitudinal axis of the engine.

3,719,175

**LIQUID COOLING SYSTEM FOR EXHAUST VALVES OF INTERNAL COMBUSTION ENGINES**

Klaus Luther, Augsburg, and Franz Schmid, Neusass, both of Germany, assignors to Maschinenfabrik Augsburg-Nürnberg AG, Augsburg, Germany

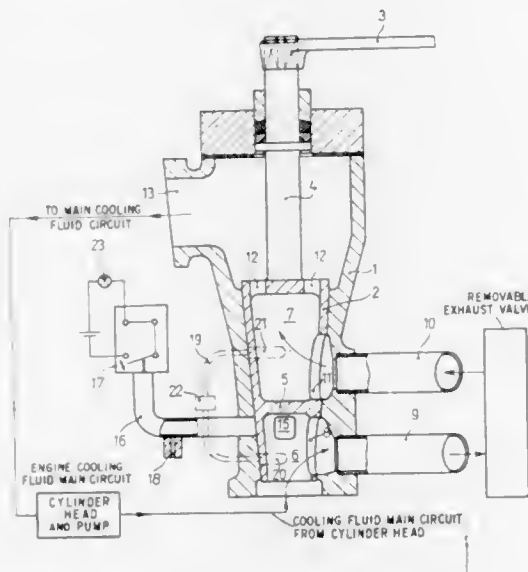
Filed Aug. 10, 1971, Ser. No. 170,463

Claims priority, application Germany, Sept. 8, 1970, P 20 44 316.7

Int. Cl. F01p 11/02, 3/14

U.S. Cl. 123—41.14

12 Claims



The cooling liquid supply and removal ducts in the cylinder block include within the fluid circuit a separate valve shutting off communication of cooling fluid to the exhaust valve unit from the cooling fluid circuit of the engine, so that the exhaust valve seats and units can be replaced without draining cooling fluid from the engine; preferably, the high pressure and low

pressure sides of the engine cooling fluid circuits are interconnected by a short circuit or bypass line which has a constriction formed therein, to which a pressure sensor can be connected, giving an alarm if there is pressure build-up, indicative of operation of the cooling fluid circuit with the valve connecting the exhaust valve cooling system of the engine being closed. The control valve itself is preferably a single unit having separated cones with flow openings therethrough.

3,719,176

**ELECTRIC FUEL INJECTION CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES**

Kazuo Shinoda, Toyota, and Kunio Endo, Anjo, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi and Nippondenso Kabushiki Kaisha, Kariya-shi, Aichi-ken, both of Japan

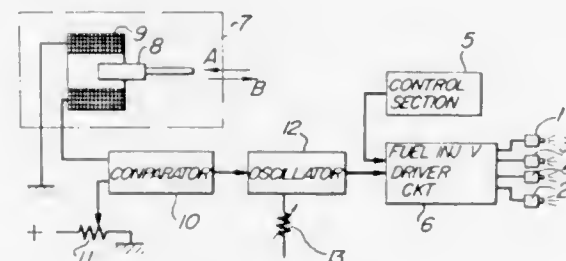
Filed July 10, 1970, Ser. No. 53,821

Claims priority, application Japan, July 29, 1969, 44/59801; July 29, 1969, 44/59802

Int. Cl. F02b 3/00

U.S. Cl. 123—32 EA

1 Claim



In internal combustion engines, where the fuel injection valves are electromagnetically operated, at the time of engine acceleration the amount of fuel injected is increased by converting sudden changes in such parameters as the negative pressure in the engine intake manifold into corresponding changes of the mechanical type, such as by the displacement of a diaphragm, according to which mechanical changes an electric fuel injection control is operated. Thus, a delay time is involved, resulting in an insufficient response characteristic. In the specification, there is disclosed an electric fuel injection system for internal combustion engines, comprising; a means to generate electric signals corresponding to the speed of motion of the throttle of the engine or particularly when the speed of the throttle motion exceeds a predetermined value; and a means to increase the amount of fuel delivered for acceleration by so controlling fuel injection valves upon reception of the signal from the first means.

3,719,177

**SIGNAL GENERATING SYSTEM FOR INTERNAL COMBUSTION ENGINES**

Kazuo Oishi, Hiroshi Yoshida, Noriyoshi Ando, and Tokuhiko Kurebayashi, all of Kariya, Japan, assignors to Nippondenso Co. Ltd., Kariya-shi, Aichi-ken, Japan

Filed March 17, 1971, Ser. No. 125,219

Claims priority, application Japan, March 18, 1970, 45/23256; March 27, 1970, 45/26200

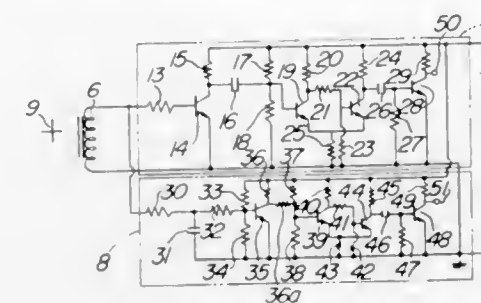
Int. Cl. F02p 1/00

U.S. Cl. 123—148 E

4 Claims

A signal generating system for use in internal combustion engines comprising a rotary pole means secured to a shaft rotating in synchronism with the engine crankshaft, said rotary pole means having a plurality of pole tips, a stationary pole means having a plurality of pole tips, a permanent magnet magnetically coupling the rotary and stationary pole means, and an induction coil to convert the rate of change of magnetic flux, which is provided by the permanent magnet, into a

corresponding voltage. Two signals of different voltage levels are derived from the induction coil, and from these signals the



top dead center, etc., of a particular cylinder and the successive predetermined angular position of the engine crankshaft may be detected.

3,719,178

**INTERNAL COMBUSTION ENGINE**

William F. Stewart, Peterborough, England, assignor to Perkins Engines Limited, London, England

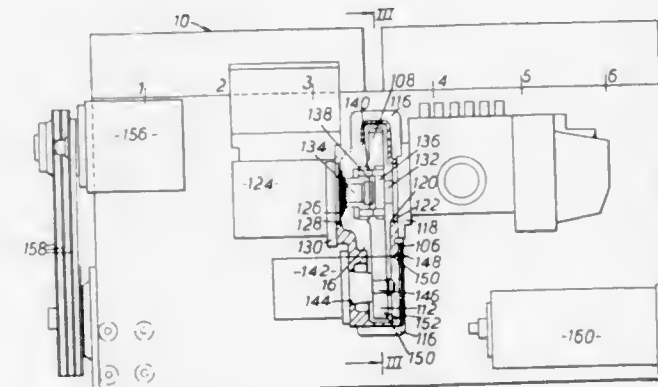
Filed Nov. 10, 1971, Ser. No. 197,429

Claims priority, application Great Britain, Nov. 10, 1970, 53,522/70

Int. Cl. F02f 7/00

U.S. Cl. 123—195 A

12 Claims



An improved internal combustion engine consists of a unitary crank case having a cavity cast at the middle of its length to house the timing drive and a drive to auxiliary equipment. The cavity has openings and the auxiliary equipment is mounted on load bearing covers which close these openings.

3,719,179

**ICE AXES**

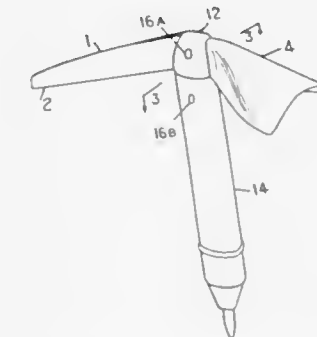
Hamish MacInnes, Glencoe, Scotland, assignor to Trevor Peck Climbing Equipment Limited, Leicester, England

Filed Oct. 22, 1970, Ser. No. 83,078

Int. Cl. B28d 1/26

U.S. Cl. 125—36

4 Claims



An ice axe has a pick part, a rear part projecting in the opposite direction from the pick part and a crown part constituting

ing a head assembly. The head assembly presents a shank which is fitted into a hollow shaft part. The rear part may be formed as an adze or as a hammer head. When formed as an adze it is made from metal plate curved to shape.

3,719,180

**DEVICE FOR HEAT TREATMENT BY WAY OF FORCED GAS CONVECTION, FORMING A BAKERY, PASTRY, PORK-BUTCHERY OVEN OR THE LIKE**

Francois Caillarec Pere, Quimper, France, assignor to Capic-Etablissements Caillarec, Quimper, France

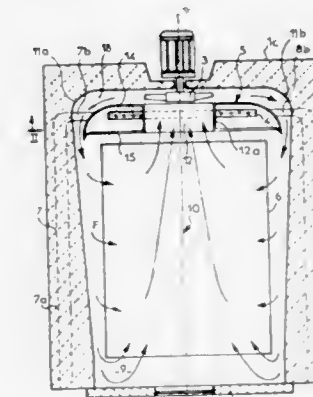
Filed Feb. 1, 1971, Ser. No. 111,241

Claims priority, application France, Feb. 2, 1970, 7003575

Int. Cl. F24c 15/32

U.S. Cl. 126—21 A

7 Claims



A device for heat treatment comprising a muffle, heating means, a fan and a treatment chamber limited on one of its sides by an inner wall of the muffle, the cross-sections of said chamber having the shape of trapezia, the larger base of which is located on the fan side of the device. The heating means are constituted by at least one gas burner. The device comprises a casing forming a heat exchanging element surrounding said heating means and being placed within the hot gases circulating in the muffle.

3,719,181

**ADJUSTABLE AND FOLDING OUTDOOR GRILL AND CRANE**

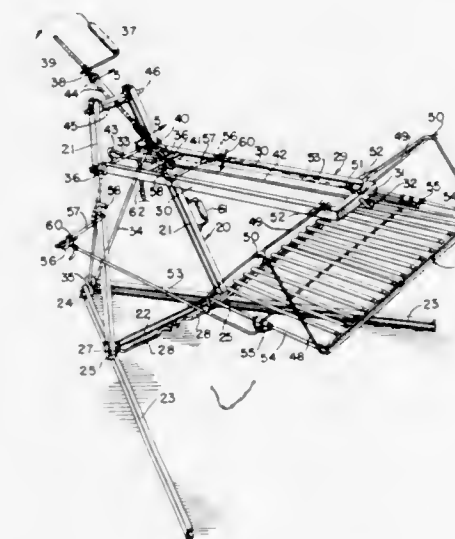
James E. Porter, Jr., Rte. 1, P.O. Box 214A, Lexington, S.C. 29072

Filed Aug. 31, 1971, Ser. No. 176,601

Int. Cl. F24b 3/00

U.S. Cl. 126—30

12 Claims



A foldable crane for outdoor cooking is adjustable for supporting a grill rack or kettle at desired elevations above a fire or charcoal bed. The grill rack will remain



level in all elevations due to the action of supporting and stabilizing means. The device is stable and solid when set up on the ground for usage and folds into a very compact essentially flat carrying or storing assembly.

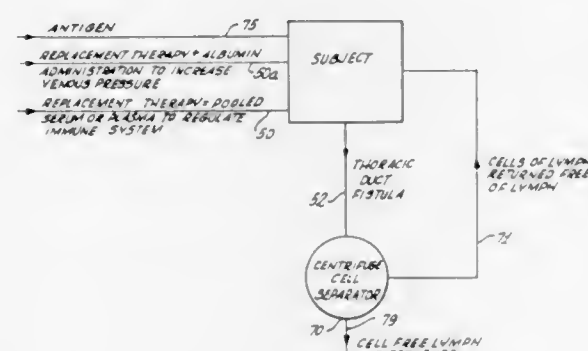
### 3,719,182 AUGMENTATION OF THE PRODUCTION OF ANTI-BODIES IN ANIMALS AND HUMANS AND THE COLLECTION THEREOF

Samuel Rose, La Jolla, Calif., assignor to Bio-Response, Inc., New York, N.Y.  
Filed Apr. 22, 1971, Ser. No. 136,476

Int. Cl. A61b 19/00

U.S. Cl. 128—1 R

19 Claims



It has been found that very large production of antibodies can be achieved by removing specific feedback regulatory antibodies by means of a lymphorectomy performed under special conditions in a patient or subject (e.g., an animal or human) with induced anatomical and physiological changes.

The subject is first given antigen administration then, preferably, but not mandatorily, is splenectomized. A thoracic duct fistula is next performed. The central venous system pressure is then preferably raised so that it is above the atmospheric pressure of the thoracic duct. In this manner, substantially all the lymph fluid is allowed to flow out of the thoracic duct from the fistula (through an indwelling catheter) for a prolonged period of time. The lymph is separated into cells and lymph fluid. The cells are returned to the subject intravenously. The subject must be given replacement fluid, which can be of several kinds, but all lacking the specific antibody.

By virtue of the above procedure, the plasma and extracellular fluid of the subject is continuously depleted of feedback antibody because the antibody is continuously removed prior to its reaching the blood stream. Because of this lack of antibody, in the presence of antigen administration, it is found that the antibody production in the lymphoid tissue and therefore its content in the lymph fluid is enormous and ever-increases. The tremendous increase in antibody production appears to be several orders of magnitude greater than other modes of antibody production and therefore appears to have very substantial utility in the fields of biology, chemistry and veterinary and clinical medicine.

### 3,719,183 METHOD FOR DETECTING BLOCKAGE OR INSUFFICIENCY OF PANCREATIC EXOCRINE FUNCTION

Howard S. Schwartz, 4 Sador Lane, Yonkers, N.Y.  
Continuation of Ser. No. 607,441, Jan. 5, 1967, abandoned.  
This application March 5, 1970, Ser. No. 22,107

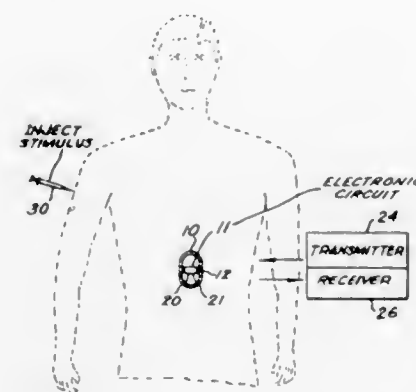
Int. Cl. A61b 5/00

U.S. Cl. 128—2 R

7 Claims

A process for determining internal blockage to pancreatic enzyme flow in which an electronic capsule transponder has

an insulative coating of material dissolvable by the action of predetermined enzyme secretions. When the coating is dis-



solved, the transponder is coated with the enzyme flow. The transponder may be swallowed and a stimulant may be applied to the body to selectively increase enzyme secretions.

### 3,719,184

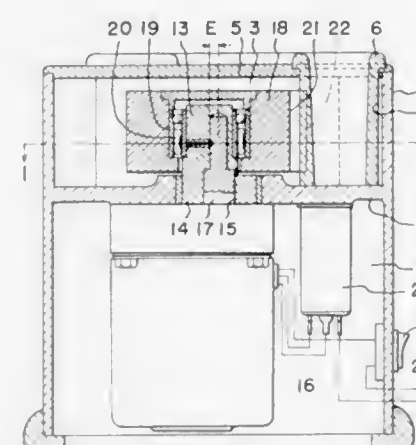
MACHINE FOR RELIEVING THE FATIGUE OF FINGERS  
Tadashi Kobayashi, 1560-2 Higashihara, Tenma, Shizuoka, Japan

Filed Oct. 28, 1971, Ser. No. 193,341

Int. Cl. A61h 1/02

U.S. Cl. 128—26

5 Claims



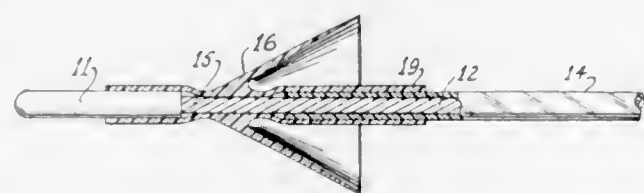


diaper to be used without the need of an outer protective garment such as "rubber pants", since the non-wicking web and the moistureproof overlay prevent moisture from being transmitted from the fabric ply placed against an infant to the outermost fabric ply. In other embodiments, the diaper can be folded in various sizes to accommodate the increased size of an infant during growth, and can also be used in larger sizes for adults requiring such protection for medical purposes.

**3,719,190**  
**HEART STIMULATION ELECTRODE WITH A CONICAL POSITIONING PARACHUTE**  
Roger E. Avery, Melville, N.Y., assignor to Avery Laboratories, Inc., Farmingdale, N.Y.  
Filed Mar. 9, 1971, Ser. No. 122,457  
Int. Cl. A61m 1/04

U.S. Cl. 128—418

5 Claims

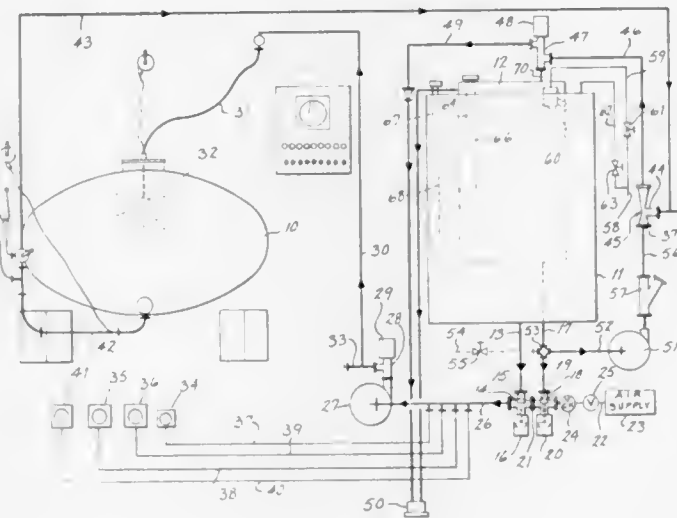


A flexible electrode is provided with a conical parachute which permits the blood flowing in a vein to draw the electrode into the heart so that the electrode may be used in connection with an external power source for stimulating the heart.

A light pull on the lead inverts the parachute for withdrawal without damage to the vein tissue.

**3,719,191**  
**CLEANING SYSTEM**  
Robert D. Zimmerly, Kenosha, Wis., assignor to Ladish Co., Cudahy, Wis.  
Filed Feb. 4, 1971, Ser. No. 112,744  
Int. Cl. B08b 9/08, 3/02  
U.S. Cl. 134—102

10 Claims



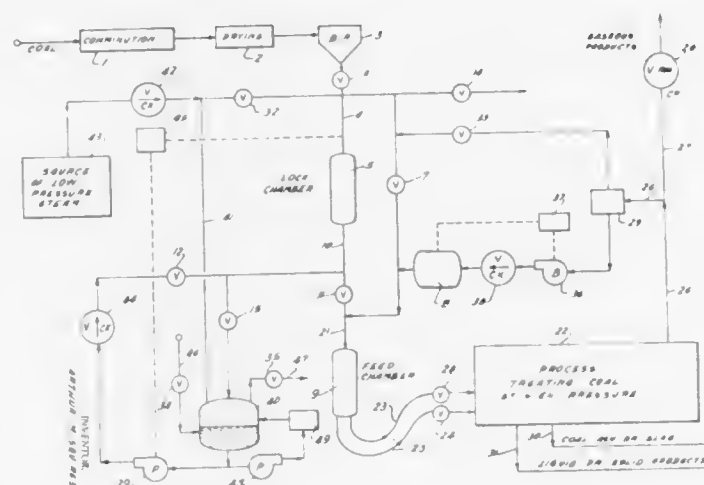
A single service cleaning system utilizes a motive tank within a rinse water tank. Pipe lines interconnect the tanks with each other and with the tank or product-pipeline to be cleaned, a supply pump being used to pump liquid under control of a burst valve to the tank lines to be cleaned, with a motive pump pumping motive fluid from the motive tank through an eductor to draw returned liquid from the tank to be cleaned for return into the motive tank and/or for discharge through a

drain line. Steam may be admitted to the system prior to the liquid entering both pumps for raising the temperature of the water in the system. Chemicals may be selectively introduced into the feed line leading to the tank or product-pipeline to be cleaned and various valves control the flow for different cleaning cycles. There is also an air supply for blowing liquid out to evacuate the feed line.

**3,719,192**  
**METHOD AND APPARATUS FOR TRANSFERRING A COMMUNUTED SOLID FROM A LOW PRESSURE INTO A SPACE OCCUPIED BY GAS AT HIGH PRESSURE**  
Arthur M. Squires, 245 West 104th Street, New York, N.Y.  
Filed July 30, 1971, Ser. No. 167,687  
Int. Cl. B65g 53/00

U.S. Cl. 137—1

15 Claims



By the invention, a comminuted solid may be introduced into a space occupied by gas at high pressure with little expenditure of energy for compression of a gas. Solid is charged to a lock chamber at low pressure, and the top of the chamber is placed into communication with a first space filled with a gas at the high pressure. The solid is then dumped from the bottom of the chamber into a second space at high pressure. With the bottom of the chamber out of communication with this second space, but with the top still in communication with the aforementioned first space, a liquid is introduced into the bottom of the chamber to drive gas from the top and into the first space. When the lock chamber is filled with the liquid, the chamber is taken out of communication with the first space, and the liquid is drained from the chamber. The liquid may advantageously be water.

**3,719,193**  
**PNEUMATIC CONTROL SYSTEM FOR VIBRATION DETECTOR**  
Donald A. Doyle, P.O. Box 3775, Santa Ana, Calif.  
Continuation-in-part of Ser. No. 93,053, Nov. 27, 1970. This application Dec. 9, 1971, Ser. No. 206,247  
Int. Cl. G05b 9/00

U.S. Cl. 137—38

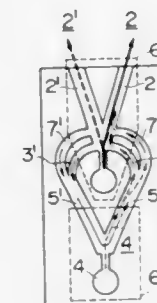
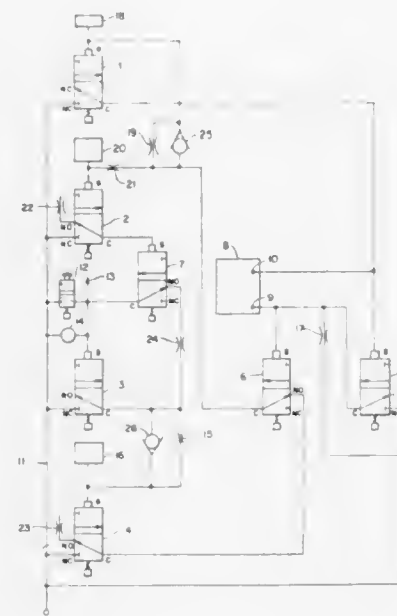
16 Claims

A pneumatically operated control system for use with a pneumatically operated vibration detector serves to discriminate between false transient conditions and conditions due to excessive vibration forces. The control system uses a number of similar diverter valves connected to provide the desired control functions. A start delay is provided to eliminate operation of the system in response to any vibration forces normally encountered during the starting period. A vibration condition occurring after the start delay causes the vibration detector to be tripped to provide a signal to two diverter valves, each of which has a pneumatic delay. Operation of one of the diverter valves causes the vibration detector

to be reset. If the vibration condition continues the vibration detector is repeatedly tripped and reset until the delay for the other diverter valve is overcome to cause it to operate to provide a signal for terminating the operation of the control

**3,719,195**  
**FLUIDIC PULSE COUNTER**  
Yasumasa Matsuda, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan  
Filed July 27, 1971, Ser. No. 166,472  
Claims priority, application Japan, July 30, 1970, 45/66077; Dec. 28, 1970, 45/120139; May 21, 1971, 46/34036  
Int. Cl. F15c 1/12  
U.S. Cl. 137—811

12 Claims

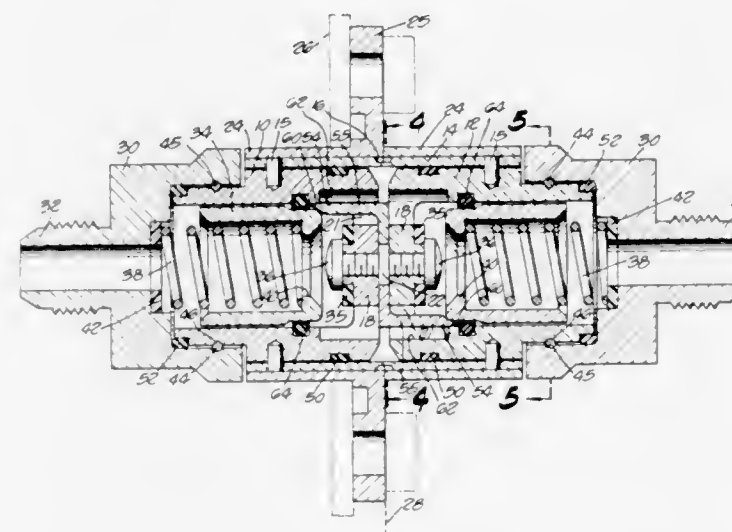


In a bistable pure fluidic element there are provided a first circulation passage having an input pulse source in communication with two control nozzles, a second circulation passage connecting said input pulse source with one point of each of two output flow passages and a third circulation passage formed in the proximity of a main jet dividing or diverting edge so as to branch at least one portion of a main jet of the element. Associated circuits are also disclosed.

system and the equipment being protected. A visual indication of the status of the control system is provided. The system is also usable for monitoring more than one vibration detector. In such applications, a visual indicator is used to indicate the status of each vibration detector.

**3,719,194**  
**BREAKAWAY COUPLING**  
Dean M. Anderson, Lakewood, and Ross E. Burbick, Bellflower, both of Calif., assignors to E. B. Wiggins, Inc., Los Angeles, Calif.  
Filed Sept. 23, 1971, Ser. No. 183,065  
Int. Cl. F16k 17/40  
U.S. Cl. 137—68

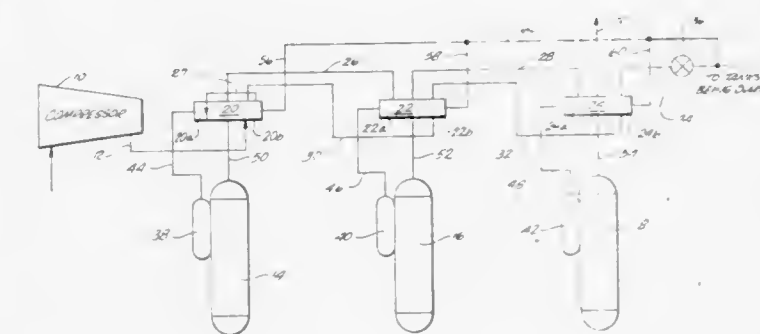
18 Claims



A breakaway coupling has two confronting bodies, each equipped with a spring-loaded valve that is normally held open by a trigger that releases in response to slight separation movement of the two bodies. The two bodies are united by a frangible sleeve that is anchored to the two bodies respectively by frangible pins. The pins yield to purely axial separation force between the two bodies and the sleeve yields to shear and bending forces.

**3,719,196**  
**CHARGING SEQUENCE SYSTEM AND PROCESS**  
Robert W. McJones, 529 Via Del Monte, Palos Verdes Estates, Calif.  
Continuation-in-part of Ser. No. 34,966, May 6, 1970. This application Nov. 25, 1970, Ser. No. 92,814  
Int. Cl. F17d 1/02  
U.S. Cl. 137—110

11 Claims



Each container in a bank of containers is individually charged with a gas in the order of the highest residual pressure remaining in the containers at the time charging is initiated. Gas withdrawal from the containers begins with the container at the lowest beginning pressure.

**3,719,197**  
**ASEPTIC SUCTION DRAINAGE SYSTEM AND VALVE THEREFOR**  
Karl A. Pannier, Jr., Gordon S. Reynolds, and James L. Sorenson, all of Salt Lake City, Utah, assignors to Le Voys, Inc., Salt Lake City, Utah  
Filed March 4, 1971, Ser. No. 120,986  
Int. Cl. A61m 1/00

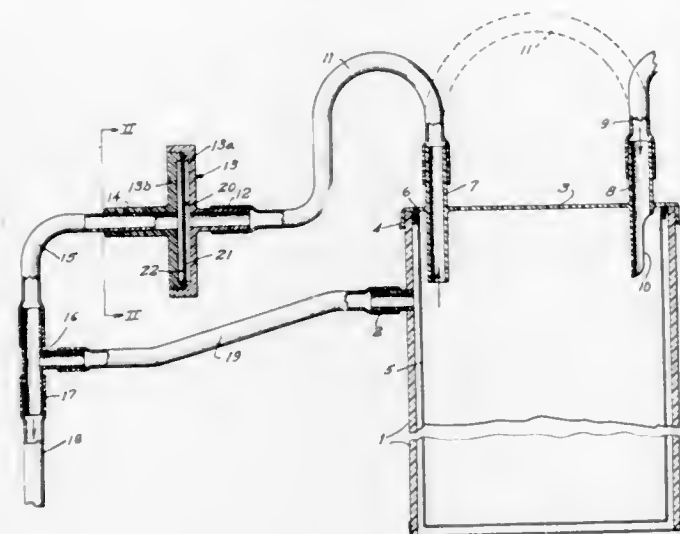
U.S. Cl. 137—205

5 Claims

An aseptic suction drainage system and valve therefor, embodying a drainage receiver for receiving drainage from the body of a patient after wounding of or surgery performed on



the patient which, after filling to a desired extent, may be sealed so that the receiver along with its drainage contents is disposable as a unit. A foolproof valve is incorporated in the system to prevent contaminated drainage from entering the



suction or vacuum system of a hospital regardless of carelessness or neglect of an attendant as to how full the drainage receiver may become, the valve automatically protecting the main vacuum system of a hospital from contamination.

3,719,198

## PRESSURE INDICATOR FOR PNEUMATIC TIRE

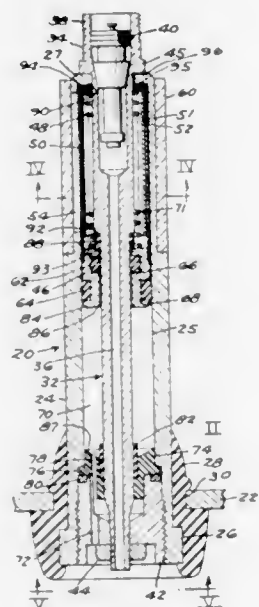
Arthur L. Wilhelm, 11375 Fourteen Mile Road, Sterling Heights, Mich.; Leonard M. Wilhelm, 6700 Bloomfield Lane, Birmingham, Mich., and Lawrence L. Wilhelm, 15138 Adams Drive, Warren, Mich.

Filed Jan. 11, 1971, Ser. No. 105,415

Int. Cl. F16k 37/00

U.S. Cl. 137-228

4 Claims



An air pressure indicator device for permanent installation on a pneumatic tire. The device has a main housing with a cylindrical chamber and a piston with associated seals slideably received therein. Air under pressure in the tire acts on and displaces the piston against the bias of a calibrated spring to provide an indication of air pressure. At opposite ends of its stroke the piston engages seals to prevent an over inflated or under inflated tire from being deflated by failure of seals associated with the piston. In one modification of this pressure indicator a stem is also included for inflating the tire.

### 3,719,199 SPOOL VALVE CONSTRUCTION OF MODULAR PARTS

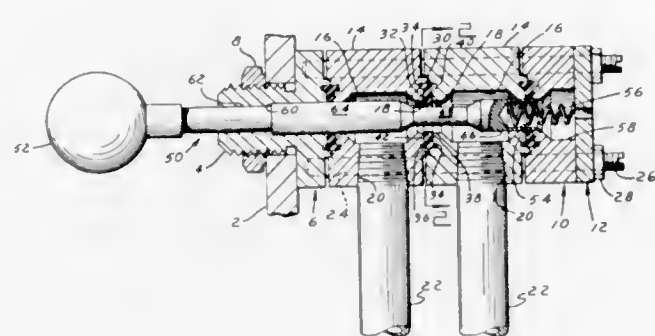
John P. Mentink, Longmeadow, Mass., assignor to Hydromat Systems, Inc., Westfield, Mass.

Filed Oct. 1, 1971, Ser. No. 185,530

Int. Cl. F16k 11/00

U.S. Cl. 137-269

6 Claims



A modular spool valve construction having a plurality of identical body members assembled end to end between cap members and housing a spool element. Each body member is formed with a longitudinal passage having aligned spool seating portions at each end thereof and a central chamber, the latter having a lateral passage between the chamber and an outside wall surface for conduit connection. The end faces of the members are provided with complementary surfaces formed with aligned means concentrically of the spool seating portions for a piloted nesting together of a series of body members and a pocketing between adjacent members of a flexible ring seal. Longitudinal tiebolt corner openings are spaced at 90° for selecting the lateral direction of the connector passage of each chamber in assembling the parts.

3,719,200

## VACUUM PUMPOUT AND PRESSURE RELIEF VALVE

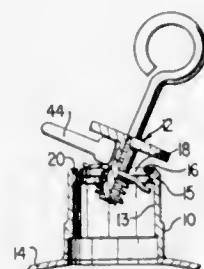
James W. Draper, Morro Bay, and Lowell N. Edwards, Los Osos, both of Calif., assignors to Cryogenic Engineering Company, Denver, Colo.

Filed Feb. 25, 1971, Ser. No. 118,813

Int. Cl. F16k 43/00

U.S. Cl. 137-315

19 Claims



A relief valve assembly is part of a removable poppet kit which includes special mounting and removing tools. A removable-poppet assembly is compatible with a conventional operator and comprises a poppet and a Z-bar biased toward one another by a spring along a plunger. The removable-poppet assembly is mounted on a valve housing by clamping an axial shoulder of the valve housing between the poppet and the Z-bar. The tools include means for manually separating the poppet from the Z-bar, and a T-shaped tool for holding the poppet and Z-bar in a separated configuration so that the removable-poppet assembly can be removed or mounted.

3,719,201

## AUTOMOBILE ELECTRICAL SYSTEM

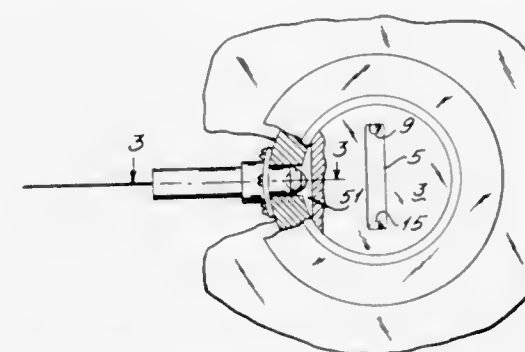
Ivan G. Minks, 5617 Welmering Drive, St. Louis, Mo., and Melvin P. Minks, 1950 Cherokee Street, St. Louis, Mo.

Filed March 12, 1971, Ser. No. 123,606

Int. Cl. B60r 25/04; F16k 35/06; H01h 9/28

U.S. Cl. 137-351

3 Claims



An electric fuel line lock for automobiles is opened by a solenoid, the ground line from which is connected to a normally open contact on the automobile ignition switch lock which is closed only when the ignition switch lock is in the "on" position, so that when the ignition switch lock is in the "off" position the fuel line is locked and the automobile cannot be operated. To prevent unauthorized operation of the ignition switch, the ignition switch includes an extra tumbler engageable with a notch or groove in a surface of the key other than the normal tumbler engaging edge of the key.

3,719,202

## ANGLE VALVE

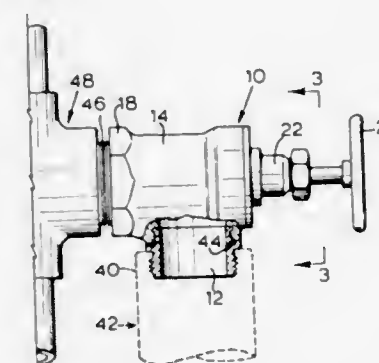
James Fitzpatrick, Toronto, Ontario, Canada, assignor to Dyer and Miller Bros., Ltd., Weston, Ontario, Canada

Filed March 1, 1971, Ser. No. 119,683

Int. Cl. F16l 5/00

U.S. Cl. 137-360

1 Claim



The outlet part of an angle valve has an internal thread to receive an externally threaded adapter which in turn receives the fire hose connector.

3,719,203

## SAFETY VALVE FOR OIL FILLED CABLE

Gunnar Wettre, 1370 Asker, Norway, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 13, 1971, Ser. No. 188,881

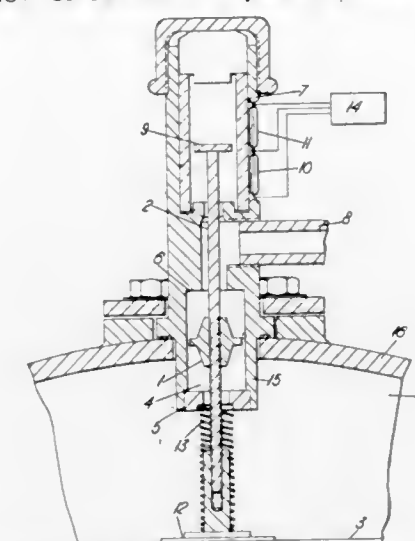
Int. Cl. F16k 37/00

U.S. Cl. 137-554

5 Claims

Oil pressure in oil filled cables is sensed and controlled by a valve arrangement which prevents damage to the oil pressure

tank. Expansion or contraction of a pressure cell with the outflow or inflow of oil moves a piston against upper or lower



valve seats to stop oil flow. A magnet on one end of the piston actuates upper and lower reed relays to set off a detector or alarm device at predetermined limits.

3,719,204

## DEVICE FOR PULSATING A LIQUID IN A COLUMN

Freerk J. Fontein, Heerlen; Martinus Ploeg, Brunssum; and Jacques Van Linden, Stein, all of Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

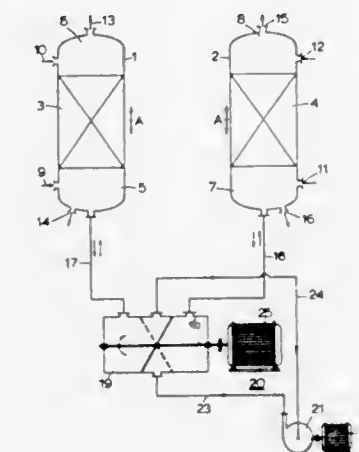
Filed Sept. 29, 1971, Ser. No. 184,815

Claims priority, application Netherlands, Sept. 29, 1970, 7014268; April 10, 1971, 7104843

Int. Cl. F04d 27/02

U.S. Cl. 137-568

20 Claims



In order to pulsate liquid in a column, the column is connected to both the suction side and the pressure side of a pump, via rotatable valve means which alternately connects the pressure side and the suction side of the pump to the column. The rotations of the valve and the pumping force and the flow capacity of the piping between the column and the pump primarily influence the amplitude and frequency of pulsations in the column. More than one valve may be connected to one column and more than one column can be connected to one valve. Preferred valve designs are disclosed, as are preferred fluid circuits incorporating surge tank means.

3,719,205

## QUICK DISCONNECT PRESSURIZATION APPARATUS

Harold Ronald Harris, 17421 Canter Street, Garden Grove, Calif.

Filed Feb. 12, 1971, Ser. No. 115,010

Int. Cl. F16l 29/00; F16k 45/00

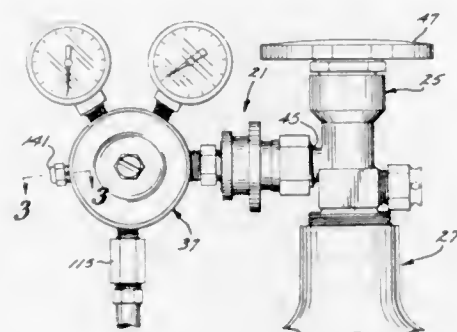
U.S. Cl. 137-583

2 Claims

Quick disconnect pressurization apparatus for connection with a control valve on a pressurization bottle and adapted for pressurization of a fluid container. The apparatus includes a coupling device including a female socket for connection with the pressurization bottle, a male plug telescopically received



in such female socket and quick disconnect coupling means for coupling the plug in such socket. A regulator assembly is formed with an inlet connected with the plug and includes an outlet port and a bleed valve. Conduit means is provided for connecting the outlet with the fluid container whereby the socket may be mounted on the pressurization bottle, the plug connected therewith and the conduit means connected with



the fluid container to pressurize such container to a selected pressure. When it is desirable to disconnect the pressurization bottle from the container, the control valve on the pressurization may be closed and the bleed valve opened and the quick disconnect coupling means actuated to release the plug from the socket to thereby disconnect such plug without necessitating use of wrenches and the like.

3,719,206

## REFILLABLE COOLING PACKAGE

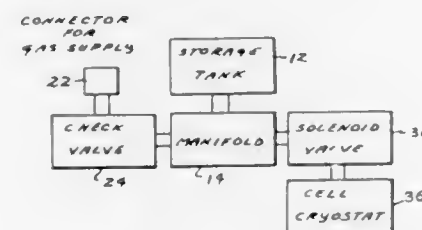
Odle Glenn Hatcher, Panama City, Fla., assignor to the United States of America as represented by the Secretary of the Air Force

Filed Feb. 12, 1971, Ser. No. 114,855

Int. Cl. F17c 7/02; F25b 19/00

U.S. Cl. 137—596

2 Claims



A refillable cooling system for detector cells in a guidance system having a refillable tank secured to a filling and discharge manifold. The storage tank is filled through a connector adapted to be connected to an argon supply. A check valve is provided between the connector and the manifold. An on/off solenoid valve is provided in the output line which is connected between the manifold in the detector cell cooling cryostat.

3,719,207

## APPARATUS FOR TRANSPORTING FLUID

Hideo Takeda, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

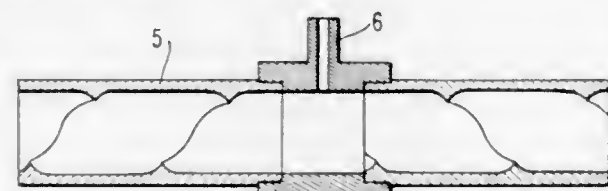
Filed Nov. 13, 1970, Ser. No. 89,219

Claims priority, application Japan, Nov. 13, 1969, 44/90897

Int. Cl. F16k 19/00

U.S. Cl. 137—604

6 Claims



A method of and apparatus for transporting fluid wherein the fluid is transported through a pipe having a helical protrusion

sion on the internal surface thereof which causes the fluid in the pipe to rotate about the longitudinal axis of the pipe.

3,719,208

## FUEL SHUTOFF DEVICE FOR MULTICYLINDER FUEL INJECTION PUMPS

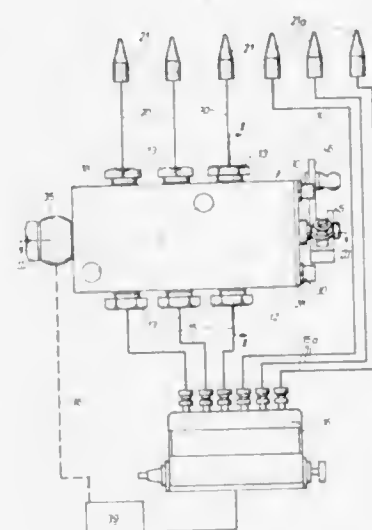
Eberhard Hofmann, Kirchberg/Murr, and Heinrich Staudt, Markgroningen-Talhausen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed March 29, 1971, Ser. No. 128,744

Int. Cl. F16k 11/00

U.S. Cl. 137—625.41

1 Claim



For arbitrarily cutting off the fuel supply to a fuel injection valve from a fuel injection pump during operation thereof, there is provided a fuel shutoff device through a channel of which the pressurized fuel passes. The device has a bore spaced from the channel and communicating therewith through a short-length port. Said bore communicates with a bypass conduit. A rotary valve plug disposed in the bore establishes or interrupts communication — dependent upon its angular position — between the channel and the bypass conduit.

3,719,209

## ARCuate TUBULAR ARTICLES OF RIGID PLASTIC

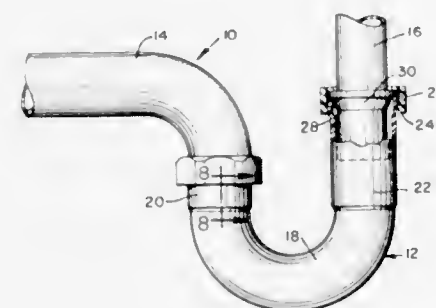
Clifford W. Rush, Southington, and Peter T. Schurman, Woodbridge, both of Conn., assignors to The Beaton & Corbin Manufacturing Company, Southington, Conn.

Filed Sept. 23, 1970, Ser. No. 74,699

Int. Cl. F16l 9/12

U.S. Cl. 138—177

6 Claims



An improved method is disclosed for fabricating a rigid plastic tubular article having an integral arcuate portion along its tubular axis. Articles such as plumbing traps, waste bends, etc., manufactured by the method are also disclosed.

3,719,210

## CIRCULAR WEAVING APPARATUS PRODUCT AND PROCESS

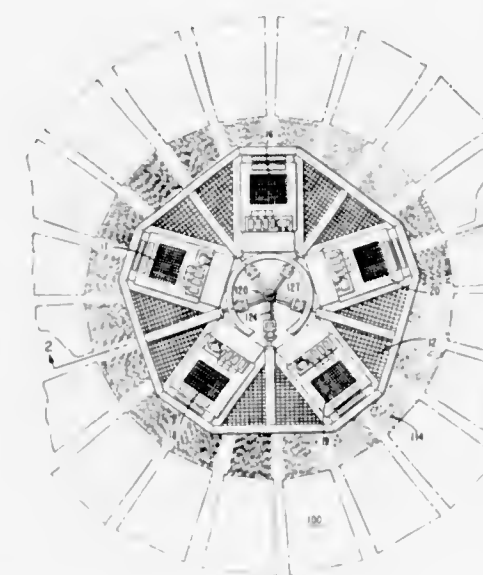
Paul D. Emerson, Raleigh; S. Jack Davis, Chapel Hill; John C. Oatfield; Fred H. Engelman, both of Cary, and Charles E. Bartee, Durham, all of N.C., assignors to Monsanto Company, St. Louis, Mo., by said Emerson, Oatfield, Engelman and Bartee

Division of Ser. No. 793,921, Dec. 31, 1968. This application Dec. 8, 1969, Ser. No. 882,387

Int. Cl. D03d 37/00

U.S. Cl. 139—13

69 Claims



A thick-walled, integrally woven, three-dimensionally shaped fabric which is produced on a circular type weaving machine is comprised of a plurality of yarn systems each of which defines a plurality of yarn planes with the yarn planes of each yarn system being distinct and traversing selected yarn planes of the other yarn systems. The fabric is woven upon the surface of a mandrel with the resulting shape being determined by the action of Jacquard means on the yarn systems and by the three-dimensional shape of the mandrel. The resulting fabric may be woven in the shape of a cylinder, a truncated cone, or as irregular shapes, such as, an airplane wing, a boat hull or the like.

3,719,211

## YARN HOLDING DEVICE FOR A PICKING ELEMENT OF A LOOM

Allan W. H. Porter, C-H 9062, Lustmuehle/Arbon, Stosswald, Switzerland

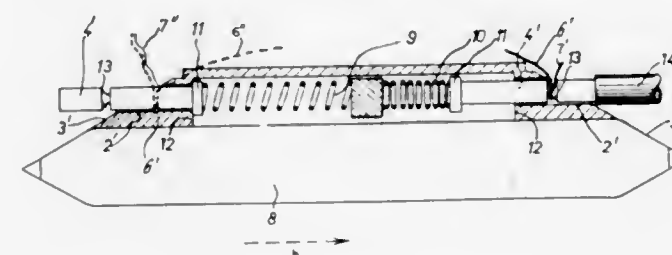
Filed May 24, 1971, Ser. No. 146,165

Claims priority, application Switzerland, June 4, 1970, 8371/70

Int. Cl. D03d 47/20, 47/24

U.S. Cl. 139—122 N

5 Claims



A yarn gripping device on a weft-inserting element of a loom is operable to pick weft yarn from a stationary weft yarn supply arranged outside the loom. The weft-inserting element

has at least one cylindrical tubular end part with a running plane surface which is inclined at the front end for the weft yarn. A cylindrical bar is located in a bore of the cylindrical end part which terminates at the inclined running surface. The bar protrudes beyond the running plane surface and there is a radial clearance between the bar and the bore on all sides which is at least as great as the yarn thickness. The weft yarn forms a loop around the bar as it runs up the inclined running plane surface to form a loop which increases as more of the weft yarn is wrapped around the bar due to the running up on the inclined surface. The bar is advantageously resiliently mounted within the cylindrical tubular end part so that it may be displaced in a radial direction. The weft-inserting element may take the form of a loom shuttle having inclined running surfaces at each end and with a bar projecting through the bore which terminates at the inclined running plane surface at each end.

3,719,212

## CIRCULAR WEAVING APPARATUS PRODUCT AND PROCESS

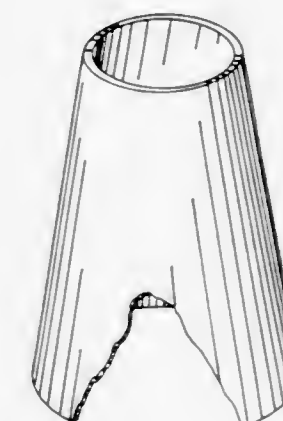
Paul D. Emerson, Raleigh; S. Jack Davis, Chapel Hill; John C. Oatfield; Fred H. Engelman, both of Cary, and Charles E. Bartee, Durham, all of N.C., assignors to Monsanto Company, St. Louis, Mo., by said Emerson, Oatfield, Engelman and Bartee

Filed Dec. 31, 1968, Ser. No. 793,921

Int. Cl. D03d 31/02

U.S. Cl. 139—387

30 Claims



A thick-walled, integrally woven, three-dimensionally shaped fabric which is produced on a circular type weaving machine is comprised of a plurality of yarn systems each of which defines a plurality of yarn planes with the yarn planes of each yarn system being distinct and traversing selected yarn planes of the other yarn systems. The fabric is woven upon the surface of a mandrel with the resulting shape being determined by the action of Jacquard means on the yarn systems and by the three-dimensional shape of the mandrel. The resulting fabric may be woven in the shape of a cylinder, a truncated cone, or as irregular shapes, such as, an airplane wing, a boat hull or the like.

3,719,213

## METHOD FOR ADDING MEDICAMENTS TO A SEALED EXPANDABLE PARENTERAL FLUID CONTAINER

John L. Quick, Buffalo, Ill., assignor to Barter Laboratories, Inc., Morton Grove, Ill.

Filed March 3, 1971, Ser. No. 120,411

Int. Cl. B65b 31/00

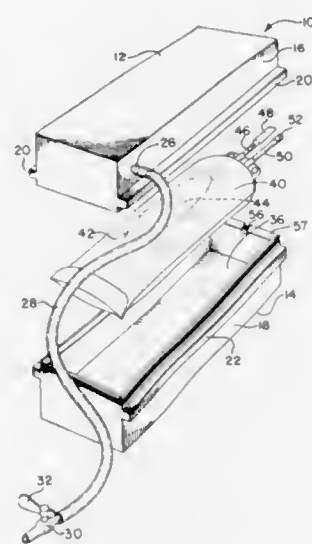
U.S. Cl. 141—5

3 Claims

A rigid chamber adapted to receive an expandable container such as a plastic bag of parenteral fluid contains an opening connected to a source of vacuum and an opening through which a tubular port on the container may be placed



so that it will be accessible from the exterior of the chamber to permit the connection thereto of a vial containing a material such as a medicament to be added to the bag. By selective control of the vacuum supply to the chamber and of the position of the medicament vial relative to the fluid level in the bag, it is possible to add the contents of vials containing not



only freely flowing liquid additives but also very viscous ones as well as powdered or granular materials. The system can also be operated in such a way that the contents of a plurality of medicament vials or syringes can be added to the bag even though the volume of the material to be transferred from the plurality of medicament containers is greater than the initial free air volume in the bag.

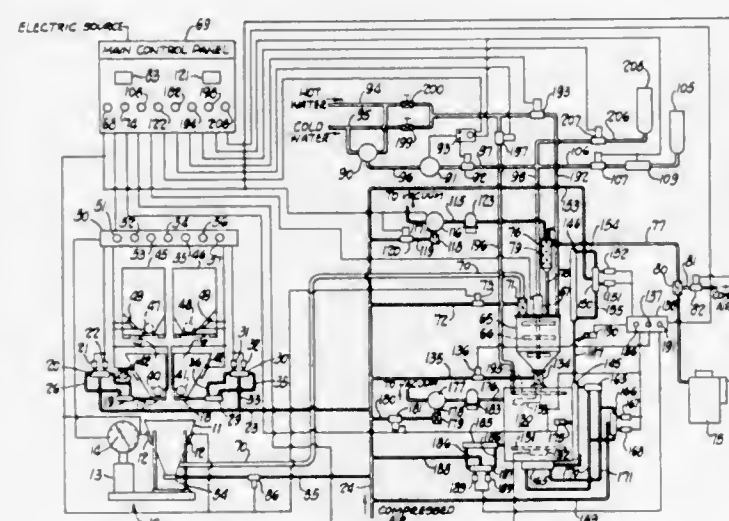
### 3,719,214 INVESTING APPARATUS

Edmund E. Erndt, Timberlake, Ohio, assignor to Precision Metalsmiths, Inc., Cleveland, Ohio

Filed July 9, 1970, Ser. No. 53,503  
Int. Cl. B65h 31/02

U.S. Cl. 141-51

4 Claims



Investing apparatus including a vacuum chamber in which flasks are filled with refractory slurry, a mixing kettle adapted to be charged with the materials required to make the slurry, and equipment for measuring out and charging into the kettle predetermined amounts of the slurry materials. A system for automatically controlling the operations of the apparatus is provided.

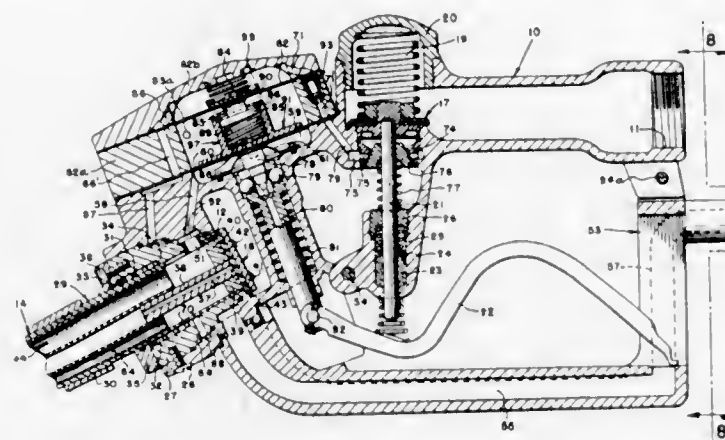
### 3,719,215 SHUT-OFF VALVE FOR LIQUID DISPENSING NOZZLE

Robert L. Murray, 611 Belmont Road, Dayton, Ky.

Filed Aug. 31, 1970, Ser. No. 68,153  
Int. Cl. B65b 1/04, 3/04; B67c 3/34

U.S. Cl. 141-207

6 Claims



A fuel dispensing nozzle includes a body having a spout slidably supported thereon with a valve, which is in the body and controls flow from the body to the spout, opening only when the spout is disposed in a tank to be filled. For fuel to flow through the spout, another valve, which is actuated by a manually operated lever, also must be opened in addition to the valve that is opened by the spout being properly disposed within the tank being filled.

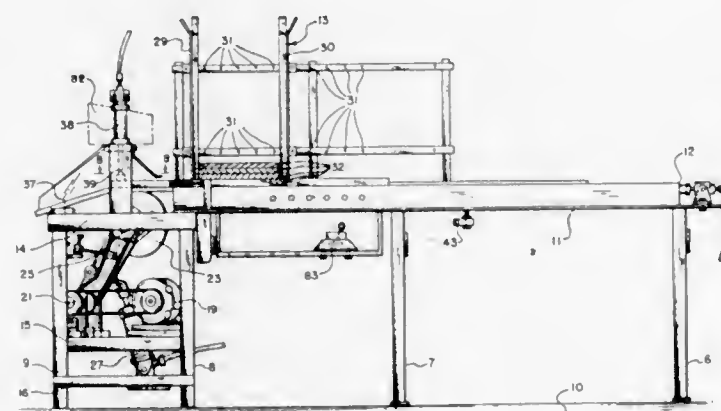
### 3,719,216 AUTOMATIC STAKE SHARPENING APPARATUS

Manville W. Tracy, 5750 N. 10th St., Phoenix, Ariz. 85004

Filed Sept. 22, 1971, Ser. No. 182,594  
Int. Cl. B27b 5/02; B27m 3/00

U.S. Cl. 83-471.2

5 Claims



Apparatus is provided for serially advancing stake blanks from an adjustable hopper utilizing a hydraulic ram. As each stake is advanced to a sharpening position, a hydraulic clamp holds the stake while it receives first and second angular cuts in sequence to effect the sharpening. After the sequential cuts are completed, the hydraulic clamp withdraws to permit the sharpened stake to be ejected as the hydraulic ram pushes the next blank into position. The angular cuts are achieved by hydraulically advancing motor driven circular saws one at a time to avoid interference with one another. The sequence of operation is controlled by a logical combination of switches actuated by the various moving parts which function to selectively energize and de-energize solenoids controlling fluid flow and retention to the several hydraulic elements.

### 3,719,217 METHOD AND APPARATUS FOR DELIMBING A TREE

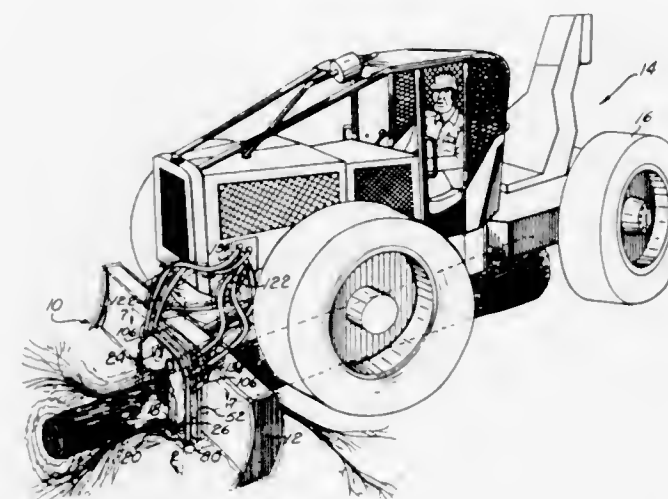
William A. Bottoms, Kamloops, British Columbia, Canada, assignor to Eaton Yale & Towne Canada Limited, London, Ontario, Canada

Filed Dec. 11, 1970, Ser. No. 97,097

Int. Cl. A01g 23/08

U.S. Cl. 144-2 Z

20 Claims



A tree having limbs thereon is positioned between a pair of delimbing jaws pivotally mounted on a frame. The jaws have means for removing the limbs from the tree upon movement of the jaws relative to the tree. Vibrating means is also provided for vibrating the jaws which results in a cutting action as the jaws engage the limbs on the tree to sever the limbs therefrom. Drive means is provided to rotate the jaws into engagement with the tree trunk and maintain the jaws in engagement with the trunk with a force dependent on the diameter of the tree trunk.

### 3,719,218 TIRE WITH BELT HAVING SCALLOPED EDGES

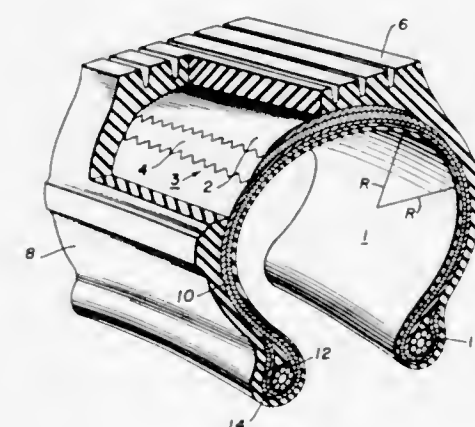
Allen E. Leybourne, III, Decatur, Ala., assignor to Monsanto Company, St. Louis, Mo.

Filed March 8, 1971, Ser. No. 121,647

Int. Cl. B60c 9/18

U.S. Cl. 152-361

5 Claims



Belted tires constructed with belt plies having less reinforcing cord at and near the edges thereof reduces the tendency for the plies to separate from the tire structure during vehicular use thereof.

### 3,719,219 PNEUMATIC TIRE

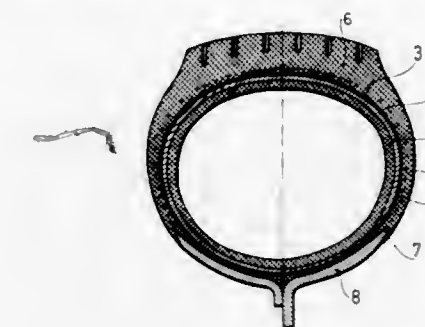
Laszlo Horvath, Gusztav Gundisch, Mandor Antal, and Mihaly Arvai, Budapest, Hungary, assignors to Orazgos Gumiipari Vallalat, Budapest, Hungary

Filed Apr. 8, 1971, Ser. No. 132,302

Int. Cl. B60c 5/16

U.S. Cl. 152-379

10 Claims



A pneumatic tire formed of an elastomer and one or more fabric ply reinforcements, in which a fabric reinforcement extends continuously around the annular cross-section of the tire at an angle of between 70° and 90° relative to the crown thereof. The tire is fastened to an elastic or rigid member, which may be a wheel rim component, by an adhesive bond formed by a suitable adhesive.

### 3,719,220 CLOSABLE SHADE COWL PROVIDED CURTAIN HANGER BRACKETS

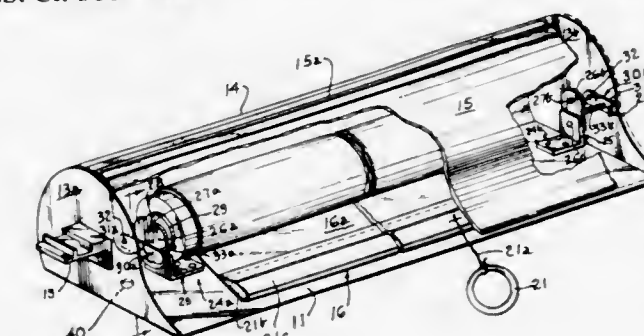
Jeff H. Small, P.O. Box 583, Liberty, Tex.

Filed Oct. 29, 1971, Ser. No. 193,787

Int. Cl. E06b 9/08; A47h 1/13

U.S. Cl. 160-108

10 Claims



The cowl, adapted to be affixed to a structure, as the top of a window frame, has a hinged cover, so that a conventional shade, rolled up, is concealed in the cowl, all but the pull string. The conventional shade mounting brackets are altered to provide pivot arms which receive the respective end lug and pin of conventional shade roller rod ends. Then, between cowl end closures and shade mounting bracket, pivotally mounted, releasable latches are provided normally to retain the shade latched within the cowl in operative position to be rolled downwardly or upwardly to be fully obscured within the cowl. Curtain hanger brackets are provided by the cowl outwardly of its end closures.

### 3,719,221 VENETIAN BLIND WINDOW ASSEMBLY

Raymond W. Hanson, 1260 El Camino Real, 310, Millbrae, Calif. 94030

Filed Feb. 11, 1971, Ser. No. 114,591

Int. Cl. E06b 9/30

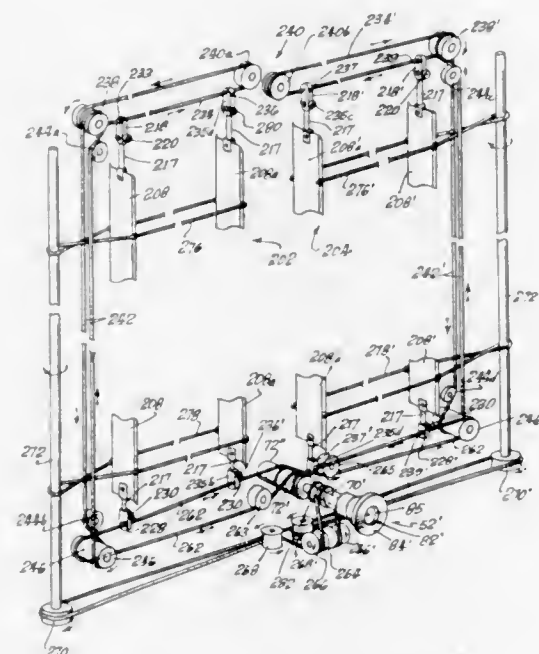
U.S. Cl. 160-168

5 Claims

Separate rotary means are provided for operating a cord which adjusts the effective size of a Venetian blind and the cord which tilts the slats, respectively. An adjustable coupling acts to connect a rotary manual or power



drive to one or the other of the rotary means. In a preferred form, the Venetian blind is housed in a closed space provided by parallel window panes, the drive being accessible outside of the space and controlling the Venetian blind while the window panes remain in situ supported by a suitable frame. In one form of the invention the slats are horizontal, and in another form of the invention the blind is arranged in two sets of vertical slats



movable toward or away from each other as well as being tiltable. Provision is also made for housing the blind in a space which consists in part an existing window pane and in part another window pane carried by a supplementary frame member which has means for sealing that frame member against the existing window pane, that frame member also carrying fastening means, such as a bolt, for securing the supplementary frame member to the frame member for the existing window pane.

3,719,222

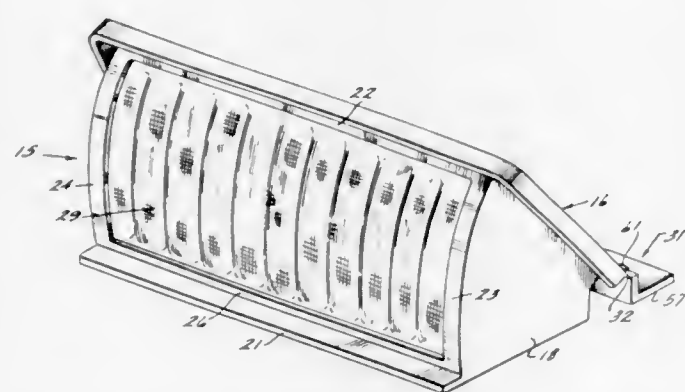
## FRAMED SCREEN PANEL

Dale L. Harding and Arthur R. Kuhnash, Cambridge, Ohio, assignors to Textron, Inc., Providence, R.I.  
Filed May 4, 1971, Ser. No. 140,026

Int. Cl. E06b 9/00

U.S. Cl. 160—371

2 Claims



A framed screen panel having a plurality of side-by-side corrugations in a central portion which terminate adjacent marginal edges of the screen panel. A plastic frame is molded on the marginal edges of the screen panel.

3,719,223

## METHOD FOR QUIETLY CASTING FOAMED METAL

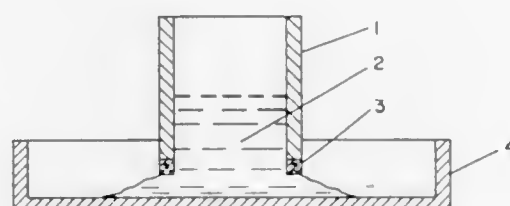
Charles P. Jarema, and Leonard M. Niebyski, Birmingham, both of Mich., assignors to Ethyl Corporation, New York, N.Y.

Division of Ser. No. 50,139, June 26, 1970, abandoned. This application Dec. 9, 1971, Ser. No. 206,309

Int. Cl. B22d 27/20, 37/00

U.S. Cl. 164—79

9 Claims



A novel vessel and an improved method of casting batch liquid materials which solidify on cooling or standing utilizing said vessel; the method is especially advantageous for casting foamed metals whereby a composition containing molten metal and a suitable foaming agent is prepared in one or more upright, open-ended vessels provided with suitable gaskets and seated against the bottom of a mold. When the composition is ready to be cast, the vessels are vertically separated from the mold bottom so that only the lower ends of the vessels contact the composition as it quietly flows into the mold.

3,719,224

## COOLING DEVICE FOR A CONTINUOUS CASTING WHEEL

Gerard Lanque, 78 Maisons-Laffitte, France, assignor to Societe Nouvelle Spidem, Paris, France

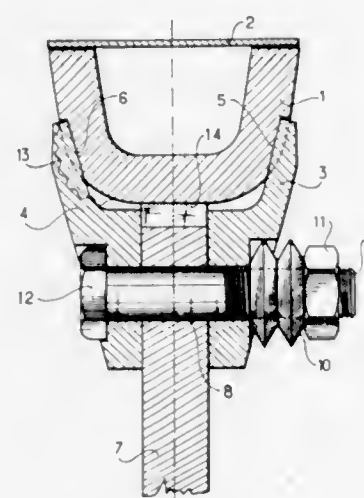
Filed Oct. 26, 1971, Ser. No. 192,133

Claims priority, application France, Oct. 23, 1970, 7038394

Int. Cl. B22d 11/06

U.S. Cl. 164—278

10 Claims



Cooling device for a continuous casting wheel, in which the casting groove has a U-shaped cross-section, having a substantially even thickness, and whose opening faces outwards, with the securing of the groove onto the hub of the wheel being achieved by shoes forming clips, the hub being provided with teeth or projections around the periphery to permit more efficient cooling of the bottom of the U-shaped casting groove in the wheel.

3,719,225

## METHOD OF STORING HEAT

Matthew Mekjean, Niagara Falls, N.Y., and James S. Sconce, Lewiston, N.J., assignors to Hooper Chemical Corporation, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 636,544, May 5, 1967, abandoned, which is a continuation of Ser. No. 329,246, Dec. 9, 1963, abandoned. This application Feb. 13, 1969, Ser. No. 799,101

Int. Cl. F28d 13/00

U.S. Cl. 165—1

10 Claims

This invention relates to a method of transferring heat and heat storage composition, employing a substantially anhydrous composition of alkali metal hydroxide, alkali metal nitrate and one or more of several additives. The operating temperature is from 250°–1,250° Fahrenheit.

3,719,226

## SEAL ASSEMBLY FOR A GAS TURBINE REGENERATOR

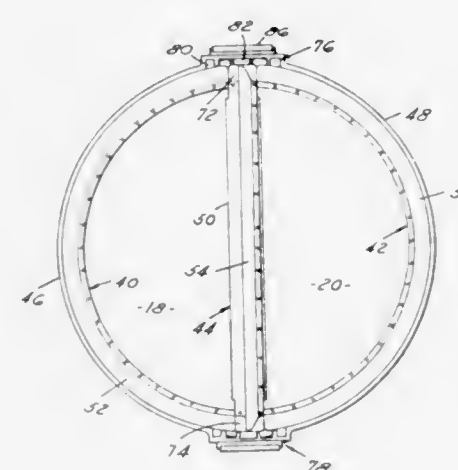
James K. Vallance, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 2, 1971, Ser. No. 168,229

Int. Cl. F28d 19/04

U.S. Cl. 165—9

13 Claims



A secondary foil is attached to the end portions of C-shaped rubbing seals so that the foil spans the end portion of a cross-arm seal. The secondary foil is concave and has a smaller radius of curvature than the C-shaped seals. Thermal expansion of the cross-arm seal changes the contact line between an end foil attached to the end portion of the cross-arm seal and the concave surface of the secondary foil and thereby maintains gas sealing without developing undue stresses.

3,719,227

## PLATE HEAT EXCHANGER

Sverre Knut Jenssen, Saltsjobaden, Sweden, assignor to Thermovatic Sverre K. Jenssen AB, Saltsjobaden, Sweden

Filed Nov. 9, 1970, Ser. No. 87,915

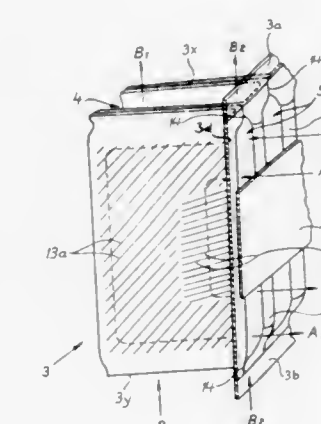
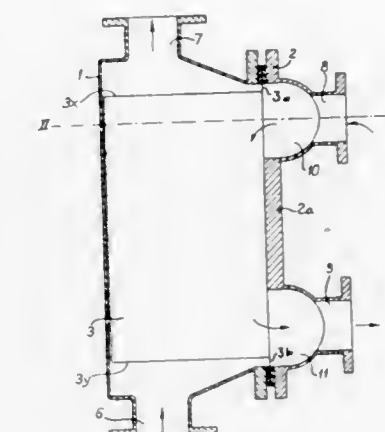
Claims priority, application Sweden, Nov. 10, 1969, 15366/69

Int. Cl. F28t 3/00

U.S. Cl. 165—166

1 Claim

Heat exchange is effected through a thin plate strip having transversely extending folds which provide it with a sinuous shape, thereby forming channels extending transversely of the strip on both sides thereof for passage of the two heat exchange media, respectively. The first set of channels (those on one side of the strip) are sealed at their opposite ends, each of these channels having opposing walls which are joined together along the opposite lateral edge portions of the strip so as to form alternate folds of the strip into a continuous line along each of these lateral edge portions. The strip is sealingly



of the strip defining the second set of channels can be made accessible for cleaning or inspection by separating the opposing side walls of these channels like the leaves in a book.

3,719,228

## METHOD OF SELECTIVELY STIMULATING OIL WELLS, COMPOSITIONS THEREFOR, AND METHODS OF MAKING SUCH COMPOSITIONS

Calixto Fortunato Garcia, Hurst, Tex., assignor to Byron Jackson, Inc., Long Beach, Calif.

Filed June 11, 1971, Ser. No. 152,362

Int. Cl. E21b 33/13

U.S. Cl. 166—281

4 Claims

A method of treating an earth formation, especially a calcareous earth formation, containing petroleum and connate brine to stimulate production of the petroleum without substantially increasing the production of brine. A liquid pre-flush composition, including a water solution of polar solvent having dissolved in the solution rosin soap and fatty acid soap is injected into the formation. The preflush composition reacts with the connate brine to produce a precipitate that blocks the brine-bearing passages, but the preflush composition does not react with the petroleum to produce a precipitate. Thus, the petroleum bearing passages are left open. Thereafter, an acid solution or other treating solution is injected into the formation to selectively stimulate or treat the oil-bearing passages. Preflush concentrates and compositions for use in the formation-treating method are disclosed as well as processes of making such compositions.



3,719,229

## SECONDARY RECOVERY METHOD

Jack F. Tate, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

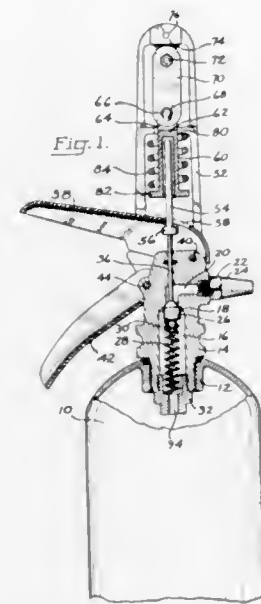
Filed June 21, 1971, Ser. No. 155,310

Int. Cl. E21b 43/22, 43/27

U.S. Cl. 166—271

17 Claims

Significant improvement in the recovery of hydrocarbons from a subterranean hydrocarbon-bearing formation containing acid-soluble components is accomplished by injecting into the formation via an injection well drilled into a formation communicating with an adjacent producing well and containing acid-soluble components which may or may not have water-sensitive clays and shales included therein, an aqueous acidic solution of a phosphate ester of prescribed formula whereupon the acid component reacts with the acid-soluble components of the formation creating passageways or enlarging existing passageways thus facilitating the flow of fluids therein and the phosphate ester prevents post precipitation of dissolved salts and thereby increases the recovery of hydrocarbons from the formation through the adjacent producing well.



3,719,230

## CASING PIPE AND METHOD OF CASING A BOREHOLE

Ray F. Kemp, Port Allen; Robert R. Blanchard, Baton Rouge, both of La., and Roger S. Chamberlin, Magnolia, Ark., assignors to The Dow Chemical Company, Midland, Mich.

Filed March 15, 1971, Ser. No. 123,950

Int. Cl. E21b 43/00

U.S. Cl. 166—315

9 Claims



An article of manufacture and its use for casing boreholes used for transporting corrosive fluids is taught. A metal casing pipe is provided with a coating of a set resinous material having incorporated therein fibrous reinforcements. The so-coated casing pipe is placed in the borehole and when the steel is corroded away a reinforced resinous casing remains.

3,719,231

## ATTACHMENT FOR AUTOMATIC OVERRIDE OF MANUALLY OPERATED COMPRESSED GAS FIRE EXTINGUISHERS AND ALARMS

Kenneth S. Haggard, Route 2, P.O. Box 293A, McMinnville, Oreg.

Filed May 14, 1971, Ser. No. 143,562

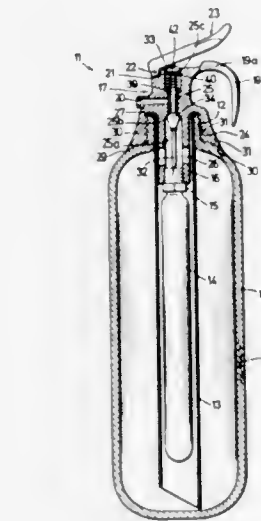
Int. Cl. A62c 13/24, 35/02

U.S. Cl. 169—26

12 Claims

An attachment for a manually operated, valve controlled compressed gas fire extinguisher or alarm device includes a housing attachable to the device by means of pins which also pivotally mount the conventional valve operating hand levers

of the device. A plunger, guided freely by a spring loaded plunger operator, extends through an opening made in the upper hand lever and is aligned with the valve. The plunger operator normally is held in retracted position by a heat responsive fuse link which interconnects the housing and



A refillable hand fire extinguisher comprised of a blow-molded thermoplastic glass-fiber reinforced plastic, extinguishing-material-containing bottle, on the male buttress-threaded neck of which a lever-valved discharge nozzle and hand grip head is threaded and sealed to the bottle, with a radially ported valve inlet nipple integral on the head coaxially spaced from a discharge riser tube mounted in the neck and extending to the bottle bottom; a replaceable elongated pressurized CO<sub>2</sub> gas cartridge, coaxially mounted in the discharge tube by its pierceable head threaded into the bottom end of the valve inlet nipple; and

operator. Upon melting of the fuse link the operator and plunger extend, under the influence of the spring loading, the plunger thus engaging and operating the valve to release the compressed gas. The attachment permits normal manual operation of the device.

3,719,232

## FIRE EXTINGUISHER

Gunter Gubela, Poll-Vingster Strasse 150-160, Cologne, Kalk, Germany

Filed Mar. 15, 1971, Ser. No. 124,261

Claims priority, application Germany, Mar. 14, 1970,

P 20 12 142.0

Int. Cl. A62c 13/00

U.S. Cl. 169—31 P

10 Claims

a reciprocable valving member carrying a cartridge piercing point. A valve safetying wedge and extinguisher stowage fitting, both of molded plastic, are also shown.

3,719,233

## STONE GATHERER

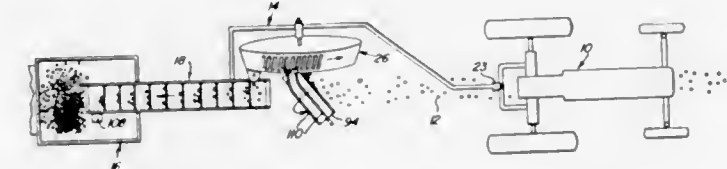
Herbert Hehr, Route 1, Fredonia, N. Dak.

Filed Oct. 18, 1971, Ser. No. 189,960

Int. Cl. A01b 43/00

U.S. Cl. 171—65

4 Claims



A mobile frame including a generally frusto-conical ground wheel journaled for rotation about a generally horizontal but inclined transverse axis with the lower periphery of the wheel in surface-to-surface contact with the ground and the minor and major diameter ends of the wheel open and closed, respectively Stone deflecting structure is positioned outwardly of the open minor diameter side of the wheel for deflecting windrowed stones into the lower periphery of the open side of the wheel and the interior of the wheel includes generally radially extending paddles supported from the closed end of the wheel and provided for elevating stones collected in the lower peripheral portion of the wheel in response to rolling movement of the wheel over the ground. Also, a stone retaining shield is provided to prevent discharge of the stones from the open side of the wheel until they have been elevated to a predetermined level and gathered stone receiving structure is supported at the aforementioned level for receiving the stones discharged outwardly of the open side of the wheel by the paddles.

3,719,234

## HIGH SPEED SHIELD CULTIVATOR LEVELER

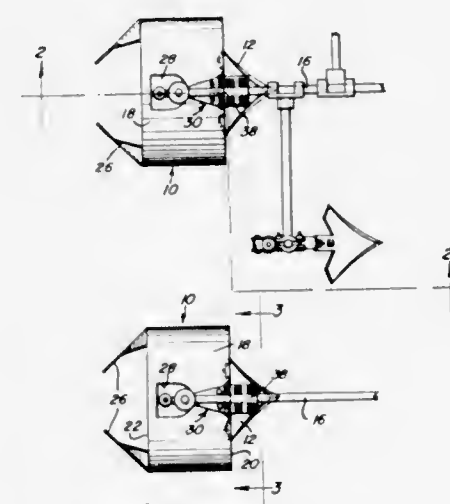
Delbert M. Neece, 517 Jackson St., Gardner, Ill. 60424

Filed Feb. 25, 1971, Ser. No. 118,610

Int. Cl. A01b 35/32

U.S. Cl. 172—135

1 Claim



A ground leveler for use in association with a cultivator shovel which is pulled forwardly through the ground. The leveler is an inverted U-shaped housing having generally parallel spaced apart ground engaging side skirts flanking the sides of the cultivator shovel. The housing has a top bridging the side skirts and the leveler is hinged mounted at the top of its forward end. Rearwardly

and inwardly inclined wings constitute extensions of each of the side skirts. The terminal ends of the wing extensions are spaced apart at the centrally located path of the cultivator shovel. The leveler causes dirt erupted by the cultivator shovel to be confined to the general path of travel of the shovel and the ground levelled.

3,719,235

## DEVICE FOR ATTACHING BULLDOZER BLADES

Yasushi Marui, Tokyo, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Original application Feb. 26, 1970, Ser. No. 14,440.

Divided and this application Nov. 22, 1971, Ser.

No. 200,925

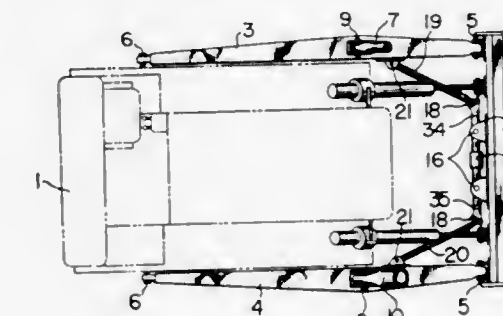
Claims priority, application Japan, Mar. 4, 1969,

44/15,885

Int. Cl. E02f 3/76

U.S. Cl. 172—803

2 Claims



A mounting assembly for tiltable bulldozer blades including lateral blade load resisting struts and means for connecting the struts to the rear of the bulldozer blade in a way such that internal stressing of the blade for tilting purposes is in no way impeded by the strut mounting assembly. Various embodiments are disclosed though in each instance a pair of brace members are pivotally mounted in generally end to end relation on the rear of the blade, the inner ends of the brace members being yieldably interconnected so as to inhibit stress transfer between the brace members.

3,719,236

## PLURALLY ENERGIZED POWER TONGS

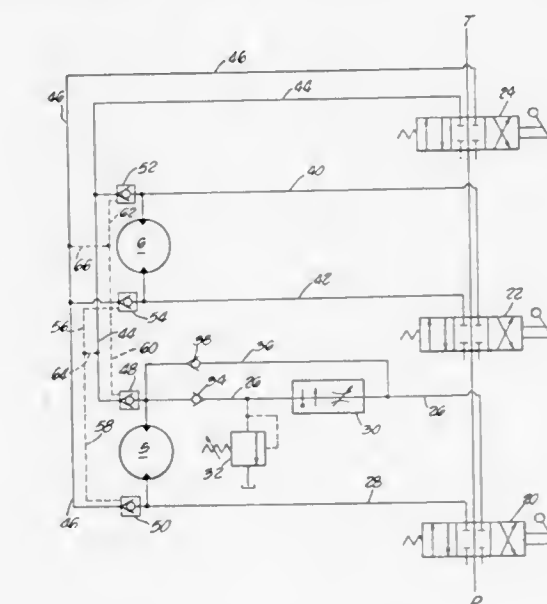
Roger Smith, Jr., and John Wirt Turner, Jr., both of Houston, Tex., assignors to Byron Jackson, Inc., Long Beach, Calif.

Filed June 21, 1971, Ser. No. 155,163

Int. Cl. E21b 19/16

U.S. Cl. 173—12

25 Claims



A power tong combination having a tong head adapted to be driven in opposite pipe gripping and turning directions in-



cluding a pair of reversible fluid motors respectively equipped with overrunning clutches which drive the gripping mechanism (a) at a low speed and low torque to start a threaded pipe connection without danger of cross-threading; (b) at high speed to spin the threaded pipe connection together or apart, and (c) at a high torque to make up or break out the pipe connection, the combination including a hydraulic power and control system with appropriate control valve means.

3,719,237

**TUBING TONG HYDRAULIC DRIVE SYSTEM**

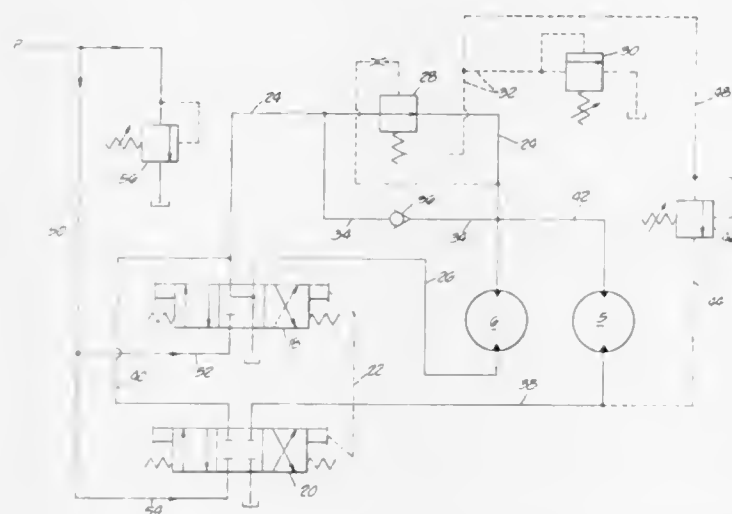
Howard S. Flick, Long Beach, Calif., assignor to Byron Jackson, Inc., Long Beach, Calif.

Filed June 21, 1971, Ser. No. 155,054

Int. Cl. E21b 19/16

U.S. Cl. 173—12

10 Claims



A power tong combination having a tong head for threaded pipe adapted to be driven in opposite pipe gripping and turning directions by a driving system which (1) drives only a first motor at a preselected torque and at high speed in the direction to connect threaded pipe; (2) jointly drives the first motor and a second motor to produce increased yet controlled torque to finally make up a pipe joint, and (3) jointly drives both motors to provide high torque to break out a pipe joint and then drives only the first motor to provide less torque and high speed to rapidly disconnect the pipe joint whereby the pipe gripping means remains engaged with pipe during the foregoing changes in speed and torque.

3,719,238

**COMPACT ROTARY WELL DRILLING RIG WITH HYDRAULIC SWIVEL PULL DOWN MECHANISM**

John David Campbell, and Robert E. McCann, both of Wichita Falls, Tex., assignors to Charles M. Dykema, Trustee, Chicago, Ill. and Small Business Administration, an agency of the United States Government

Filed Aug. 19, 1971, Ser. No. 173,009

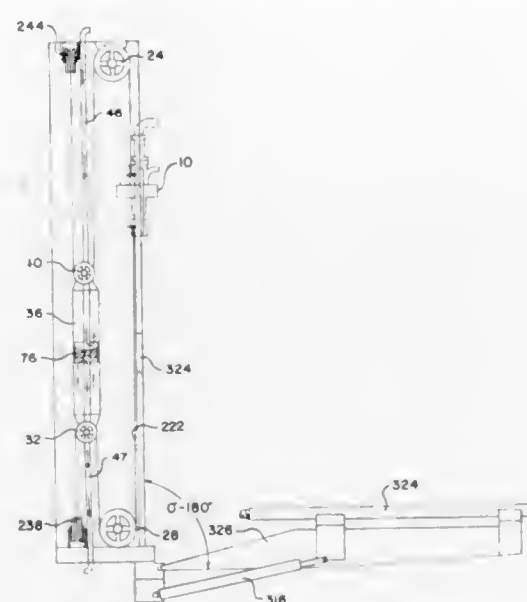
Int. Cl. E21c 5/06; F01b 29/08

U.S. Cl. 173—147

6 Claims

A compact, mobile, portable rotary drilling rig which enables the use of drill pipe of a length slightly less than the height of the mast. The drilling rig has a power driven swivel or drilling head connectable to a drill pipe, which swivel may be pulled down by a hydraulic cylinder-plunger arrangement, which cylinder is about one-half the length of the distance which the swivel is to be pulled down, and which cylinder is so constructed that no hoses are connected directly to the movable hydraulic cylinder. The hydraulic cylinder exerts tension on cables to perform the pull down action. Provision is made to mount the present compact, mobile, rotary drilling rig, in-

cluding the mast, on a vehicle which may be enclosed in a van-like structure, if desired, which van-like structure may be so insulated that men can work within an insulated enclosure



when the outside temperature is well over 100° or they can work therein when the outside temperature is subzero without injury to the machinery and without discomfort to themselves.

3,719,239

**UP-HOLE SIGNALING DEVICE**

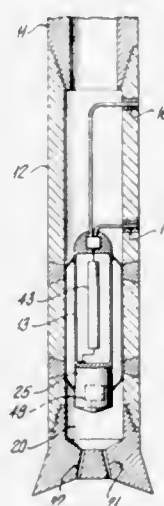
Albert P. Richter, Jr., Houston, Tex.; James D. Bruner, Englewood, Colo., and Percy T. Cox, Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Aug. 4, 1971, Ser. No. 169,014

Int. Cl. E21b 47/12

U.S. Cl. 175—50

6 Claims



In borehole drilling which employs a bit having at least one passage for drilling fluid under pressure, there is apparatus to release a resilient ball that will temporarily block the passage. The blocking will cause a pressure increase that may be observed at the surface.

3,719,240

**EARTH BORING MACHINE**

James W. Young, Irving, and George A. Cason, Jr., Dallas, Tex., and Ernest O. Kunkel, Nevada, Mo., assignors to Dresser Industries, Inc., Dallas, Tex.

Original application Feb. 2, 1970, Ser. No. 7,923. Divided and this application Oct. 29, 1971, Ser. No. 193,870

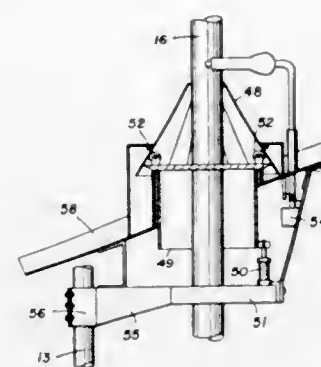
Int. Cl. E21c 7/00

U.S. Cl. 175—207

1 Claim

An apparatus for boring large diameter holes. A drilling mechanism is pivotally mounted on a base and ar-

ranged so that it may drill at any angle from the horizontal, either up or down. Means are provided to divert



the drilling residue and loose rock and a drill pipe positioning system installs and removes sections of the drill pipe.

3,719,241

**FREE BREATHING LUBRICATION SYSTEM FOR SEALED BEARING ROCK BITS**

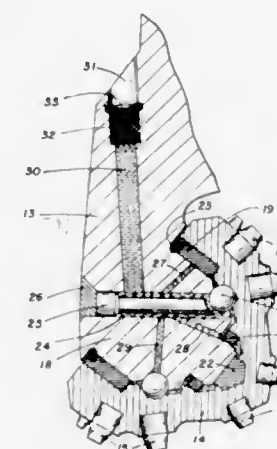
William Rex Bell, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Nov. 24, 1971, Ser. No. 201,850

Int. Cl. E21b 9/08, 9/35; E21c 13/00

U.S. Cl. 175—228

26 Claims



Three individual lubricant reservoirs are positioned in a three cone rotary rock bit with one of the reservoirs in each of the three arms of the bit for supplying lubricant to the bit bearing systems located between each of the three individual cone cutters and the bearing shafts upon which they rotate. A seal is positioned between each of the cone cutters and its bearing shaft to prevent the lubricant from escaping into the borehole and to prevent borehole fluids and debris from entering the bearing area. A passageway extends from each of the lubricant reservoirs to the exterior of the bit and a free breathing porous filter plug is positioned in each of the passageways thereby equalizing the internal pressure of lubricant in the lubricant reservoir and the hydrostatic pressure of drilling fluid in the well bore.

3,719,242

**SNOWMOBILE TRACK SUPPORT SYSTEM**

Marley J. Duclo, Roseau, Minn., assignor to Textron Inc., Providence, R.I.

Filed Feb. 4, 1971, Ser. No. 112,690

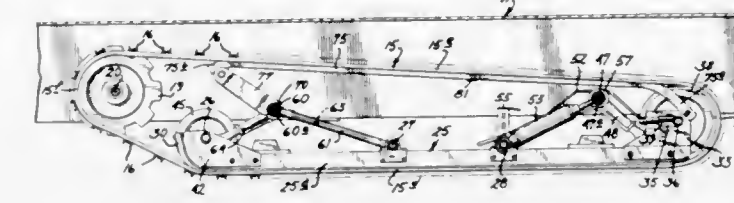
Int. Cl. B62m 27/02

U.S. Cl. 180—5 R

3 Claims

A suspension system for a snowmobile is shown, having a pair of slide rails for engagement with the lower run of the drive track. A yieldable suspension system mounted on

the body and positioned between the upper and lower runs of the track supports the snowmobile on the lower run. A pair of spaced guide rails are positioned below the upper return run to provide support for the upper run. The guide



rails are mounted so as to remain in contact with the upper run over substantially their entire length during substantially all movements of the suspension system with respect to the body.

3,719,243

**RETRACTABLE UNDER SLIDE PANEL FOR DISABLED SNOWMOBILES**

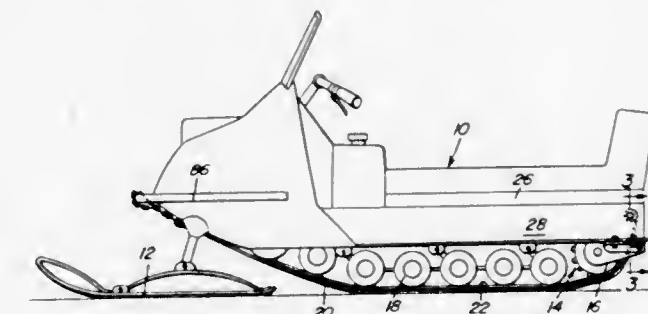
Joseph Gustave Losier, New Brunswick, Canada, assignor to Joseph Renald Losier, Tracadie, New Brunswick and Nicholas Dellelce, Sudbury, Ontario, Canada

Filed Feb. 18, 1971, Ser. No. 116,497

Int. Cl. B62b 15/00; B62m 27/02

U.S. Cl. 180—5 R

7 Claims



An elongated sheet of flexible material stored in a compact rolled state at one end of a snowmobile upon a reel provided for supporting and winding the sheet of flexible material. The reel is positioned slightly endwise outwardly and above the adjacent end of the endless track of the associated snowmobile and the strip or panel of flexible material wound on the reel may be unwound from the latter, passed lengthwise beneath the lower reach of the endless track of the snowmobile and anchored to the remote end of the snowmobile. The panel is of a width adapted to span the entire transverse extent of the associated endless track and thereby is operative to form a smooth undersurface for that portion of the associated snowmobile normally occupied by the lower reach of the endless track assembly of the snowmobile. This smooth undersurface enables the snowmobile, when disabled and when the flexible panel is disposed in operative position, to be readily manually pushed or towed behind another snowmobile or similar vehicle.

3,719,244

**RECREATIONAL VEHICLE**

Hobart G. Miller, and James F. Mariol, both of Chicago, Ill., assignors to Apeco Corporation, Evanston, Ill.

Filed Oct. 7, 1971, Ser. No. 187,409

Int. Cl. B62d 53/04

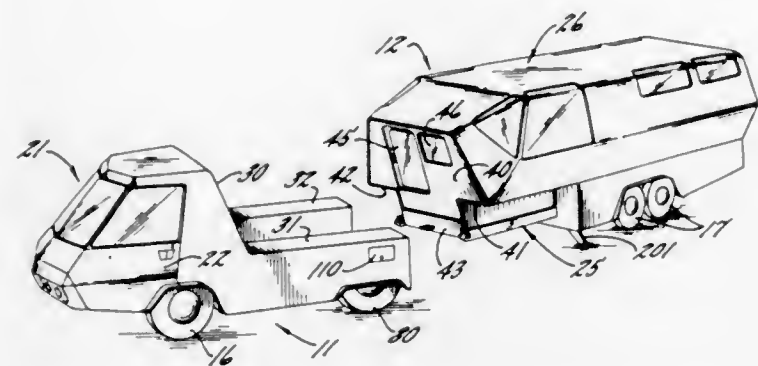
U.S. Cl. 180—14 R

22 Claims

A recreational vehicle of composite construction made up of a power unit, or tractor, and a self-supporting living unit, the units being telescoped together and interfitted to form a single rigid structure for safe and easy driving at highway speeds. The power unit, in addition to a pair of steerable driv-



ing wheels, has a pair of auxiliary wheels which are normally retracted but which are extendible to permit the power unit to be separated for independent usage as a runabout when the living unit is parked in a camp site or the like. Means are provided for drawing the units together and for separating them so that conversion from one mode of use to the other can be effected in just a few seconds' time. The units are so joined



and constructed that when drawn together, and with the auxiliary wheels retracted, the appearance is that of a vehicle having a single frame and body. The rear wall of the power unit and front wall of the living unit, upon assembly, lie closely face-to-face and have registering doorways to permit easy movement of the passengers back and forth between the units while underway.

3,719,245

## VEHICLE STRUCTURE

Karl Wilfert, Gerlingen-Waldstadt, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

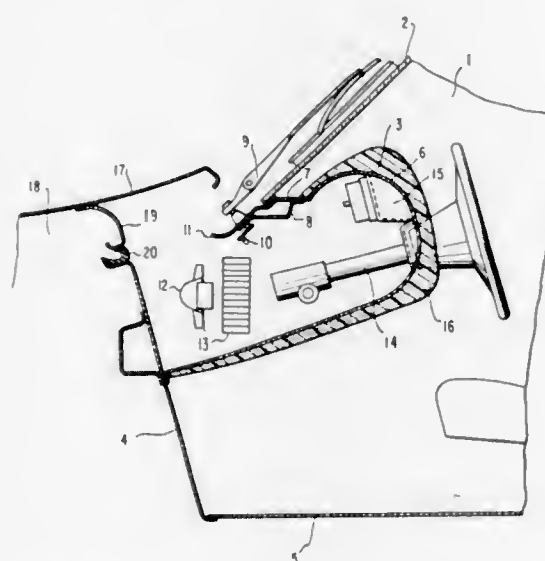
Filed Aug. 26, 1970, Ser. No. 67,142

Claims priority, application Germany, Aug. 27, 1969, P 19 43 485.6

Int. Cl. B60k 37/00

U.S. Cl. 180—90

27 Claims



A vehicle structure disposed in the forward part of a passenger space, particularly of a passenger motor vehicle which serves for the accommodation and mounting of auxiliary installations, instruments and the like; the structure thereby projects into the vehicle interior space in a generally rearward direction and closes off the vehicle interior space with respect to the adjoining vehicle space, e.g., forming the engine or luggage space; the structure is constituted by a hollow body that is accessible only from the outside for servicing the auxiliary installations and instruments.

### 3,719,246 DEVICE IN VEHICLES, PARTICULARLY AUTOMOTIVE VEHICLES, FOR SKID PREVENTION

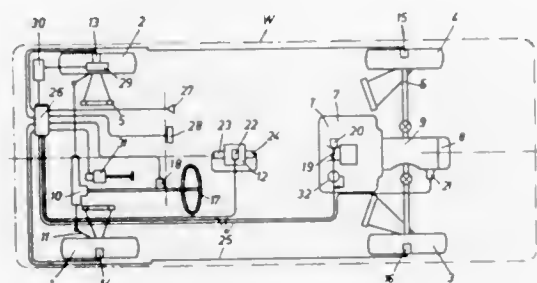
Helmuth Bott, 7254 Munchingen, Germany, assignor to Firma Dr.-Ing. h. c. F. Porsche K.G., Stuttgart-Zuffenhausen, Germany

Filed Dec. 16, 1969, Ser. No. 885,438

Int. Cl. B60t 8/18, 8/24

U.S. Cl. 180—103

20 Claims



A device for automotive vehicles including an antiblocking mechanism and means for skid prevention. The device essentially includes measuring instruments which detect the instantaneous driving condition and which are coupled with a control mechanism responsive to specific critical values of the vehicle. This control mechanism triggers actuatable means for the automatic control of at least one device serving to keep the vehicle on course upon reaching a predetermined critical value of lateral acceleration.

3,719,247

## GOLF CART

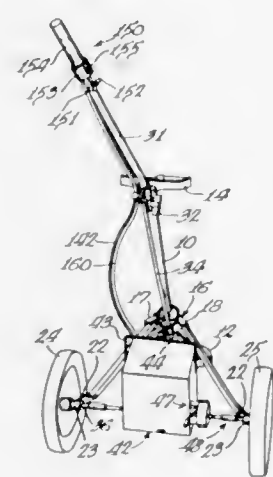
Roger M. Hollis, 2823 Gulf of Mexico Drive, Longboat Key, Sarasota, Fla.

Filed April 7, 1971, Ser. No. 132,127

Int. Cl. B62d 5/104

U.S. Cl. 180—19 H

14 Claims



A collapsible powered two-wheel golf bag cart including a frame, collapsible leg structures on the frame each carrying one wheel, golf bag support means on the frame, a handle on the frame for manipulating the cart, a power unit detachably supported on the frame between the wheels, an electric motor in the power unit, an output shaft from the power unit, a disconnectable coupling for connecting the output shaft to drive one of the cart wheels, a disengageable clutch in the power unit connecting the motor and the output shaft, a battery in the power unit in circuit with the motor, and circuit control means on the handle for energizing the motor forwardly or reversely and for varying the speed of the motor.

3,719,248

## DOOR LOCK, ESPECIALLY FOR MOTOR VEHICLES

Werner Breitschwerdt, Stuttgart; Gunter Gmelner, Sindelfingen; Christian Grabner, Maichingen, and Gerhard Sigmund, Stuttgart, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

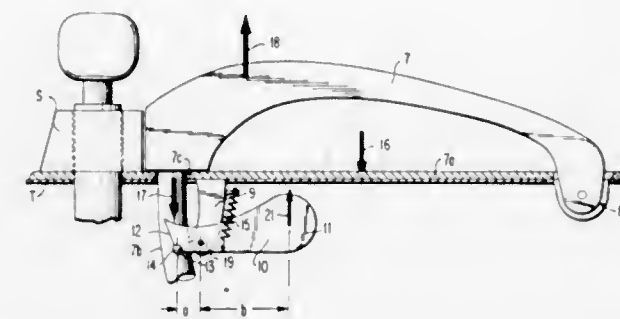
Filed May 14, 1971, Ser. No. 143,335

Claims priority, application Germany, May 15, 1970, P 20 23 859.9

Int. Cl. E05c 3/36

U.S. Cl. 180—112

6 Claims



A door lock, especially for motor vehicles, which is equipped with a pull handle and with a device preventing movement caused by forces due to inertia of those parts of the door lock which are movable and have a significant weight; the device for preventing such movement includes, in addition to the pivotally mounted pull handle, a rod connected to the end of the pull handle opposite its pivotal support which extends into the interior of the door where an equalization mass is pivotally supported in such a manner that in case of a sudden change in the direction of movement initiating the inertia forces, a pivoting of the pull handle in the opening direction is prevented.

3,719,249

## POWER STEERING SYSTEM AFFORDING EMERGENCY STEERING CAPABILITY

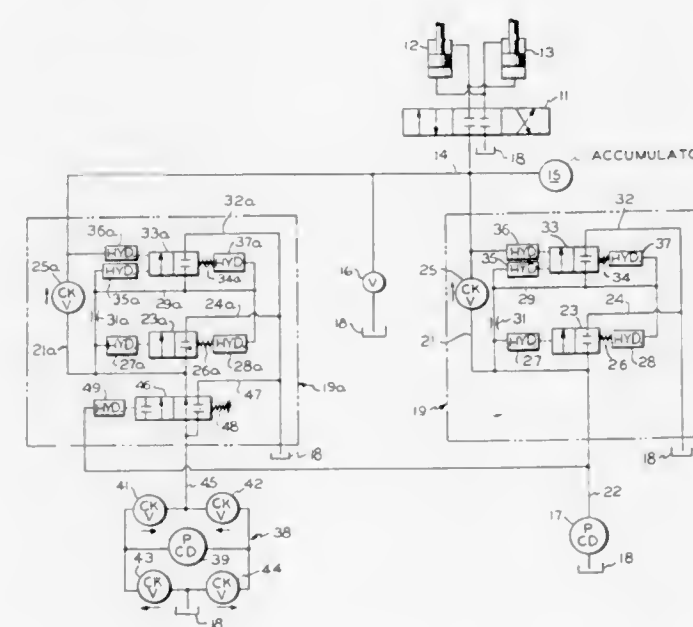
Lanson Becker, Galesburg, and Theron M. Huffman, Paw Paw, both of Mich., assignors to General Signal Corporation, Rochester, N.Y.

Filed March 5, 1971, Ser. No. 121,342

Int. Cl. B62d 5/08

U.S. Cl. 180—79.2 R

7 Claims



The disclosure concerns hydraulically operated power steering systems for vehicles, particularly large articulated vehicles. The system includes a closed center steering valve

which normally is supplied with oil from an engine driven pump, and it incorporates an accumulator and a ground drive pump which provide sufficient hydraulic power to permit steering during extended periods of engine-off towing.

3,719,250

## SPEAKER SYSTEM

Kouji Maekawa, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

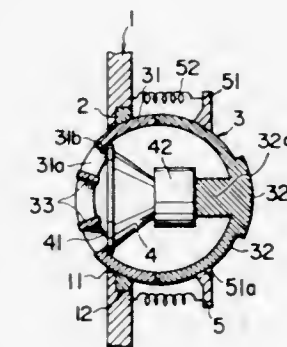
Claims priority, application Japan, Mar. 16, 1971, 46/17070

Filed March 15, 1972, Ser. No. 234,930

Int. Cl. G10k 13/00; H04r 1/28

U.S. Cl. 181—31 B

4 Claims



A speaker system mounting arrangement which allows the middle and high frequency sounds to be directed in a desired direction to give a better sound reproduction without changing the position of the speaker enclosure, by mounting the middle and high frequency sound range speakers in a globe member having an opening on one side thereof and movably mounting the globe member in an opening formed in the enclosure installation or mounting board and is spring biased to allow the globe member to be rotated to position the sound axis of the speaker in any desired direction without moving the speaker enclosure.

3,719,251

## DIFFUSER APPARATUS FOR PNEUMATIC TOOLS

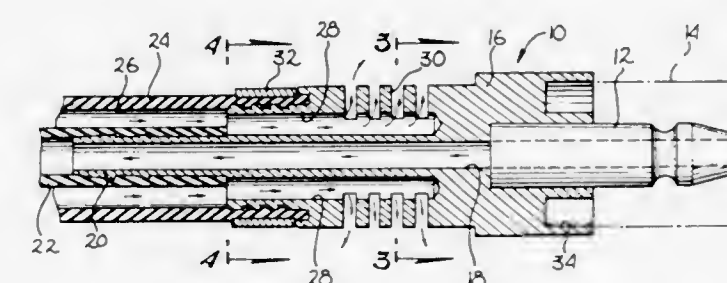
John R. Hedrick, La Crescenta, Calif., assignor to Hall International Inc., Santa Barbara, Calif.

Filed March 31, 1971, Ser. No. 129,796

Int. Cl. F01n 1/10, 7/18

U.S. Cl. 181—36 A

7 Claims



A diffuser apparatus to disperse a gaseous stream wherein the apparatus is formed as a single integral unit having an internally located supply passage, a gaseous exhaust passage surrounding the supply passage, a plurality of spaced apart annular openings communicating the ambient with the exhaust passage through the outer housing wall.

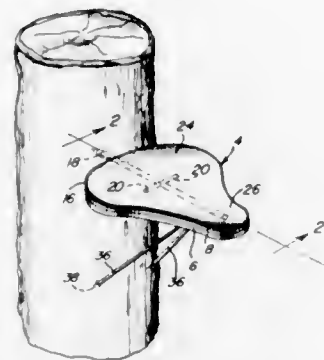


### 3,719,252 TREE SEAT

Garen R. Tiley, 8012 Crystal Valley Cove, Little Rock, Ark.  
Filed Dec. 20, 1971, Ser. No. 209,991  
Int. Cl. A47c 9/10

U.S. Cl. 182-187

9 Claims



A readily attachable and detachable portable type tree seat of requisite size and shape for convenient use by a hunter. It has an inward cantile-like body portion and a pommel-like forward or outward end portion, resembles a bicycle seat or saddle in top plan, and provides a comfortably resilient seat for the occupant. A centrally balanced supporting rod is fixed on the seat and has a screw-threaded shank or stud which can be expeditiously embedded and temporarily screwed and securely anchored on the tree for convenient reliable use in the special environment at hand. A V-shaped prop has pointed anchoring ends and a U-shaped vertex portion which is hingedly mounted on an adapter lug carried by the non-twisting portion of the embedded rod.

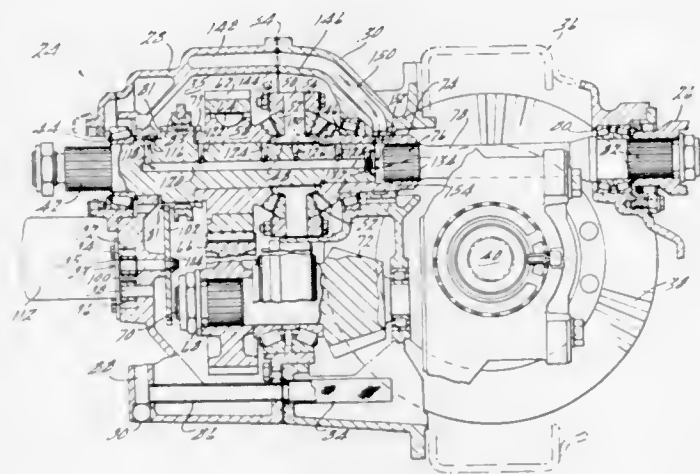
### 3,719,253 LUBRICATING SYSTEM FOR POWER TRANSMITTING APPARATUS

Sam E. Dukes, Detroit, and Edwin C. Maki, Bloomfield Hills, Mich., assignors to North American Rockwell Corporation, Pittsburgh, Pa.

Filed July 13, 1971, Ser. No. 162,176  
Int. Cl. F16n 7/36

U.S. Cl. 184-6.12

12 Claims



A lubrication system for a power transmitting apparatus comprising an outer casing defining a center chamber including a liquid lubricant sump, a shaft journaled for rotation within the casing and gear means located within the chamber and operatively connected to the shaft. A lubrication passage is formed within the shaft. This passage has two openings to exterior of the shaft for the introduction of lubricant to the passage. First lubricant supply means supply lubricant from the sump to one of the passage openings at a predetermined pressure and second lubricant supply means supply lubricant

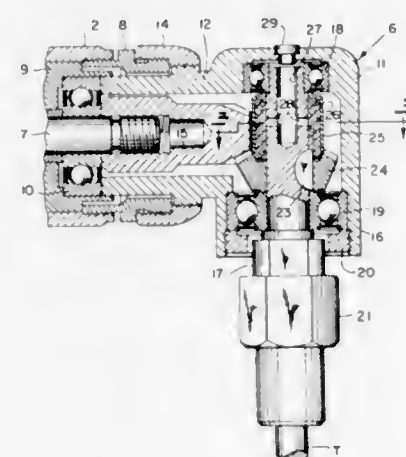
from the sump to the other of the openings at a pressure less than the predetermined pressure. One way valve means are located in the other of the openings and prevent the flow of lubricant to the passage through the second opening only when the fluid pressure within the passage is less than the fluid pressure outside the passage and proximate the second opening.

### 3,719,254 LUBRICATED ANGLE DRIVE ATTACHMENT FOR AIR OPERATED TOOL

Philip A. Snider, Hicksville, Ohio, assignor to Dotco, Inc., Hicksville, Ohio  
Filed Nov. 10, 1971, Ser. No. 197,237  
Int. Cl. F16n 7/18

U.S. Cl. 184-64

9 Claims



An angle drive attachment comprising an angular housing having one leg thereof detachably secured to the end of an air motor housing on whose rotor shaft is mounted a bevel pinion which meshes with a bevel gear keyed onto the output shaft which is journaled in the other leg of said angular housing, said attachment being characterized in that the output shaft is hollow to constitute a lubricant reservoir and has therearound and rotatable therewith a sleeve of absorbent material from which the lubricant is metered in finely divided form by centrifugal force directly onto the teeth of the bevel gear and into the zone of intermesh of the teeth of said bevel pinion and gear thus to lubricate the same. The angular housing of the attachment is provided with a lubricant fitting through which lubricant is periodically supplied into the hollow output shaft.

### 3,719,255 ENERGY ABSORBING DEVICE

Clare G. Daniels, El Toro, and Bernard Mazelsky, W. Covina, both of Calif., assignors to ARA, Inc. (Aerospace Research Associates, Inc.), West Covina, Calif.

Filed April 21, 1969, Ser. No. 817,979  
Int. Cl. F16f 7/12

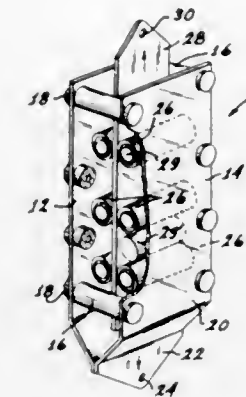
U.S. Cl. 188-1 C

3 Claims

The device is an energy absorbing arrangement in which a flexible tube-like, energy absorbing member is confined in a space between one relatively rigid body member and another. They may deform elastically but not plastically. Relative motion between one body member and the other body member roll the tube-like in the space, and thereby absorbs energy in the rolling due to the cyclical plastic deformation or hysteretic deformation thereof, since the spacing between the one body member and the other body member is less than the unstressed and undeformed diameter of the flexible, tube-like member. A nondeformable rigid cylindrical retainer means is positioned within the flexible tube-like member to limit the

radial deformation thereof to prevent stress relieving plastic flow or creep of the flexible tube-like energy absorbing

member, in which said transfer member bears solely on three supporting areas which are flat, two of said areas being incorporated in said fixed support on the same side

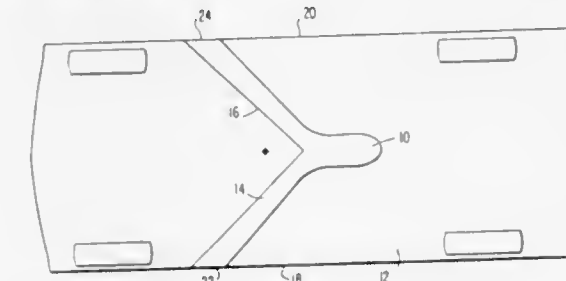


### 3,719,256 RETRO-ROCKET BRAKING SYSTEM FOR LAND VEHICLES

Carl C. Clark, 23 Seminole Ave., Baltimore, Md. 21228  
Filed June 18, 1971, Ser. No. 154,333  
Int. Cl. B60k 1/12

U.S. Cl. 188-2 R

3 Claims



A rocket motor is secured to the frame adjacent the underside of the vehicle and is provided with two diverging nozzles extending forwardly at an angle to the center line of the vehicle and terminating at the sides thereof. The lines of thrust along each nozzle intersect rearwardly of the center of mass of the vehicle and are disposed at approximately a 5° incline relative to the horizontal such that the thrust plane defined by the two nozzles intersects the surface on which the vehicle is travelling rearwardly of the area defined by the wheels of the vehicle.

### 3,719,257 DISC-BRAKE AND SUPPORT STRUCTURE

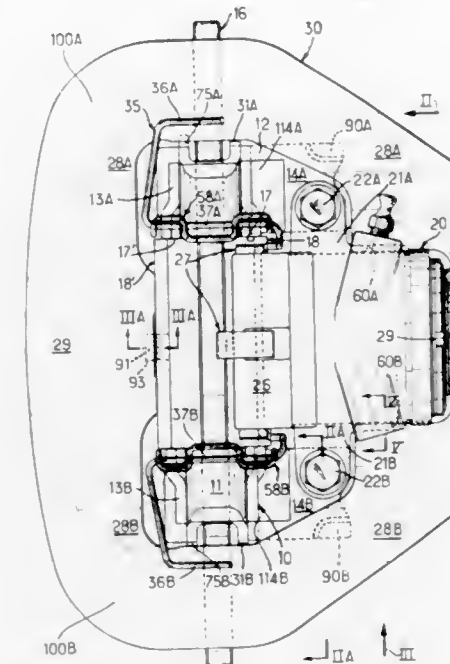
Jean Maurice, Paris, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France  
Filed May 8, 1970, Ser. No. 35,643  
Claims priority, application France, May 4, 1969, 6915621; May 11, 1969, 6919288; July 11, 1969, 6923672

The portion of the term of the patent subsequent to Feb. 3, 1987, has been disclaimed  
Int. Cl. F16d 55/228

U.S. Cl. 188-73.4

21 Claims

A disc-brake of the kind comprising a rotating disc rigidly fixed to the member to be braked, a fixed support, to brake-shoes mounted so as to move perpendicularly to the plane of the disc on each side of said disc, an actuating unit and a transfer member, said actuating unit acting directly on one of said brakeshoes and indirectly on the other through the intermediary of said transfer



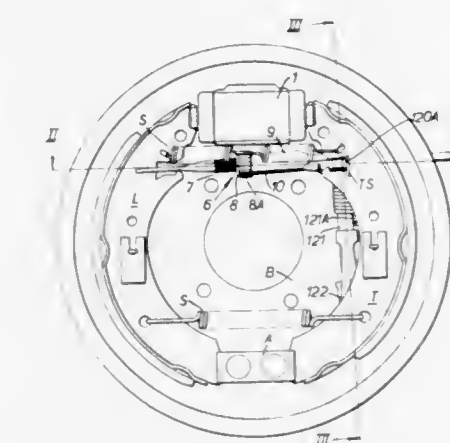
of the disc, while the third area is disposed on the other side of said disc, thus providing improved means for retaining said transfer member in position.

### 3,719,258 VEHICLE BRAKES

Hugh Grenville Margetts, Birmingham, England, assignor to Girling Limited, Birmingham, England  
Filed Aug. 23, 1971, Ser. No. 173,989  
Claims priority, application Great Britain, Aug. 24, 1970, 40,573/70

U.S. Cl. 188-79.5 P

3 Claims



An auto-adjuster mechanism for an internal shoe drum brake of the type having an adjustable length strut through which handbrake actuating forces are transmitted from a handbrake mechanism to the shoes is characterized by a pawl and ratchet adjuster of which the pawl is pivotally mounted and is subjected to the action of a coil spring stressed both in torsion (to urge the pawl in a direction to effect adjustment) and in compression (to urge the pawl yieldingly into engagement with the ratchet) and only operates to effect adjustment of the strut during operation of the service brake means.



3,719,259

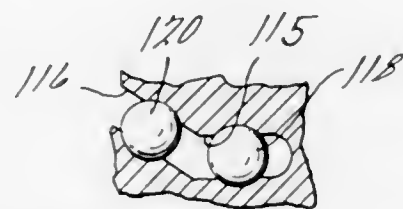
**CLUTCH WITH TORQUE RESPONSIVE VALVE**  
Lawrence D. Burcz and George E. Lemieux, Livonia, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 12, 1971, Ser. No. 198,295

Int. Cl. F16d 43/20

U.S. Cl. 192—54

8 Claims



A power transmission mechanism having multiple ratio gearing and clutches and brakes for controlling the relative motion of the elements of the gearing, including a torque input clutch for establishing and disestablishing a driving connection between a driving shaft and a power input element of the gearing, the driving connection between the driving shaft and the torque input member of the clutch including a reaction piston cooperating with an annular cylinder in the clutch structure and a cammed connection between the torque input shaft and the input member of the clutch including registering cam parts on said piston and on said clutch member whereby the torque transmitted through the clutch results in an axial force component on the piston, and valve means responsive to the relative angular displacement of the torque input shaft with respect to the clutch input member for establishing a pressure signal that is distributed to one side of the reaction piston which tends to oppose relative displacement of the torque input shaft with respect to the clutch input member

3,719,260

**ELECTROMAGNETIC CLUTCH**

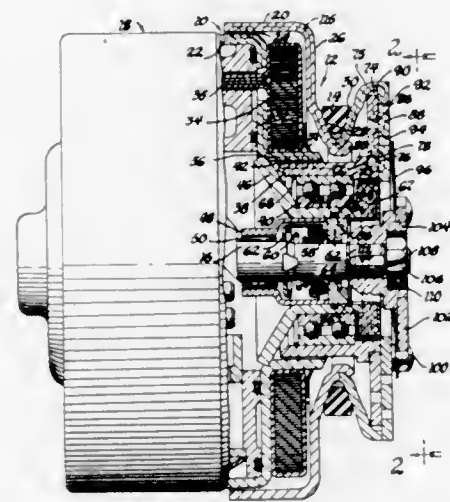
John H. Heidorn, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 27, 1971, Ser. No. 212,596

Int. Cl. F16d 27/10

U.S. Cl. 192—84 C

3 Claims



The electromagnetic clutch illustrated includes a coil arrangement wherein the coil housing is formed in part by a portion of an adjacent air-conditioning compressor casing and in part by a portion of a sheet metal pulley assembly, both portions of which serve as a part of the path of the magnetic flux. The clutch elements are such that a six-pole clutch field is included in the clutch path. The overall arrangement permits the pulley groove and clutch bearing to be located substantially closer to the compressor than with the prior art arrange-

ments, thus being adaptable to a shorter output shaft for reducing the tendency toward shaft bending and compressor distortion resulting from belt load.

3,719,261

**PRINTING METHOD AND APPARATUS USING CONDUCTIVE FUSIBLE INK**

Paul Heinzer, Geneva, and Alfred Schweizer, Chene-Bourg/Geneva, both of Switzerland, assignors to Battelle Memorial Institute, Carouge, Geneva, Switzerland

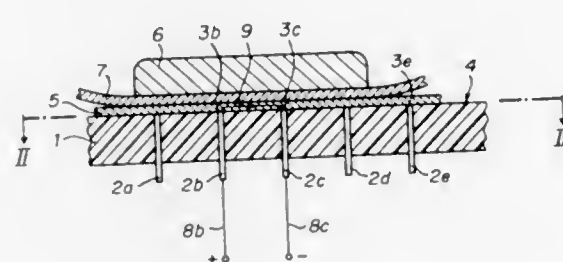
Filed Nov. 12, 1970, Ser. No. 88,546

Claims priority, application Switzerland, Nov. 12, 1969, 16803/69

Int. Cl. G01d 15/10

U.S. Cl. 197—1 R

6 Claims



The invention provides a method of and an apparatus for electrically printing an outline on paper. For this an ink support of greater transverse than superficial conductivity has one surface covered with a solid and fusible conductive ink. Pairs of points defining the desired outline are selected on the support. One point of each selected pair is connected to one pole of a current source and the point of each selected pair is connected to the opposite pole of the source thus causing current to flow between the points of each selected pair. The ink melts along the current paths and the molten ink is picked up by the paper, previously placed in contact with the support, thus printing the outline defined by the selected pairs of points. The apparatus comprises an endless tape; inking means for applying conductive ink to one side of the tape; a printing head providing a plurality of localized contacts with the tape; a selector which selects, under the action of control signals defining the outline, a number of pairs of contacts and connects these pairs to an electric current source; and drive and guide means for the tape and the paper.

3,719,262

**METHOD OF AND MACHINE FOR STORING DATA**

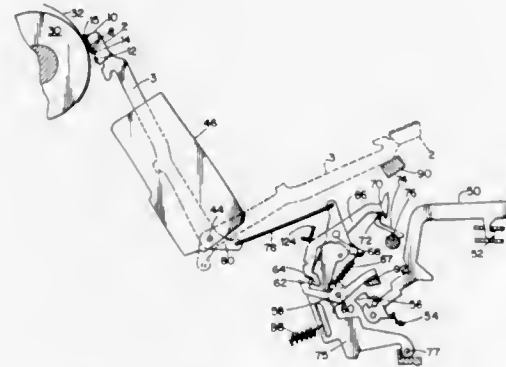
John T. Taplin, 15 Sewall Street, West Newton, Mass.

Filed Aug. 10, 1970, Ser. No. 62,415

Int. Cl. B41j 3/50

U.S. Cl. 197—1 R

6 Claims



A method of and machine for storing data by placing in superimposed relation a substantially invisible machine readable coded symbol and a visible man readable character in the

3,719,265

**CONVEYOR HANDRAILS**

Robert Barry Redding, and David Aspin Thirlby, both of c/o Fort Dunlop, Erdington, England

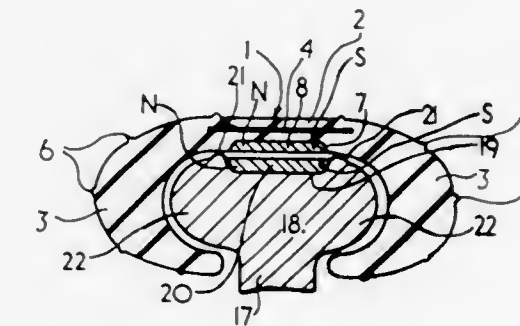
Filed May 12, 1971, Ser. No. 142,613

Claims priority, application Great Britain, May 16, 1970, 23,813/70

Int. Cl. B66b 9/12

U.S. Cl. 198—16 R

1 Claim



A passenger conveyor comprising a C-shaped handrail, which is flexible, contains an embedded longitudinally extending reinforcement and includes a strip of magnetized material; drive means for the handrail; and support means, wherein the drive means has a magnetized rim to attract the handrail and the support means has a magnetized upper edge to repel and support at least part of the weight of the handrail.

3,719,266

**SHEET STACKING APPARATUS**

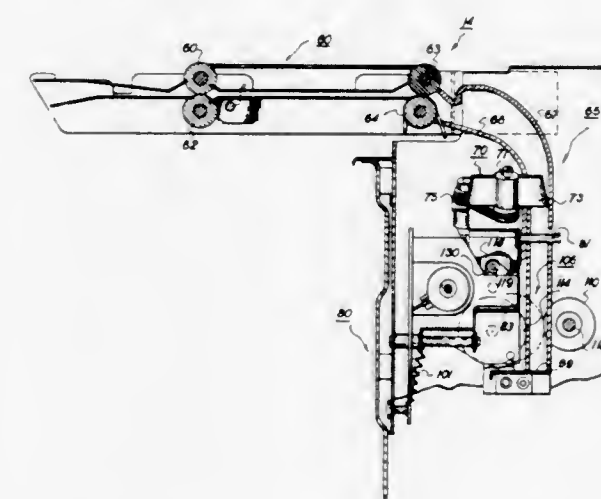
Homer Korn, Webster; Stephen J. Greenfield, and Denis J. Stemmle, both of Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sept. 9, 1970, Ser. No. 70,831

Int. Cl. B65g 57/00

U.S. Cl. 198—35

5 Claims



Apparatus for stacking copies from documents that are copied in repeated cycles. A transport delivers copies to a gate which collects them in a stack. A jogging device positioned at the entrance of the gate ensures proper corner registration of the copies in the tray. After the stack is assembled in the gate, the gate is pivoted out of the sheet path and pinch rolls associated with the gate serve to grip the stack and eject it into a receiving tray located below the gate. Cam actuated devices serve to reposition the gate and pinch rolls at the proper interval.

3,719,263

**DEVICE FOR LOCKING THE CARRIAGE OF AN ELECTRIC TYPEWRITER**

Lorenzo Navone, Canton Vigna 49, Ivrea, Italy

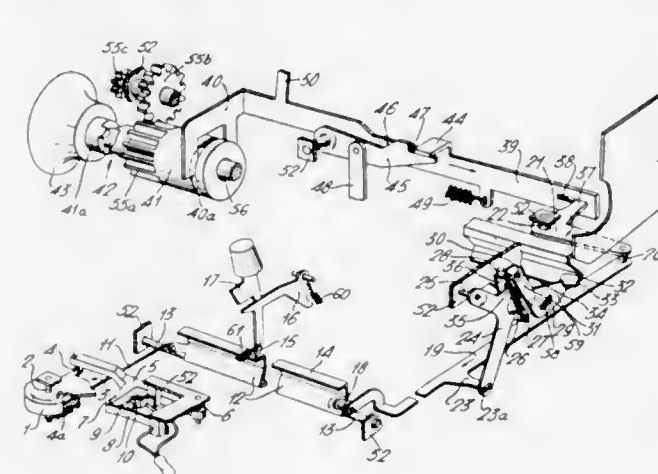
Filed July 8, 1970, Ser. No. 53,148

Claims priority, application Italy, July 15, 1969, 52,647/69

Int. Cl. B41j 29/56

U.S. Cl. 197—193

4 Claims



A device for locking the carriage of an electric typewriter to protect against damage during transport operated by the manual movement of the typewriter motor control switch between the ON and OFF position. The carriage lock comprises a projection which cooperates with a recess in a carriage member to lock the carriage in the center position. Operating in conjunction with the carriage lock are a means for locking the typewriter keys to prevent depression thereof and a means for disengaging the drive motor from the carriage return mechanism.

3,719,264

**SEALING SYSTEM FOR CHAIN CONVEYORS**

Claude Moreau, Nantes, France, assignor to Societe Financiere et Industrielle des Ateliers et Chantiers de Bretagne Prairie au Duc, Nantes Loire Atlantique, France

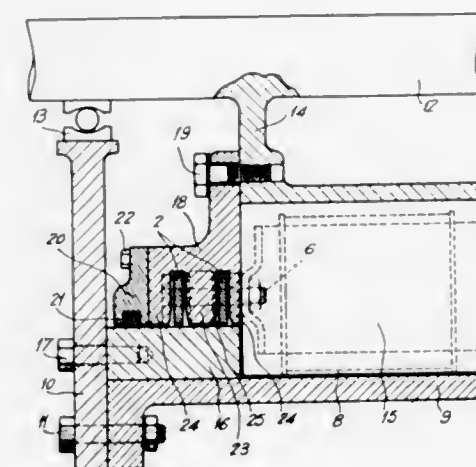
Filed Dec. 20, 1971, Ser. No. 209,787

Claims priority, application France, April 22, 1971, 7114362

Int. Cl. A23i 1/28

U.S. Cl. 198—1

6 Claims



A sterilization apparatus in accordance with the invention comprises a pressurized chamber and means for conveying articles to be sterilized through the chamber.



3,719,267

# APPARATUS FOR ADJUSTING THE SPEED OF A TRANSPORT BAND EQUIPPED WITH GRIPPERS TO THE SPEED OF A CONVEYOR BAND ARRANGED AHEAD OF SUCH TRANSPORT BAND

Walter Reist, Hinwil, and Heinz Meili, Wädenswil, both of  
Switzerland, assignors to Ferag, Fehr & Reist AG, Zurich,  
Switzerland

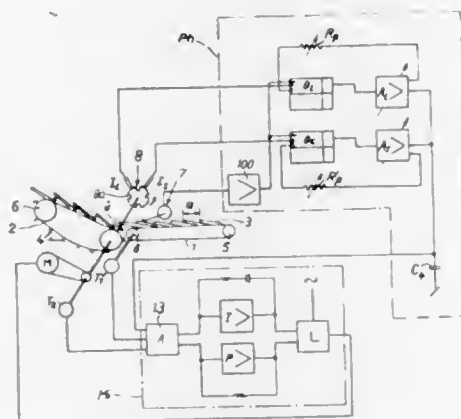
Filed April 20, 1971, Ser. No. 135,690

Claims priority, application Switzerland, April 29, 1970,  
6443/70

Int. Cl. B65g 37/00; B65h 9/14

U.S. Cl. 198—76

5 Claims



An apparatus for adjusting or accommodating the speed of a transport band equipped with grippers to the speed of a conveyor band arranged ahead of such transport band, wherein the conveyor band serves to convey a stream of individual articles, especially newspapers. According to the invention, there is contemplated the provision of two control or regulator means, of which the first serves to control the speed of transport band equipped with the grippers as a function of the average speed of the conveyed stream of individual articles, and the second control or regulator means serves to synchronize the movement of the aforesaid transport band with the movement of the individual articles, so that a respective gripper of the transport band seizes or engages with an individual article conveyed by the conveyor band.

3,719,268

# FOLDING AUGER FOR PORTABLE FEED MILL AND MIXER

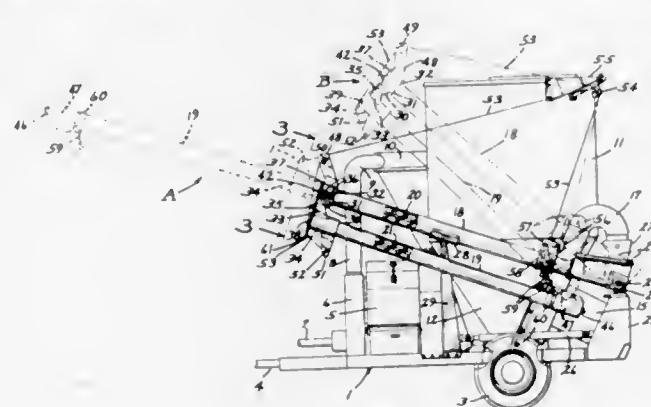
Earl A. Koehnen, Chaska, Minn., assignor to Farmhand,  
Inc., Hopkins, Minn.

Filed June 28, 1971, Ser. No. 157,372

Int. Cl. B65g 21/12

U.S. Cl. 198—115

6 Claims



An auger conveyor for portable feed mills and mixers, including a pair of cooperating longitudinally inner and outer tubular members each having a conveyor auger section extending longitudinally therein. The inner tubular member is pivotally mounted at one end for swinging

movements relative to the mixer on a generally horizontal axis extending transversely of the conveyor. The outer tubular member is pivotally connected at one end to the other end of the inner tubular member on a hinge axis parallel to the axis of swinging movement of the inner member for movements between an operative position in axial alignment with the inner member, and an inoperative storage position in underlying generally parallel relation to the inner member. An elevating cable is disposed to move the outer member from its storage position to its operative position.

3,719,269

# SYSTEM FOR SORTING MAIL BAGS

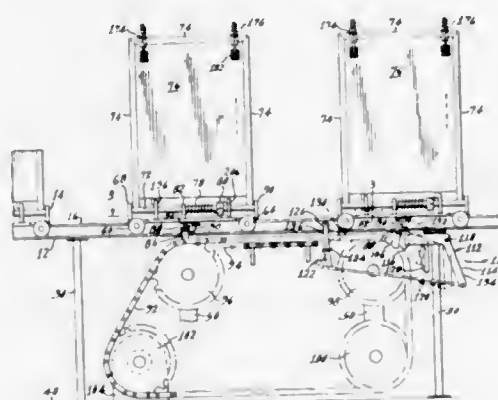
Ernest B. Hardwig, P. O. Box 2685, Jacksonville, Fla.  
Division of Ser. No. 47,812, June 19, 1970, Pat. No. 3,655,030.

This application July 2, 1971, Ser. No. 159,391

Int. Cl. B65g 15/00

U.S. Cl. 198—179

3 Claims



A sorting apparatus for empty sacks including movable carriers for traversing a track. The carriers are provided with sack holding and manipulating supports automatically actuated when the carrier is stopped at an unloading station to tilt and release the bag, while a movable frame at the station guides the bag into position on top of a stack.

3,719,270

# WORKPIECE TRANSFER DEVICE

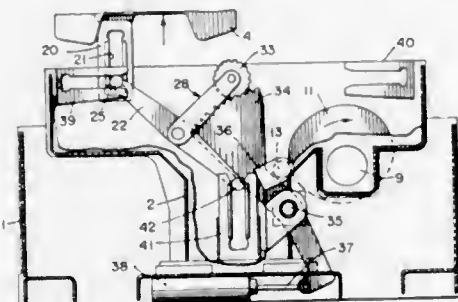
Albert P. Budris, Oak Lawn, and Louis F. Carrieri, La Grange  
Park, both of Ill., assignors to U.S. Industries, Inc., New  
York, N.Y.

Filed April 8, 1971, Ser. No. 132,282

Int. Cl. B65g 25/04

U.S. Cl. 198—219

11 Claims



A transfer device for transferring a workpiece from one station to another in a line of presses utilizing a form of crank driven linkage mechanism which horizontally reciprocates a carriage between two extreme positions while carrying a workpiece. A lift frame on which the carriage reciprocates, raises the carriage and the workpiece at one of said positions and lowers the carriage and workpiece at the other of said positions to deposit the workpiece at the next station.

3,719,271

# PACKING FOR SEMICONDUCTOR DISCS

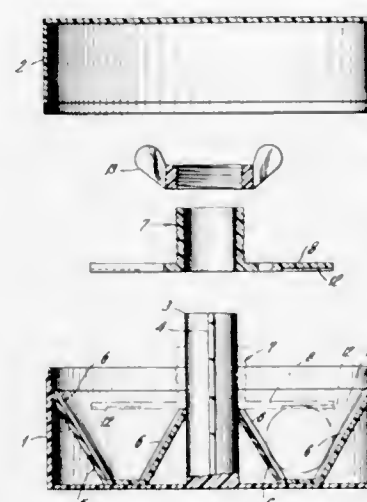
Bernhard Authier and Helmut Deckert, Burghausen,  
Upper Bavaria, Werner Hofbauer, Munich, and Rudolf  
Bauer, Bavaria, Germany, assignors to Wacker-Chemi-  
tronic, Gesellschaft für Elektronik-Grundstoffe m.b.H.  
Postfach, Burghausen, Upper Bavaria, Germany

Filed Nov. 12, 1971, Ser. No. 198,104

Int. Cl. B65d 57/00, 85/58

U.S. Cl. 206—1 R

2 Claims



A packing for holding and shipping semiconductor discs comprising a can containing a bracket having rabbets in which the discs stand vertically with respect to the bottom of the can and are held fast with a certain tension. Thus the semiconductor discs do not rest on their flat surfaces, and therefore they cannot touch or scrape against each other. The can has a lid which may be sealed to the can by adhesive tape. The packing has the advantage that it makes possible the dust-free and breakage-free shipment of semiconductor discs of any size or thickness, so that any subsequent cleaning or further processing is avoided.

3,719,272

# INTERLOCKING CASE FOR ELECTRONIC COMPONENTS

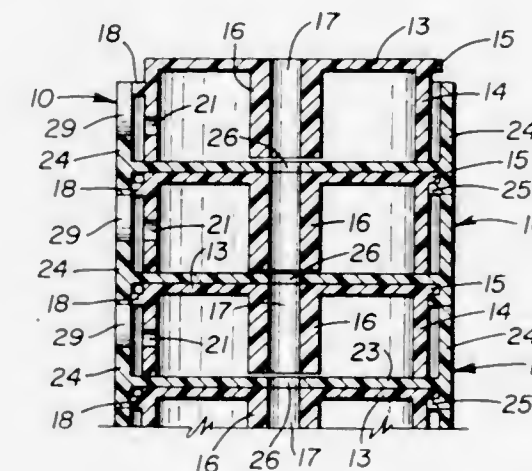
Norman R. Bodine, Oshkosh, and David C. Noetzelmann, Sr.,  
Minatare, both of Nebr., assignors to Midwec Corporation,  
Oshkosh, Nebr.

Filed Nov. 3, 1971, Ser. No. 195,194

Int. Cl. B65d 7/00, 71/00

U.S. Cl. 206—65 F

8 Claims



An interlocking case for electronic components which comprises an inverted cup shaped member having a plurality of circumferentially spaced apart tabs projecting radially from its top, and an open top cup shaped member having a plurality of

circumferentially spaced tabs projecting inwardly from its side wall below the bottom of said member, the inverted cup shaped member being seated in said open top member. Said members have registering openings in their side walls for passage of wiring from the inverted cup shaped member, and means on their proximate side wall surfaces, which prevent rotation of the two case members relatively to each other. The tabs on the top of one case engage the tabs on the bottom of another case for stacking a plurality of cases.

3,719,273

# PACKING VESSEL FOR THIN SHEET MATERIALS

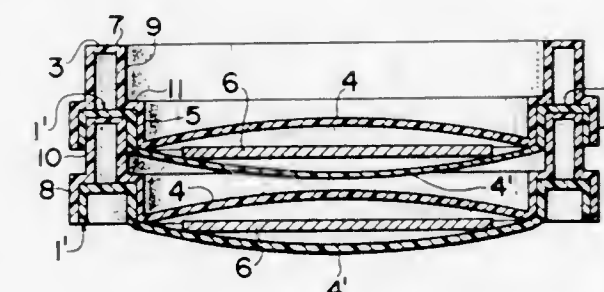
Iwao Abe, Nodashi, Chibaken, Japan, assignor to Chisso  
Corporation, Osaka, Japan

Filed Jan. 11, 1971, Ser. No. 105,276

Int. Cl. B65d 21/00, 71/00

U.S. Cl. 206—65 F

10 Claims



A container having cooperating lower and upper members that are adapted to fit together so as to form a plurality of cavities, the lower member having a plurality of concave bottom surfaces and an annular channel surrounding each concave bottom surface, the upper member having a plurality of convex surfaces and an annular channel disposed around the periphery of each such convex surface, the channel sections of the upper and lower members being constructed so that they will interfit in a nesting relationship.

3,719,274

# MECHANISM FOR DELIVERING RECORDED SHEET FILM SELECTED IN INDEXING DEVICE TO REPRODUCTION POSITION

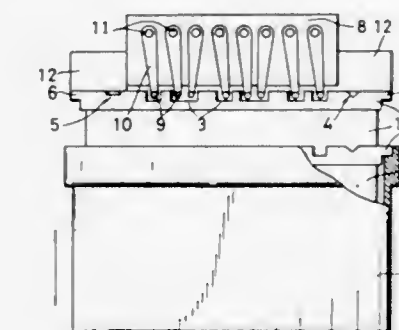
Masahiro Yamamoto, Tokyo, and Takeo Iida, Matsudo, both of  
Japan, assignors to Minolta Camera Kabushiki Kaisha,  
Osaka, Japan

Filed July 1, 1971, Ser. No. 158,749

Int. Cl. B07c

U.S. Cl. 209—80.5

5 Claims



Mechanism for neatly delivering a recorded sheet film, which has been magnetically selected in the known film indexing device from a plurality of films each having magnetic material identification tag, with being suspended to the reproduction position. The mechanism comprises three means, the first of which is a pair of longitudinally extended members, each being adapted to be pivotally moved to engage with the free end of said tag to suspend the film in its operation



position; the second means is a pair of slider members, each being adapted to be slidably moved along a pivot of said longitudinal member with accompanying the film with its tag free end sliding along one side of said longitudinal member; and the third means is a transversely extended member having two projections at the opposite ends for engaging with each of the tag ends to receive the film from said slider member for the reproduction.

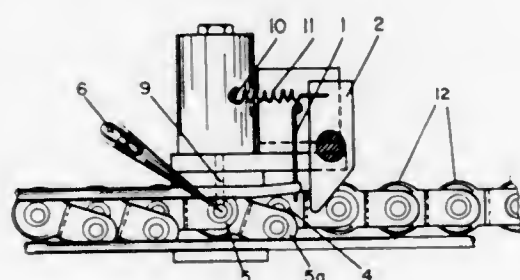
### 3,719,275 APPARATUS FOR CONVEYING AND FILLING CAPSULES

Donald E. Lanigan, Greenlawn, and Johannes P. Biegert, Selden, both of N.Y., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jan. 5, 1972, Ser. No. 215,607  
Int. Cl. B07c 3/10

U.S. Cl. 209—79

8 Claims



Improvement to an apparatus for conveying and filling capsules comprising a means for detecting the presence of an unseparated capsule in a capsule receiving means after the capsule has been subjected to a reduced pressure to separate the capsule into a body section and a cap section and a means for ejecting such unseparated capsule from said receiving means.

### 3,719,276 SIEVING

Robert William Allen, High Peak, Stanley Hall, Disley, and John Drane, 52 Yew Tree Drive, Stockport, both of England, assignors to Henry Simon Limited, Stockport, England

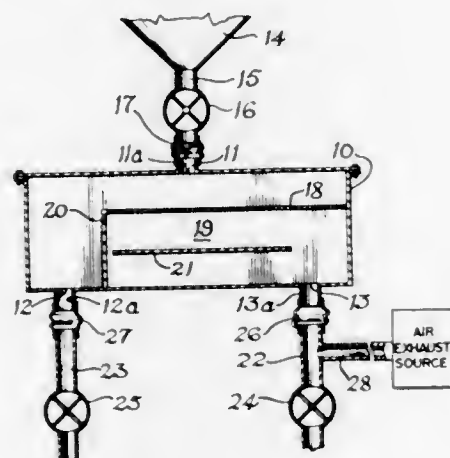
Filed March 27, 1970, Ser. No. 23,393

Claims priority, application Great Britain, May 28, 1969, 27,097/69

Int. Cl. B07b 1/00

U.S. Cl. 209—240

8 Claims



A method of sieving characterized by the inclusion of the step of forcing a current of air through the sieve co-currently with the material being sieved, whereby to achieve an increased throughput rate of the material being sieved, and apparatus for practicing such methods.

### 3,719,277 QUICK CHANGE SYSTEM OR VIBRATORY TRAY SYSTEM

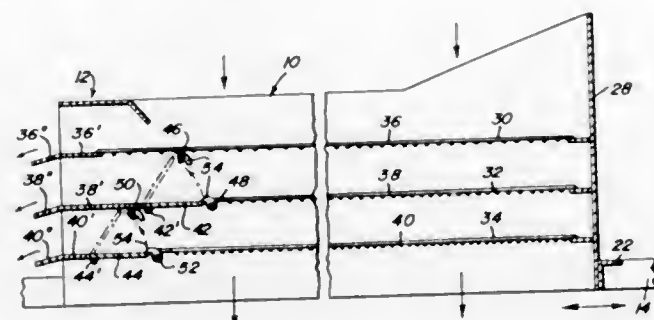
Jack Michael, Box 155, Ohlman, Ill.

Filed Dec. 30, 1970, Ser. No. 102,790

Int. Cl. B07b 13/16

U.S. Cl. 209—258

3 Claims



A grading, separating and blending apparatus for aggregate materials including an upwardly opening receptacle into which aggregate to be processed may be downwardly displaced. The receptacle is of the oscillatory vibrating type and includes a plurality of vertically spaced screen or similar panels. The openings in the screen panels are progressively smaller in effective plan area with each successive downward screen panel and the receptacle includes one open end and is reciprocal or oscillatable in a manner whereby the aggregate caught by the screen panels will be discharged off the corresponding ends of the panels. These ends of at least some of the screen panels have flap doors operatively associated therewith which may be selectively opened and closed and utilized to direct the discharge from one screen panel down onto the corresponding end of the next lower screen panel rather than allowing the aggregate to be discharged off the end of the upper screen panel. In this manner, selected blends of aggregate may be formed of selected grades of aggregate while other grades of aggregate are allowed to pass off the discharge ends of their respective screen panels.

### 3,719,278 EXTERNAL FILTERS FOR AQUARIA

Erwin Kolfertz, Bebelallee 9, Solingen-Merscheid, Germany

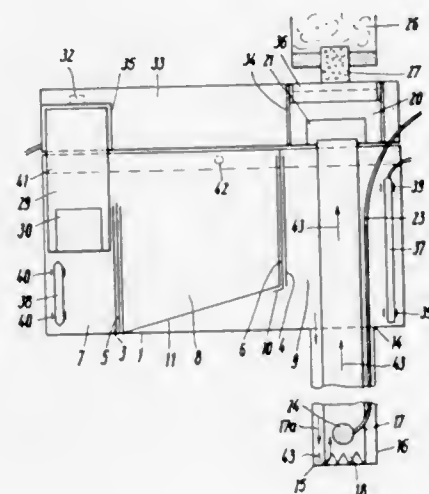
Filed Oct. 8, 1970, Ser. No. 79,114

Claims priority, application Germany, Dec. 17, 1969, G 69 48 723.6

Int. Cl. E04h 3/20

U.S. Cl. 210—169

6 Claims



An external filter for cleaning the water of an aquarium, wherein water is extracted from the aquarium and supplied to an inlet chamber from which it flows through a filter chamber to an outlet chamber which is fitted with a tube extending downwards from the bottom of the chamber, the tube being

closed at its lower end, and a second tube which is mounted in the first tube and which opens at its lower end adjacent the lower end of the first tube and opens at its upper end into an overflow channel which is positioned above the outlet chamber, there being an air supply means which is arranged to inject air into the lower end of the second tube in order to initiate a gas lift for raising the filtered water from the outlet chamber via the tubes to the overflow channel which then directs it back into the aquarium. As an alternative, the inlet, which preferably functions with a siphonic action, may open directly into the filter chamber from which it flows into two outlet chambers each of which is provided with a similar gas lift device for returning the filtered water to the aquarium.

### 3,719,279 MOUNTING FOR PREFABRICATED, LARGE SURFACE, INDIVIDUAL FILTERING LAYERS IN HORIZONTAL LAYER FILTERS, HAVING LARGE DIMENSIONED FILTER ELEMENTS

Günther Leigel-Seitz, Bad Kreuznach, Germany, assignor to Seitz-Asbest-Werke Theo & Geo Seitz, Bad Kreuznach, Germany

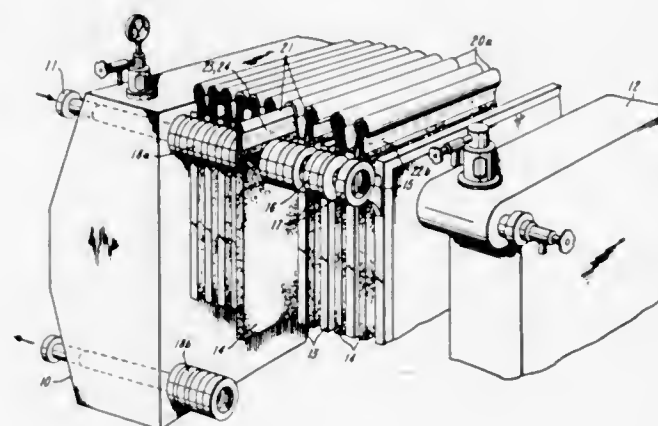
Filed Sept. 17, 1971, Ser. No. 181,369

Claims priority, application Germany, Sept. 23, 1971, P 20 46 827.3

Int. Cl. B01d 25/12

U.S. Cl. 210—231

9 Claims



A mounting for prefabricated, large surface, individual filtering layers, which form filter packets when sandwiched between adjacent large dimensioned vertical filter elements in a complete layer filter, said mounting being characterized primarily in that each individual filtering layer is held vertically between the adjacent filter elements by a detachable connection comprising interengaging elements which are arranged above the filter packet. The arrangement is such that one connecting element is situated on the layer edge which rises beyond the upper horizontal border of the filter elements, while the other connecting element is arranged on the upper horizontal border of one or above both filter elements of a filter packet.

### 3,719,280

1,2,3,12A-TITRAHYDRO-7(2H)PLAIDOMENONES  
William J. Houlihan, Mountain Lakes, and Jeffrey Nadelson, Parsippany, both of N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

Filed Oct. 1, 1970, Ser. No. 77,373

Int. Cl. C07c 49/76, 49/80, 49/82

U.S. Cl. 260—590

2 Claims

Pleiadenes substituted at the 7-position, e.g. 1,2,3,7-tetrahydro-7-(1-methyl-4-piperidyl)pleiadene and 1,2,3,7,12,12a hexahydro-7-(1-methyl-4-piperidyl)pleiadene-7-ol, and dibenzoheptalenes substituted at the 8-position, e.g.

1,2,3,4-tetrahydro-8-(1-methyl-4-piperidyl)-8H-dibenzo[b,ef]heptalene, prepared from a corresponding ketone and Grignard reagent, are useful as anti-convulsants.

### 3,719,281 MULTIPLE APPLICATION SEALING MEANS FOR FLUID FILTERS

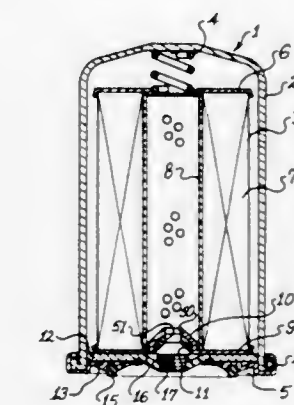
James V. Dieringer, Racine, Wis., assignor to Tenneco Inc., Racine, Wis.

Filed Apr. 12, 1971, Ser. No. 133,109

Int. Cl. B01d 27/00

U.S. Cl. 210—440

7 Claims



Disposable spin-on fluid fuel filter assemblies are made adaptable to fuel filter bases having threaded attachment posts of varying diameters and lengths by providing the filter element with resilient self-centering sealing means immediately adjacent the end of the threaded attachment post. Upon installation of the filter assembly onto a suitable filter base the conical seal is forced into and maintained in sealing engagement with the end of the attachment post by the element hold-down spring normally provided in spin-on filter assemblies.

### 3,719,282 UNIVERSAL COFFEE FILTER

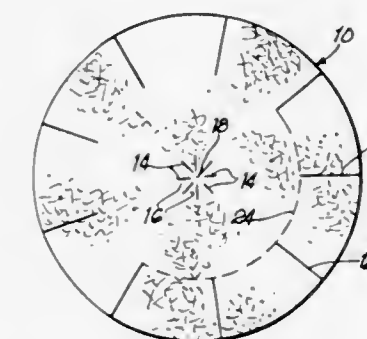
Harlan A. Schwartz, Manitowoc, Wis., assignor to Schwartz Manufacturing Company

Filed Nov. 16, 1970, Ser. No. 89,616

Int. Cl. B01d 35/28

U.S. Cl. 210—477

13 Claims



A coffee filter element universal to coffee baskets having bases of varying sizes and shapes. A plurality of slits extending inwardly from the periphery of the filter define portions adapted to fold upwardly at the vertical wall of a basket and to substantially seal thereagainst, the central portion of the filter lying against the base of the basket, thereby, in baskets smaller than the filter element forming a lipped filter element. The filter element is slitted at its center to accommodate basket stems. The display and dispenser package is configured to be suspended and to contain a plurality of circular coffee filter elements.



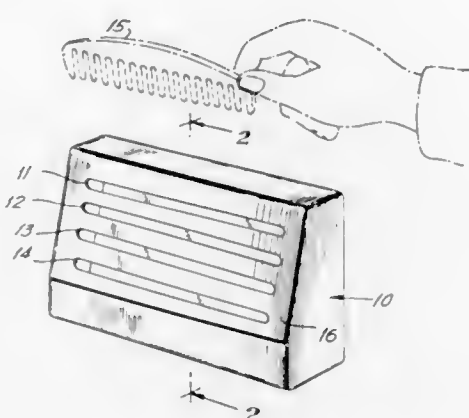
3,719,283  
COMB CASE

John A. Urda, 97-11 Horace Harding Expressway, Lefrak City, N.Y.

Filed Jan. 29, 1971, Ser. No. 111,066  
Int. Cl. A47y 7/00

U.S. Cl. 211-13

1 Claim



A case for holding a plurality of combs, each within its own seat for easy individual access. The case includes a housing having a plurality of horizontally disposed spaced-apart slots along one vertical side to provide access to the slots. Each of the seats comprises a trough along the inner side of the slot within which the tooth edge of the comb is removably seated.

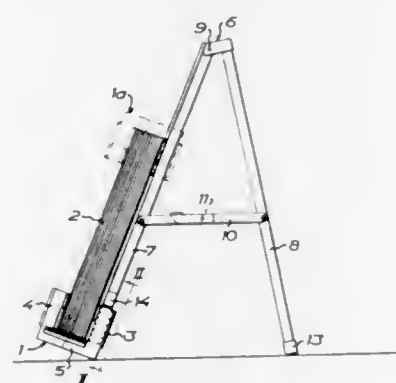
3,719,284  
EQUIPMENT FOR HANDLING GLASS SHEETS AND THE LIKE

Stig Arne Rasmusson, Leif Key, Tommy Dahlstrom, and Ernst Georg Thelander, Emmaboda, Sweden, assignors to AB Emmaboda Glasverk, Emmaboda, Sweden

Filed Apr. 7, 1971, Ser. No. 132,044  
Claims priority, application Sweden, Apr. 8, 1970, 4,759/70

Int. Cl. A47f 7/00; B65h 1/02  
U.S. Cl. 211-50

2 Claims



Equipment for handling glass sheets, consisting of U-shaped clamps for clamping a pack of sheets for shipping and A-shaped frames, one leg of which is inserted into a clamp jaw to form an easel-like support for the pack, thereby facilitating unpacking the sheets.

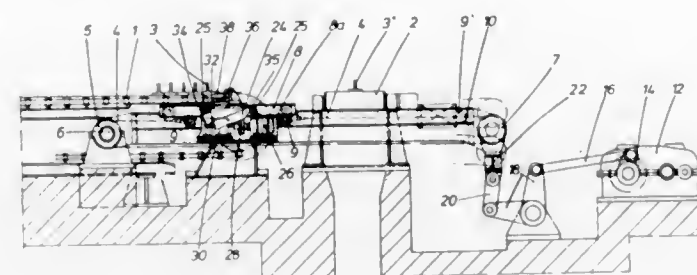
3,719,285  
DEVICE FOR CROSS FEEDING INDIVIDUAL CURVED ROLLED RODS OR BARS

Georg Wilhelm Böse, Krefeld-Fischeln, Germany, assignor to Moeller & Neumann G.m.b.H.

Filed June 2, 1970, Ser. No. 42,688  
Claims priority, application Germany, June 3, 1969, P 19 28 312.6  
Int. Cl. B65g 17/00

U.S. Cl. 214-1 P  
A cross-feeding device for curved rolled rods and bars whose carrier elements 36 mounted on a plurality of

carriage devices 8 which can be displaced selectively in common into contact with the rolled product and raised



to lift the rolled product, whereupon they return together with the lifted product.

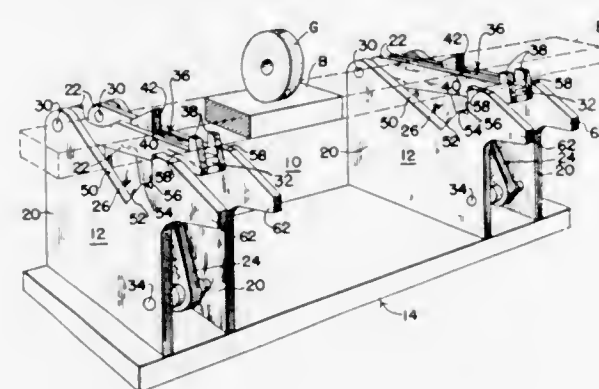
3,719,286  
BILLET MANIPULATING UNIT

Robert J. Kazuba, Chicago, Ill., assignor to Pettibone Corporation, Chicago, Ill.

Filed July 22, 1971, Ser. No. 165,268  
Int. Cl. B65g 7/00

U.S. Cl. 214-1 QG

7 Claims



A billet manipulating unit adapted, in conjunction with similar units, to receive therein an elongated steel billet which is rectangular in transverse cross section, and the width of which is appreciably greater than its thickness and, by the manipulative action of two cooperating pivoted billet-engaging arms, to impart varying increments of unidirectional turning movement to the billet in order to present selected side surfaces of corner edges thereof to a grinding wheel for conditioning purposes.

3,719,287  
METHOD OF AND APPARATUS FOR MATERIAL STORAGE AND RETRIEVAL IN A WAREHOUSE SYSTEM

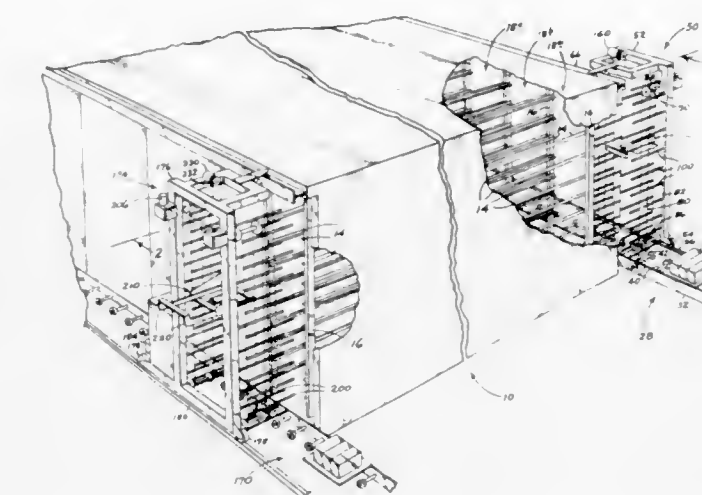
Raymond L. Billingsley, Fenton, Mich., Ralph L. Howard, Pittsburgh, Pa., and Donald H. Noreen, La Grange Park, Ill., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Original application Feb. 19, 1968, Ser. No. 706,289, now Patent No. 3,595,412, dated July 27, 1971. Divided and this application Mar. 8, 1971, Ser. No. 121,998  
Int. Cl. B65g 1/06

U.S. Cl. 214-16.4 A  
An automatic large-scale warehousing system including a warehouse with a large number (8100) of bins (B) arrayed in aisles AS for storing enough products (17,000)

to service a complex of manufacturing plants (26 automobile assembly plants). A crane CR is associated with each aisle and is actuable to store or retrieve the material in the different bins B. A computer (FIG. 6) is associated with this system of bins and part of the memory core (Inventory Core) of the computer carries an inventory of the storage; that is, an identification of each bin and the material stored in this bin. The core of the Computer is also programmed so that in response to selective commands on punch cards, the cranes are automatically actuated either to store material in open bins, identified in the Computer as open, or to retrieve material from the bins where they are stored. The Inventory Core of the Computer is automatically changed to record each storage and each retrieval. The Inventory Core of the Computer has facilities for storing the condition of each bin (8100) and can store data identifying the bin position of any of

outfeed conveyor below the outfeed ends of the racks. The racks are disposed in side-by-side sets and the shifter, elevator, and transfer mechanism are movable between different sets.



Control means connected to the elevator, shifter, and transfer mechanism moves them automatically as required between selected sets and between selected racks in the sets.

3,719,289  
METHOD AND DEVICE FOR FORMING A STREAM OF MATERIAL CONSISTING OF TANGLED SHREDS SUCH AS TOBACCO

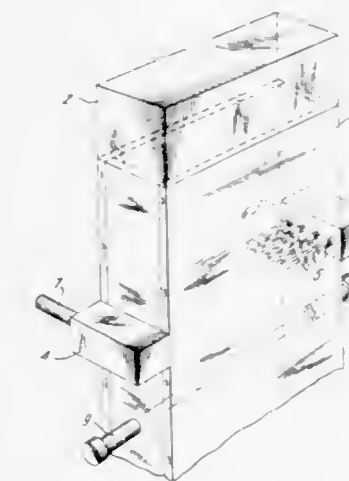
Claude Buisson, Olivet, and Jean-Pierre Delaunay, Saint-Jean-de-Braye, both of France, assignors to Service D'Exploitation Industrielle des Tabacs et des Allumettes, Paris, France

Filed Dec. 11, 1970, Ser. No. 97,142

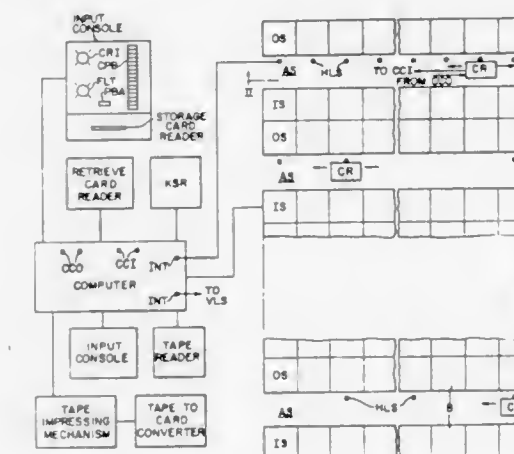
Claims priority, application France, Dec. 11, 1969, 6942848  
Int. Cl. B65g 65/32

U.S. Cl. 214-17 CA

4 Claims



In a method for forming a stream of material consisting of tangled shreds such as tobacco and having a substantially constant density, wherein a reserve supply of material having a substantially constant volume is formed by bringing the material in the direction of the stream and discharging the said material in the same direction, further comprising the step of exerting the pressure of a compressed gaseous fluid on the said reserve supply of material in the direction of the stream.



the (17,000) products. The computer has a diagnostic program which in the event of a malfunction prints intelligence of the malfunction and its location. The storing or retrieval are carried out in defined steps (FIGS. 4 and 5) and the Computer has counting and timing words. The counting words are preset to count out each step and the timing words to time out each step. If a step is timed out before it counts out the diagnostic program is enabled. The complete warehousing is carried out by the cooperation of the Computer and the bin system and not by operation of wired logic associated with different sets of bins.

3,719,288  
ARTICLE HANDLING APPARATUS

Robert A. Schmitt; Gary W. Betts; Forrest H. Johnson, and Lloyd Carlson, all of Vancouver, Wash., assignors to Columbia Machine, Inc., Vancouver, Wash.

Filed Aug. 2, 1971, Ser. No. 168,175

Int. Cl. B65g 1/06

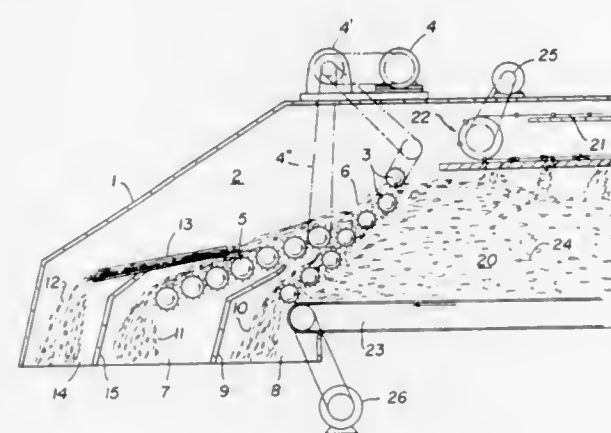
U.S. Cl. 214-16.4 C

20 Claims

Apparatus for loading articles in a substantially continuous single-file stream onto the infeed end, of a selected rack in a set of vertically stacked racks. The apparatus includes an infeed conveyor for moving articles horizontally and in succession into a region below the infeed ends of the racks. An elevator lifts articles in succession directly from the infeed conveyor and raises them to a position adjacent the infeed end of the selected rack. A shifter, which is vertically adjustable to different positions adjacent the infeed ends of different racks, is operable to move articles off the elevator and onto the selected rack. A transfer mechanism, adjustable to a position adjacent the outfeed end of the selected rack, receives articles discharged from the rack and shifts them vertically onto an

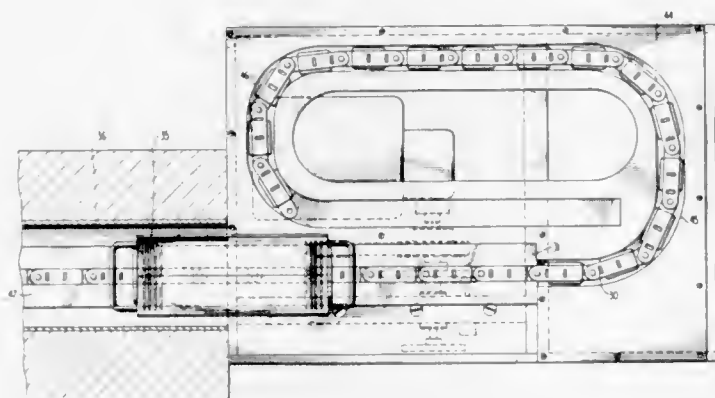


**3,719,290**  
**DISCHARGE HEAD FOR A BIN, ESPECIALLY A BULK METERING BIN**  
 Herbert Voigtlaender, Weiterstadt, Germany, assignor to Carl Schenck Maschinenfabrik G.m.b.H., Darmstadt, Germany  
 Filed June 8, 1971, Ser. No. 150,970  
 Claims priority, application Germany, June 30, 1970, P 20 32 128.2  
 Int. Cl. B65g 65/42  
 U.S. Cl. 214—17 D 10 Claims



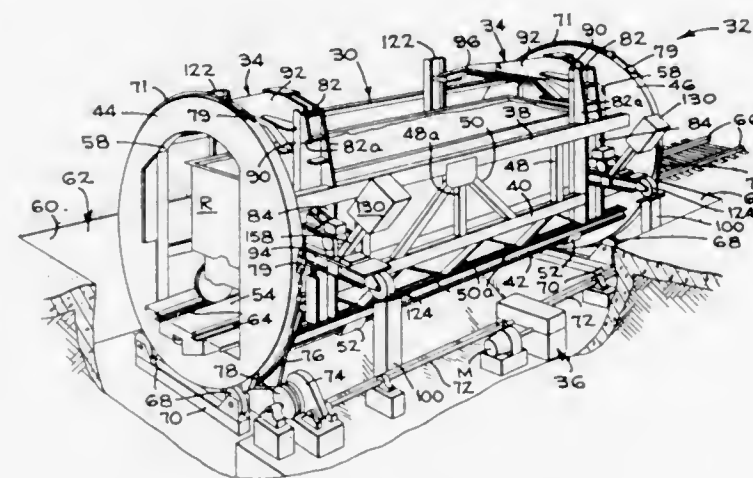
The present discharge head is intended for removing a plurality of even and uniform flows of material, such as chips and fibers intermixed with binders from a bin. This is accomplished by a first row of spiked rollers inclined toward the horizontal and by at least one flow dividing means which may also comprise a row of spiked rollers or an endless conveyor belt. The second row forms an angle with the horizontal which is more acute than the respective angle between the first row and the horizontal.

**3,719,291**  
**DIFFUSION FURNACE LOADER**  
 Joseph Redan, Parsippany, N.J., assignor to Simmonds Precision Products, Inc., Tarrytown, N.Y.  
 Filed July 28, 1971, Ser. No. 166,731  
 Int. Cl. F27b 9/26  
 U.S. Cl. 214—34 9 Claims



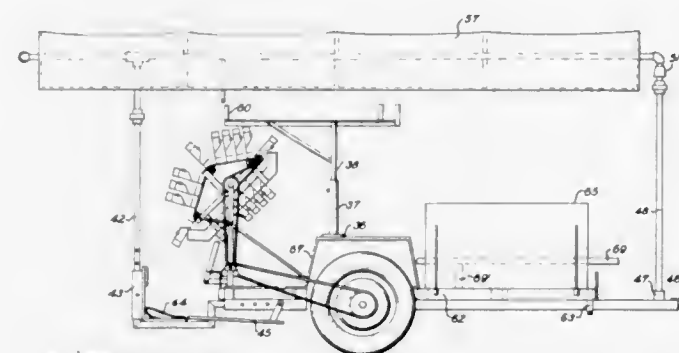
A furnace-loading mechanism for use with a diffusion furnace, the components thereof facilitating the entry and withdrawal of a wafer-bearing quartz boat member relative to a furnace through an articulated chain link construction which is capable of storage in a horizontal plane on the loader.

**3,719,292**  
**CLAMP MECHANISM FOR ROTARY CAR DUMPER**  
 Ralph C. Ouska, Hinsdale, Ill., assignor to FMC Corporation, San Jose, Calif.  
 Filed April 21, 1971, Ser. No. 135,960  
 Int. Cl. B65g 67/54  
 U.S. Cl. 214—55 4 Claims



A railroad car is secured for dumping in a rotary car dumping cradle by gravity lowered clamp beams which engage the top of the car and are locked in place by a gravity actuated, infinitely variable locking mechanism that grasps tension members connected to the side of the car dumper.

**3,719,293**  
**TOBACCO HARVESTING**  
 C. Winston Swain, and Louis E. Dailey, Jr., both of Ahoskie, N.C., assignors to Dailey Irrigation Co. Inc., Ahoskie, N.C.  
 Continuation-in-part of Ser. No. 860,338, Sept. 23, 1969. This application Jan. 13, 1971, Ser. No. 106,042  
 Int. Cl. B60p 1/36  
 U.S. Cl. 214—83.3 2 Claims

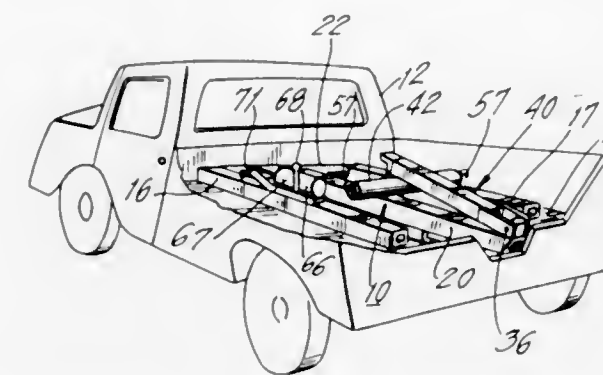


The Harvester-Handler attachment for use on a tobacco harvester that replaces individuals who were formerly used for this purpose; it being a unique way of handling or passing the tobacco directly from the primers or croppers to the loopers.

**3,719,294**  
**TOW BAR APPARATUS**  
 Joseph Aquila, 144-41 231st Street, Rosedale, N.Y.  
 Filed Nov. 9, 1970, Ser. No. 87,863  
 Int. Cl. B60p 3/12  
 U.S. Cl. 214—86 A 8 Claims

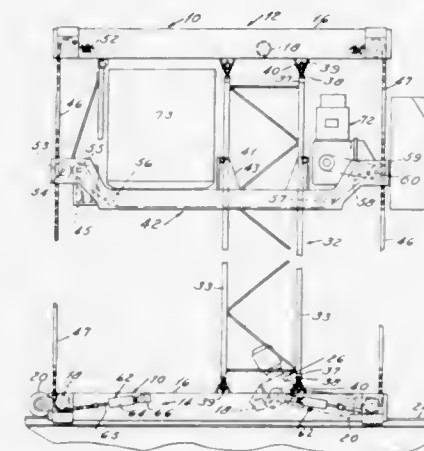
A truck-mounted towing crane is constructed with a tubular boom pivoted at one end and raised by a power cylinder. A tow bar assembly is pivotally mounted to the other end of the

boom so that the former may be folded back to a storage position and the boom lowered for storage of the crane in a small space. The tow bar assembly includes a downward and rear-



ward extension for the boom and a cross-bar supported from below at its center by a ball joint connected to the free end of the boom extension.

**3,719,295**  
**CONTROLLED MECHANICAL STORAGE DEVICE**  
 Robert W. Grace, Sandusky, Ohio, assignors to Jervic B. Webb Company  
 Filed Oct. 6, 1970, Ser. No. 78,363  
 Int. Cl. B66f 7/22  
 U.S. Cl. 214—674 10 Claims

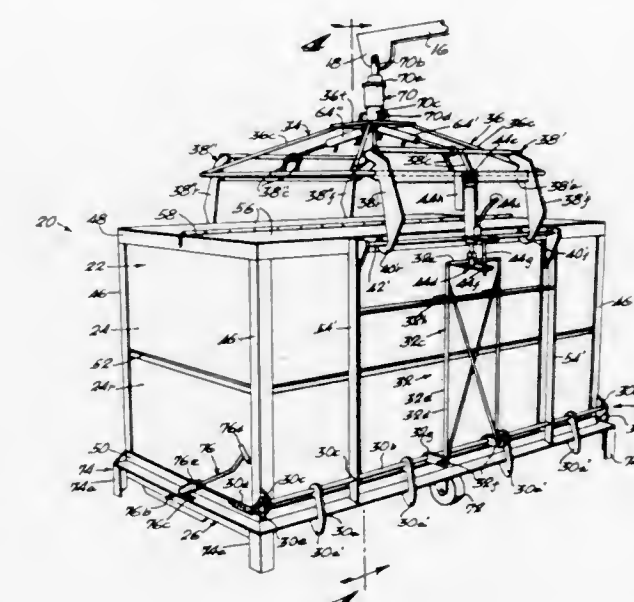


A mechanical storage device for loading and unloading storage racks consisting of lower and upper trucks which travel along vertically spaced rails, and a mast connected between the trucks. A carriage with a laterally shiftable load table is vertically movable in a path defined by guides on the mast, and the horizontal attitude of the carriage is independently controlled by chains cross-connected between the trucks and trained about pairs of sprockets on the carriage. Vertical movement of the carriage is obtained by a hoist unit mounted on the carriage and driving one or more of the sprockets so that the carriage moves along the chains. The vertical attitude of the mast is adjustable to align the device with storage rack structure.

**3,719,296**  
**LOAD HANDLING CONTAINER APPARATUS**  
 Eric M. Larson, Jr., 1205 Andora, Coral Gables, Fla.  
 Filed Sept. 25, 1970, Ser. No. 75,633  
 Int. Cl. B66f 9/00  
 U.S. Cl. 214—315 6 Claims

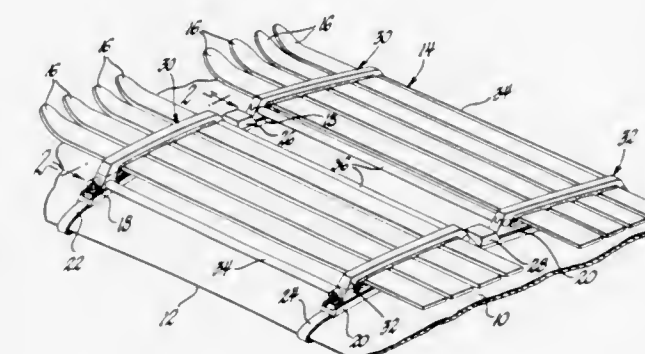
Load handling apparatus particularly operative in a municipality trash collecting operation, servicing domestic and/or industrial sectors of a community. The load handling

apparatus, in trash or waste collecting form, includes a plurality of trash containers adapted to be positioned each at a strategic trash pick-up location. Each of the containers are provided with drop bottom wall means and spring-loaded dog



latch means releasably holding the drop bottom wall in closed configuration. The load handling apparatus may include also a portable crane unit and container lifting grapple means dependently supported on the boom means of the crane unit.

**3,719,297**  
**VEHICLE ROOF SKI RACK**  
 Ronald J. Nowicki, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.  
 Filed Nov. 27, 1970, Ser. No. 93,233  
 Int. Cl. B60r 9/00  
 U.S. Cl. 214—450 2 Claims



A vehicle roof ski rack includes front and rear ski clamp assemblies mounted on a vehicle roof for lateral outboard movement from a storage position, generally above the roof, to a loading position allowing convenient access to the clamp assemblies. The clamp assemblies include respective clamp members that are spring biased toward unclamped positions and pivotally movable to ski clamping positions in which first latch members respectively secure the clamp members. Second latch members respectively hold the clamp assemblies in the storage position and a key releasably controlled actuating member, that extends longitudinally between the clamp assemblies, is rotatably actuated to move the first and second latch members to respective unlatched positions to simultaneously allow movement of the clamp members to the unclamped positions and movement of the clamp assemblies to the loading position.



3,719,298

**DUMPING RATE CONTROLLING TAILGATE FOR A DUMP VEHICLE**

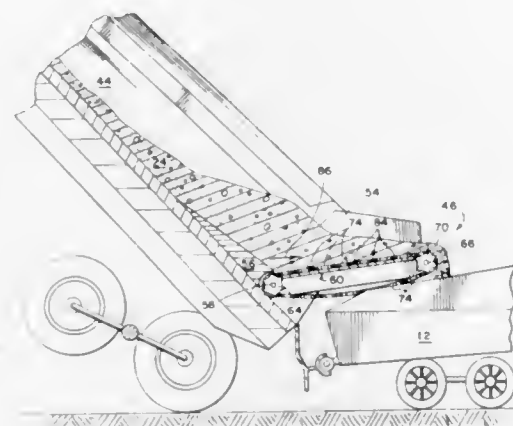
Thelma Burnice Brown, 1717 So. Willis, Abilene, Tex.

Filed Sept. 25, 1970, Ser. No. 75,551

Int. Cl. B60p 1/36

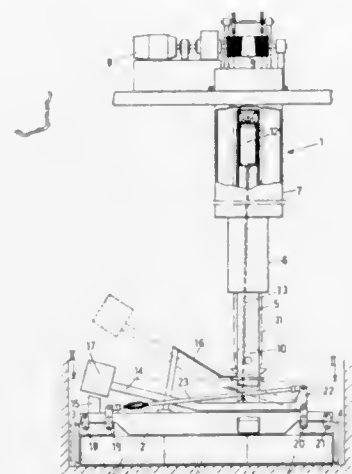
U.S. Cl. 214—509

1 Claim



A tailgate for use on a dumping vehicle for controlling the rate at which material is dumped from the truck having a plurality of material engaging members which discharge material over the tailgate at a desired rate by controlling the rate of movement of the material engaging means.

from one another, means for driving and controlling the clamping members, and members for moving the yoke, in which the clamping members make only a very small displacement when they move from the clamping position into the



release position, whereby at least one of the clamping members is so guided that it is displaced parallel with itself during the movement of the clamping members in relation to one another.

3,719,301

**GREENHOUSE PLANTING BOX**

Eugene A. Boppert, Woodstock, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

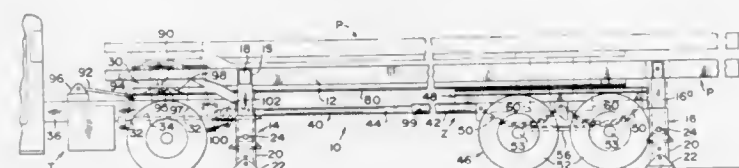
Filed Sept. 11, 1970, Ser. No. 71,537

Int. Cl. B65d 9/06

U.S. Cl. 217—5 R

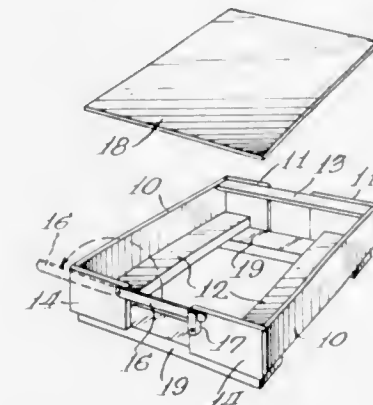
3 Claims

12 Claims



A combination tractor-trailer and pallet load carrying assembly is provided. The trailer and tractor fifth wheel both have vertically movable, controllable, load support or lift means associated therewith and the pallet has removable or retractable load support members thereon whereby the tractor-trailer can be moved under the pallet, the lifting device raised, and the pallet lifted for load transport action. The trailer is of a center pole type and is pivotally connected to the tractor.

A greenhouse planting box composed of an upwardly open frame, a base construction and a planting board removably supported on the base. The board is adapted to support individual pots and the pots can be lifted on the board whereby they can be removed individually or as a whole. The planting box is formed with hand access openings in an opposed pair of walls for permitting grasping and lifting of the planting board.



3,719,300

**HOISTING APPARATUS, MORE PARTICULARLY FOR USE IN A FURNACE**

Frederik Willem Siegmund, Bilthoven, Netherlands, assignor to N.V. Nederlandse Kraanbouw Mij., Utrecht, Netherlands

Filed Dec. 28, 1970, Ser. No. 101,994

Claims priority, application Netherlands, Jan. 20, 1970, 7000804

Int. Cl. B66c 1/42

U.S. Cl. 214—658

6 Claims

The invention relates to a hoisting apparatus having a yoke, at least two clamping members which are disposed on the end portions of the yoke, and can be moved towards and away

3,719,302

**STORAGE CONTAINERS FOR LIQUIDS**

William Hamilton, Mill Brae, Old Guildford Road, Frimly Green, Camberley, England

Filed May 17, 1971, Ser. No. 143,965

Claims priority, application Great Britain, May 20, 1970, 24,494/70; Jan. 22, 1971, 2,992/71

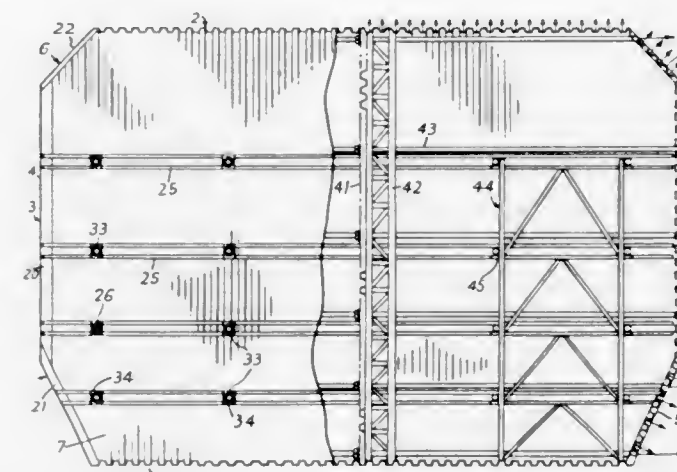
Int. Cl. B65d 25/18

U.S. Cl. 220—9 LG

15 Claims

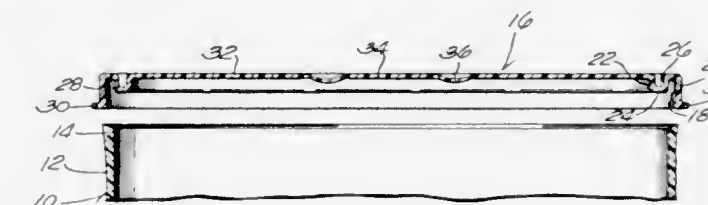
A thermally insulated container for liquefied natural gas is constructed in a ship and has corrugated walls. The corrugations in the bottom, side and top walls extend longitudinally of

the ship while those in the end walls extend vertically. The side and top walls are supported from the ship's structure by sliding connections, while the end walls are interconnected by tie-rods. Thermal contraction of the walls on filling the container is accommodated by a reduction in the length of the tank in



the length direction of the corrugations and by deformation of the corrugated walls transversely of the corrugations. Vertical contraction and expansion of the end walls is accommodated by elastic deformation of the top wall which is left unsupported in the regions adjacent the end walls.

The cover has a groove formed in the bottom face thereof which is adapted to receive the upper edge portion of the container sidewall. The cover further includes a panel portion, a centrally located button portion and a hinge portion connecting the button portion to the panel portion. The button portion is biased upwardly by the inherent resiliency of the cover material. To install the cover it is first pressed onto the container with the sidewall edge fully inserted into the groove on the cover. The button portion of the cover is depressed causing a slight increase in pressure on the inside of the container. The cover is then cracked open slightly with the button por-



tion depressed to allow the pressure inside and out to be equalized. The cracked open portion is then closed with the button depressed. The button portion is then released to allow it to spring back to its original position because of the inherent resiliency of the cover material. The upward movement of the button portion will cause a slight increase in the internal volume of the container which in turn will cause a slight decrease in the pressure inside the container. This pressure differential will tend to force the cover into its installed position to thereby provide a reasonably tight hermetic seal between the cover and container.

3,719,303

**REFRIGERATOR CABINET CONSTRUCTION FOR RELEASING FOAM INSULATION**

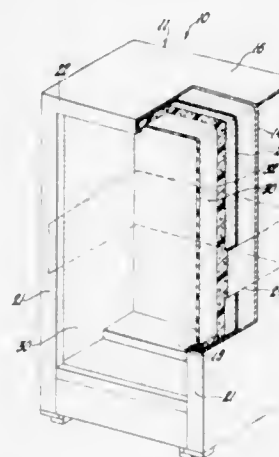
Paul E. Kronenberger, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 1, 1971, Ser. No. 194,294

Int. Cl. B65d 25/18

U.S. Cl. 220—9 F

2 Claims



A refrigerator cabinet having an outer metal shell, a plastic inner liner, and foamed-in-place insulation therebetween together with the application of a foam insulation release agent coextensive with the inner surface of the metal shell except for a single horizontal adherence seam devoid of the release agent on both sides and the rear wall of the shell to produce a cabinet capable of maintaining interior dimensions while allowing for differences in coefficients of thermal expansions between the liner and shell.

3,719,304

**CONTAINER AND COVER THEREFOR**

Douglas C. Pressnell, 11878 Hamden Drive, Cincinnati, Ohio

Filed Sept. 28, 1970, Ser. No. 76,658

Int. Cl. B65d 41/00

U.S. Cl. 220—42 C

1 Claim

A cover and container combination with the container having upstanding sidewalls terminating at an upper edge portion.

3,719,305

**CONTAINER HOLDER**

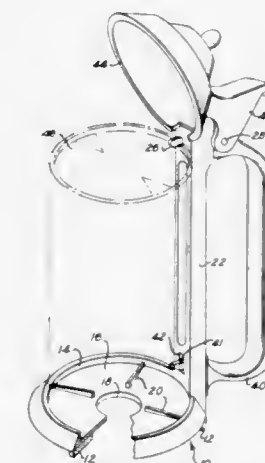
Douglas C. Pressnell, 11878 Hamden Drive, Cincinnati, Ohio

Filed July 2, 1971, Ser. No. 159,423

Int. Cl. B65d 25/00

U.S. Cl. 220—85 H

6 Claims



A holder for holding a beverage can in such a manner that one may use the holder as a stein in drinking the beverage from the can. The holder includes a dish for supporting the can, a post extending upwardly of the dish, a handle pivoted to the top of the post and a bar slidably mounted for inward-outward movement in the top of the post. A latch is provided at the bottom of the handle that, when the handle is swung downwardly, extends through a slot on the post and bears against the can to restrain the can against movement on the dish. A connection is provided between the handle and the bar that is so constructed as to move the bar inwardly over the top of the can when the handle is swung downwardly to also restrain the can against movement on the dish.



3,719,306

**COVER FOR MAINTAINING FRESHNESS OF COFFEE**

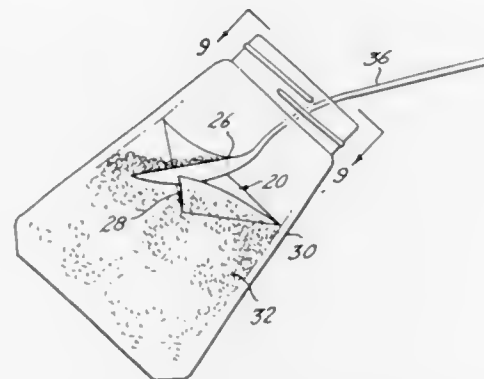
Tobias G. Holtzman, 69 Garden Street, Passaic, N.J.

Filed Jan. 11, 1971, Ser. No. 105,194

Int. Cl. B65d 25/00

U.S. Cl. 220-93

3 Claims



A cover is provided for use in combination with a receptacle for coffee. The cover is utilizable in a receptacle having a circular, horizontal cross-section and rests on the top of the surface of the coffee in the receptacle. The cover comprises a circular disc having a radially extending slit which extends from the center of the disc to the periphery thereof to enable an overlapping of the portions of the disc on opposite sides of the slit but adjacent thereto. The disc has a larger diameter than the diameter of the bore of the bottle so that the periphery of the disc bears against the inner surface of the receptacle to protect the coffee from exposure to air.

3,719,307

**ICE DISPENSING DEVICE**

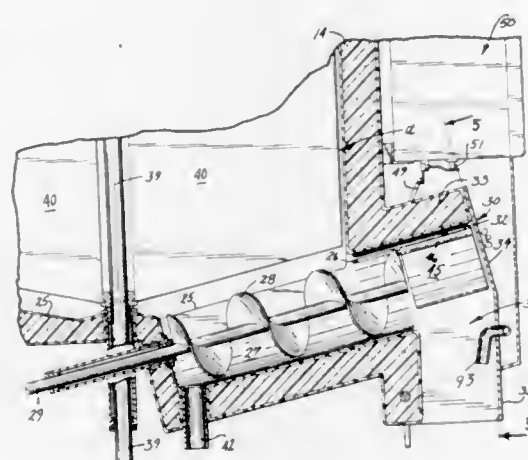
Arthur G. Larson, Mound, Minn., assignor to McQuay, Inc., Minneapolis, Minn.

Filed Oct. 6, 1970, Ser. No. 78,460

Int. Cl. G01f 1/20

U.S. Cl. 222-236

10 Claims



A reservoir having an inlet end and an outlet is disposed in a housing to receive ice from a chipped ice manufacturing device at its inlet end. A chamber is formed exteriorly of the reservoir at the outlet thereof, and a power operated conveyor is positioned within the lower end of the reservoir to deliver chipped ice from the reservoir to the chamber. Electrically operated controls are connected to terminate operation of the power operated conveyor responsive to a predetermined operation of the conveyor to dispense a desired amount of chipped ice, and a vane pivotally connected to the conveyor is disposed within the chamber to sweep therethrough during operation of the conveyor and positively displace and dispense ice within the chamber laterally outwardly through an opening formed in the lowermost portion of the side wall of the chamber during operation of the conveyor.

3,719,308

**DENTAL DRINKING CUP FILLING APPARATUS**

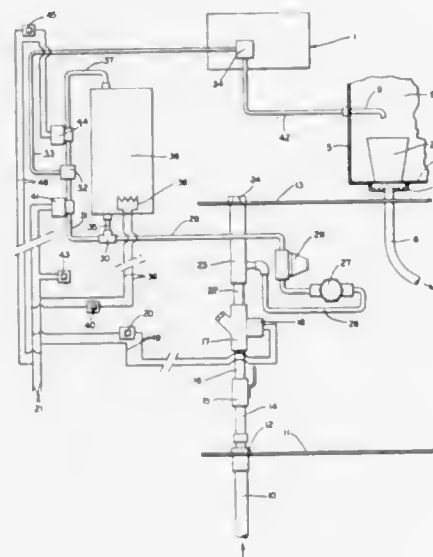
Dean H. Buchtel; Kenneth R. Lappin, and John A. Maurer, all of Canton, Ohio, assignors to The Weber Dental Manufacturing Company, Canton, Ohio

Filed Oct. 26, 1970, Ser. No. 83,897

Int. Cl. B67d 5/34, 5/62

U.S. Cl. 222-70

1 Claim



A filling apparatus for a drinking cup for a dental unit which enables the cup to be filled automatically with a desired predetermined amount of cold water by pressing a control button. Hot water may be mixed with the cold water to temper the cold water during the automatic filling by pressing a second hot water button and holding the same for the time necessary to add and mix the desired amount of hot water. Alternately, the hot water button may be pressed to discharge a desired amount of hot water only into the cup.

3,719,309

**APPARATUS FOR PROCESSING A STRIP OF PHOTOGRAPHIC MATERIAL**

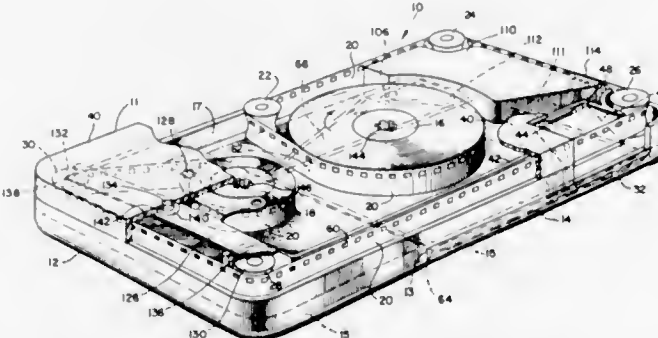
Rogers B. Downey, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 813,469, April 4, 1969. This application Dec. 18, 1970, Ser. No. 99,692

Int. Cl. B65d 35/28

U.S. Cl. 222-101

9 Claims



A motion picture film processing system employing a dispensing container having an applicator through which processing fluid may be expressed onto a strip of exposed photographic material as the strip of material is drawn thereacross. Processing fluid is initially stored in a collapsible container having a weakened portion adapted to rupture responsive to a predetermined compressive force. A fluid feeding device communicates with a reservoir chamber of the dispensing container through an exit orifice provided in one of its walls and also has an entrance port connected to the weakened portion of the collapsible container. The reservoir

chamber is at least equal in capacity to the collapsible container. This system can advantageously be employed in a compact multipurpose film handling cassette, having a removable cover plate adjacent the collapsible container-fluid feeding device, which is adapted to be mounted both within a camera and a unique processor-projector unit. With the aforesaid cover plate removed, a roller of the processor-projector unit progressively applies a compressive force against the entire length of the collapsible container-fluid feeding device assembly whereby the processing fluid is expelled from the collapsible container into the reservoir chamber of the dispensing container.

3,719,310

**CLOSURE NOZZLE FOR INJECTION MOLDING MACHINES**

Werner Hunten, Stein, near Nuremberg, Germany, assignor to Ankerwerk Nurnberg GmbH, Nuremberg, Germany

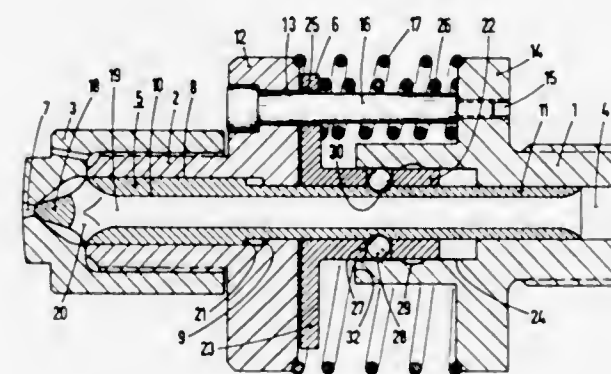
Filed Feb. 24, 1971, Ser. No. 118,423

Claims priority, application Germany, Feb. 26, 1970, P 20 09 006.6

Int. Cl. B29f 1/03

U.S. Cl. 222-497

11 Claims



A closure nozzle for use on an injection moulding machine comprising a nozzle carrier adapted for connection to the plasticizing cylinder of the machine, a nozzle arranged displaceably relative to the nozzle carrier, a spring loaded closure element axially displaceable in a co-axial bore in the nozzle carrier and displaceable relative to the nozzle, and a locking element operatively associated with the closure element for the controlled opening and closing of the closure element.

3,719,311

**PRESSING APPARATUS AND METHOD**

Dan B. Remiarz, Brooklyn Center, Minn., assignor to The Unipress Company, Inc., Minneapolis, Minn.

Filed March 4, 1971, Ser. No. 121,027

Int. Cl. D06c 5/00, 15/00

U.S. Cl. 223-73

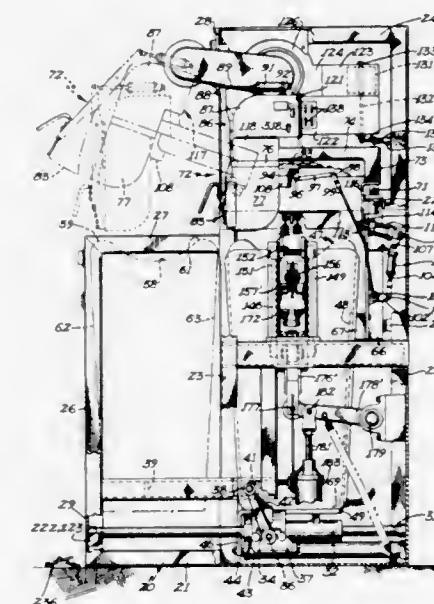
36 Claims

A pressing apparatus is disclosed in which a garment support is movable between two horizontally-displaced positions, i.e. a dressing position in which a garment is initially placed on the support and later removed from it, and a pressing position in which the garment is supported for pressing engagement by one or more movable pressing plates. The pressing plates are movable between retracted and pressing positions, and preferably also to an intermediate steaming position.

The movable garment support includes an upwardly extending center buck having sides against which the downwardly extending legs of a garment are adapted to be initially dressed and then pressed, in combination with a garment waist support mounted above the center buck for relative movement between an upper loading position and a lower dressing and

pressing position. The device further includes a plurality of safety means effective both individually and in combination to insure the desired sequence of movement of the various parts, and such safety means may also include timing or sequence control means for automatically controlling certain portions of a pressing, steaming or other treatment cycle. Selective presteaming controls are provided.

The garment waist support preferably includes improved features for convenient mounting of a garment waist portion in a manner which facilitates suitable alignment of the desired



front crease locations of such a garment with the front edges of two laterally-spaced buck portions which form part of the garment support. The waist support also includes movable seat wings for smoother dressing of the garment. The seat wings retract during steaming and pressing.

Improved cuff holders on the garment support hold the garment during dressing and movement to pressing position, but retract at the start of steaming. An improved supporting and alignment mechanism for a movable pressing plate is also disclosed.

3,719,312

**COLLAPSIBLE GARMENT HANGER**

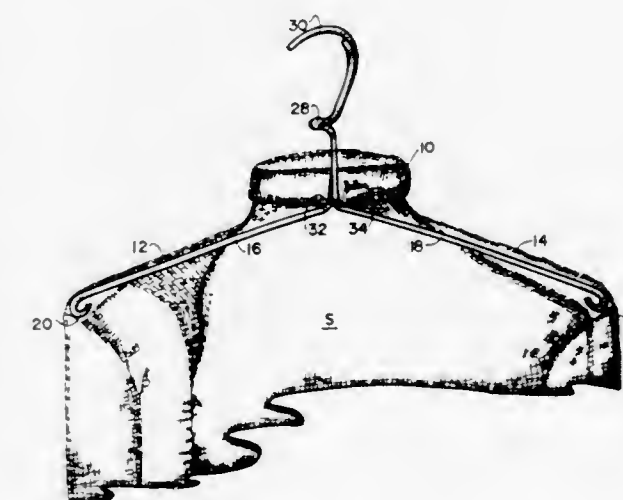
Charles F. Krut, 170 Taylor Street, Talcottville, Conn.

Filed March 4, 1971, Ser. No. 120,936

Int. Cl. A47j 51/10

U.S. Cl. 223-94

3 Claims



The device disclosed comprises a two piece garment hanger fabricated from steel wire and collapsible so as to be readily inserted in the neck opening of a turtle neck sweater or the



like. A first wire is pivotally connected to a second wire by a rivet, which rivet is so located with respect to these wires so that the hanger can be opened to support a garment in a conventional fashion or can be collapsed so as to permit insertion or removal of the hanger through the relatively small neck opening in a turtle neck sweater or the like.

3,719,313

## CAR TOP LUGGAGE CARRIER

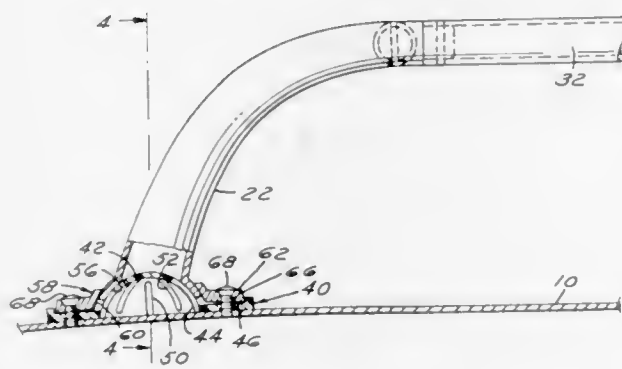
Ludwig J. Tischler, Huntington Woods, Mich., assignor to F. L. Jacobs Co., Southfield, Mich.

Filed July 27, 1971, Ser. No. 166,483

Int. Cl. B60m 9/00

U.S. Cl. 224-42.1 D

12 Claims



The rail support assembly is for a vehicle top carrier where four or more rail support assemblies are mounted on the roof of a vehicle, with rails extending between adjacent assemblies to complete the carrier. Each rail support assembly comprises: a one piece resilient base which is adapted to conform to the curvature of the vehicle roof and is provided with a spherical section forming a dome; an upstanding tubular element having a spherical socket on one end seated on the dome; a locating plate having a spherical rim surrounding and engaging the socket on the tubular element, with the locating plate overlying flanges provided on the resilient base; and fastening means extending through the flanges and plate to secure the support assembly to the vehicle roof.

3,719,314

## APPARATUS FOR BREAKING WOOD WASTE INTO SHORT PIECES

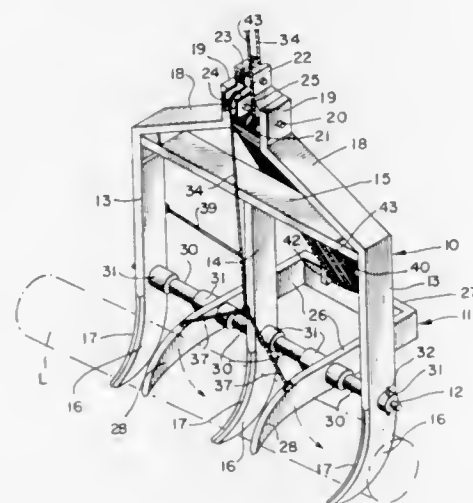
Ernest P. Cox, P.O. Box 154, Lolo, Mont.

Filed Aug. 9, 1971, Ser. No. 170,042

Int. Cl. B26f 3/00

U.S. Cl. 225-97

10 Claims



A heavy duty pivoted jaw wood breaking unit is adapted to be positioned and operated by a cable operated or hydraulic

cally operated shovel or another form of logging machine. The apparatus breaks logging slash, tree tops, limbs and other windfalls into short sections which can be buried and scattered to substantially reduce the danger of fire. The broken material will also decompose faster than the usual large logs.

3,719,315

## TAPE ALIGNING DEVICE

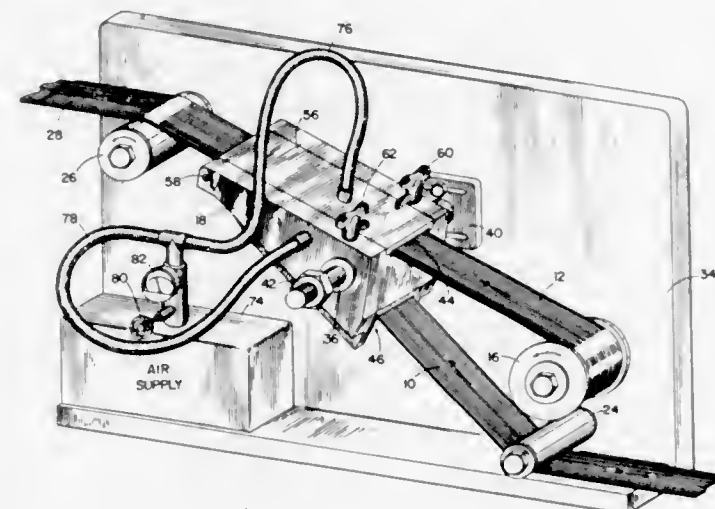
Bretislav Paul Zuber, Montreal, Quebec, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Apr. 10, 1972, Ser. No. 242,646

Int. Cl. B65h 23/26

U.S. Cl. 226-19

7 Claims



An apparatus is disclosed for guiding and aligning a plurality of tapes during a continuous laminating process. One of the tapes is a structurally weak heat-sensitive plastic film and the other is a heated metal tape. The plastic film is guided through a first path and the metal tape through a second path, the second path being pre-aligned with and converging towards the first path. Means are provided to support the plastic film on a frictionless air cushion and means are provided to allow the apparatus limited lateral movement to maintain both tapes perfectly aligned one above the other.

3,719,316

## WEB SPREADER ELEMENT

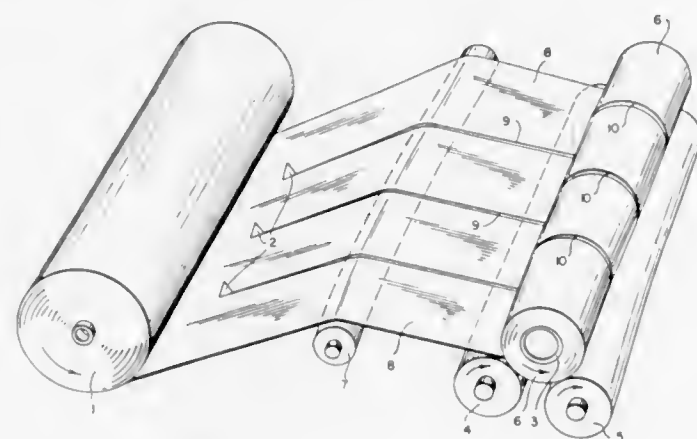
Kenneth G. Frye, Downingtown, Pa., assignor to Beloit Corporation, Beloit, Wis.

Filed Apr. 22, 1971, Ser. No. 136,378

Int. Cl. B65h 23/32

U.S. Cl. 226-199

3 Claims



A spreader element which is useful to spread a web includes an adjustably bowable shaft and a cylindrical, non-rotatable outer surface about the bowable shaft.

According to the present invention, the outer cylindrical surface is made up of a plurality of separate cylindrical segments axially aligned along the shaft each segment being non-rotatable relative to the member.

3,719,317

## EASILY OPENABLE CARTON WITH ELONGATED ADHERENCE AREAS NEAR THE SIDE EDGES OF THE OVERLAPPED FLAP

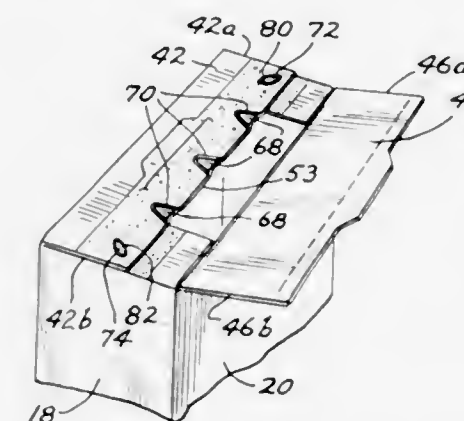
William A. Brastad, Minneapolis, Minn., assignor to General Mills, Inc.

Filed May 4, 1970, Ser. No. 34,194

Int. Cl. B65d 5/54

U.S. Cl. 229-51 WB

2 Claims



A carton end closure formed of two flaps adhesively held together at a number of distinct areas. One of these areas is elongated with its longitudinal axis pointed toward one corner of the overlapped flap. Another of these areas is also elongated with its longitudinal axis pointed toward another corner of the overlapped flap. Another of these areas is located in the center portion of the overlapped flap. At each of these distinct areas of adherence one of the overlapped flaps is embossed.

3,719,318

## THERMOPLASTIC BAG

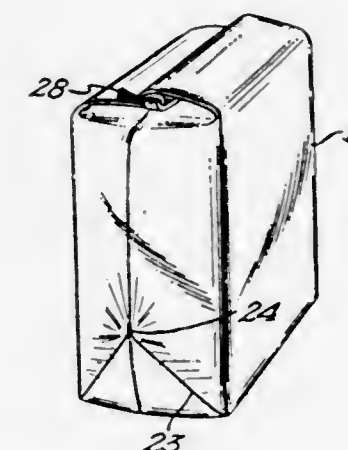
Harry Hamilton Moran, 2965 Casco Point Road, Wayzata, Minn.

Division of Ser. No. 841,670, June 25, 1969, Pat. No. 3,534,520, which is a continuation of Ser. No. 590,417, Oct. 28, 1966, abandoned. This application Oct. 19, 1970, Ser. No. 82,012

Int. Cl. B65d 33/30

U.S. Cl. 229-58

9 Claims



A thermoplastic bag is formed from a sheet of thermoplastic material which is folded and tucked to form a bottom gusset. The bottom gusset portion is sealed at opposite corners with an inverted V-shaped seal, and the sheet forming the partially formed bag is severed with a severing and welding medium

3,719,319

## ENVELOPE-LIKE CONTAINER

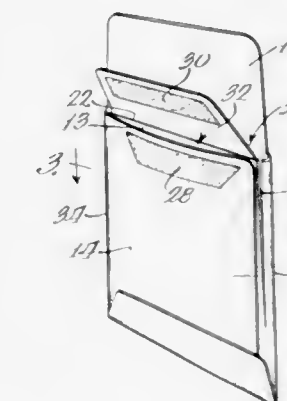
Carl W. Schleutermann, Harwood Heights, Ill., and Herman L. Lewis, Jr., Malibu, Calif., assignors to Arvey Corporation

Filed Sept. 30, 1970, Ser. No. 76,853

Int. Cl. B65d 27/08

U.S. Cl. 229-72

6 Claims



An envelope-like container made of a single blank comprising an open top pocket for papers such as a bank book, checks, currency, and a deposit slip. The open top pocket is slit in one wall thereof to allow access to the interior of the pocket. The container may also have a pocket for coins that can be sealed after the coins are inserted. The container is particularly designed for use by depositors at drive-in banks and makes it easy for the teller to handle deposits without fear that the contents will slide out and be lost.

3,719,320

## MOTION REVERSING LEVER MECHANISM FOR A THERMOSTATIC CONTROL LEVER

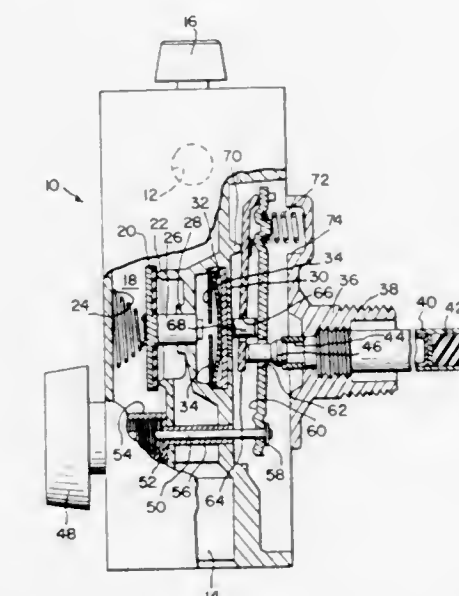
Louis P. Morris, Garden Grove, and Theodore J. Dykzeul, Rolling Hills, both of Calif., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Feb. 23, 1971, Ser. No. 118,013

Int. Cl. F16k 31/56

U.S. Cl. 236-48

6 Claims



A motion reversing lever mechanism disposed between a valve assembly and a thermally responsive element in a ther-



mostatic control device and including an actuating lever fulcrumed at one end and engaging the valve assembly at an intermediate point, and an intermediately fulcrumed supplemental lever engaging the thermally responsive element at one end and the actuating lever at its other end such that movement of the thermally responsive element in one direction is transmitted by the levers to the valve assembly for moving the same in an opposite direction.

3,719,321

## AIR FLOW CONTROL DEVICE

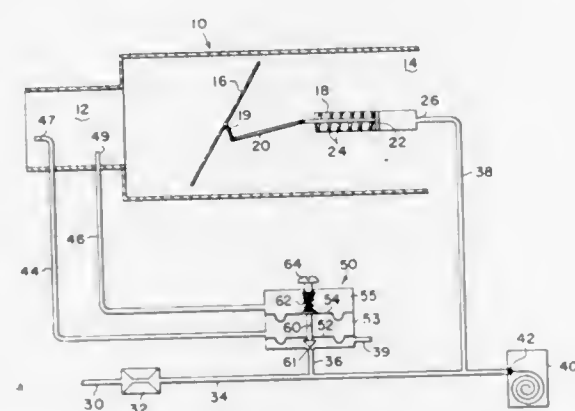
John C. McNabney, La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.

Filed May 20, 1971, Ser. No. 145,167

Int. Cl. G05d 7/01, 23/12

U.S. Cl. 236—49

10 Claims



Pneumatically operated air flow control devices for use in a variable air volume conditioning system, wherein air volume rate is normally controlled by temperature responsive means, and including pressure responsive means to override the temperature responsive means under prescribed conditions.

3,719,322

## THERMALLY RESPONSIVE VALVE ASSEMBLY

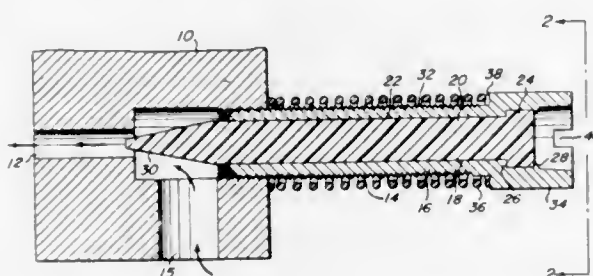
Robert T. Gifford, Yellow Springs, Ohio, assignor to Vernay Laboratories, Inc., Yellow Springs, Ohio

Filed April 8, 1971, Ser. No. 132,494

Int. Cl. G05d 23/02

U.S. Cl. 236—102

9 Claims



A thermally responsive valve assembly includes a cylindrical casing or shell in which is mounted a rod-like valve core which is attached to the casing or shell at one end and extends outwardly of the shell at its opposite end. The valve core is formed of a material having an appreciable different coefficient of linear thermal expansion than the material of which the outer casing or shell is formed and the external diameter of the valve core is sufficiently smaller than the internal diameter of the casing or shell to allow the core and shell to move axially with respect to each other in response to changes in temperature. The external surface of the shell is threaded so that the complete valve assembly may be threaded into position with the outwardly extending portion of the valve core located within a port through which the fluid flow is to be regulated.

The initial setting of the valve core with respect to the port is adjusted by threading the shell into the wall of the member in which the port is formed, and thereafter, changes in temperature will cause the effective area of the port to be varied as either the valve member or the casing expands and contracts in response to temperature changes.

3,719,323

## AUTOMATIC DISH WASHING MACHINE

Walter Raiser, Lange-Gasse 24, Basel, Switzerland

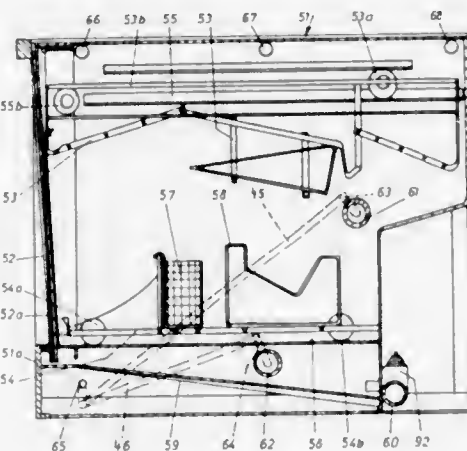
Filed June 14, 1971, Ser. No. 152,554

Claims priority, application Germany, Jan. 20, 1971, P 21 02 572.9

Int. Cl. B08f 3/00

U.S. Cl. 239—264

7 Claims



The specification discloses an automatic dish washing machine having a washing chamber of approximately rectangular cross section closable by means of a door, a circulating pump and heating means for the water to be sprayed into the washing chamber. The circulating pump is disposed next to the washing chamber on the side remote from the door and in the washing chamber two nozzle tubes lying parallel to one another and pivotable about their longitudinal axes are connected via pipes to the circulating pump and are, further, accommodated via links to a driving unit disposed outside the washing chamber. One pipe is disposed in the washing chamber near the top, or bottom, and the other at about mid height of the chamber. Fixed nozzle pipes can also be included in the washing chamber.

3,719,324

## VELOCITY SENSOR FEEDBACK MECHANISM FOR THRUST REVERSER ACTUATING SYSTEM

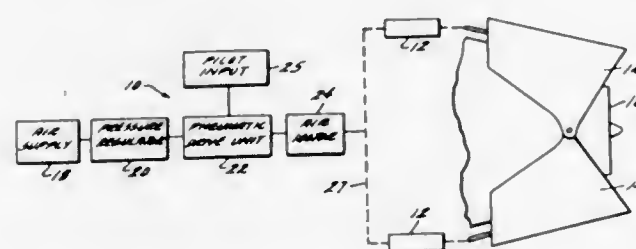
Donald E. Uehling and Stephen B. Tucker, Cincinnati, Ohio, assignors to General Electric Company

Filed June 4, 1971, Ser. No. 150,089

Int. Cl. F02k 1/18

U.S. Cl. 239—265.19

8 Claims



A control system for stowing and deploying a movable load member, such as a gas turbine engine thrust reverser door, is described as including a velocity sensor feedback loop which both protects the load member and assures complete deployment thereof. The velocity sensor comprises a piston and chamber positioned so that the piston

comes into contact with the load member as it nears an extreme position of movement. As the piston is engaged, a pressure builds up in the chamber which is a function of the velocity of the load member. This pressure forms an input to a servomechanism which controls the velocity of the load member. The system is provided with means for venting the piston chamber as the load member comes to rest to assure that the load member is maintained in its final position by the servomechanism.

3,719,325

## NOZZLE FOR A PNEUMATIC-HYDRAULIC HEAD FOR CLEANING OF MOLDS FOR PRESSURE CASTING OF METAL

Alexander Cerva, Nove Mesto nad Vahom, and Milan Tomasovic, Bzince p.J., both of Czechoslovakia, assignors to Vyskumny ustav Mechanizacie a Automatizacie, Nove Mesto nad Vahom, Czechoslovakia

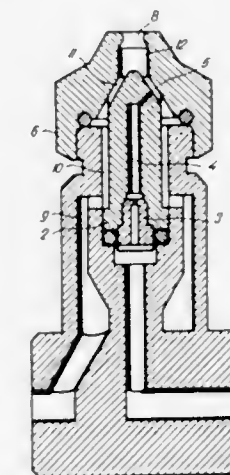
Filed July 21, 1971, Ser. No. 164,578

Claims priority, application Czechoslovakia, Aug. 14, 1970, 5644-70

Int. Cl. B05b 7/10

U.S. Cl. 239—405

4 Claims



A nozzle for a pneumatic-hydraulic head for cleaning molds for pressure casting of metal, having independent supplies of pressurized air and separating material. The nozzle has a chamber and spiral shaped mixing channels creating in the chamber prior to the discharge through the nozzle spout a vortex in the pressurized air. A transfer channel is also provided connected to the supply of the liquid separating material terminating into one of the mixing channels.

3,719,326

## LIQUID ATOMIZING DEVICES

Harold Place, Accrington, and Alan Gillingham Cheshire, Burnley, England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

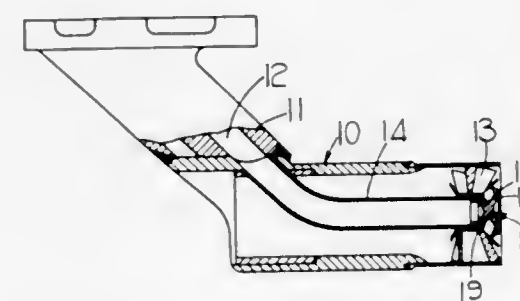
Original application July 8, 1969, Ser. No. 839,902, now Patent No. 3,608,831. Divided and this application Feb. 5, 1971, Ser. No. 112,870

Claims priority, application Great Britain, July 18, 1968, 34,308/68

Int. Cl. B05b 7/00

U.S. Cl. 239—406

5 Claims



A liquid atomizing device, particularly intended for use in the burner of a gas turbine engine, has a tubular body

through which air can flow to a swirler formed by vanes at the downstream end of the body. A fluid passage is defined by a tube within the body and a downstream end wall of the passage includes an external concave annular flange and a plurality of holes through which fuel can pass from the passage to impinge on the flange and thereby be directed into the swirling airstream downstream of the blades.

3,719,327

## DRIP IRRIGATION NOZZLE

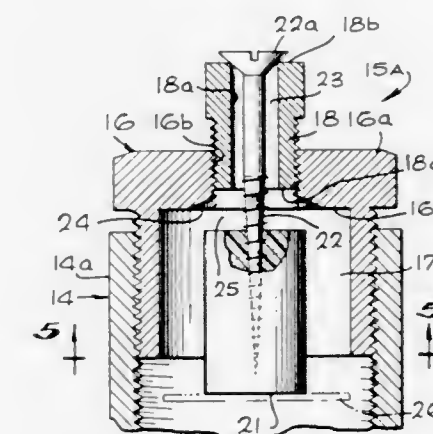
Walter C. McMahan, Escondido, Calif., assignor to McMahan Brothers Mfg. Co., Inc., Escondido, Calif.

Filed Aug. 13, 1971, Ser. No. 171,498

Int. Cl. B05b 1/30

U.S. Cl. 239—454

19 Claims



A drip irrigation nozzle having pressure regulating and self-cleaning characteristics. The nozzle includes a resilient closure member which in a flow limiting position partially blocks the nozzle metering orifice in proportion to the pressure of the supplied fluid. The nozzle discharge or "drip" rate thus is substantially independent of fluid supply pressure. When the irrigation fluid is turned on or off, the transient burst of fluid past the closure member cleans debris from the nozzle.

3,719,328

## ADJUSTABLE SPRAY HEAD

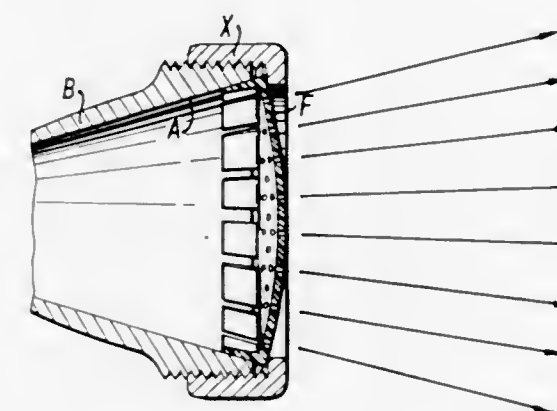
Clyde V. Hindman, 1385 East Ave., Morgantown, W. Va.

Filed Oct. 22, 1970, Ser. No. 83,114

Int. Cl. B05b 15/00

U.S. Cl. 239—546

6 Claims



This disclosure relates to an adjustable spray head having a resilient face plate formed with a plurality of spray apertures therein. The face plate has an annular flange which cooperates with a tapered surface on the spray head body for flexing the face plate and thereby selectively changing the angular relationship of the apertures and thus the spray pattern.



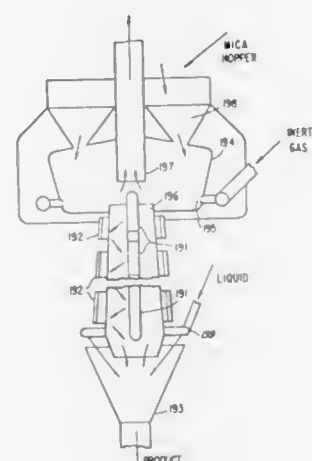
3,719,329

# ULTRADISINTEGRATION AND AGGLOMERATION OF MINERALS SUCH AS MICA, PRODUCTS THEREFROM AND APPARATUS THEREFOR

Josef Ruzicka, 55-25 98th Place, Rego Park, N.Y.  
Division of Ser. No. 650,543, June 30, 1967, Pat. No. 3,608,835. This application Aug. 5, 1970, Ser. No. 61,518  
Int. Cl. B02c 19/00

U.S. Cl. 241-4

9 Claims



Frangible or cleavable solids, such as mica, are disintegrated in oriented, high-velocity streams of a fluid medium so as to produce thin smooth-surfaced particles or flakes having a high specific surface area and a high ratio of length to thickness. The resulting particles or flakes are useful as agglomerants, fillers or pigments or can be agglomerated to form paper-like webs or solid discs or articles of other predetermined configurations, with or without added binder, either in self-supporting form or adhered to a substrate. Various methods and apparatus for such disintegration are disclosed.

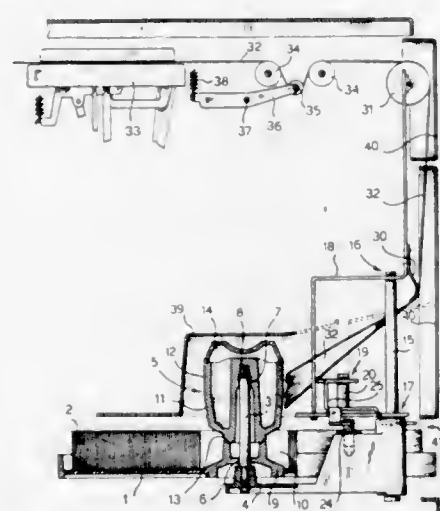
3,719,330

# PUNCHED-TAPE UNWINDING DEVICE

Ezio Dell Antonio, and Quinto Tarizzo, both of Turin, Italy, assignors to Ing. C. Olivetti L.C., S.p.A., Ivrea, Italy  
Filed Jan. 19, 1971, Ser. No. 107,717  
Claims priority, application Italy, Feb. 9, 1970, 67400 A/70  
Int. Cl. B65h 17/48

U.S. Cl. 242-55.18

5 Claims



A tape unwinding device having a turntable supporting a reel of tape that has a central opening and is removed from the turntable by the innermost turn in said central opening at an angle to the turntable, and a turntable hub having an annular recess of height substantially equal to the tape width and a frusto-conical tape guide section above the recess. The minor diameter of the frusto-conical section is adjacent the recess, and its apex angle is substantially coincident with the exit

angle formed by the innermost turn of tape with the turntable axis during exit in the absence of said hub.

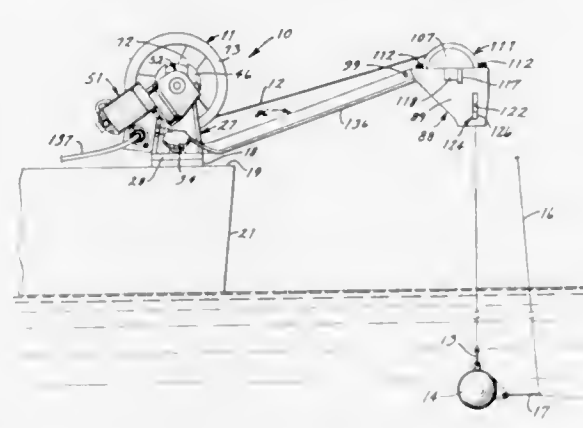
3,719,331

# DOWNRIGGER

Gerald J. Harsch, South Haven, Mich., assignor to Harsch Precision Engineering, South Haven, Mich.  
Filed June 30, 1971, Ser. No. 158,252  
Int. Cl. B65h 17/52

U.S. Cl. 242-106

14 Claims



A downrigger for use in trolling. The downrigger has frame means releasably mounted on the watercraft. Shaft means are rotatably supported on the frame means and reel means are axially, slideably mounted on the shaft means and angularly fixed for rotation therewith. Drive means are provided and adapted to drive the shaft means for rotation to wind and unwind the line from the reel means. Brake means are provided which include an axially facing planar stationary surface on the frame means encircling the shaft means and an axially facing cooperating planar surface opposed to the stationary surface mounted on the reel means for rotation therewith. The brake means also includes actuating means for urging the cooperating surface in an axial direction into and out of an adjustable frictional engagement with the stationary surface for frictionally locking the reel means to the frame means under an adjustable amount of friction so that the tightness of the coupling between the stationary surface and the cooperating surface may be controlled and the coupling may be caused to slip when the line becomes snagged on an underwater object to thereby prevent the line from breaking.

3,719,332

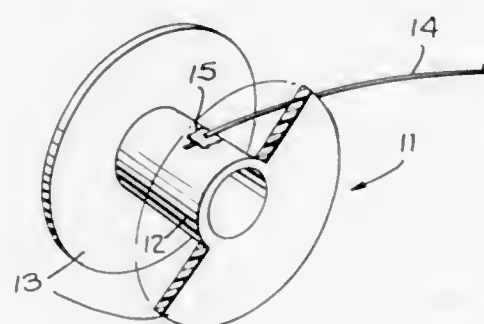
# METHOD OF SECURING A THREAD TO A BOBBIN AND A THREAD WOUND BOBBIN

Philippe Hardy-The McLain, Columbia, S.C., assignor to Soo Valley Company, Columbia, S.C.

Filed Oct. 6, 1970, Ser. No. 78,496  
Int. Cl. B65h 75/28

U.S. Cl. 242-125.1

16 Claims



The thread is heat sealed to the bobbin either by flowing the material of the bobbin about the thread or by sealing the thread directly to the bobbin under heat and pressure. Either one of the thread or bobbin must be made of a thermoplastic material.

3,719,333

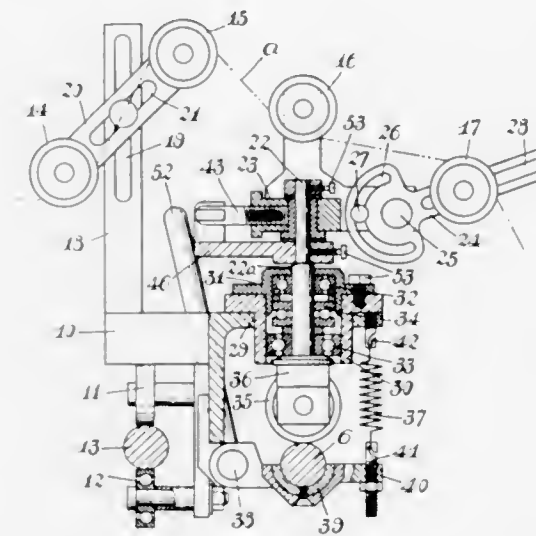
# FEED MECHANISM FOR COIL WINDER

Iwao Kubo, 3-go, 14-ban, 4-chome, Ikegami, Ota-ku, Tokyo, Japan

Filed May 13, 1970, Ser. No. 36,838  
Int. Cl. B65h 54/30

U.S. Cl. 242-158.4

1 Claim



The present invention provides an improved seed mechanism of a coil winding machine having a roller with a sharp edge to contact with pressure a feed shaft which rotates at a constant speed. The roller is mounted at a lower end of a vertical shaft in a traveler which moves along an axis of the feed shaft. The vertical shaft is supported rotatably by the traveler and has a guide grooved pulley to guide a metallic wire. The roller moves on the feed shaft spirally together with directional deviation of the grooved pulley caused from a minute change of winding direction of the metallic wire on a bobbin owing to a natural habit of the metallic wire to be wound as the traveler moves gradually, such that when finishing the winding of layer a coil layer obliqueness of the roller is reversed in compliance with the natural habit of the metallic wire so as to reverse the moving direction of the traveler.

3,719,334

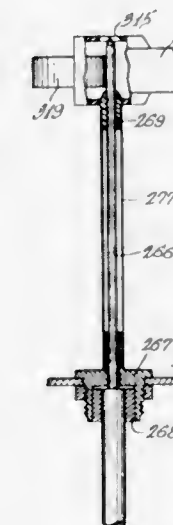
# TAPE DRIVE CAPSTAN

Thomas W. Vail, Buffalo Grove, Ill., assignor to Warwick Electronics Inc.

Original application Nov. 21, 1968, Ser. No. 777,689, now Patent No. 3,677,555. Divided and this application Mar. 31, 1971, Ser. No. 129,763  
Int. Cl. G03b 1/04; G11b 15/32

U.S. Cl. 242-181

6 Claims



A tape drive capstan having a long capstan shaft threadable through a plurality of tape cassettes wherein a

shroud surrounds the capstan shaft and has a bearing rotatably supporting said capstan shaft near an exposed end thereof and said shroud engages a cassette in playing position thereof to resist deflection of the capstan shaft by force applied by the coating pressure roller.

3,719,335

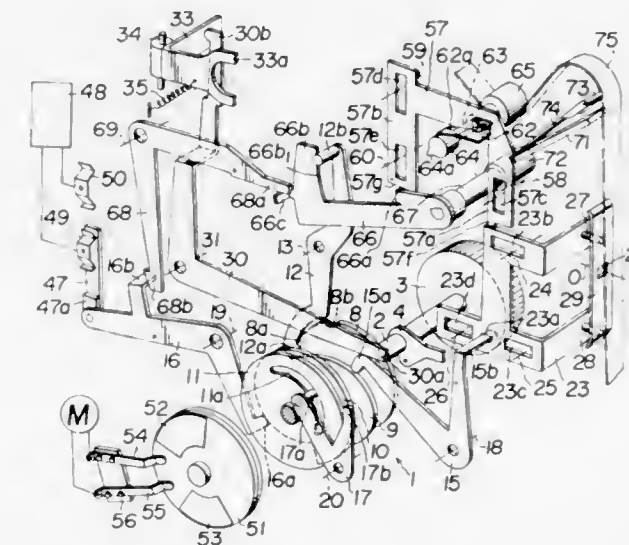
# AUTOMATIC FILM REWINDING DEVICE FOR SMALL MOVIE PROJECTORS

Makoto Kurasawa, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoli, Naka-magone, Ota-ku, Tokyo, Japan

Filed Dec. 1, 1970, Ser. No. 94,050  
Claims priority, application Japan, Dec. 8, 1970, 45/98785  
Int. Cl. B65h 63/04, 25/00

U.S. Cl. 242-186

8 Claims



An automatic film rewinding device for small movie projectors effects automatic rewinding of the film responsive to detection of tensioning of the film, wound on a supply reel, at the terminating stage of film supply, and is operable selectively to effect single-frame projection as well as projection of the film while the latter is moving in the rewinding direction. An externally accessible operating knob is operable to move a control cam group between forward film feed, neutral and reverse film feed positions, and a control lever group includes certain levers engaged with the control cam group and other levers operated by the cam engaging levers. The control lever group sets the components of the projector either to feed film forwardly or to rewind film and is locked in the forward feed film position and in the neutral position by a locking lever which is directly released by a member subjected to tension of the film. The control lever group includes only three cams.

3,719,336

# FAULT DETECTOR FOR HELICOPTER FEEL AUGMENTATION SYSTEM

Donald W. Fowler, West Haven, and Harold G. Heiney, Jr., Huntington, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed May 20, 1971, Ser. No. 146,573  
Int. Cl. B64c 13/50

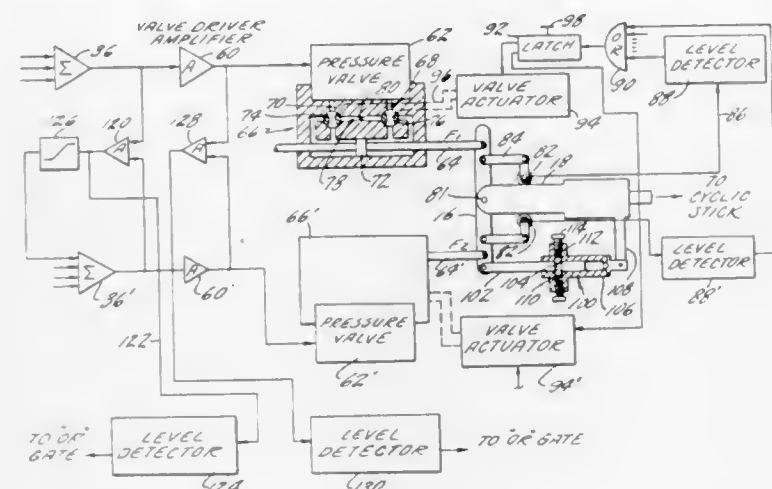
U.S. Cl. 244-77 M

6 Claims

In a feel augmentation control system for high speed helicopters in which a force is applied to the cyclic stick in direct proportion to the load induced by movement of the stick, redundant force actuator controls responsive to sensed inputs are provided. If any unbalance in the electrical or mechanical properties of the redundant controls occurs, the force actuator controls in the feel augmentation system are



deactivated and a damping force is provided for the cyclic stick. The cyclic stick can be actuated by the pilot against the



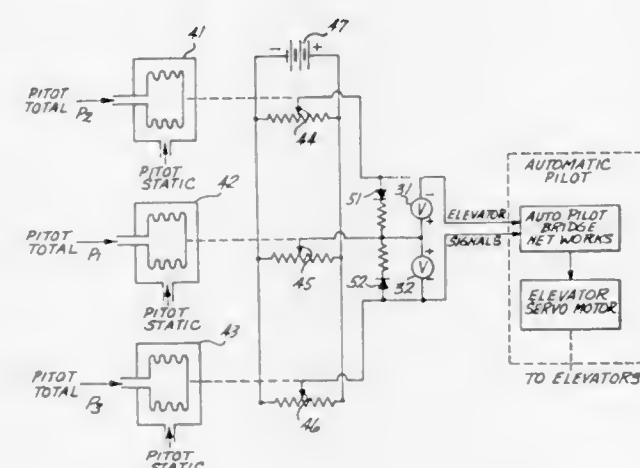
damping force, and the force actuator controls will not reengage unless reset.

**3,719,337**  
**FLIGHT CONTROL APPARATUS FOR MAINTAINING MAXIMUM GROUND SPEED WHILE WITHIN THE JET STREAM**

Conrad O. Gardner, 11424 236th Pl. S.W., Edmonds, Wash.  
Filed June 14, 1971, Ser. No. 152,563  
Int. Cl. B64c 15/00

U.S. Cl. 244—77 D

10 Claims



A system for maximizing ground speed utilizing jet stream air currents and/or providing guidance along the path of least resistance by processing of dynamic pressure information signals derived at spaced apart points of different altitude levels. Dynamic pressures are continuously compared and aircraft altitude control or altitude direction indicator means responsive to the compared pressures are utilized to cause changes in aircraft altitude or indicate the changes to be made to achieve maximum ground speed through a path of less resistance, or achieve increased comfort by avoiding paths adjacent large pressure differentials.

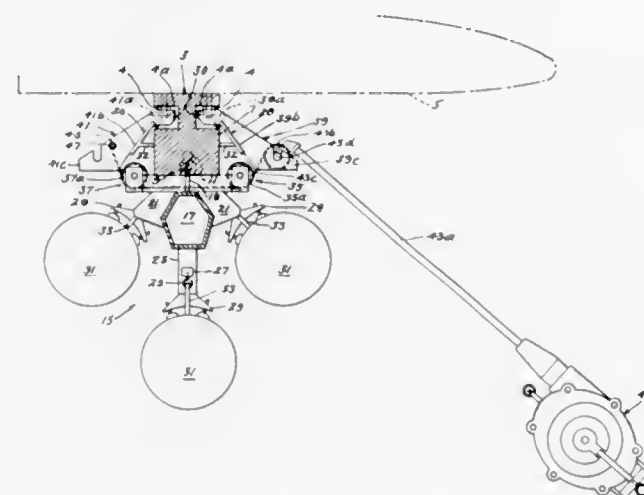
**3,719,338**  
**BOMBLOAD HANDLING APPARATUS**  
Joseph P. Ruggeri, Cherry Hill, N.J., assignor to The United States of America as represented by the secretary of the Navy  
Filed Feb. 23, 1971, Ser. No. 117,898  
Int. Cl. B64c 1/22

U.S. Cl. 244—137 R

10 Claims

Subject disclosure relates to novel and improved apparatus for loading and unloading a bombload ejection subassembly on an aircraft bombrack. When an asymmetric bombload is to be handled, the apparatus includes a sheave assembly which is secured to the bombload assembly such that its axis of rotation

is positioned vertically above the center of gravity of the bombload assembly, an elongated support beam which is mounted on the bombrack, a single cantilever element which may be adjustably positioned on the beam and extends outwardly over the sheave assembly and a hoist mechanism which is cradled on the end of the cantilever element and controls a lifting cable which is reeved about the sheave assembly. When a sym-



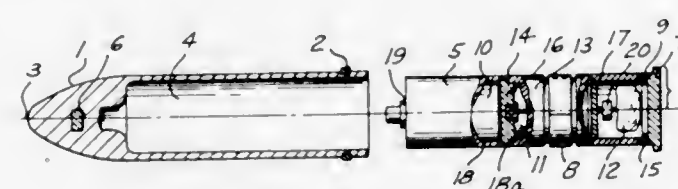
metric bombload is to be handled, the apparatus includes a pair of sheave assemblies which extend outwardly from opposite sides of the bombload assembly, a pair of elongated support beams which are mounted on opposite sides of the bombrack, a pair of cantilever elements which are secured to the bombrack frame above the sheave assemblies, and a hoist mechanism.

**3,719,339**  
**DEVICE FOR A PROJECTILE**  
Bjorn Herman Olof Simmons, Karlskoga, and Lars Anders Birger Karsberg, Bofors, both of Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden  
Filed Feb. 9, 1971, Ser. No. 113,916  
Claims priority, application Switzerland, Feb. 25, 1970, 2408/70

U.S. Cl. 244—3.27

Int. Cl. F42b 13/32, 13/38

12 Claims

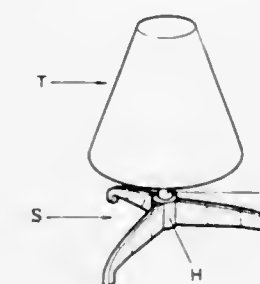


A device separable from a projectile arranged to be fired from a rifled barrel. The device includes a unit such as a flare supported by a parachute which is expelled from the projectile a predetermined time after firing of the projectile. The unit is placed in a container which is initially closed at one end by a bottom plate which also constitutes the bottom plate of the projectile and is capable of sustaining the powerful gas pressure generated when the projectile is fired. Upon expulsion of the container from the projectile by a suitable timing and expelling assembly, the container separates into several parts and a brake mounted on the unit is activated by the centrifugal force and causes a slowdown of the unit. The bottom plate which is also subject to the centrifugal force is pivotally connected to the unit by a pivot means which is eccentrically disposed with respect to the lengthwise center axis of the container and thus of the unit. The combined action of the centrifugal forces acting upon the brake and the bottom plate cause the latter to pivot into an angular position in which it is released from the pivot means and is thus ejected out of the linear path of the unit, thereby preventing collision with the same.

**3,719,340**  
**TREE STAND**  
Ian F. Norton, Toronto, Ontario, Canada, assignor to Noma Lites Canada Limited, Scarborough, Ontario, Canada  
Filed Oct. 7, 1971, Ser. No. 187,387  
Int. Cl. A45g 33/2

U.S. Cl. 248—48

5 Claims

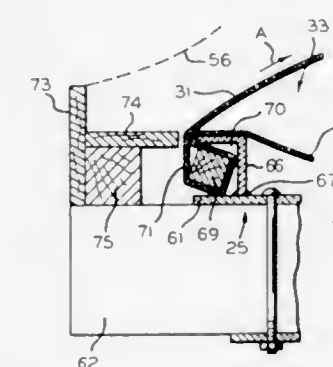


This invention relates to a spider support for supporting a standard having a central hub including a receptacle therein and a fence integral with and in spaced relation thereto. The fence has spaced slots which receive removably installable anchors of spoke elements extending in radial relation to the hub; the hub and spoke elements co-operating to provide a rigid assembly.

**3,719,341**  
**INFLATABLE FORM FOR CONCRETE BUILDING SHELL**  
Horral Harrington, Pittsburgh, Pa., assignor to Ivan Himmel, Chicago, Ill., a part interest  
Filed July 26, 1971, Ser. No. 165,478  
Int. Cl. B28b 7/32

U.S. Cl. 249—65

10 Claims



An inflatable form for a concrete building shell comprising a frame including a plurality of support members defining the periphery of a concrete shell segment, a retainer affixed to one support member and affording a continuous channel facing outwardly of the support member, and a wood rail wrapped in one edge of an outer fabric layer for the inflatable form. The rail is dimensioned to fit easily into the channel in flat relation thereto, but is large enough to lock firmly into the channel upon inflation of the form. In a preferred embodiment, there is an auxiliary rail positioned within the channel, below the main rail and outside the fabric, held in place by a plurality of small wedges.

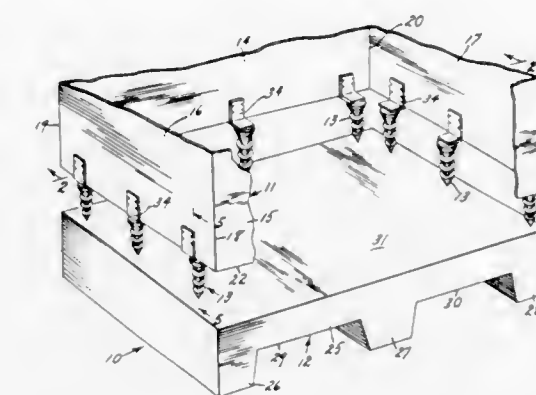
**3,719,342**  
**CLIP FOR RIGID FOAM PALLET**  
Julius B. Kupersmit, New York, N.Y.  
(145—80 228th St., Springfield Gardens, N.Y. 11413)  
Filed Dec. 23, 1970, Ser. No. 101,005  
Int. Cl. A44b 17/00, 21/00

U.S. Cl. 248—216

1 Claim

A clip for interconnecting the cardboard sides of a collapsible shipping container to a molded rigid foam pallet inwardly of the peripheral edges thereof. The clip includes

a pair of planar side members having inwardly directed teeth for engaging the opposite sides of a cardboard panel, and a stepped pointed downwardly extending projection capable of penetrating the upper surface of said pallet and



extending into the portions of relatively thick cross-section, whereby the rigid foam, by virtue of elastic memory may flow over the stepped surfaces of the projection to provide a retentive effect.

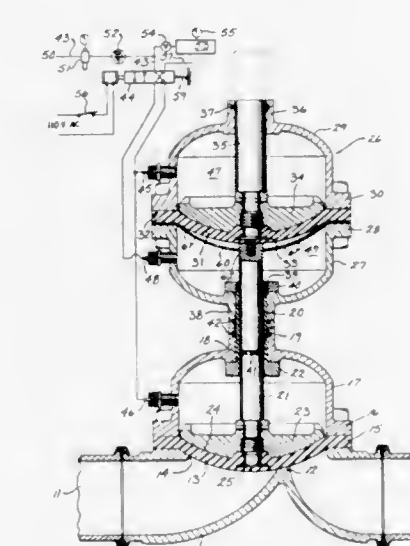
**ERRATUM**

For Class 249—65 see:  
Patent No. 3,719,341

**3,719,343**  
**FLUID PRESSURE ACTUATED DIAPHRAGM VALVE**  
Bruno H. Werra, Waukesha, Wis., assignor to Ladish Co., Cudahy, Wis.  
Filed April 8, 1971, Ser. No. 132,434  
Int. Cl. F16k 7/12, 31/145

U.S. Cl. 251—61.1

11 Claims



A diaphragm valve controlling the flow through a liquid pipe line includes a bonnet having a valve follower therein. An actuator stem has its lower end connected to said follower and has its upper end connected to a second follower movable in a superimposed actuator housing containing upper and lower chambers which are separated by a diaphragm, the latter having its upper surface engaged by said second follower. A control provides for simultaneous introduction of pressure into the valve bonnet and into the upper chamber of the superimposed housing to provide sufficient force to overcome the back pressure of the liquid in the pipe line to close the valve, or for alternative introduction of pressure fluid into the lower chamber only of the superimposed housing to open the valve.



3,719,344

## BALL VALVE SEATING ASSEMBLIES

Gerald Cedric Jones, Hereford, and Herbert Bentley Leek, Upper Doulington, Hereford, both of England, assignors to Saunders Valve Company Limited, Monmouthshire, England

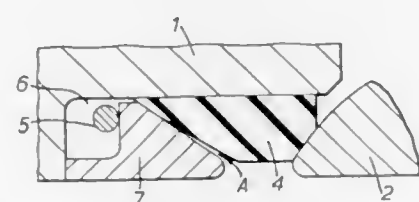
Filed Aug. 16, 1971, Ser. No. 171,898

Claims priority, application Great Britain, Aug. 26, 1970, 41,010/70

Int. Cl. F16k 11/04

U.S. Cl. 251—174

4 Claims



A ball valve of the type having a ball with a flow passage therethrough rotatably mounted in a bore in a valve casing in engagement with seating rings of extrudable material disposed on opposite sides of the ball and urged into sealing contact with the ball by spring-urged backing rings having conical surfaces confronting similar conical surfaces of the seating rings wherein the confronting conical surfaces are so shaped as to be separated over a major part of their axial extent by a gap which tapers in a direction away from the ball.

3,719,345

## DRAIN FITTING

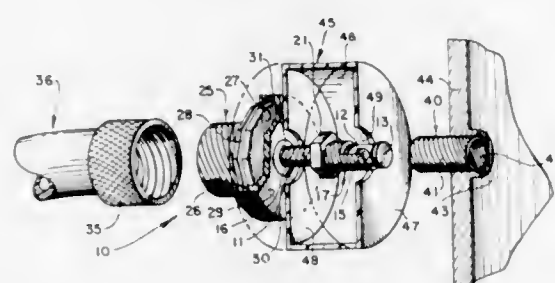
James Earl Bridegum, 12143 Gothic Ave., Granada Hills, Calif. 91344

Filed May 10, 1971, Ser. No. 141,778

Int. Cl. F16k 31/50

U.S. Cl. 251—351

3 Claims



A drain stem formed in its side wall with a port is coupled to a mounting sleeve structured for being mounted to a liquid container. A collar coupled to the drain stem can be moved to uncover the port and allow liquid to be drained from the container.

3,719,346

## AUTOMOTIVE SUSPENSION BALL JOINT CHECKING METHOD

James P. Bohannon, Salinas, Calif., and Loyd O. McAfee, Seattle, Wash., assignors to said McAfee, by said Bohannon

Division of Ser. No. 768,418, Oct. 17, 1968, Pat. No. 3,612,485. This application Sept. 2, 1971, Ser. No. 177,314

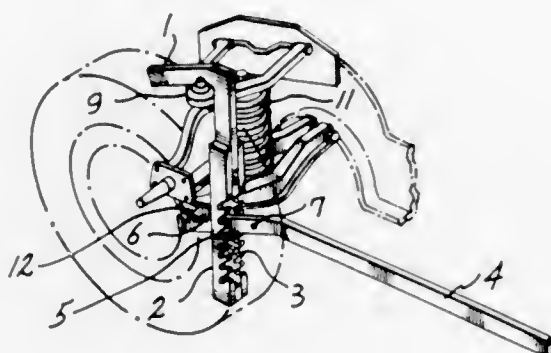
Int. Cl. B66f 3/00

U.S. Cl. 251—1

1 Claim

A hanger suspended by a hook from the upper control arm of an automotive wheel support carries a disengageable lever,

the short end of which engages beneath the lower control arm. Downward swinging of the long arm of the lever will contract the tongs formed by the hook and short lever arm engaged with the upper and lower control arms and straddling the compression spring engaged between them. The fulcrum pin of the lever is engageable selectively with any set of socket notches



in furcations of the hanger for application to differently spaced control arms. Contraction of the tongs compresses the spring between the control arms to relieve the ball joints between the spindle support and the control arms from load so that the amount of backlash between the spindle support and the control arms can be checked.

3,719,347

## VACUUM ANCHORED PULLING DEVICE

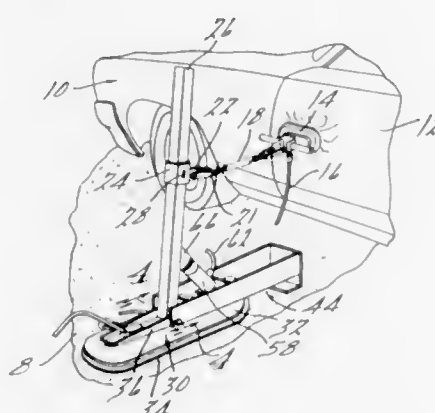
Raymond P. Wolgast, 3726 Kipling Rd., and Bertie Forrest Hall, Jr., 3568 Kipling Rd., both of Berkeley, Mich., assignor to said Wolgast by said Hall

Filed Sept. 22, 1971, Ser. No. 182,718

Int. Cl. B66f 3/00

U.S. Cl. 254—124

9 Claims



A pulling device used in automobile body repair work. A power operated post is pivoted on a vacuum anchor pad resting on a floor. The post is connected by a chain and a vacuum cup or the like to the part to be pulled. An extension leg on the anchor pad increases the pulling force which the device can exert without separation of the anchor pad from the floor.

3,719,348

## CABLE-HANDLING MACHINE

Herbert Arthur Wells, Westfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Filed Dec. 15, 1971, Ser. No. 208,127

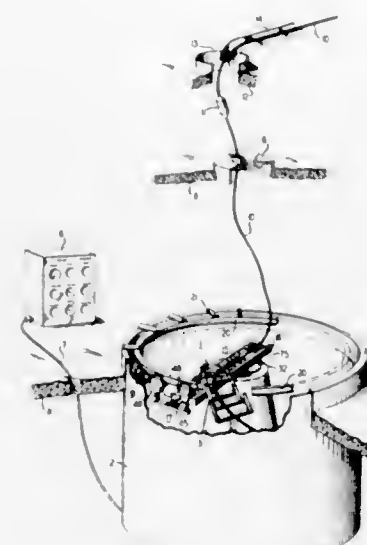
Int. Cl. B65h 54/00

U.S. Cl. 254—134.3 SC

14 Claims

An improved cable-handling machine for controlling the feeding of cable into and out of a stowage tank. The machine comprises a radial boom having one end rotatably mounted on the top of a core structure in the tank. The other end of the boom is suspended from a motor-

driven trolley having wheels which are supported on a flange of a circular beam attached to the rim of the tank. A cable carriage is slidably mounted on the boom and has a portion which projects outwardly and downwardly.



A separate radial drive system causes the carriage to travel back and forth along the boom for varying the radial distance between the core structure and the projecting portion of the carriage independently of the movement of the trolley.

3,719,349

## SHOCK ABSORBING CABLE CONNECTOR FOR PALLET LOADER HEAD

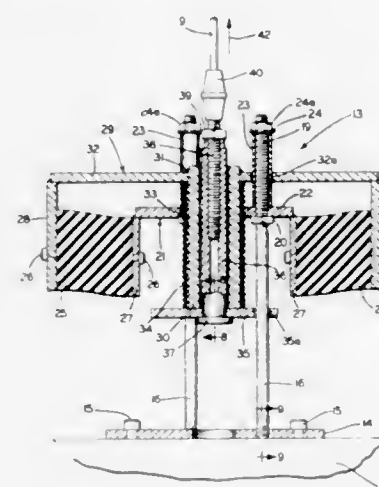
George K. Dulaney, Cazenovia, N.Y., assignor to Diebold, Incorporated, Canton, Ohio

Filed Sept. 15, 1971, Ser. No. 180,802

Int. Cl. B66d 5/00

U.S. Cl. 254—135 R

12 Claims



A connector construction for hoist or elevator cables which raise and lower a movable head such as a vacuum head of a pallet loader. The connector absorbs the shock encountered in lifting or lowering a load from a position at rest to full speed during only a few feet of movement of the head with its load. The connector for each cable has a number of interconnecting relatively movable members which support the load and through which lifting or lowering reactions are transmitted between cables and head. Usually four cables are connected to the head, one at each corner. The interconnected members include rubber block means through which the entire shock load is transmitted in shear from a member connected to a cable to one connected to the head. The connector also has spring means permitting relative movement between relatively movable connector members as the elevator motor comes up to speed for raising or lowering the head. The new shock absorbing connector reduces the shock load

3,719,350  
SELF-CLEANING VENTING SECTION FOR CONTINUOUS MIXERS

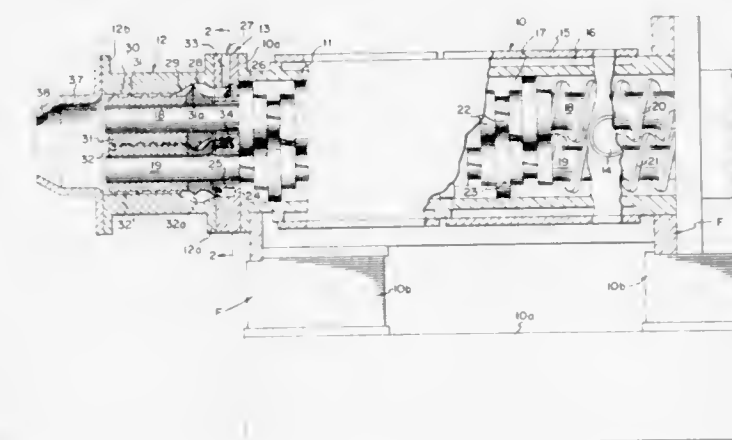
Bernard A. Loomans, Saginaw, Mich., assignor to Baker Perkins Inc., Saginaw, Mich.

Filed March 22, 1971, Ser. No. 126,450

Int. Cl. B01f 7/04; B29b 1/06, 3/00

U.S. Cl. 259—6

15 Claims



A continuous mixer preferably of the twin-shaft type wherein axially parallel shafts extend through a mixer or reactor barrel and have radially extending mixing and kneading paddles thereon which wipe one another and the chamber walls substantially continuously during rotation. The mixer is provided with at least one vent hole for the removal of volatiles between the barrel inlet and outlet, and a member is provided on at least one of the shafts which moves material in a direction away from the vent hole as the shafts revolve.

3,719,351

## EXTRUDER FOR THERMOPLASTIC OR NON-CROSS-LINKED ELASTOMERIC MATERIAL, A MIXING ZONE DEFINED BY A FEED SCREW

Hartmut Upmeyer, Tecklenburg, Germany, assignor to Windmoller & Holscher, Lengerich/Westphalia, Germany

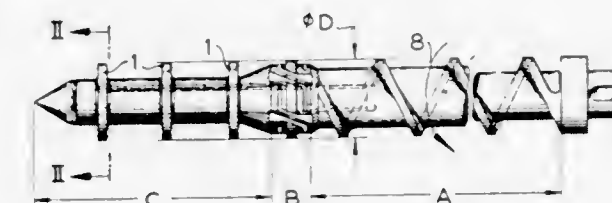
Filed May 4, 1971, Ser. No. 140,190

Claims priority, application Germany, May 15, 1970, P 20 23 910.5

Int. Cl. B01f 7/08

U.S. Cl. 259—191

7 Claims



In an extruder for thermoplastic or non-cross-linked elastomeric material, a mixing zone defined by a feed screw for the material comprises at least one mixing ring on a cylindrical core portion of the screw, the mixing ring being apertured for the flow of material through the ring. The apertures are formed by a plurality of circumferentially distributed passages which are alternately oppositely inclined to the longitudinal axis of the screw.



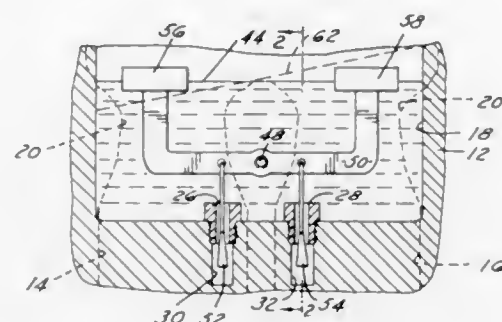
### 3,719,352 INERTIA RESPONSIVE CARBURETOR FUEL FLOW CONTROL MEANS

Robert S. Harrison, Detroit, and Thomas R. Johnson, Ann Arbor, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 11, 1971, Ser. No. 197,901  
Int. Cl. F02m 5/02

U.S. Cl. 261—23 A

11 Claims



An inertia responsive carburetor fuel flow control means which accommodates for variations in fuel levels in the fuel bowl caused primarily by centrifugal forces set up by vehicle cornering. The invention is used with multi-barrel carburetors having separate passages to each barrel from the fuel bowl. An inertia sensing means, either in the form of a spring biased weighted arm or a fuel surface angle sensor, controls the positions of metering rods that cooperate with orifices in each passage to maintain essentially identical rates of flow through each passage when the passages experience different fuel heads.

### 3,719,353 LIQUID COOLING SYSTEM, APPARATUS AND METHOD

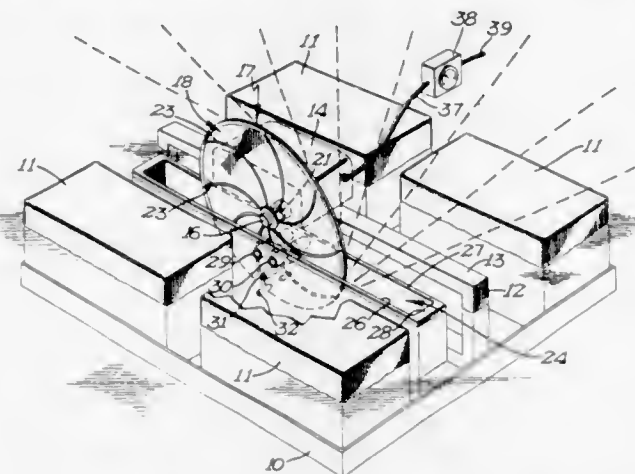
Lloyd G. Cherne, Edina; Leonard J. Boler, and Ernest E. Matthews, both of Minneapolis, all of Minn., assignors to Cherne Industrial, Inc., Hopkins, Minn.

Filed June 17, 1970, Ser. No. 47,078

Int. Cl. B01f 5/22

U.S. Cl. 261—90

21 Claims



A method is disclosed for cooling liquid at high volume rate by projecting fine drops of liquid throughout the area above the surface of a reservoir of limited size, so that the unevaporated portions of such drops fall back into the reservoir and the drops normally remain close enough to the surface to minimize drift losses. Apparatus for projecting such liquid includes a rotatable member having a surface generally perpendicular to its axis of rotation. The axis is oriented so that the surface is at an angle to the horizontal, and liquid is fed to specific limited areas of the surface from which fine drops will be projected upwardly in response of the member. Such apparatus is shown in connection with a cooling system for practicing the above method, and in which liquid effluent from an operating plant is fed to such liquid projecting and spraying apparatus at one area of a reservoir, is transferred by

such spraying to another area of the reservoir and is cooled during such transfer by evaporation exposure to the atmosphere above the reservoir. The system includes means defining and separating the two reservoir areas to facilitate high volume rates of spray transfer and to prevent normal liquid flow from one area to the other except by means of such spray transfer.

### 3,719,354 TRAVELLING GRATE MACHINES

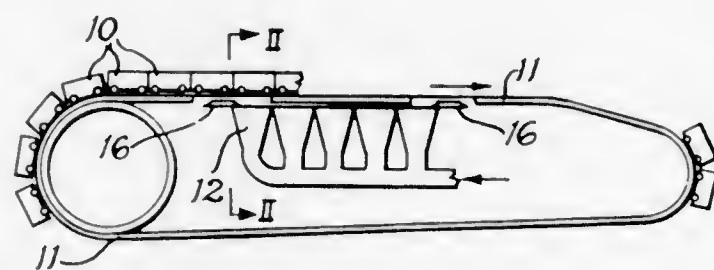
Charles David Burgess, Cheshire, England, assignor to Simon-Carves Limited, Cheshire, England

Filed Aug. 27, 1971, Ser. No. 175,438

Int. Cl. B60g 11/22

U.S. Cl. 266—21

5 Claims



Apparatus for the gaseous treatment of solid materials comprising a plurality of pallets each having a base in the form of a grate and which are adapted to be moved in end-to-end abutting relationship through a treatment zone where a gaseous medium is passed through the material on the pallets from static wind boxes located below the pallets, characterized by the provision of dead plates extending over the width of the apparatus at the positions where the pallets enter and leave the treatment zone and by the provision of wear strips extending transversely of each pallet at the leading and trailing ends thereof and depending from the underside of the pallet to make contact with the dead plates as they pass thereover, said wear strips being of a softer material than the material of the dead plates, whereby the wear strips are worn away to accommodate for distortion of the pallets while maintaining a proper seal with respect to the dead plates.

### 3,719,355 BASIC OXYGEN CONVERTER

Kurt Suetter, and Adolf Riegler, both of Linz, Austria, assignors to Vereinigte Österreichische Eisen- und Stahlwerke Aktiengesellschaft, Linz, Austria

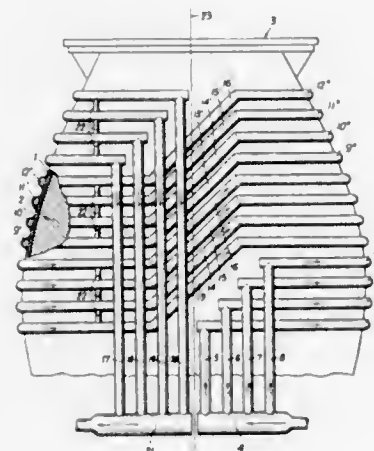
Filed Sept. 14, 1971, Ser. No. 180,268

Claims priority, application Austria, Sept. 24, 1970, 8613/70

Int. Cl. C21c 5/46

U.S. Cl. 266—35

6 Claims



The invention relates to a basic oxygen converter having a metal shell comprising at thermally highly stressed areas, in

particular in the area between the carrying ring and the converter mouth, at least one pipe coil group through which a coolant is flowing and which includes several half tubes of preferably semicircular cross section welded to the converter shell and joined at one end to a coolant distributor and at the other end to a coolant collector, wherein the improvement resides in that for the purpose of obtaining a pressure equalization and a uniform flow of the cooling agent, the half tubes of each group are connected with each other by means of cross canals on at least one site. By this arrangement changes in the tube cross section due to thermal stresses are rendered innocuous, if not prevented, the pressure of the coolant being uniform throughout the cooling system. The operating safety thus is improved.

### 3,719,356 ENGINE BLOCK STAND

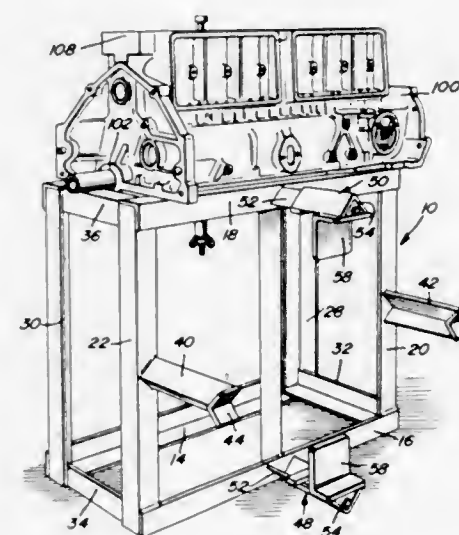
Jordan D. Winstead, P.O. Box 433, and Robert B. Barnes, 228 Glendale Ave., both of Rocky Mount, N.C.

Filed June 29, 1970, Ser. No. 50,861

Int. Cl. B23q 1/02, 3/00

U.S. Cl. 269—48

9 Claims



A support to be used in supporting an engine block in an elevated stationary position with its deck surface horizontally disposed and facing upwardly for mounting a boring bar assembly thereon. The support or stand includes an elongated anchor bar and a pair of horizontally spaced apart upwardly facing rest surfaces from and upon which the opposite end portions of the bar are supported. The stand further includes at least one upwardly facing support surface and is designed to support an engine block therefrom with the bar extending through main bearing journals of the block, an undersurface portion of the block resting upon the support surface and at least two of the cylinder bores of the block disposed generally vertically and opening upwardly through the deck surface. Further, the bar includes an upwardly projecting clamp stud for extending upwardly through one of the cylinder bores and use in clamping the boring bar assembly to the top deck of the engine block.

### 3,719,357 AUTOMATIC POWER FEEDER

Albert F. Shields, Forest Hills, N.Y., assignor to S & S Corrugated Paper Machinery Co., Inc., Brooklyn, N.Y.

Filed March 4, 1971, Ser. No. 120,838

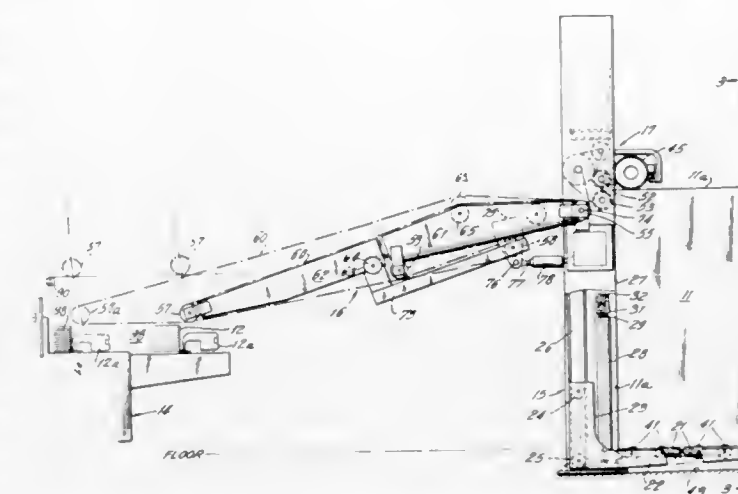
Int. Cl. B65h 5/08, 5/22

U.S. Cl. 271—12

8 Claims

An automatic sheet feeder is provided with a relatively slow speed suction wheel that engages the top of a stack of sheets supported by a rising elevator. Sheets removed horizontally from the stack by the wheel are delivered to high speed con-

veyor rolls which deposit the sheets in a shingled arrangement on a relatively narrow slow speed suction conveyor of adjustable length. Power means acting from below is used to adjust the suction conveyor to a height compatible with the height of



the stack in the hopper receiving sheets from the feeder, and is also used to raise the conveyor which permits the hopper to be retracted for servicing the converting apparatus associated with the hopper.

### 3,719,358 PLAYGROUND APPARATUS

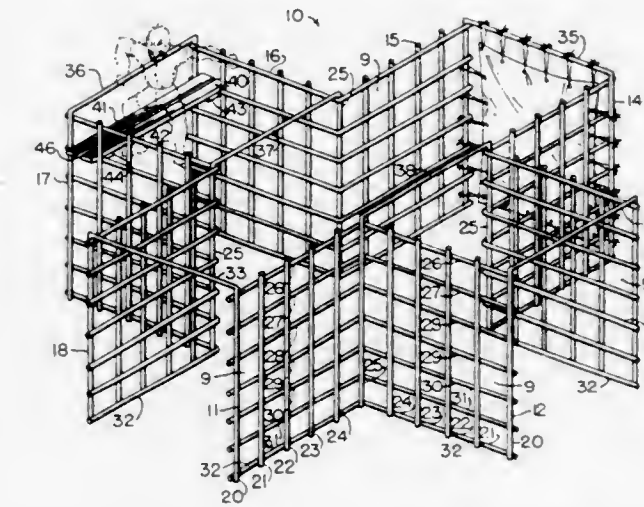
David Aaron, Box 100-A, R.D. No. 1, Accord, N.Y.

Filed June 24, 1971, Ser. No. 156,425

Int. Cl. A63b 17/04

U.S. Cl. 272—60

1 Claim



Vertical and horizontal bars are joined to make upstanding substantially square grids arranged to form a cruciform structure with open ends, facing pairs of grids of the structure being the same distance apart. Spanning members longer than the distance between facing grids are provided to extend through facing rectangular openings of the grids, the spanning members having transverse cleats near their ends securing the spanning members in position. The spanning members may be placed in a wide variety of positions to provide varied play possibilities. Fabric sheets with peripheral ties are provided to selectively close off or cover portions of the structure.

### 3,719,359 SAND WEDGE GOLF CLUB

Frank E. Evans, and Dorothy D. Evans, both of 645 Cheowa Circle, Knoxville, Tenn.

Filed Sept. 8, 1970, Ser. No. 70,060

Int. Cl. A63b 53/04

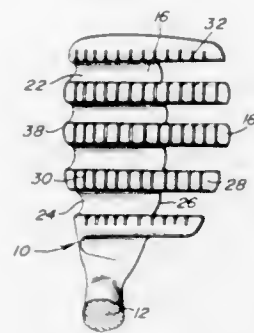
U.S. Cl. 273—167 J

3 Claims

A golf club in the form of a sand wedge constructed with a relatively wide sole from the front edge to the rear edge with a plurality of spaced fingers extending upwardly and rearwardly



therefrom which are separated and slanted for elevating the ball. The underside of the fingers converge inwardly to form a generally V-shaped finger which immediately increases the space between the fingers inwardly of the front face thereof thereby reducing resistance and friction of sand or other material passing between the fingers during the golf swing. The ball contacting surface of the fingers is slightly rounded or



convex transversely which together with the space between the fingers reduces to a minimum the buffering and shock absorbing affect of the sand between the club face and the ball thereby allowing immediate and effective contact between the club face and the ball. The club face may be flat or concave which allows for a wider controlled range of elevation of the ball.

### 3,719,360 GOLF COURSE

Henry C. Purdy, 115 East Northfield Road, Livingston, N.J.  
Filed April 21, 1971, Ser. No. 135,932  
Int. Cl. A63b 67/02  
U.S. Cl. 273—176 A

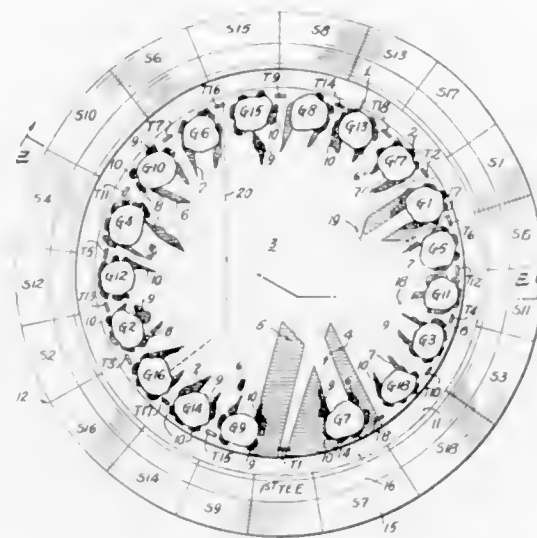
12 Claims



An outdoor golf course is described which includes one or more 18 hole circuits arranged radially around a central clubhouse. The base inner circuit includes six sets of three holes each leading out and then back in to the clubhouse. In each set of three holes, the tee of the first hole and the green of the third hole are located adjacent the central clubhouse. Also, in each set of three holes, the second hole includes a tee located near the first green and a green located near the third tee. Each set of the base circuit may then be used to build additional nine or 18 hole circuits leading out and back in to the central clubhouse thus providing up to six circuits in addition to the base circuit.

3,719,361  
GOLF COURSE  
Frank J. Rotolo, 1515 East Broadway, Tucson, Ariz.  
Filed July 31, 1970, Ser. No. 59,992  
Int. Cl. A63b 67/02  
U.S. Cl. 273—176 AB

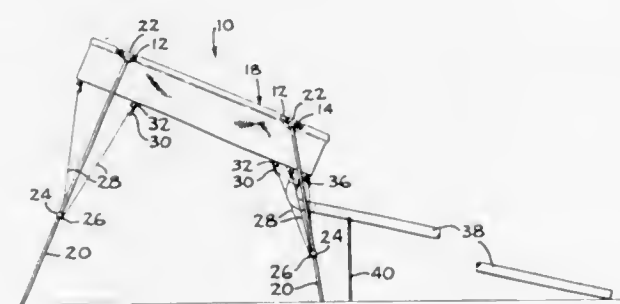
5 Claims



A golf course with an improved layout of tees and greens and including spectator stands extending along and at least partially around the golf course area. The layout of the course provides for regulation play on a relatively small area of ground compared to conventional regulation golf courses. The distance from tee to green for any hole is not greater than slightly more than the distance a tournament player can drive the ball from the tee. Players travelling from tee to green travel along a walkway surrounding the course and hence, the usual fairway and rough areas are unobstructed by players so several groups can tee off from the same tee in quick succession. Since each player plays the ball from its lie adjacent the green, play on the course is the same as play on conventional regulation courses. In the preferred embodiment, the course is of circular outline and the tees and greens are so arranged that the play is generally across the course along a diameter of the course. The course can also be elliptical, rectangular, polygonal or square in outline. Signal lights can be provided on each green to indicate to players on the tee that the green is clear and it is safe for them to hit their tee shots.

3,719,362  
GOLF PRACTICE DEVICE  
Jack D. Blanchard, 20351 Bolinger Road, Cupertino, Calif.  
Filed Dec. 27, 1971, Ser. No. 212,213  
Int. Cl. A63b 69/36  
U.S. Cl. 273—182 R

9 Claims

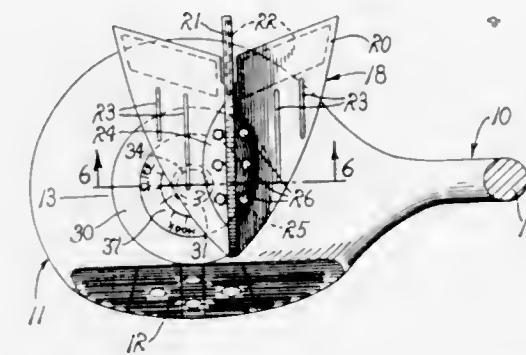


A golf practice device arranged to receive chip or pitch shots in a flexible receptacle suspended from a segmented ring carried by detachable legs so as to permit ready disassembly and storage, the legs being pivotally adjustable to vary the ring and receptacle disposition, and also arranged to return the received balls to the player through a funnel in the receptacle and a ball-return conduit. Resilient tie-down straps are con-

nected between spaced apart locations on the lower edge of the receptacle and collars which may be shifted to different positions on the legs.

3,719,363  
GOLF CLUB SWING TRAINING DEVICE  
John Gardon Harrison, 1461 Aster Drive, Apt. 3,  
Antioch, Calif. 94509  
Filed Aug. 5, 1971, Ser. No. 169,327  
Int. Cl. A63b 69/36  
U.S. Cl. 273—186 A

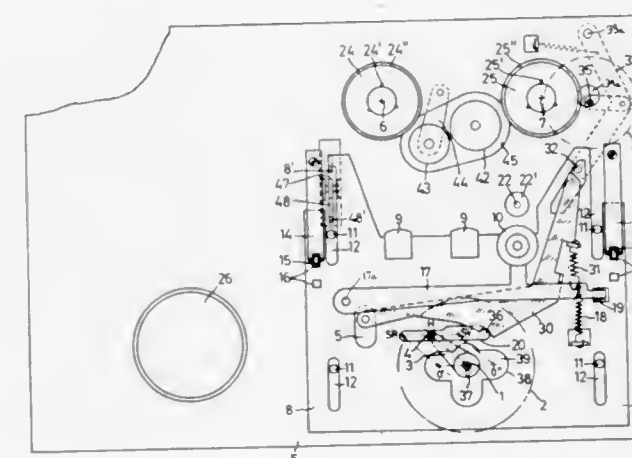
7 Claims



An auxiliary training attachment for the head of a golf club having a horizontal stabilizer of flexible material, a centrally disposed vertical stabilizer of flexible material extended from the horizontal stabilizer, malleable strips of metal imbedded in the trailing edges of each stabilizer supplying bendably adjustable rudder and elevator control, and a releasable mount for supporting the stabilizer on the head of a golf club for rotational adjustment aerodynamically to urge a desired swing path for the head of the golf club. The releasable mount is either a suction cup for so-called "wood" or a spring clip for so-called "iron." There is a dial base provided with radial grooves engageable by ribs on the bottom of the horizontal stabilizer in various adjusted positions for "hook" or "slice" corrections. Sockets having restricted entrance openings are provided to releasably hold weights on the stabilizer.

3,719,364  
SOUND RECORDING AND REPRODUCING APPARATUS  
Gerd Hessland, Penzendorf, and Ulrich Gräbel, Nuremberg, Germany, assignors to Grundig-Elektro-Mechanische Versuchsanstalt, Furth, Bavaria, Germany  
Filed Apr. 30, 1969, Ser. No. 820,489  
Claims priority, application Germany, May 2, 1968, P 17 72 353.4  
Int. Cl. G11b 15/24  
U.S. Cl. 274—4 D

6 Claims

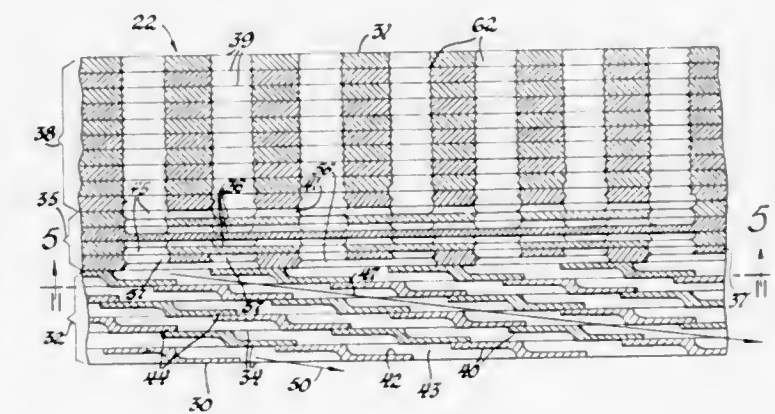


A tape recorder wherein all operations can be initiated and terminated by a single actuating member which is rotatable in a starting position and is movable sideways

to and from starting position. Angular movements of the actuating member effect displacements of a platform which carries the sound heads and the pressing roller for the tape. Sidewise movements of the actuating member are utilized to effect rapid forward advance or rapid re-winding of tape by way of friction wheels which receive motion from a flywheel.

3,719,365  
SEAL STRUCTURE  
Calvin E. Emmerson, Indianapolis, Robert A. Griffin, Sheridan, and George B. Meginnis, Indianapolis, all of Ind., assignors to General Motors Corporation, Detroit, Mich.  
Filed Oct. 18, 1971, Ser. No. 190,179  
Int. Cl. F01d 11/08; F02f 11/00  
U.S. Cl. 277—53

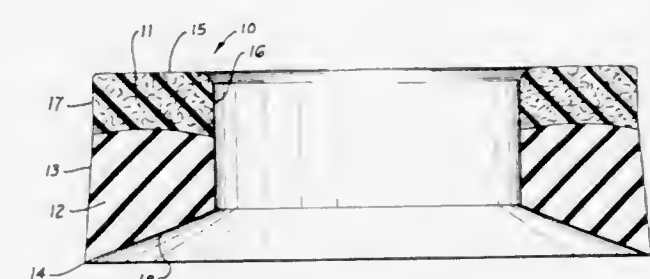
6 Claims



A porous cooled seal ring adapted to cooperate with blade tips, seal knives or, generally, the other element of a labyrinth type seal has a special laminated structure providing controlled porosity, abrasability of the metallic structure, and discharge of air from the seal in a direction generally accordant with the movement of the other seal element.

3,719,366  
HETEROGENEOUS LIP-TYPE PACKINGS  
Aaron J. Pippert, Houston, Tex., assignor to Utex Industries, Inc., Houston, Tex.  
Filed May 26, 1971, Ser. No. 147,027  
Int. Cl. F16j 15/32  
U.S. Cl. 277—205

8 Claims



A packing comprised of an annular body having a sealing section and a reinforcing section in which the sealing section which is of a resilient material has at least one sealing lip and the reinforcing section is made up of a strip of fabric wound into a helix with the convolutions of the helix superimposed upon one another and bonded together to form an integral section. The threads of the fabric in the strip are disposed obliquely to the opposed edges of the strip such that when the strip is wound into the helix, substantially the ends of the threads are exposed to the wearing surfaces of the reinforcing section. The invention also includes a method of manufacturing the packing in which the sealing section, having the sealing lip, is formed from a suitable resilient material and is then bonded to the reinforcing section which has been formed by



winding the strip of fabric into a helix with the convolutions superimposed upon one another and then bonding together the convolutions.

3,719,367

**COLLET CHUCK FOR THREADED SHANK TOOLS**

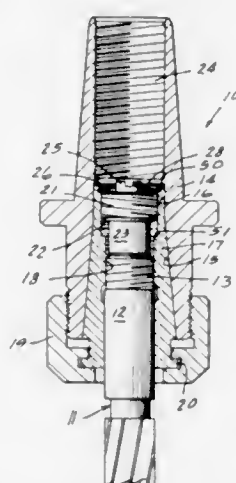
Walter Baturka, Frankenmuth, Mich., assignor to Houdaille Industries, Inc., Buffalo, N.Y.

Filed Sept. 1, 1971, Ser. No. 177,050

Int. Cl. B23b 31/30, 31/04

U.S. Cl. 279—1 A

25 Claims



An adapter assembly or collet chuck for a tool holder includes a collet member that is internally threaded to receive a threaded shank tool, there being a backup screw providing a force on the end of the tool, the threads of the tool and of the backup screw being dissimilar in pitch or hand so that if the tool slips within the collet during usage, a force is developed between the dissimilar threads whereby further slipping is precluded.

3,719,368

**TOE IRON FOR SAFETY SKI BINDINGS**

Peter Biermann, Garmisch-Partenkirchen, Germany, assignor to Hannes Marker, Garmisch-Partenkirchen, Germany

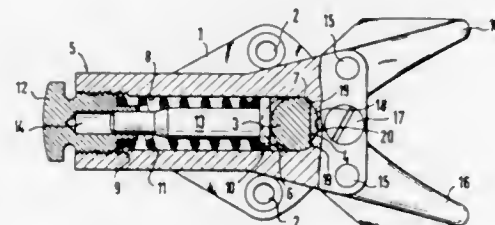
Filed Dec. 1, 1970, Ser. No. 93,942

Claims priority, application Germany, Dec. 22, 1969, P 19 64 306.2

Int. Cl. A63c 9/00

U.S. Cl. 280—11.35 T

8 Claims



A pivoted member carries at least one soleholder and is mounted on a vertical carrying pin that is rigid with a base plate. The pivoted member is movable from its normal position against the force of at least one spring. At least one vertical and preferably flat surface is formed on that half of the carrying pin which is adjacent to the soleholder. A mating surface of the pivoted member is associated with each of said vertical surfaces and engages the same when the pivoted member is in its normal position. The mating surface or surfaces is a portion or are portions of the wall of the bearing of the pivoted member. Said bearing is clear of that half of the carrying pin which is remote from the soleholder when the pivoted member is in its normal position.

3,719,369

**SNOW FLOTATION APRON FOR SKIMOBILES**

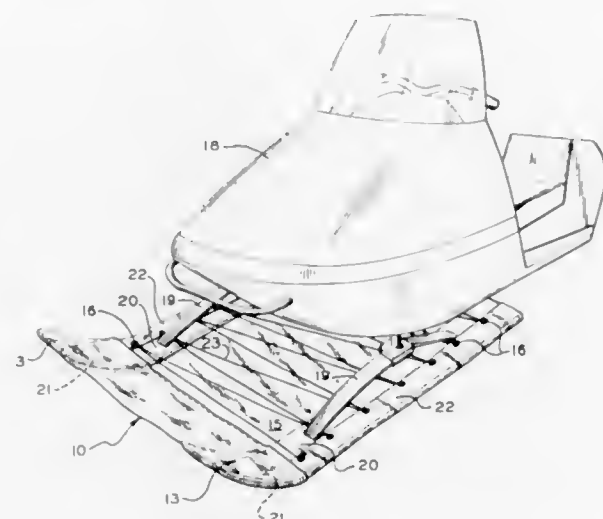
Phillip D. Savage, Owls Head, N.Y., assignor to Hall Ski-Lift Company, Inc., Watertown, N.Y.

Filed June 10, 1971, Ser. No. 151,689

Int. Cl. B62d 9/04

U.S. Cl. 280—28

2 Claims



A generally rectangular apron of flexible material has pocket means at its forward end into which the toes of the skis of a snowmobile are adapted to be inserted. The length of the apron is substantially that of the skis and its width substantially larger than the distance from the outside edge of one ski to the outside edge of the other, the side edges of the apron being provided with eyelets so that, when the edges are turned up over the top of the ski edges and a flexible cord progressively laced across from one edge to the other through the eyelets, the apron is securely secured to the skis and provides lift from the snow between the skis.

3,719,370

**ANTI-THEFT SHOPPING CART**

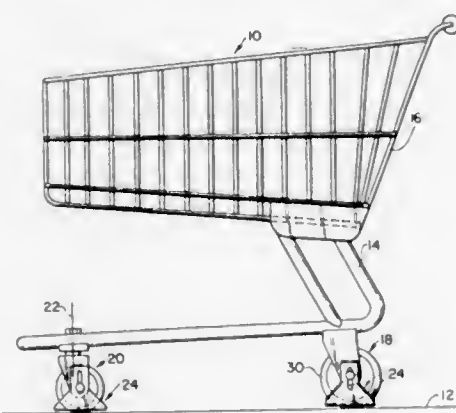
Richard Conway Gintick, 126 Bond Street, and Michael Norman Gintic, 700 Park Street, both of Hartford, Conn.

Continuation-in-part of Ser. No. 842,443, July 16, 1969, abandoned. This application April 2, 1971, Ser. No. 130,733

Int. Cl. B62b 11/00

U.S. Cl. 280—33.99 C

6 Claims



A shopping cart adapted to travel on a substantially smooth horizontal operating surface and having vertically adjustable guard plates mounted on the wheel supports thereof. Each guard plate has a horizontally disposed guard surface for positioning near the operating surface to engage and prevent the cart from rolling over surface irregularities. Each guard plate is adjustable relative to and releasably retained in assembly with an associated wheel support by an axle bolt which also serves to restrain the guard plate against angular movement relative to the wheel support.

3,719,371

**MOBILE UNIT WITH IMPROVED SUSPENSION STRUCTURE**

Orly Musgrave, Springfield, Ohio, assignor to Boise Cascade Corporation, Boise, Idaho

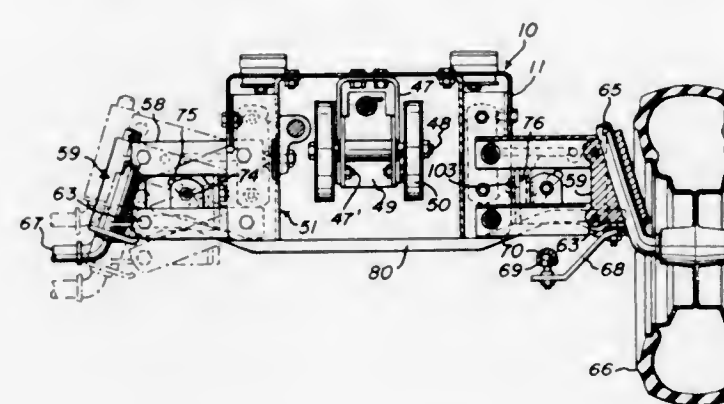
Division of Ser. No. 670,151, Sept. 25, 1967, Pat. No.

3,550,364. This application Nov. 25, 1970, Ser. No. 92,694

Int. Cl. B62d 7/18

U.S. Cl. 280—96.2 R

5 Claims



A mobile unit for vehicle use having a novel independent front suspension. The unit includes unique support elements which stabilize its chassis and embodies an improved transmission. Preferred embodiments may be incorporated to provide rugged, durable and highly versatile vehicles such as riding mowers and like equipment.

3,719,372

**AUTOMATIC TRACTOR-TRAILER COUPLING DEVICE**

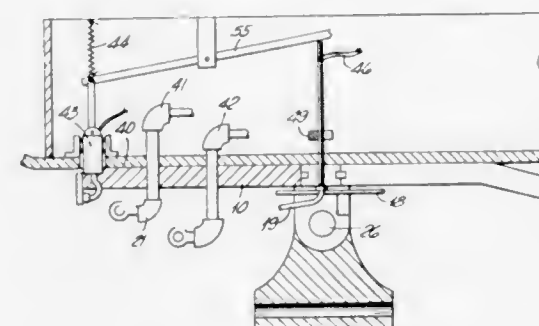
Charles S. Rawlings, Augusta, Kans., assignor of a fractional part interest to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Dec. 30, 1971, Ser. No. 214,077

Int. Cl. B60d 1/08

U.S. Cl. 280—421

5 Claims



The automatic coupling and uncoupling of tractors to trailers and semi-trailers is accomplished by this device which modifies the conventional tractor fifth wheel to include automatic coupling of the electric light and the air line cables supplying the trailer from the tractor. Mating coupling members are incorporated on the trailer for automatic coupling action, or manual coupling may be accomplished with trailers which are not so equipped.

3,719,373

**CASTERED TRAILER FOR A VEHICLE**

Thomas C. Johnson, Houston, Tex., assignor to

Easy-Back, Inc., Shreveport, La.

Filed June 21, 1971, Ser. No. 154,779

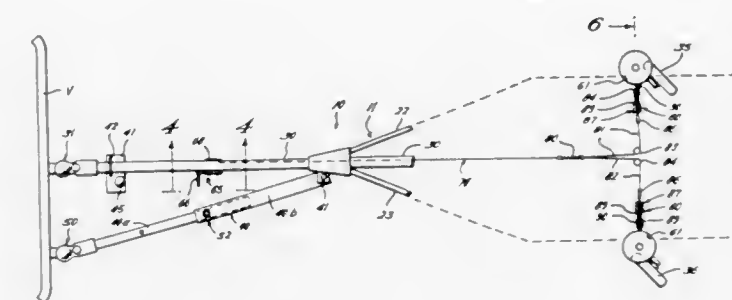
Int. Cl. B62d 53/00

U.S. Cl. 280—474

15 Claims

A trailer for a vehicle includes a frame supported by casters with cooperating latch and detent means on the

trailer and casters, respectively, to normally lock the casters against swiveling movement. Tongue means is connected with the frame and includes pivot means for securing the trailer to a vehicle, a control bar is pivotally mounted on the trailer adjacent the tongue for easy access and includes pivot means for securing the control bar to the vehicle at a point offset from the connection of the



tongue to the vehicle when the control bar is pivoted away from the tongue to a second position to form a rigid structure between the vehicle and trailer. Actuating means to actuate the latch and detent means to release the casters are mounted on the tongue and frame of the trailer for easy access after the control bar has been secured to the vehicle to form a rigid structure for swiveling.

3,719,374

**SEALING CONSTRUCTION BETWEEN TWO JUXTAPOSED ELEMENTS**

Francisco M. Serrano, Paris, France, assignor to Compagnie Francaise des Petroles, Paris, France

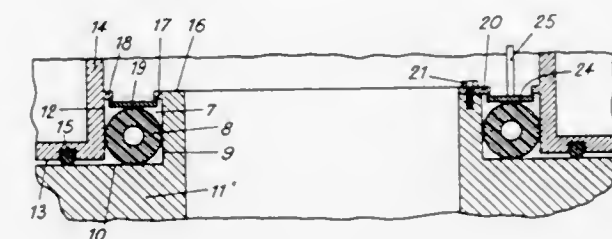
Filed Mar. 5, 1970, Ser. No. 16,881

Claims priority, application France, Mar. 7, 1969, 6906361

Int. Cl. F16l 17/00

U.S. Cl. 285—97

9 Claims



A sealing construction between two juxtaposed elements wherein the elements have support surfaces disposed in supporting relation to each other, and walls extending from the support surfaces and defining a chamber therebetween. A sealing member is inflated within the chamber to provide a liquid-tight joint between the elements.

3,719,375

**REINFORCED PIPE JOINT**

Karl Olof Nordin, Varnamo, Sweden, assignor to Forsheda Gummifabrik AB, Forsheda, Sweden

Filed Mar. 1, 1971, Ser. No. 120,036

Claims priority, application Sweden, Mar. 2, 1970, 2,678/70

Int. Cl. F16l 21/06

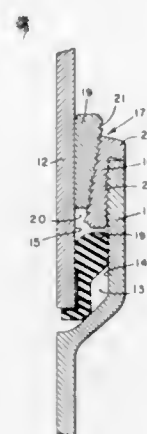
U.S. Cl. 285—339

5 Claims

An arrangement for imparting stability and rigidity to a pipe joint including a pair of pipes having their adjacent ends placed in concentric relationship and with an annular space therebetween. A seal ring is located in the space for precluding escape of fluid carried in the



pipes. To impart stiffness to the joint, a pair of tapered inner and outer rings are placed in interlocking engagement in the space and are arranged to be axially displaceable in a tightening direction. As the inner ring is forced



inwardly along the pipe, both rings are compressed and locked together by coating teeth thus imparting stiffness to the joint and precluding axial displacement of the rings outwardly.

3,719,376

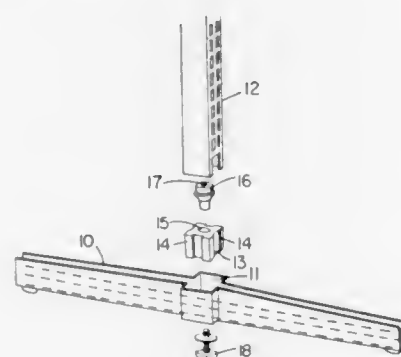
#### EXPANSION DEVICE FOR MOUNTING AN UPRIGHT COLUMN TO A BASE STRUCTURE

Jacob L. Johnson, 7518 Piney Branch Road, Silver Spring, Md.

Filed March 22, 1971, Ser. No. 126,857  
Int. Cl. B25g 3/28

U.S. Cl. 287—20.3

2 Claims



An improved device for rigidly mounting a hollow column to a base structure is provided. The device comprises a plurality of expansion members which when arranged end to end form a block which is telescopically accepted into the end of the hollow column, the block has a central bore with tapered walls, a tapered wedge member is forced by appropriate means into the central bore forcing the expansion members radially outward and against the column wall. The column wall is forced by the expanding members into rigid contact with the base.

3,719,377

#### TURNBUCKLE

Robert D. Schultz, and John DiMartino, both of Sayville, N.Y., assignors to Peck and Hale Inc., West Sayville, N.Y.

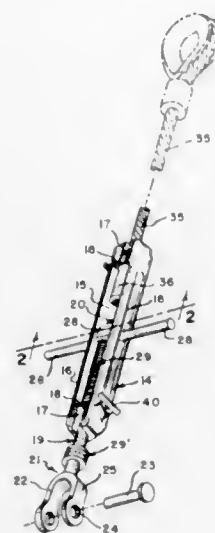
Filed July 21, 1970, Ser. No. 56,928  
Int. Cl. F16b 7/06

U.S. Cl. 287—60

16 Claims

A turnbuckle is disclosed comprising a body member having a slit extending longitudinally therethrough, said slit having a reduced width portion forming an internal shoulder in the body member, an adjustment rod having a threaded portion, said rod being positioned in the slit with its threaded portion

situated in the wide portion of the slit, a nut member disposed within the wide portion of the slit in threaded engagement with the adjustment rod, and a plurality of adjustment spacers



seated on the rod within the wide portion of the slit and held in abutting relationship to the internal shoulder by the nut member.

3,719,378

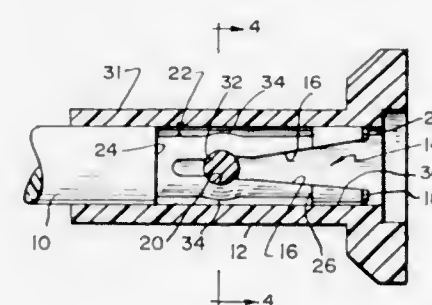
#### PULL-PROOF CONTROL KNOB

George C. P. Windsor, Oak Park, Ill., assignor to Warwick Electronics Inc.

Filed Aug. 3, 1971, Ser. No. 168,664  
Int. Cl. F16d 1/06

U.S. Cl. 287—53 H

2 Claims



A knob to shaft coupling including a resilient shaft having a cutout and an elongated recess in a side thereof extending to either side of the cutout. A diagonal guide-way extends from one end of the shaft toward the cutout and a knob having a bore with a projection therein may be received on the shaft in such a way that contact of the projection with the diagonal surface will deflect the recessed portion of the shaft to permit the projection to enter the cutout whereupon the resilience of the shaft will firmly hold the projection in the cutout to establish a coupling between the knob and the shaft.

3,719,379

#### BACKREST LOCKING MECHANISM OF VEHICLE SEATS

Gerhard Sigmund, Stuttgart-Vaihingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Filed Sept. 22, 1970, Ser. No. 74,411

Claims priority, application Germany, Sept. 29, 1969, P 19 49 085.8

Int. Cl. B60n 1/04

U.S. Cl. 297—379

39 Claims

An installation for locking the backrest in seats of vehicles, particularly motor vehicles in which a forward tilting or pivot-

ing of the backrest is prevented during the drive of the vehicle, by a disengagable locking mechanism; the locking mechanism includes clamping means preferably arranged at the inner side of two seat fittings supported at the seat frame which retain the backrest in the driving condition under a spring force in

forms a resilient cushion for the door bolt when the door is closed.

3,719,381

#### RELATING TO ADJUSTABLE STAYS

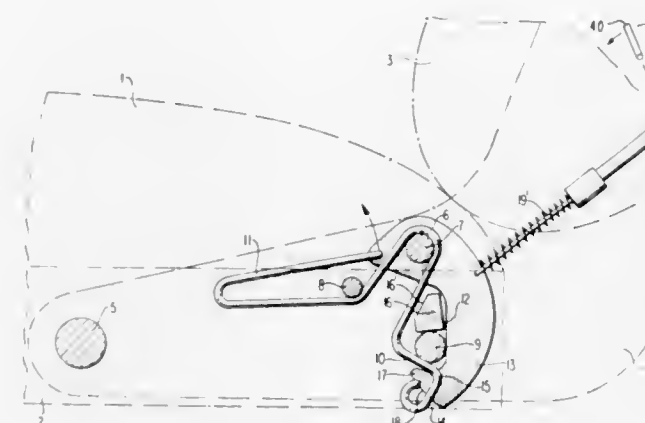
Tjaart Petrus Venter, 117 Koos de la Ray Street, Pretoria North, Transvaal, South Africa

Filed March 25, 1971, Ser. No. 128,350

Int. Cl. E05c 17/30

U.S. Cl. 292—275

3 Claims



the rearwardly pivoted position whereas upon exceeding the spring force by a load acting on the backrest in the driving direction, a hook-like member supported on a pivot pin fastened at the fitting stops the backrest at a relatively fixed part such as a pin member or the like secured at the seat frame.

3,719,380

#### MOTOR-VEHICLE DOOR LATCH WITH PIVOTAL LATCHING FORK

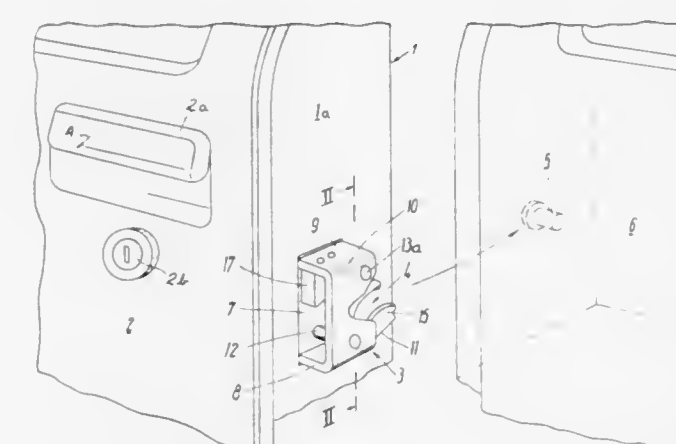
Hans Dieter Watermann, Metzkauzen, Germany, assignor to Arn Kiekert Sohne, Kettwigerstrasse, Heiligenhaus, Germany

Filed Jan. 4, 1971, Ser. No. 103,678

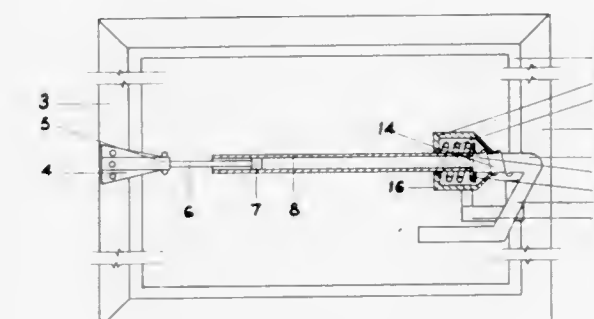
Int. Cl. E05c 3/06

U.S. Cl. 292—216

8 Claims



A motor-vehicle door latch has a housing formed by a U-shaped member which projects from the door edge and has a flat backing plate bridging its two horizontal U-legs. The web of the U-shaped member is formed with a horizontally directed notch. A horizontal pivot pin for a vertical latching fork is journaled in the backing plate and the web below the notch and above the notch is pivoted a rotatable detent engageable with one arm of the fork to lock a bolt mounted on the vehicle doorpost in the notch and hold the door closed. The other arm of the fork is driven back in the housing by the bolt when the door is closed to rotate the locking arm into the locking position. An elastomeric body within the housing



An adjustable stay comprising a tubular member having an elongated member telescopically extensible therefrom, one of said members having at least part of its length of non-circular cross-section and the other member having a co-operating portion of non-circular cross-section adapted upon relative rotation of the members to engage and disengage the said one member.

3,719,382

#### CAMPER HOLD-DOWN BRACKET

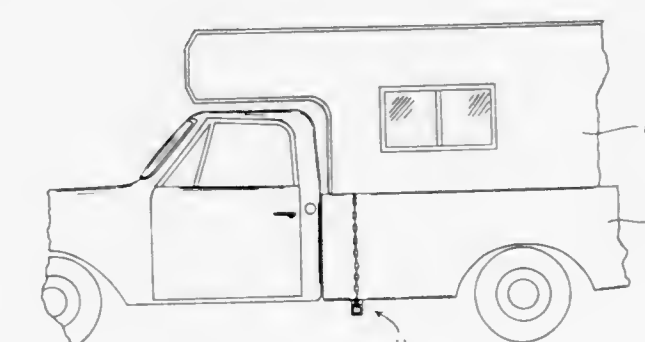
John Stanley Palm, R.R. 1, Altona, Ill. 61414

Filed Aug. 2, 1971, Ser. No. 168,198

Int. Cl. B62d 21/14

U.S. Cl. 296—23 MC

3 Claims



A bracket is clamped by bolts directly to the frame of a pickup truck, and it supports a removable extension bar extending outwardly below the body of the truck. The outer end of the extension bar and the overhanging portion of a pickup camper are connected by a usual chain and turnbuckle combination. The only force applied by the bracket to the body of the truck is the downward force applied to the camper. The extension bar is readily removable so that it does not deface the appearance of the pickup nor interfere with usual clearance during normal use of the truck.



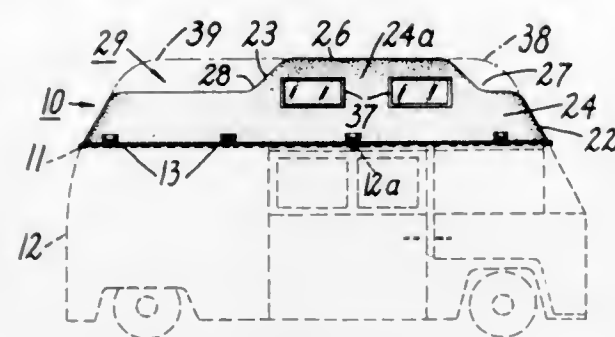
3,719,383

## REMOVABLE CAMPER UNIT

Michael Ferro, 18 77th Street, Brooklyn, N.Y.  
 Filed Sept. 30, 1970, Ser. No. 76,675  
 Int. Cl. B60p 3/32

U.S. Cl. 296—23 MC

7 Claims



A camper unit is provided which can be removably secured to the top of a flat-roofed vehicle such as a Volkswagen station wagon or the like. The camper unit can be adapted to provide internal and external storage areas and bunk space, and is intended for use with a transporting vehicle having means to enter the unit from the interior of the vehicle.

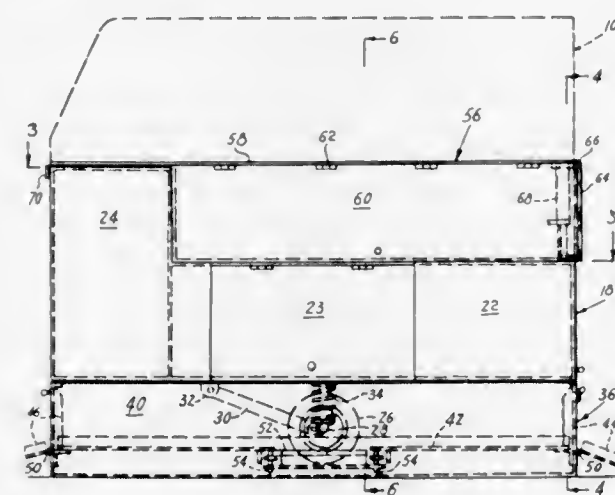
3,719,384

## CAMPER BASE AND TRAILER

Thomas C. du Bois, 119 Colonial Avenue, Pittman, N.J.  
 Filed Oct. 30, 1970, Ser. No. 85,551  
 Int. Cl. B60p 3/32

U.S. Cl. 296—23 ML

5 Claims



An assembly used with a camper to form a pickup trailer therefor, a drive-in base and a roof assembly for the trailer to provide an enclosed space when the trailer is not being used to support or convey a camper. The trailer is a wheeled unit adapted to square up the T-shaped camper and the base engages the wheeled trailer to form a rectangular shape for the assembly.

3,719,385

## CHASSIS-TO-CONTAINER LOCKING MEANS

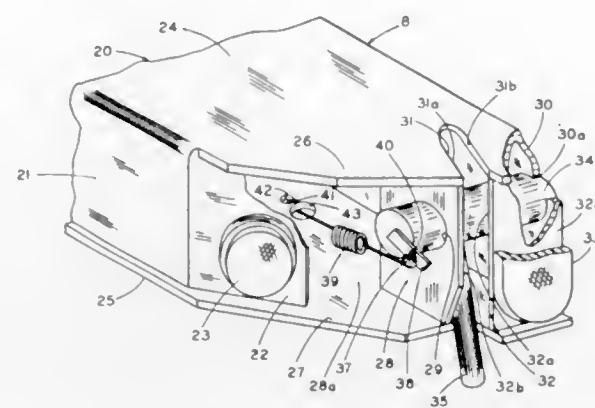
George W. Carr, Cincinnati, Ohio, assignor to Pullman Incorporated, Chicago, Ill.  
 Filed Dec. 15, 1970, Ser. No. 98,344  
 Int. Cl. B60p 7/10

U.S. Cl. 296—35 A

7 Claims

A locking mechanism for coupling of the trailer chassis to the supported container where the locking mechanism is an end extension of the chassis cross member having an intermediate transverse wall and a back wall adjacent the container corner casting, a rearward horizontally extending rotatable locking pin reciprocally disposed in both walls from a withdrawn unlocked position with the rearward end of the pin

inwardly of the back wall to an extended locked position with the rear end of the pin being outwardly of the back wall and into the end opening in the container corner casting, handle means for rotating and longitudinally moving the pin between



both positions with the handle riding and a vertical slot and a diagonal extending horizontal guide slot and spring means connecting with a moment arm on the front side of the pin for biasing holding the pin in either position.

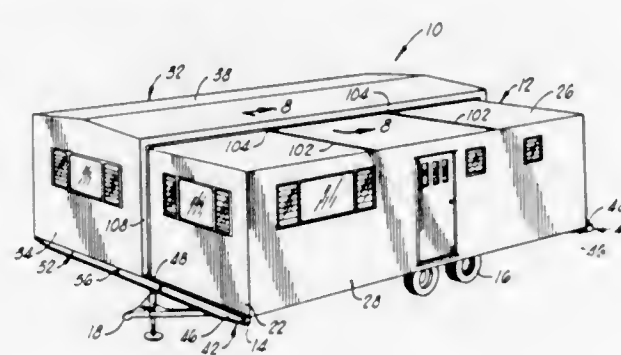
3,719,386

## EXPANSIBLE TRAILERS

Ray Puckett, 3008 10th St., Wichita Falls, Tex. 76309, and Sidney K. Lambert, Wichita Falls, Tex.; said Lambert assignor to said Puckett  
 Filed July 22, 1970, Ser. No. 57,229  
 Int. Cl. B60g 3/34

U.S. Cl. 296—26

9 Claims



An expansible trailer having a pair of telescoping trailer sections and a folding floor unit within one of the trailer sections. The telescoping trailer sections are relatively extended and retracted by a hydraulically actuated linking mechanism. Folding floor joists for supporting the extended trailer section are also disclosed. Tracks and rollers for guiding the extended trailer sections are also disclosed.

3,719,387

## SEATBACK LATCH AND RECLINER MECHANISM

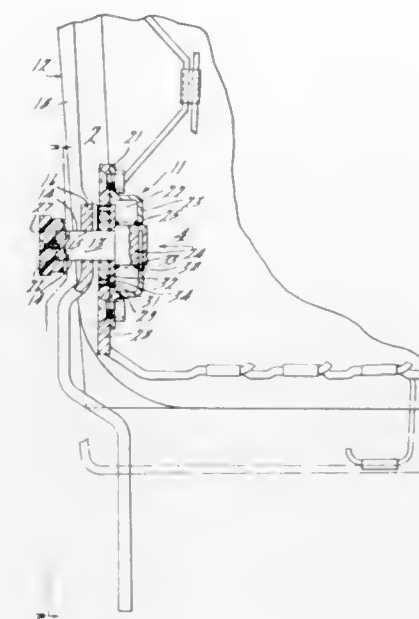
John A. Boschen, Royal Oak, and Patrick J. Stanecki, Allen Park, Mich., assignors to Ford Motor Company, Dearborn, Mich.  
 Filed Dec. 3, 1971, Ser. No. 204,499  
 Int. Cl. A47c 3/00; B60n 1/02

U.S. Cl. 297—355

12 Claims

A seatback latch mechanism for a seatback frame pivotally supported on a seat frame for forwardly or rearwardly tiltable movement relative to the latter. The latch mechanism comprises a nonrotatable longitudinally shiftable shaft carrying a nonrotatably secured external gear means which meshes with an internal gear means to hold the seatback frame against tiltable movement. Longitudinal shifting of the shaft disengages the gear means permitting forward or rearward tilting movement of the seatback frame about the axis of the shaft, the

latter being fixed relative to the seat frame. The mechanism includes indexing or locking means for controlling



the gear means engagement positions and thereby the locking positions of the seatback frame relative to the seat frame.

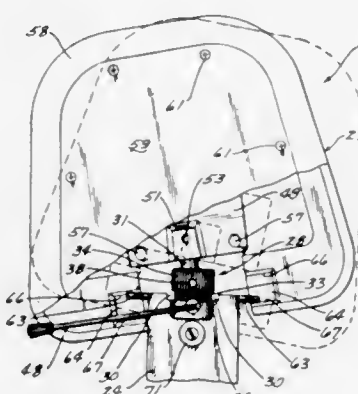
3,719,388

## ADJUSTABLE HEADREST ASSEMBLY FOR A DENTAL CHAIR

George A. Fortnam, Des Moines, Iowa, assignor to Den-Tal-Ez Mfg. Co.  
 Filed May 12, 1971, Ser. No. 142,489  
 Int. Cl. A47c 7/38

U.S. Cl. 297—405

2 Claims



The headrest assembly has a head receiving depression in the front surface thereof for holding the head in a comfortable, yet secure position at all times. To permit convenient access to all tooth surfaces to be worked on the headrest assembly is swivelly mounted on the backrest of a dental chair for adjustable movements laterally and transversely of the backrest and for rotational movement about an upright axis. A single conveniently located lever is readily actuated to release the headrest from and to lock the headrest in an adjustably moved position.

3,719,389

## THERMO PLASTIC TUBING FURNITURE

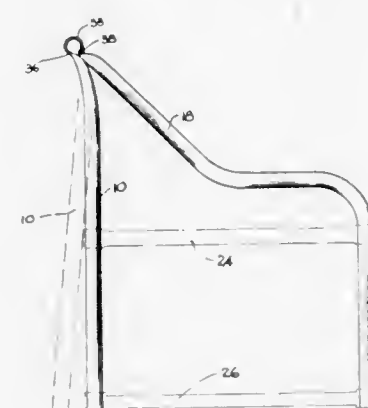
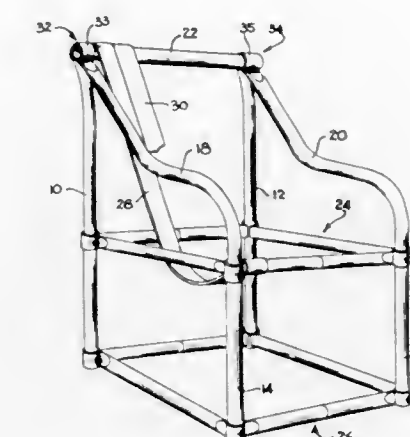
Douglas G. Burton, 9435 Bona Vista Lane, Whittier, Calif., and Norman L. Kiger, 7691 Belgrave Avenue, Garden Grove, Calif.  
 Filed May 19, 1971, Ser. No. 144,915  
 Int. Cl. A47c 4/02, 7/00

U.S. Cl. 297—440

10 Claims

A method and apparatus for furniture construction entails the forming of thermo-plastic tubing side and cross frame sec-

tions wherein joints for securing interconnected members to each other comprise flattened closed loop clamping sections integrally connected with adjoining frame member portions. The loop sections, even in unstressed condition of the frame members, are dimensioned to be just equal to, or slightly smaller than the tubular members that are retained and



clamped therein. Further, the construction is such, that upon assembly the portions of the tubular members on either side of the several flattened closed loop clamping sections are stressed to hold these portions closer to each other, so that they will more tightly grasp the tubular members that each encircles.

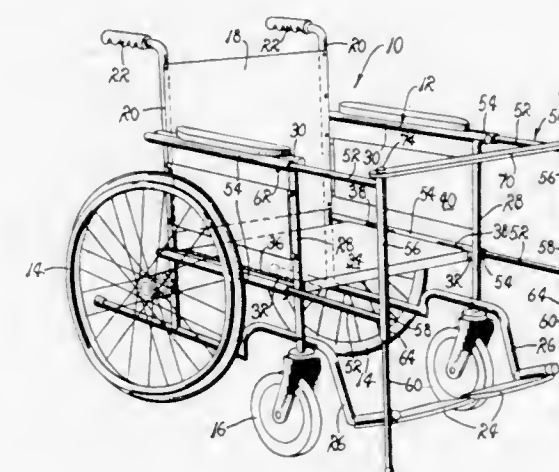
3,719,390

## WHEEL CHAIR

Martha L. Haney, 2319 South Lotus Avenue, Fresno, Calif.  
 Filed Jan. 22, 1971, Ser. No. 108,870  
 Int. Cl. B60h 3/00

U.S. Cl. 297—6

1 Claim



An improved wheel chair for a patient-operator unable to support himself unaided and erect, characterized by a pivotal seat and an auxiliary frame telescopically coupled with the frame of the wheel chair and employable by the operator in



supporting himself erect. A particular feature of the invention resides in the auxiliary frame, which is provided with a pair of vertically oriented legs, supported for displacement in both horizontal and vertical directions, whereby the legs can be spaced from the wheel chair and vertically extended into an operative engagement with the floor, and a lifting-bar fixedly suspended between the legs so that the operator can position the seat of the wheel chair in a desired relationship with respect to a given toilet bowl and draw himself to an erect position, employing the lifting-bar, in order to gain access to the toilet bowl.

3,719,391

## CHAIR FOR USE IN DENTISTRY

Vincenzo Neri, Strada Antica S. Vito 12, Turin, Italy

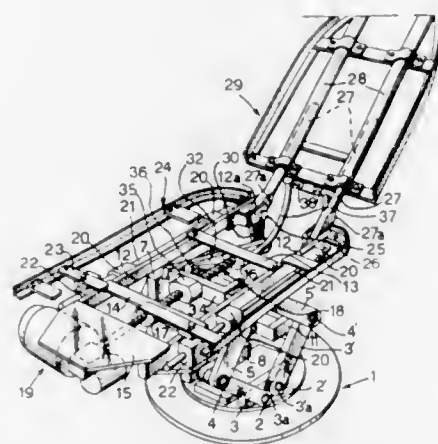
Filed March 24, 1971, Ser. No. 127,682

Claims priority, application Italy, April 17, 1970, 68311; July 21, 1970, 69506 A/70

Int. Cl. A49b 19/00

U.S. Cl. 297—341

5 Claims



An odontological chair has, in addition to the usual raisable seat and tiltable backrest longitudinally slidable seat and backrest frames. Movement of these two frames is effected in opposite directions and by different amounts automatically as the backrest is tilted, and proportionately to the angle of tilt, so that the frames approach each other as the backrest is lowered, avoiding movement of the patient's body on the seat and backrest, which would otherwise occur. In a modification the entire seat structure is moved horizontally as the backrest is raised or lowered, to prevent horizontal displacement of the patient's head.

3,719,392

## DUMP BODY VEHICLE

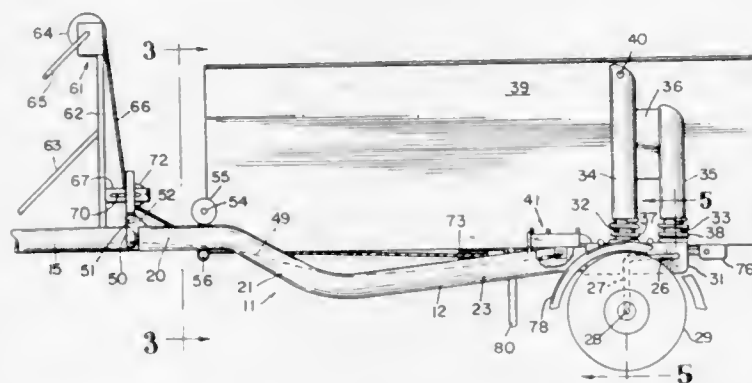
Arvin E. Russell, 430 Sandra Lane, Indianapolis, Ind.

Filed Oct. 13, 1971, Ser. No. 188,800

Int. Cl. B60p 1/02, 1/34

U.S. Cl. 298—5

11 Claims



A dump body vehicle including a frame and a body, the rear end of the body being pivotally supported from upstanding

resilient suspension assemblies supported, in turn, from crank axles journaled at the rear end of the frame to rock rearwardly at times, the front end of the body being longitudinally slidable relative to the frame and guidedly supported from the frame which is formed to provide a rearwardly and downwardly inclined section which lowers the front end of the body commensurately as the rear end of the body descends during such rocking of the suspension assemblies, whereby the body assumes a substantially horizontal depressed position for easy loading, together with a latching device to hold the suspension assemblies against such rocking for transit. Another latching device can be withdrawn to permit the front end of the body to rise relative to the frame to a dumping position, and a winch and cable are provided to move the body forwardly to transit position and, when the body is in its transit position, to elevate its front end. An open-ended pulley is provided so that the cable may be readily engaged therewith to facilitate the advantageous application of force to move the body forwardly, or disengaged therefrom to facilitate the advantageous application of force to lift the front end of the body.

3,719,393

## ADJUSTABLE SPREADER AND LEVELER FOR DUMP TRAILER

Thomas Viviano, 218 Victor Ave.,

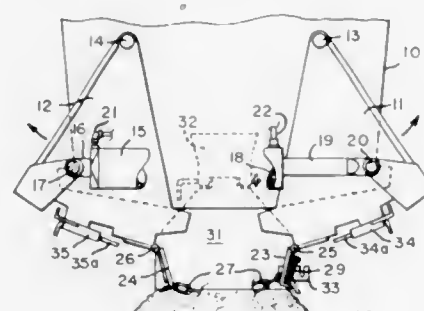
Campbell, Calif. 95008

Filed Nov. 15, 1971, Ser. No. 198,705

Int. Cl. B60p 1/56

U.S. Cl. 298—35 M

5 Claims



An adjustable spreader provided to the bottom of a dump trailer to level off the material being dumped and also control the spreading thereof. The dump trailer is provided with clamshell gates with runners pivotally attached to the adjacent bottom sides thereof. Suitable chains are provided between the runners to control the spreading thereof when the clamshell gate members are open. Means is also provided to the bottom of the clamshell gates for holding the runners in elevated position when not in use. A leveling plate is attached to the rear of the trailer hopper and this plate extends across the rear ends of the runners so that it functions to level off the material dumped from the hopper as the trailer is moved forward.

3,719,394

## APPARATUS FOR STEERING A LONGWALL MINERAL MINING MACHINE

Dennis Hartley, Burton-on-Trent, England, assignor to Coal Industry (Patents) Limited, London, England

Filed Jan. 11, 1971, Ser. No. 105,299

Claims priority, application Great Britain, Jan. 15, 1970, 01965/70

Int. Cl. E21c 27/24

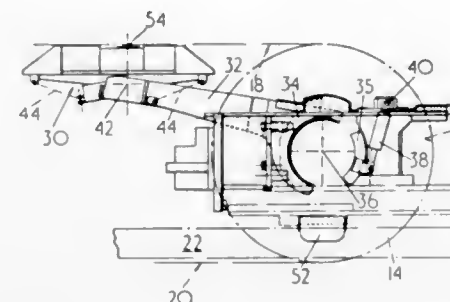
U.S. Cl. 299—1

12 Claims

The invention relates to apparatus for steering longwall mining machines. The apparatus comprises an electromagnetic-radiation emitter/detector which is mounted on the end

of an arm pivotally mounted on the machine. The emitter/detector is located immediately behind the machine's rotary

The vacuum in the vertical transfer plate is then converted to pressure to cause the inserts to fly across the air gaps to the core pin ends, following which the inserts are maintained on



3,719,395

## MAGNETIC WHEEL

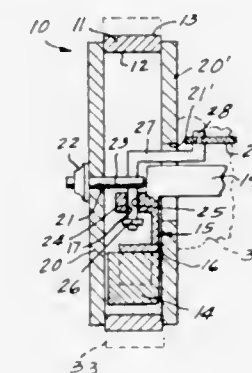
Dzermal Mulasmajic, 338 Pleasant Hill Boulevard, Palatine, Ill.

Filed Aug. 30, 1971, Ser. No. 175,940

Int. Cl. B06b 3/00; B60b 19/00, 9/00

U.S. Cl. 361—5 R

8 Claims



A magnetic wheel for supporting a vehicle employs a permanent magnet in the shape of a ring which is journaled for rotation about a shaft. The shaft is loosely coupled to the frame of the vehicle for vertical movement by means of a member which positions a magnet within the ring which is poled to repel the ring. The wheel is adapted for steering by providing that the loose coupling includes a pivotal coupling and by providing a lever arm for connection to a steering mechanism, such as a rack and pinion mechanism.

3,719,396

## METHOD AND APPARATUS FOR MOLDING ARTICLES CONTAINING INSERTS

Roger D. VanDeWalker, and Blair E. Howe, both of Costa Mesa, Calif., assignors to California Injection Molding Co., Inc., Costa Mesa, Calif.

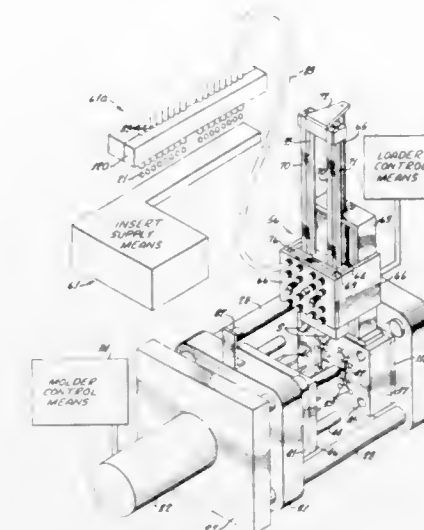
Filed Oct. 8, 1970, Ser. No. 79,191

Int. Cl. B65g 51/02

U.S. Cl. 302—2 R

9 Claims

A method and apparatus for mass-manufacturing elongated hollow plastic objects, such as covers for electronic thermometer probes, and ball point pens, having inserts at the ends thereof. The inserts are automatically loaded, by vibrating the same into pockets and then lifting them out of the pockets into suction tubes which pass through a horizontal transfer plate into nests in a vertical transfer plate. Vacuum is employed to maintain the inserts in the nests during movement of the vertical transfer plate to positions adjacent the distal ends of hollow core pins through which air is sucked.



such ends by suction. The mold is then closed to cause the inserts to engage spring-biased plungers, following which the plastic is injected.

3,719,397

## CONVEYING A COAL SLURRY WITH A SINGLE PIPELINE

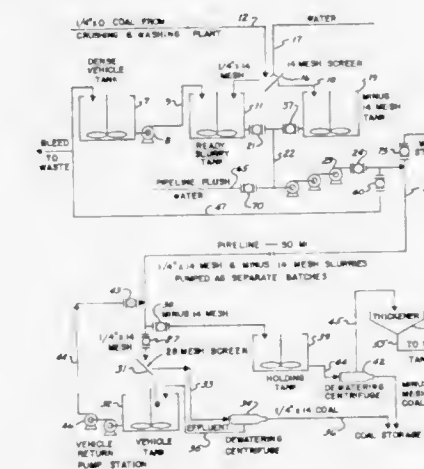
Edward J. Wasp, San Rafael, Calif., assignor to Bechtel International Corporation, San Francisco, Calif.

Filed Dec. 20, 1971, Ser. No. 209,636

Int. Cl. B65g 53/30

U.S. Cl. 302—66

5 Claims



This invention relates to the art of transporting coal with water through a pipeline. More particularly, it relates to a method which includes preparing a vehicle comprising an aqueous slurry of an inorganic finely divided water insoluble solid carrier such as magnetite, coal ash, coal of a selected size or various clays. Coal in particulate form is then suspended in the vehicle. The insoluble solid carrier must be finely divided as compared to the particulate coal to ensure that the two can be separated by screening or hydraulic sizing. In this connection, the solid carrier should all be finer than 100 microns while the particulate coal should all be larger than 500 microns.

After the slurry is formed, it is then pumped through a pipeline to a location many miles away where, after being separated from the vehicle, the coal is utilized and the coal-free vehicle is collected. This operation is continued for a period of several days at the end of which pumping of the slurry is discontinued and the pipeline is flushed with water. Upon completion of the flushing, the coal-free vehicle is pumped



back through the pipeline to the point at which the coal slurry is prepared, the vehicle being reused. The water filling the pipeline is returned to the preparation point by the return of the vehicle. In this manner, it is possible to achieve transportation of the coal and reutilization of the vehicle with but a single pipeline.

3,719,398

## ANTISKID BRAKE CONTROL

Katuki Takayama and Koji Nishida, Kariya, and Hayao Yamazaki, Osaka, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Aichi Prefecture, and Sharp Corporation, Osaka, Japan

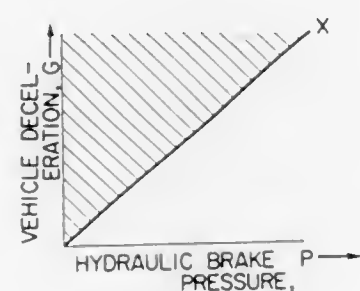
Filed Dec. 8, 1970, Ser. No. 96,208

Claims priority, application Japan, Dec. 9, 1969, 44/99,253

Int. Cl. B60f 8/08

U.S. Cl. 303—21 A

9 Claims



This invention relates to a method of and an apparatus for the control of antiskid hydraulic brake pressure by sensing both the hydraulic pressure being applied to wheel cylinder means of at least a vehicle wheel and the wheel angular rotational speed deceleration caused thereby in the wheel(s) for the purpose of sensing an impending wheel lock.

The improvement comprises a step for intentionally varying the sensitivity for sensing the wheel speed deceleration depending upon the applied hydraulic brake cylinder pressure.

3,719,399

## SKID CONTROL MODULE

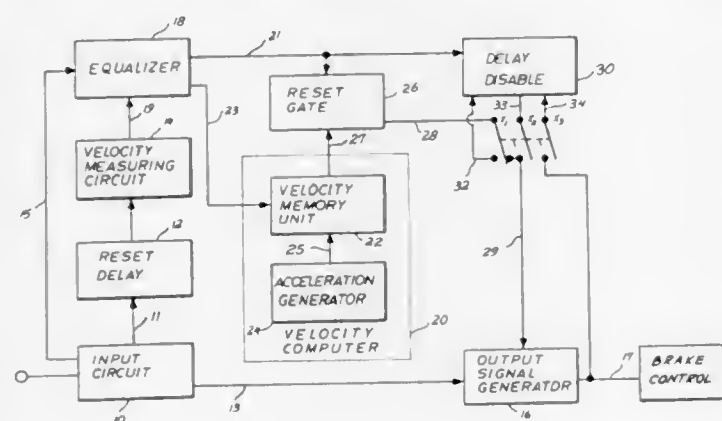
Carmeli Adahan, 1626 Bonita Avenue, Apt. No. 6, Berkeley, Calif.

Filed Oct. 26, 1970, Ser. No. 83,811

Int. Cl. B60f 8/08

U.S. Cl. 303—21 BE

10 Claims



An skid control control module which generates accurate signals indicating the instantaneous velocity of a moving member from successive input signals with no appreciable

time delay. Each instantaneous velocity signal of the member is compared with a signal developed according to a maximum permissible acceleration rate. Whenever the comparison indicates the member exceeded the permissible rate, a control signal is generated which is only terminated when a later comparison indicates the motion of the member is back within the permitted range. This control signal controls the braking force so as to prevent an impending skid.

3,719,400

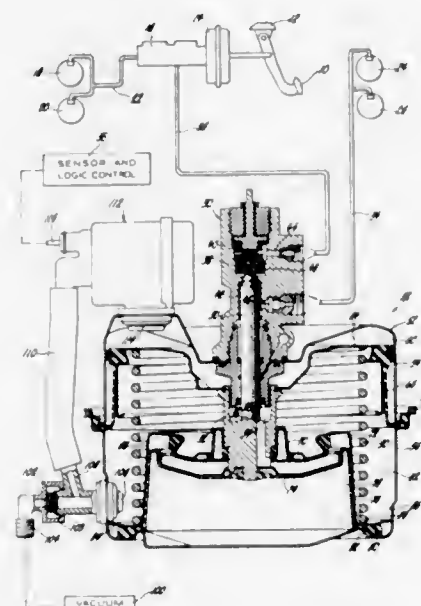
## WHEEL LOCK CONTROL MODULATOR

Donald Edward Schenk, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 3, 1971, Ser. No. 195,249

Int. Cl. B60k 8/06

2 Claims



A wheel lock control system in which the brake apply pressure modulator is divided into four chambers, one always subjected to atmospheric pressure and normally providing pressure support to the hydraulic displacement piston, one always being subjected to vacuum during operation, and the other two being subjected to vacuum or atmospheric air pressure or some intermediate pressure depending upon the system operational mode to control movement of the brake apply pressure modulating valve displacement piston. Two of the chambers are separated by a divider plate which also act as a spring seat for a hydraulic support pressure support spring as well as providing a locking arrangement for holding the outer annulus of a support diaphragm in sealed position against a portion of the modulator housing.

3,719,401

## SOLENOID-OPERATED HYDRAULIC SWITCHING VALVE

Marco Peruglia, Turin, Italy, assignor to Fiat Societa per Azioni, Turin, Italy

Filed July 26, 1971, Ser. No. 166,149

Claims priority, application Italy, April 28, 1971, 68411 A/71

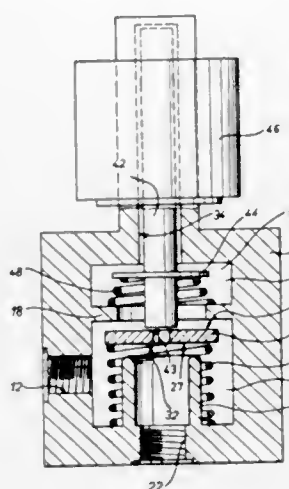
Int. Cl. B60f 8/06

U.S. Cl. 303—21 F

4 Claims

A solenoid-controlled hydraulic changeover valve is described, in which a movable solenoid armature, upon energization of the solenoid, closes a restrictor orifice in a movable obturator and simultaneously presses the obturator on to a seat, cutting off communication between an inlet and outlet; upon subsequent de-energization of the solenoid the fluid

pressure derived from the valve inlet keeps the obturator against the valve seat so that the resumed flow of fluid to the outlet port is, at least initially, restricted by the obturator ori-



absence of the supply of fluid under pressure to this clutch, it prevents the rocking of the pivoted lever in the above-mentioned one direction. The brake valve device further includes a new and improved three-position selector valve device for conditioning the brake valve device for use in either freight or passenger service by controlling the supply of fluid under pressure to this clutch. Therefore, the novel three-position selector valve device, while in its freight position, so cooperates with the usual suppression valve device of the brake valve device as to prevent the supply of fluid under pressure to the clutch mechanism until the handle of the brake valve device is manually returned to its release position. Consequently, this new selector device, while in its freight position, provides for operation of the clutch to insure only a direct brake release on the locomotive and cars in the train, and while in its passenger position, provides for operation of the clutch to enable a graduated release.

3,719,403

## CRANE BOOM HAVING WEAR PADS

Fu-Tien Sung, Waynesboro, Pa., assignor to Walter Kidde & Company, Inc., Clifton, N.J.

Filed Nov. 17, 1970, Ser. No. 90,320

Int. Cl. F16c 25/02

U.S. Cl. 308—3

5 Claims

fice. When the valve is connected in an anti-skid braking circuit in a by-pass line for the pressure fluid source, this mode of operation can be arranged to limit the rate of rise and fall of braking pressure during anti-skid braking modulation.

3,719,402

## FLUID PRESSURE BRAKE CONTROL APPARATUS

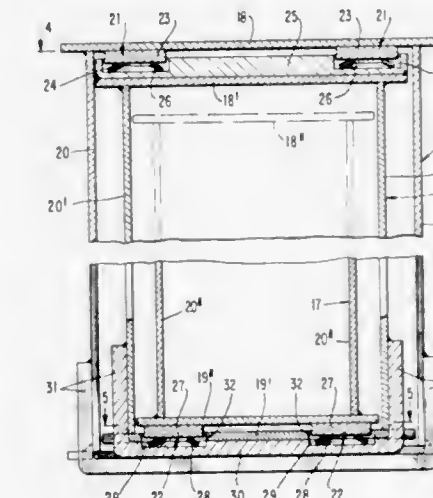
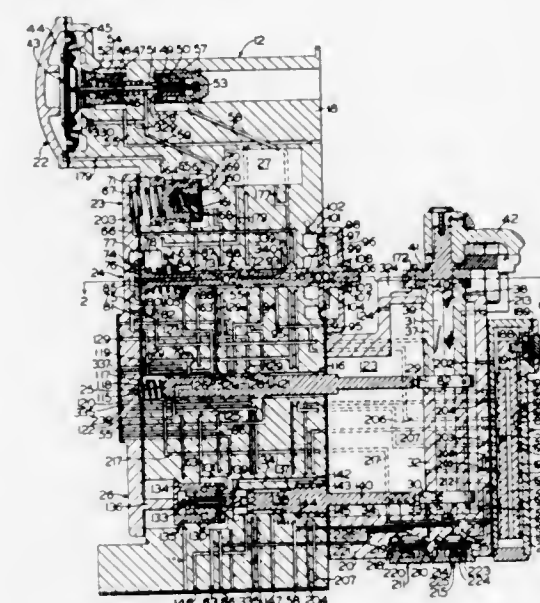
Glenn T. McClure, McKeesport, and Robert B. Salton, Pittsburgh, both of Pa., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Sept. 17, 1971, Ser. No. 181,296

Int. Cl. B60f 15/18

U.S. Cl. 303—35

15 Claims



Wear pads or bearings for telescoping crane booms consists of units on the rear and top and forward end and bottom of adjacent telescoping sections. Each wear pad unit comprises plural wear pad or plate sections floatingly mounted on cushioning elements within a retainer. The strength or spring constant of the cushioning elements may vary within the units to meet conditions of varying stress. The wear pad units are self-adjusting to accommodate inherent angularity between telescoping boom sections.

3,719,404

## CRANE BOOM HAVING UNIVERSALLY SWIVELED WEAR PADS

Russell L. Sterner, Greencastle, Pa., assignor to Walter Kidde & Company, Inc., Clifton, N.J.

Filed Nov. 17, 1970, Ser. No. 90,377

Int. Cl. F16c 25/02

U.S. Cl. 308—3

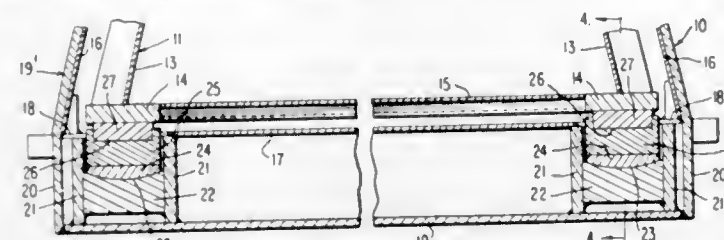
7 Claims

This invention relates to a relay-type brake valve device for controlling pressure variations in the brake pipe of a railway fluid pressure brake control system having a self-lapping regulating valve device for supplying fluid under pressure directly to a relay valve device to cause the operation thereof. The regulating valve device is operative in a fluid pressure releasing direction by the rocking in one direction of a pivoted lever in response to rotation of either a service cam rotatable by manual actuation of a brake valve handle or a penalty cam rotatable by a fluid pressure operated penalty and split reduction valve in response to a restrictive train operating condition. A fluid pressure operated clutch mechanism, including a nut and screw each provided with a non-self-locking type of screw thread, is so interlocked with the lever that, in the

The lower wear pads of multi-section telescoping crane booms comprise assemblies located on the forward end and bottom of each boom section. Each such assembly consists of a support housing for a pair of laterally spaced wear pad units and within the support housing are retainer means for each wear pad unit. Each unit includes low friction wear pad ele-



ments for direct frictional engagement with the bottom face of the next innermost boom section and spherically curved



universally self-adjusting seating means for the wear pad elements.

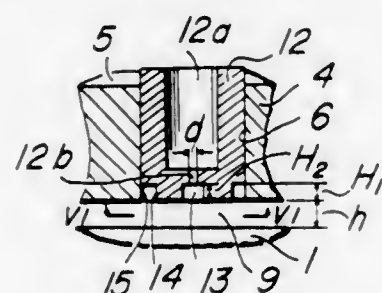
### 3,719,405 GAS BEARING

Hideki Izumi; Ryoichi Ichikawa; Hiroshi Koike, and Katsuyuki Tanaka, all of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 13, 1971, Ser. No. 106,226  
Claims priority, application Japan, Jan. 21, 1970, 45/5086  
Int. Cl. F16c 17/16

U.S. Cl. 308-9

1 Claim



In an externally pressurized gas bearing of the type forcing gas under pressure into the clearance between a shaft and the bearing, an inlet for introducing gas under pressure is formed in one end of a nozzle body while a recessed pocket is formed in the other end and in communication with the inlet through an orifice; a bearing proper is fitted over and concentrically of the shaft with a predetermined clearance; and the nozzle body is hermetically fitted into a nozzle body receiving hole in the bearing proper in such a way that the other end of the nozzle body may be in substantially coplanar relation with the inner surface of the bearing proper, so that the volume of the recessed pocket may be determined with ease yet with a higher degree of accuracy and thus the assembly is greatly simplified as compared with the prior art bearing.

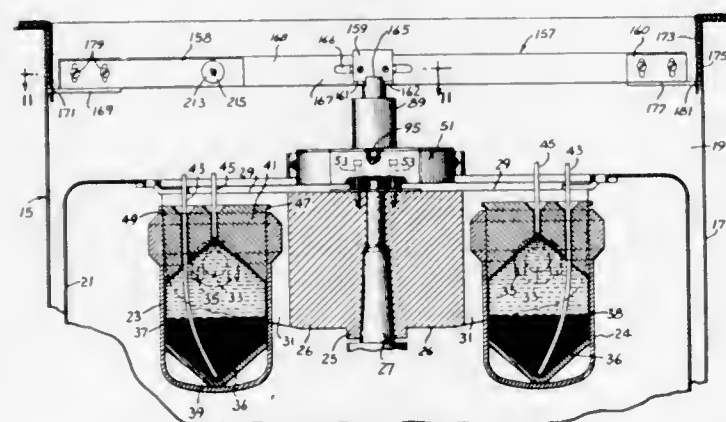
### 3,719,406

**BEARING MECHANISM FOR CENTRIFUGE ASSEMBLY**  
Charles A. Schlutz, Glenview; Stanley J. Sedivy, Chicago Ridge, and Charles R. Memhardt, Morton Grove, all of Ill., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

Division of Ser. No. 713,595, March 18, 1968, Pat. No. 3,561,672. This application Nov. 16, 1970, Ser. No. 97,407  
Int. Cl. F16c 35/02

U.S. Cl. 308-15

4 Claims



A fluid system for separating materials in each of a plurality of batches which are simultaneously washed by forcing a fluid

through a centrifuge, provides independent pressure heads for each batch to enable flow of equal volumes through said batches, respectively.

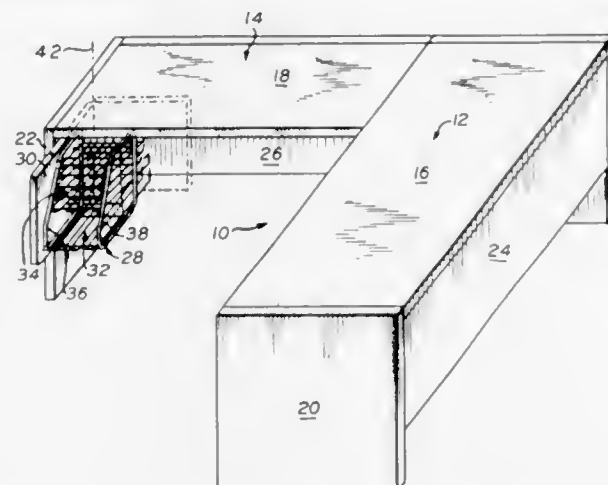
### 3,719,407 DESK CONFIGURATION HAVING STATIONERY ORGANIZER

David Woods, Quakertown, Pa., assignor to J. G. Furniture Company, Inc., New York, N.Y.

Filed May 17, 1971, Ser. No. 143,871  
Int. Cl. A47b 17/00, 19/00, 88/00

U.S. Cl. 312-197

4 Claims



A desk configuration has a stationery organizer which is pivotally mounted beneath a work surface portion of the desk configuration in a storage position, the organizer being substantially recessed from the vertical plane of the front edge of the work surface in this position. The stationery organizer is pivotal about a vertical axis between this storage position and a usage position in which the organizer extends beyond the front edge vertical plane.

### 3,719,408

**MOBILE MERCHANDISER CART AND REFRIGERATED SHOWCASE THEREFOR**

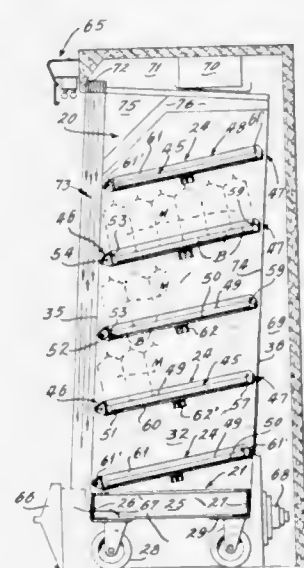
William H. Fullington, Ballwin, and Melvin O. Maisak, Florissant, both of Mo., assignors to Pet Incorporated, St. Louis, Mo.

Division of Ser. No. 835,455, June 23, 1969. This application Feb. 2, 1971, Ser. No. 111,898

Int. Cl. A47b 77/08; A47f 3/04; A47b 91/00

U.S. Cl. 312-236

2 Claims



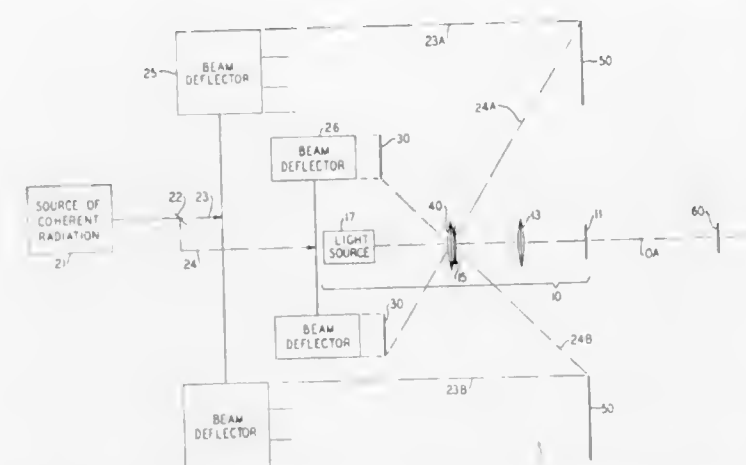
The combination of a mobile merchandiser cart for the transportation, storage and display of food and beverage products from the production source to the retail consumer, and a refrigerated showcase having a cart product area for receiving a merchandiser cart with a complementary fit.

**3,719,409  
ARRAY OF FOCUSING HOLOGRAMS**  
Charles James Vincelette, Glen Ellyn, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Filed Nov. 16, 1971, Ser. No. 199,196  
Int. Cl. G02b 27/22

U.S. Cl. 350-3.5

7 Claims



An array of light focusing holograms is disclosed, that is particularly useful in recording a hologram memory. Like the array of focusing holograms in U.S. Pat. 3,530,442, each of these holograms is formed so that it directs light through a page of digital data to a different portion of a plane where the hologram memory is recorded. In addition, however, each hologram is also formed so that it directs light through only those portions of the data page where information can be found. Moreover, the light focussing holograms are also designed to reduce the aberrations that would otherwise be encountered in recording a hologram memory at points not on a normal to the data page. Additional features of this disclosure make possible the convenient substitution of one data page for another and the efficient readout of the memory.

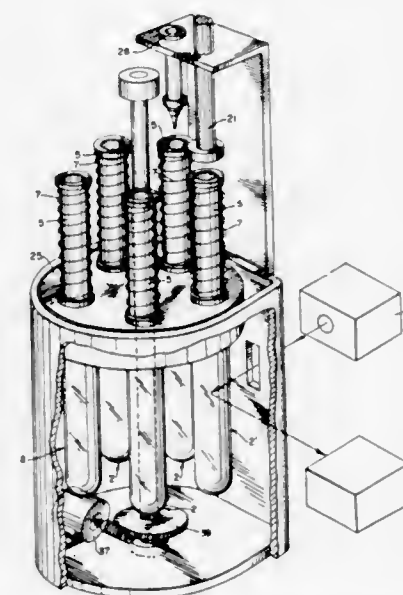
### 3,719,410

**MIXING AND MEASURING APPARATUS**  
Eli A. Kalket, Teaneck, N.J., assignor to Farrand Optical Co., Inc., Valhalla, N.Y.

Filed Nov. 10, 1971, Ser. No. 197,501  
Int. Cl. G01n 21/52, 1/00

U.S. Cl. 356-36

8 Claims



Disclosed is a mixing device and measurement apparatus suitable for use in the kinetic photometric analysis of enzymes and other substances. The mixing apparatus includes a test cell having a base container for holding one reactant solution

and having a mixing container for holding another reactant. To mix the reactants and initiate the reaction, the mixing container is forced into the base container whereby the solution is transferred between containers.

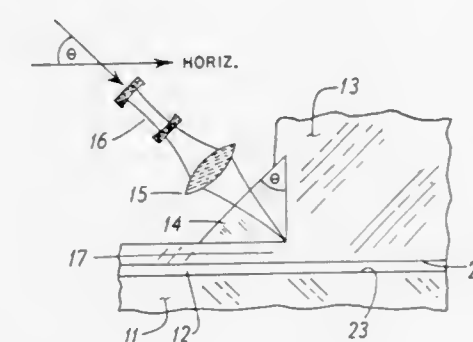
### 3,719,411

**CONTINUOUS COUPLING OF TUNABLE OR BROAD BAND RADIATION INTO THIN FILM WAVEGUIDES**  
John Edwin Midwinter, Morristown, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed March 17, 1971, Ser. No. 125,094  
Int. Cl. G02b 5/14

U.S. Cl. 350-96 WG

3 Claims



A technique is described for designing and constructing a thin-film waveguide/coupler combination that will allow the continuous coupling of a beam of broad band or tunable radiation from a laser-like source into a thin-film waveguide that is deposited on a suitable substrate. This is achieved by selection of a combination of materials having proper refractive indices in a sandwich structure which comprises the waveguide resulting in high efficiency without recourse to any mechanical realignment of the angle of incidence of the light beam relative to the waveguide as the frequency to be coupled varies.

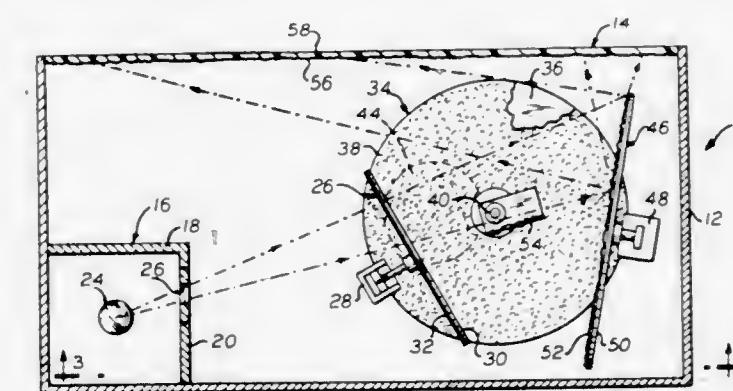
### 3,719,412

**BACKLIGHTED PROJECTION SCREEN**  
Earl M. Reiback, 20 East 9 Street, New York, N.Y.

Filed Aug. 27, 1970, Ser. No. 67,310  
Int. Cl. G03b 21/56

U.S. Cl. 350-117

6 Claims



Apparatus for projecting continuously variable, multicolored, random patterns of light onto a translucent screen, and includes a lamp and the translucent screen. The screen is preferably transparent plastic containing a light absorbent dye and having a matte front and sandblasted rear surface.



3,719,413

## INVERTED TELEPHOTO PROJECTION LENSES

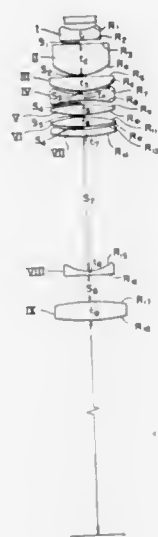
Hadrian B. Lechner, North Chili, N.Y., assignor to Bausch &amp; Lomb Incorporated, Rochester, N.Y.

Filed Feb. 11, 1972, Ser. No. 225,493

Int. Cl. G02b 9/64

U.S. Cl. 350—214

3 Claims



An improved inverted telephoto lens having a seven element positive group separated from a two element negative group.

3,719,414

## POLARIZATION INDEPENDENT LIGHT MODULATION MEANS USING BIREFRINGENT CRYSTALS

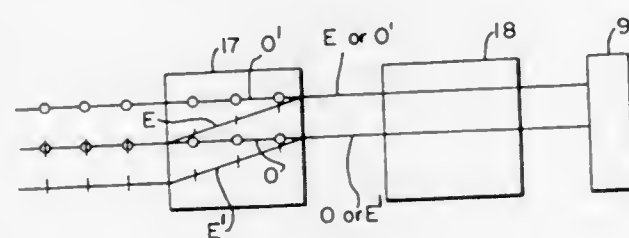
John L. Wentz, Ellicott City, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 28, 1970, Ser. No. 67,930

Int. Cl. G02I 1/26

U.S. Cl. 350—150

1 Claim



A first optically birefringent crystal divides an incident randomly polarized light beam into two linearly polarized orthogonal components, namely, an ordinary ray and an extraordinary ray. The incident light beam is so related to the optic axis of the birefringent crystal that ordinary ray is undeviated but the extraordinary ray is deviated by a selected amount, both of the rays emerging from the birefringent crystal parallel to each other. The amount of deviation is a function of the index of refraction and the length of the path through the crystal. The spaced rays are then directed through an electro-optical polarization modulator which electronically converts the linearly polarized components to elliptically polarized beams with the eccentricity dependent upon the magnitude of an applied electric field. For a particular magnitude of applied electric field, the polarization modulator will cause a 90° rotation of the orthogonal components. The two emerging rays are then passed through a second birefringent crystal which recombines the two rays with the intensity along the emerging axis proportional to the magnitude of the elec-

tric field applied to the polarization modulator. In the unenergized state of the polarization modulator maximum transmittance is obtained. In the energized state the transmittance varies according to  $T = \sin^2 KE$  where  $E$  is the magnitude of the applied electric field and  $K$  is a proportionality constant. Thus, the light modulation system can be controlled electronically to make it selectively transmissive for incident light of all polarizations. The system is also described as applied to a resonant optical cavity such as a Q-switching device for randomly polarized stimulated emission of radiation devices (lasers).

3,719,415

## RADIAL AND TANGENTIAL POLARIZERS

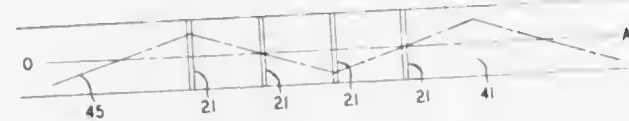
Eric Gordon Rawson, Stirling, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 22, 1971, Ser. No. 182,741

Int. Cl. G02b 27/28

U.S. Cl. 350—157

6 Claims



Radial and tangential polarizers selectively attenuate meridional or skew rays in a focusing waveguide. A radial polarizer is a polarizer in which the direction of polarization at any point in the polarizer is approximately parallel to a radial line from the center of the polarizer. A tangential polarizer is a polarizer in which the direction of polarization at any point in the polarizer is approximately perpendicular to a radial line from the center of the polarizer. A pair of radial polarizers or a pair of tangential polarizers spaced apart at an odd multiple of one-fourth of the period of oscillation of a meridional ray about the center of the optical path attenuate skew rays in favor of meridional rays. A radial polarizer and a tangential polarizer similarly spaced attenuate meridional rays in favor of skew rays.

3,719,416

## MOTION-PICTURE SYSTEM

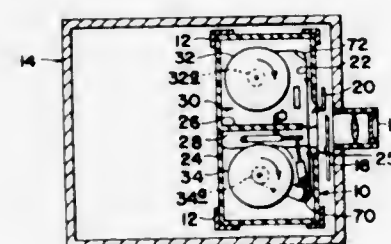
Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 738,464, June 20, 1968, Pat. No. 3,655,277. This application March 19, 1971, Ser. No. 126,307

Int. Cl. G03b 23/03

U.S. Cl. 352—72

17 Claims



Motion-picture apparatus for exposing a motion-picture film especially adapted to a diffusion transfer method of image formation; for rapidly processing the exposed film; and for immediately thereafter projecting the film in the form of a finished motion-picture sequence. The system includes, for an improved operation, a unique multi-purpose cassette or magazine usable both in a camera component for the taking function and in a projection component for processing and projection purposes.

3,719,417

## DETACHABLE FILM MAGAZINE FOR MOTION PICTURE CAMERA

Jacques Lecoeur, Paris, France, assignor to Eclair International, Paris, France

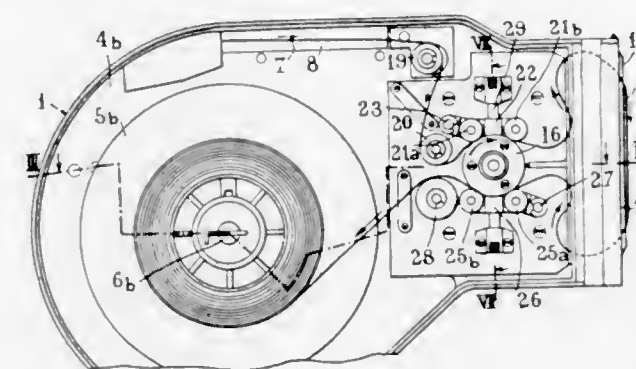
Filed Aug. 5, 1971, Ser. No. 169,258

Claims priority, application France, Feb. 8, 1971, 7104076

Int. Cl. G0b3 23/00

U.S. Cl. 352—78 R

3 Claims



This invention relates to a detachable film magazine for motion picture camera. This magazine consists essentially of a flat box having detachable major faces. An intermediate partition parallel to said faces divides the box into a first compartment and a second compartment. The first compartment encloses the feed spool and means for guiding the film towards a slot formed in said intermediate partition for transferring the film to the second compartment. This second compartment encloses a drive sprocket actuated from the camera motor, a take-up spool and means for guiding the film emerging from said transfer slot along a first peripheral zone of said sprocket, then along the outer face of the front wall of the magazine, which is adapted to be locked to the rear face of the camera, and finally along a second zone of said sprocket towards the take-up spool.

3,719,418

## RESET CONTROL PARTICULARLY FOR OPTICAL COMPENSATORS

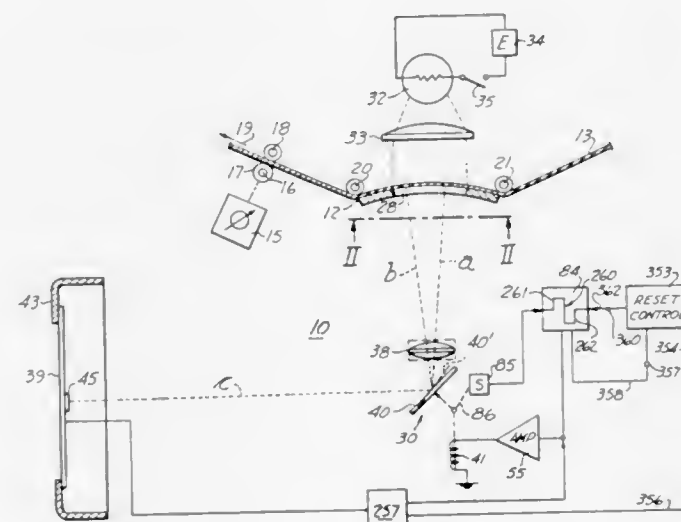
Robert F. Johnston, Wildwood, and Kenneth L. Hendrickson, Niles, both of Ill., assignors to Bell &amp; Howell Company, Chicago, Ill.

Filed Aug. 27, 1971, Ser. No. 175,482

Int. Cl. G03b 41/10

U.S. Cl. 352—109

29 Claims



A repeatedly advanced device, such as an optical compensator or rectifier in continuous film feed motion picture apparatus, is reset between successive advancements with the aid of resetting energy. Errors in the resetting of the device are

sensed and an error signal is controlled with the error signal to correct errors in the resetting of the device.

3,719,419

## SELECTIVE SINGLE LENS PROJECTING SYSTEM

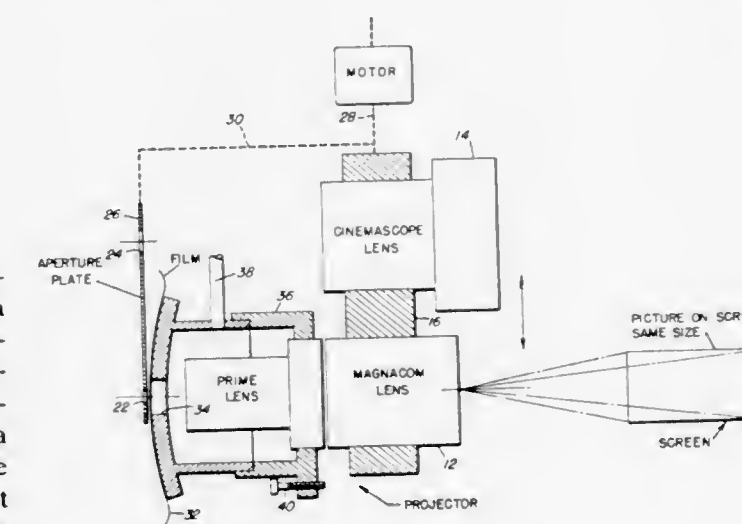
Lawrence W. Davee, c/o Century Projector Corporation, 165 West 46th Street, Tenafly, N.J.

Filed Dec. 10, 1970, Ser. No. 96,923

Int. Cl. G03b 3/00, 21/14

U.S. Cl. 353—101

3 Claims



The projector system includes in combination with the prime focusing lens and film aperture for projecting a picture of desired dimensions through a single removable lens onto a screen, at least one additional lens having a different curvature for changing the enlargement of the image on the screen, said additional lens being movably mounted for selective use in place of said first single lens when the corresponding image enlargement is desired, therebeing an additional corresponding aperture for use with each of the additional lenses, of suitable format to project a picture on the screen of substantially the same size for each image enlargement. Each additional lens is mounted for proper spacing in front of the prime lens to change the image enlargement correspondingly without requiring any focusing adjustment of the prime lens. The single lenses are mounted on a turret or slide mounting for selective interposition in front of the prime lens, and the mounting is connected to an aperture plate having the different apertures for moving them selectively into operative positions in accordance with the selected lens. This movement may be accomplished manually or automatically by motor means.

## ERRATUM

For Class 356—36 see:  
Patent No. 3,719,410

3,719,420

## METHOD AND APPARATUS FOR MEASURING PARALLAX BETWEEN POINTS ON STEREO IMAGES USING A FOURIER TRANSFORM HOLOGRAM OF ONE OF THE IMAGES

Stanley J. Krulikowski, Jr., 214 Meridian, Dearborn, Mich. 48124, and Juan C. Dawson, 1393 E. Easter Circle, Littleton, Colo.

Filed May 13, 1971, Ser. No. 142,962

Int. Cl. G01c 11/12

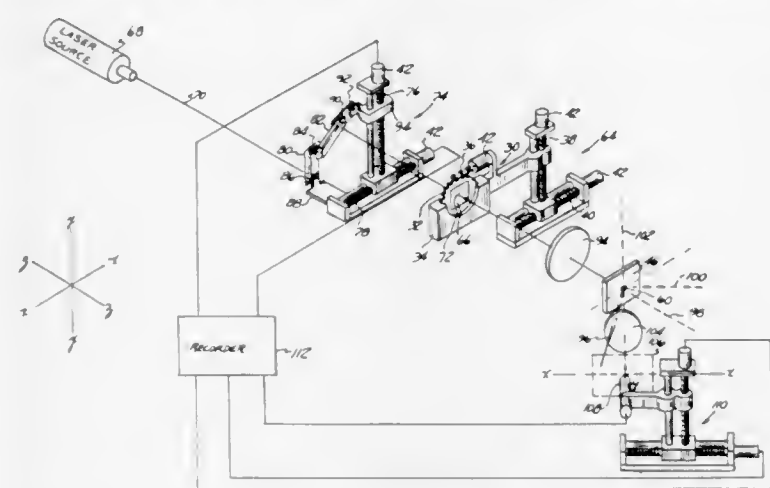
U.S. Cl. 356—2

16 Claims

The method and apparatus of this invention can be used to measure parallax between points of stereo images



that are rotated with respect to each other as well as coplanar stereo images. The parallax between conjugate points on first and second stereo images of a scene is measured by recording a Fourier transform hologram of the first stereo image and aligning the recorded hologram with the second stereo image. Measurements in image parallax are made by directing a thin beam of laser light to strike and be diffracted by a point or small



area on the second stereo image. The spherical lens is positioned to receive the diffracted beam, form the Fourier transform of that beam, and direct the beam to strike the recorded hologram. The diffracted beam causes a product signal to propagate from the hologram. The direction of propagation of this product signal is measured to determine image parallax between the illuminated point of the second stereo image and the conjugate of that point of the first stereo image.

3,719,421

#### OPTICAL DEVICE FOR DETERMINING THE POSITION OF A POINT ON A SURFACE

Jean-Loup Poilleux, Vanves, and Jean Tourret, Montrouge, both of France, assignors to Compagnie des Compteurs, Paris, France

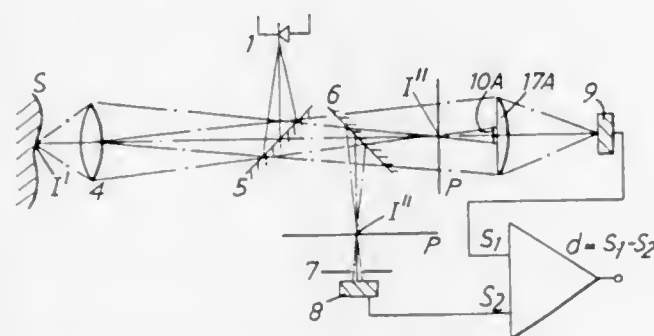
Filed Dec. 10, 1971, Ser. No. 206,602

Claims priority, application France, Dec. 10, 1970, 7044512

Int. Cl. G01c 3/08

U.S. Cl. 356-4

9 Claims



The optical device comprises a luminous source and an optical system for forming a primary image of the source on the surface whose position is to be determined. The optical system returns some of the light back from the primary image. A beam splitter is provided for splitting the returning light into two beams directed towards two secondary image points. Two optical elements are disposed respectively in these two beams, each optical element controlling the amount of light passing therethrough, and two photoelectric detectors are provided respectively behind the two optical elements to receive the light passing through. Preferably one of the optical elements is a field lens having a central screen, and the other optical element is a diaphragm having a central aperture of the same diameter as the screen. Alternatively both the optical elements can be constituted by field lenses each having a central screen.

#### 3,719,422 A BINOCULAR RANGEFINDER-VIEWFINDER WITH FRESNEL OPTICS

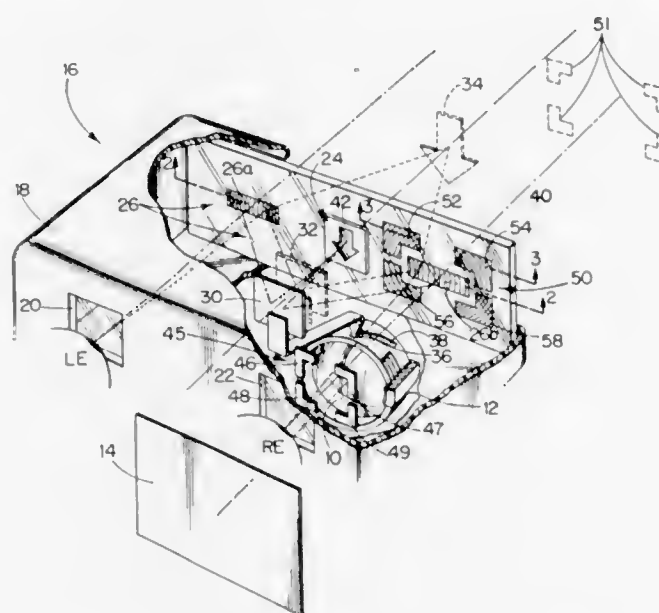
Edwin H. Land, Cambridge, and Philip R. Norris, North Reading, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 20, 1971, Ser. No. 108,084

Int. Cl. G01c 3/04, 3/14; G03b 13/02

U.S. Cl. 356-8

13 Claims



This disclosure depicts a number of novel Fresnel imaging structures incorporated in photographic rangefinding and viewfinding means. Each Fresnel imaging structure is both focal and afocal for simultaneously providing a view of a selected field and for projecting into the field a virtual image of a rangefinding or framing reticle.

3,719,423

#### METHOD OF DETERMINING THE PRESENCE OF STIMULATED EMISSION OR OF MEASURING THE NET GAIN IN MATERIALS FOR LASERS

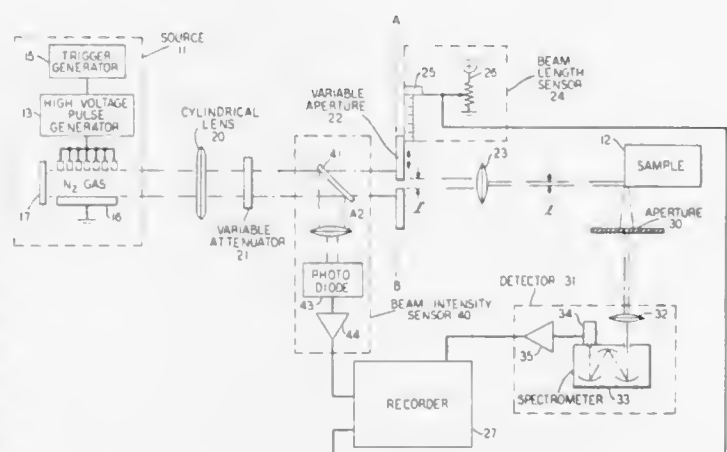
Robert Francis Leheny, Little Silver, and Kerry Lee Shaklee, Sea Bright, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 3, 1971, Ser. No. 112,237

Int. Cl. G01n 21/00

U.S. Cl. 356-36

8 Claims



A method of determining the presence of stimulated emission or of measuring the net gain in materials, typically solid materials for lasers, is disclosed. Basically, the technique involves pumping the material to be tested with a beam of radiation to excite a volume therein of variable length,  $l$ , and comparing the luminescent output emitted along the length,  $l$ , and from an edge of the excited volume, for various values of  $l$ . If

the output varies approximately as an increasing exponential function of the length, an excess of gain over loss is being obtained. A net gain calculation for the material is then straightforward.

3,719,424

#### RADIANT ENERGY SENSOR

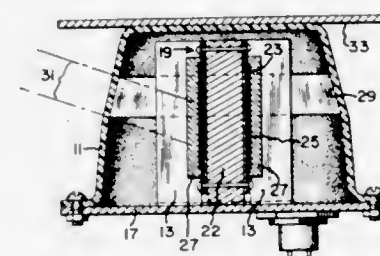
Richard C. Weischedel, Camillus, N.Y., assignor to General Electric Company

Filed Dec. 28, 1970, Ser. No. 101,865

Int. Cl. G01b 11/26

U.S. Cl. 356-141

7 Claims



A radiant energy sensor for determining light source location, more particularly for determining the angle of elevation of a nuclear burst by measuring the angular inclination of the line of sight to the center of light output resulting from the burst. This is accomplished by provision of a pair of radiant energy sensor elements mounted in vertical arrayed relationship behind an aperture aligned with the upper of the two sensor elements, so that with different angles of elevation of the light source there occurs a differential change in the illuminated areas of the two sensor elements and a corresponding change in the ratio of their respective signal outputs, which may be measured to yield an indication of elevation angle. For coverage of the entire azimuth a plurality of such sensor pairs may be provided in circular array, with signal processing means being provided for selection or combination of those of the sensor outputs which are to be made determinative in the elevation angle measurement.

3,719,425

#### APPARATUS FOR MEASURING THE DIMENSION OF AN OBJECT

Ludwig Leitz and Willi Horn, Wetzlar, Germany, assignors to Ernst Leitz GmbH, Wetzlar, Germany

Filed May 15, 1970, Ser. No. 37,775

Claims priority, application Germany, May 20, 1969, P 19 25 587.9

Int. Cl. G01b 11/10

U.S. Cl. 356-159

2 Claims



A method of measuring the dimension of an object, for example the diameter of spinning fibres, comprises the steps of employing a Töpler optical arrangement and introducing the object into a beam of parallel light rays.

3,719,426

#### SUPERSONIC COMPRESSORS WITH CONICAL FLOW

Jean-Marie Eugene Friberg, Bourge-la-Reine, and Jean-Marie Merigoux, Palaiseau, both of France, assignors to Societe Alsacienne De Constructions Atomiques De Telecommunications Et D'Electronique "Alcatel", Paris, France

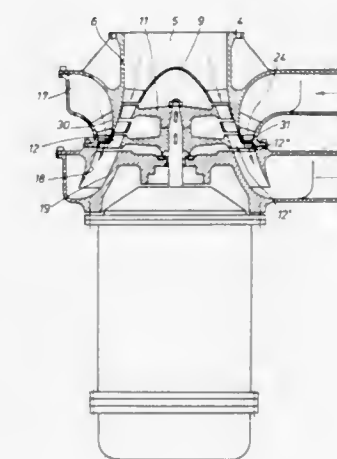
Filed Oct. 19, 1970, Ser. No. 82,026

Claims priority, application France, Oct. 17, 1969, 6935743

Int. Cl. F04d 31/00; F01d 1/02

U.S. Cl. 415-116

4 Claims



In an axial supersonic compressor with conical flow, compressing of two flows occurs together, only in that portion of their course in the mobile wheel where they are compatible in terms of pressure. The compressor thus makes it possible to subject two flows, which are compatible in terms of pressure, to two different compression ratios in one and the same compression stage, either upstream or downstream from this stage.

3,719,427

#### VARIABLE AREA NOZZLE FOR TURBINES OR COMPRESSORS

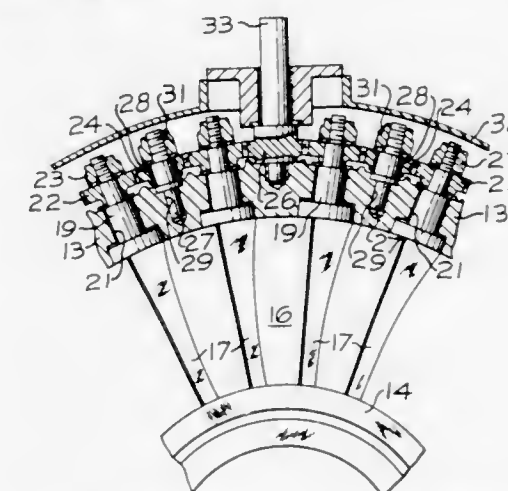
Warren W. Davis, Dunlap, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed March 22, 1971, Ser. No. 126,688

Int. Cl. F01b 25/02

U.S. Cl. 415-147

6 Claims



A variable area nozzle assembly arranged in an annular housing adjacent a rotor. In order to accurately position movable vanes in the nozzle while compensating for the effects of wear or heat distortion in the nozzle assembly, bevel



bears are secured to the vanes and intermediate bevel gears are arranged therebetween with springs axially urging the gears into positive engagement with each other.

3,719,428

**JET ENGINE FOR HYPERSONIC INTAKE VELOCITIES**  
Wilhelm Heinrich Dettmering, am Chorusberg 26, Aachen, Germany

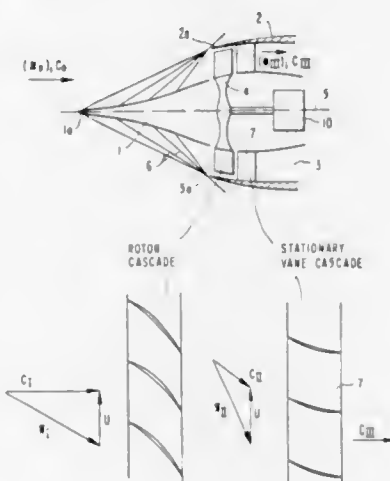
Filed March 13, 1970, Ser. No. 19,418

Claims priority, application Germany, March 14, 1969, P 19 13 028.0

Int. Cl. F01d 1/02; F02k 3/00

U.S. Cl. 415-181

14 Claims



A jet engine, which is suited for hypersonic intake velocities, has a rotating cascade in the intake duct for decelerating the hypersonic flow. The blade angles  $\beta_1, \beta_2$  of the rotating cascade, the circumferential speed  $U$  of the rotor and the deceleration  $\Delta w$  of the relative cascade flow are matched in accordance with  $\cos \beta_2 = (U \cdot \cos \beta_1) / (U - \Delta w \cdot \cos \beta_1)$ , to ensure an axial direction of the absolute flow at the rotor cascade exit. A stationary vane cascade can be arranged downstream of the rotor cascade, in the case of high blade camber, for further deceleration and axial straightening of the flow. The intake rotor can be coupled to an engine accessory power unit or to a compressor arranged downstream of the intake. Controllable flaps can be provided to route the gas jet leaving the engine combustion chamber either to a turbine arranged downstream for driving the compressor or directly to the engine outlet nozzle. The intake rotor can also be coupled to an acceleration cascade arranged downstream of the combustion chamber; the acceleration cascade can also be preceded by a stationary vane cascade.

3,719,429

**PUMP APPARATUS AND HOUSING THEREFOR**

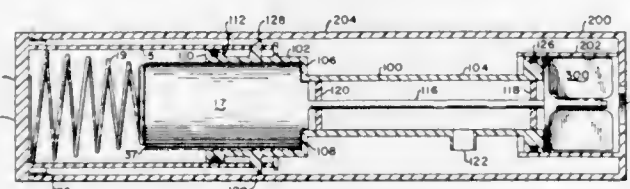
Clinton Rule, Beverly Farms, Mass., assignor to Rule Industries, Inc., Gloucester, Mass.

Filed Oct. 7, 1971, Ser. No. 187,344

Int. Cl. F01d 1/02; F04b 17/00, 35/04

U.S. Cl. 415-201

13 Claims



There is described an impeller pump assembly and particularly an impeller pump housing characterized by simple and rapid assembly and disassembly thereof.

3,719,430  
DIFFUSER

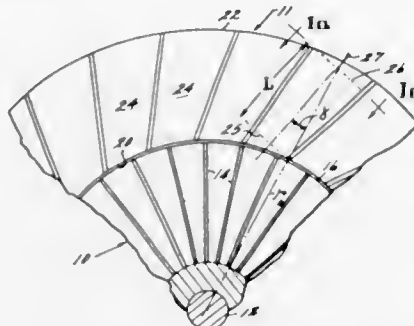
Lawrence William Blair, Boxford, and Alexander Connor Bryans, Reading, Mass., assignors to General Electric Company

Filed Aug. 24, 1971, Ser. No. 174,335

Int. Cl. F01d 1/02; F03d 1/04; F04d 29/40

U.S. Cl. 415-207

5 Claims



A diffuser annulus includes a plurality of passages there-through, wherein the passages gradually merge radially outward from a curvilinear cross-section to a rectilinear cross-section. The diffuser annulus may be optimized for maximum efficiency by varying the axially extending width of the passages at the outer periphery of the annulus independently of the diameter of the passages at the inner periphery of the annulus.

3,719,431  
BLADES

Thomas Steele, Littleover, George Oswald Eccles, Skipton, and Douglas Herbert Williamson, Derby, England, assignors to Rolls-Royce Limited, Derby, England

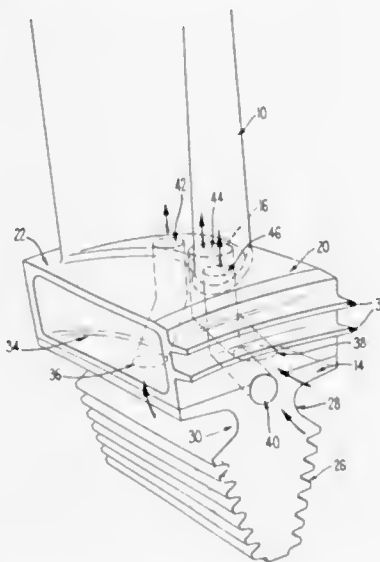
Filed Sept. 25, 1970, Ser. No. 75,545

Claims priority, application Great Britain, Sept. 26, 1969, 47,612/69

Int. Cl. F01d 5/18

U.S. Cl. 416-96

4 Claims



This device concerns a hollow gas turbine engine blade being provided with a solid metal blade stub, the joint between the hollow blade and stub being reinforced by providing a reinforcement collar which is attached to both the stub and the hollow blade.

3,719,432  
ARTICULATED SLEEVE FOR TURBINE  
BUCKET LASHING

Victor S. Musick, Scotia, and Bernard E. Fontaine, Burnt Hills, N.Y., assignors to General Electric Company

Filed Apr. 23, 1971, Ser. No. 136,884

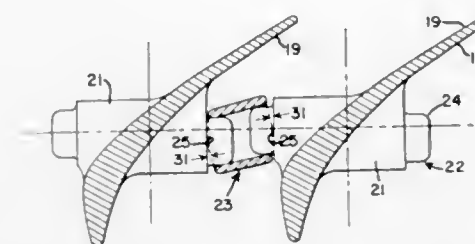
Int. Cl. F01d 5/22

U.S. Cl. 416-196

5 Claims

A blade lashing device for a turbine wheel having closely adjacent blades formed with a lug on each blade face.

A sleeve is interposed between lugs on opposing blade faces to connect turbine blades. The sleeve is formed



with clearances so that it will form an articulated joint between interconnected turbine blades.

3,719,433  
GETTER DEVICE

Elio Rabusin, Milan, Italy, assignor to S.A.E.S. Getters S.p.A., Milan, Italy

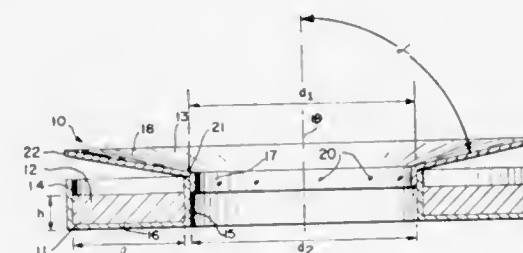
Filed April 14, 1971, Ser. No. 133,992

Claims priority, application Italy, Apr. 21, 1970, 86251/70; Apr. 21, 1970, 28834/70

Int. Cl. F04b 37/02

U.S. Cl. 417-48

22 Claims



A getter device comprising an annular ring having (1) an outer wall, (2) an inner wall, and (3) a bottom wall joining the outer wall with the inner wall; a getter metal vapor releasing material in the annular ring; and a deflector for the getter metal vapor. Certain embodiments provide for a separate deflector; other embodiments provide for a gas releasing material admixed with the getter metal vapor releasing material.

3,719,434

**ROTARY EJECTOR COMPRESSOR**

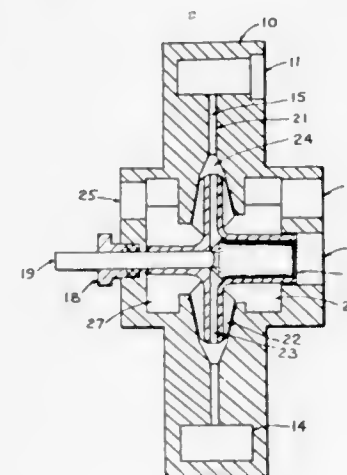
Michael Eskeli, 2932 Sandage Avenue, Fort Worth, Tex.

Filed March 30, 1971, Ser. No. 129,407

Int. Cl. F04b 23/04; F04f 5/00

U.S. Cl. 417-78

6 Claims



Method and apparatus for a compressor for compressing air, gases and vapors approximately isothermally by using a liquid stream to entrain and compress the gas, with the liquid

being accelerated by an impeller, inner passage, and the gas initially being accelerated by vanes placed on the outside of the same impeller; the two streams are brought together and compressed by using the kinetic energy contained in the liquid stream. Further, the compressor can advantageously be used to compress vapors where the gas stream is condensed fully or in part by the liquid stream thereby decreasing the specific volume of the total fluid stream during compression, and improving the efficiency of the compression.

3,719,435

**SAFETY MEANS FOR A DIFFERENTIAL PRESSURE  
VALVE ASSOCIATED WITH A FUEL INJECTION  
APPARATUS**

Franz Eheim, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

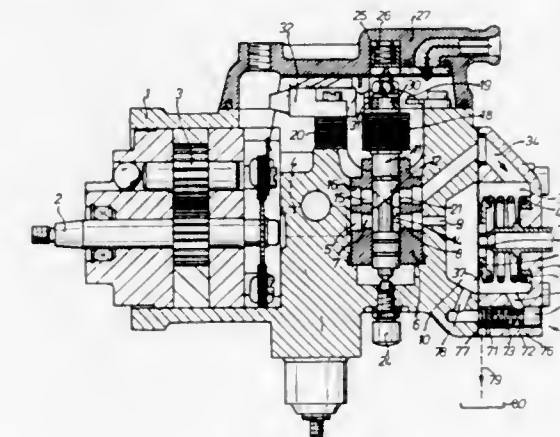
Filed Nov. 3, 1971, Ser. No. 195,151

Claims priority, application Germany, Nov. 7, 1970, P 20 54 910.4

Int. Cl. F04b 49/08

U.S. Cl. 417-307

6 Claims



In order to protect against excessive loads the membrane of a differential pressure valve associated with a fuel metering valve of a fuel injection apparatus, there is provided a second differential pressure valve which is connected parallel with the first-named differential pressure valve and which opens to discharge pressurized fluid therefrom when the differential pressure in the first-named valve exceeds a safe magnitude.

3,719,436

**AXIAL FLOW PUMP**

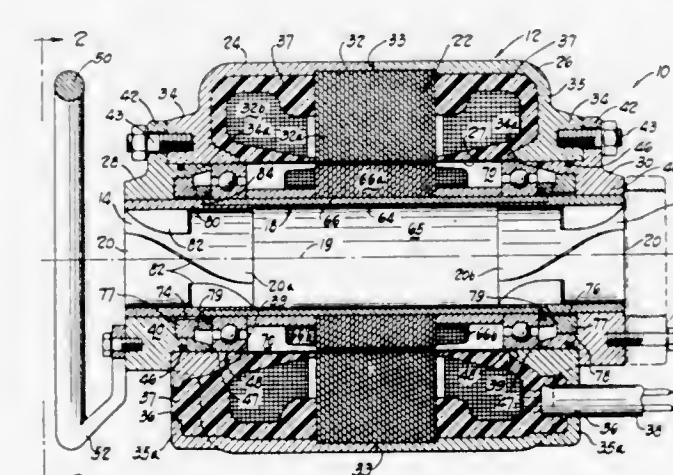
Stanley B. McFarlin, Jeromesville, Ohio, assignor to The Gorman-Rupp Company, Cleveland, Ohio

Filed Sept. 22, 1970, Ser. No. 74,398

Int. Cl. F04b 35/04

U.S. Cl. 417-356

16 Claims



An axial flow pump includes a housing supporting a tubular, electric motor driven pump body for rotation about an axis, and a plurality of impeller units detachably supported within



the tubular pump body. The impeller units are constructed to provide a substantially unobstructed axial pumping passage through the pump body and are removable from the pump body without requiring disassembly of the pump body or the housing.

3,719,437

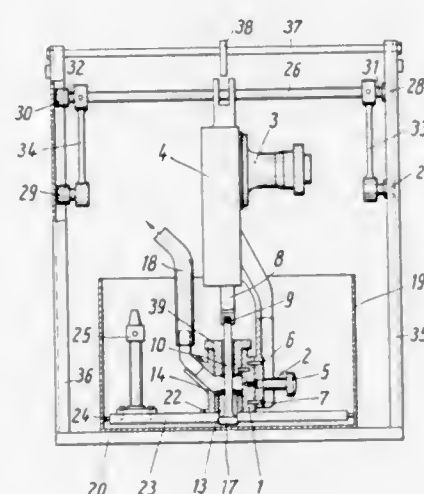
**PISTON PUMP FOR DELIVERING VISCOUS PASTES**  
Siegfried Schuhmann, and Hans Alix, both of Offenbach A.M., Germany, assignors to Roland Offsetmaschinenfabrik Faber & Schleicher AG, Offenbach am Main, Germany  
Filed Nov. 9, 1970, Ser. No. 87,866

Claims priority, application Germany, Nov. 15, 1969, P 19 57 559.8

Int. Cl. F04b 17/09, 21/00, 39/10

U.S. Cl. 417—360

6 Claims



A piston pump for delivering viscous fluids such as ink paste has an outlet valve in the form of a disc surrounding the pump piston rod and closing one end of the pump cylinder, the other end of the cylinder being open to form an inlet port when the piston projects beyond it at the end of the suction stroke. The outlet valve is closed by friction with the piston rod by a spring on the suction stroke and is opened by the pressure of fluid drawn into the cylinder on the working stroke. The valve and piston are quickly detachable from a drive mechanism comprising a motor and gearing which are suspended from a mounting movable vertically above a fluid container in which the pump is housed when working. The pump carries at its suction end a pressure plate which is a close sliding fit within the container wall or walls. Two or more pumps may be mounted on the same pressure plate.

## ERRATUM

For Class 417—180 see:  
Patent No. 3,719,524

3,719,438

## ROTATING PISTON ENGINE

William C. Howard, P.O. Box 638, Olden, Tex. 76466

Filed Nov. 30, 1970, Ser. No. 93,745

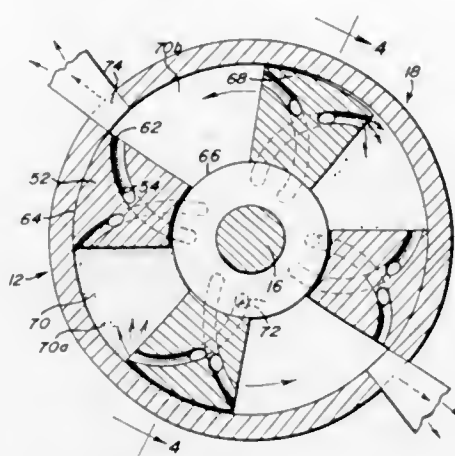
Int. Cl. F01c 9/00

U.S. Cl. 418—36

6 Claims

Heated gas is compressed and expanded in the working chambers formed between piston rotors which oscillate relative to each other while rotating about a drive axis. The gas is conducted into each chamber through the pis-

ton vanes and exhausted through radially outer ports in the housing. Movement of the piston rotors is synchro-



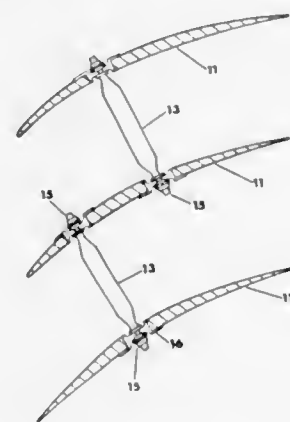
**3,719,439**  
**BLADED ROTOR FOR A GAS TURBINE ENGINE**  
Lindsay Grahame Dawson, Castle Donington, James Alexander Petrie, Littleover, and Kenneth Edward George Bracey, Findern, England, assignors to Rolls-Royce Limited, Derby, England  
Filed Apr. 6, 1971, Ser. No. 131,698

Claims priority, application Great Britain, Apr. 10, 1970, 17,154/70

Int. Cl. F01d 5/24

U.S. Cl. 416—196

5 Claims



A bladed rotor for a gas turbine engine has a row of blades, each blade having two part spherically faced depressions on opposite faces and holes through the blade thickness which lead into the depressions. Tie members extend between adjacent blades, the ends of the tie members passing through the holes and being retained by part spherically face nuts which engage in the part spherical depressions. The tie members are thus allowed to move relative to the blades and to take up the natural position without stressing the blade unduly.

## ERRATUM

For Class 418—36 see:  
Patent No. 3,719,438

3,719,440

## AIR OPERATED TOOL

Philip A. Snider, Hicksville, Ohio, assignor to Dotco, Inc., Hicksville, Ohio

Filed April 16, 1971, Ser. No. 134,588

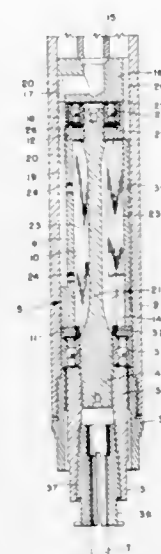
Int. Cl. F04c 1/00; F03b 13/04; B23q 5/00

U.S. Cl. 418—266

8 Claims

An air operated tool having a rotary air motor of which the tool holding rotor is supported for high speed accurate rota-

tion by preloaded ball bearings adjacent the ends of the rotor. The tool herein is characterized in that a Belleville spring is employed to eliminate axial play of the rotor and to preload the ball bearings to desired precise extent.



device, guide means, after-treatment devices (stretching, heating, etc.) and winding devices.

3,719,441

## APPARATUS FOR MOLDING ARTICLES

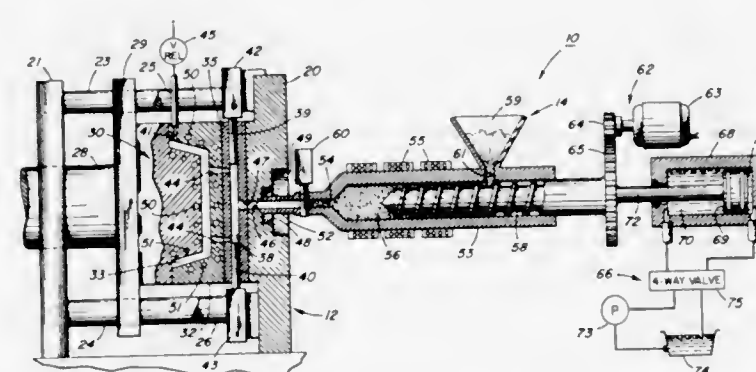
Albert Spaak, Little Falls, and Clifford L. Weir, Wayne, both of N.J., assignors to Allied Chemical Corporation, Morristown, N.J.

Division of Ser. No. 811,271, Feb. 19, 1969, abandoned, Continuation-in-part of Ser. No. 679,387, Oct. 31, 1967, abandoned. This application June 22, 1970, Ser. No. 59,816

Int. Cl. B29d 27/04

U.S. Cl. 425—4

10 Claims



This disclosure is directed to a method of for injection molding. Premature foaming and setting of foamable molding materials is prevented by accomplishing the injection of the molding material into a preheated mold cavity having a gaseous substance therein at a pressure in excess of that required to prevent foaming of the molding material. Planned wastage of molding material is minimized by providing pistons in the runners which carry the molding materials to the mold, which pistons force excess molding material away from the mold so as to recompress and recover the material, thereby to be used in the next subsequent molding cycle.

3,719,442

## SIMULTANEOUS PRODUCTION OF PLURALITY OF FILAMENT WINDING PACKAGES

Heinz Schippers, Friedhelm Hensen, and Erich Lenk, all of Remscheid-11, Germany, assignors to Barmag Barmer Maschinentabrik Aktiengesellschaft, Wuppertal, Germany

Filed Nov. 23, 1970, Ser. No. 91,850

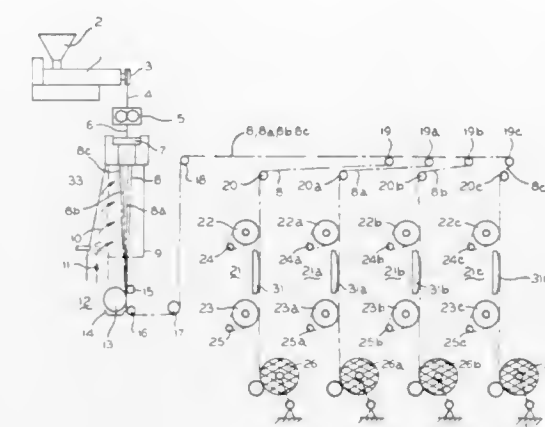
Claims priority, application Germany, Nov. 25, 1969, P 19 59 034.2

Int. Cl. D01d 5/00

U.S. Cl. 425—66

8 Claims

Simultaneous production of a large number of winding packages of filaments of flat, round or profiled cross section



3,719,443

## APPARATUS FOR MANUFACTURING RUBBER WASHER ELEMENTS

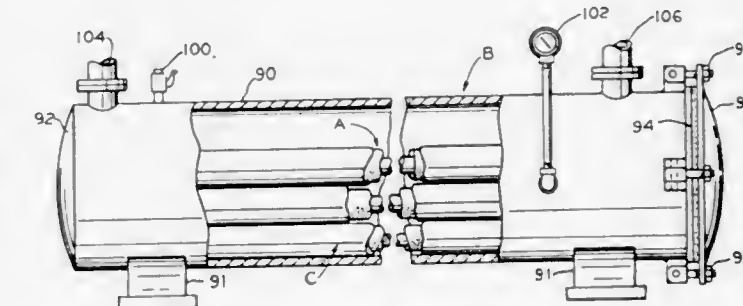
Harold E. Hall, Middlefield, Ohio, assignor to Stalwart Rubber Company, Bedford, Ohio

Filed Sept. 25, 1970, Ser. No. 75,452

Int. Cl. B29h 3/00

U.S. Cl. 425—352

7 Claims



A method and apparatus for manufacturing annular shaped rubber washer elements wherein an uncured elongated annular rubber blank is placed between a pair of coaxial mandrels which define an open-ended annular chamber having cross-sectional dimensions equal to those desired in the finished washer elements. Piston means disposed at each end of the chamber for coaxial movement into and out of the chamber apply pressure against the end portions of the blank in order to longitudinally compress and radially expand the blank into the final desired dimensional configuration while it is being cured. Following curing, the elongated element is cut transversely to its longitudinal axis in desired widths to form washer elements.

3,719,444

## EXTRUSION GUIDER

George N. Benjamin, III, and Clarence M. Pence, both of Marion, Ind., assignors to Anaconda Wire and Cable Company

Filed March 8, 1971, Ser. No. 121,643

Int. Cl. B29c 27/14

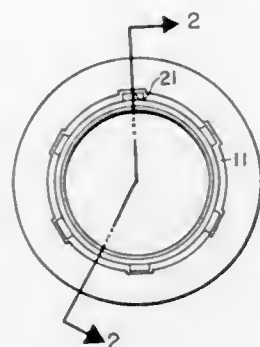
U.S. Cl. 425—114

2 Claims

For extruding cable jackets with embedded strands the core



guider comprises replaceable inserts. To select a desired depth



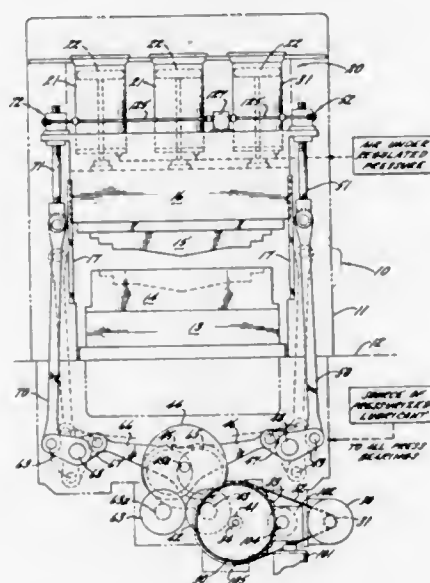
of strand in the jacket, each insert has a tapered tubular extension with a different edge thickness.

### 3,719,445 USE OF METAL WORKING PRESS FOR PLASTIC COMPRESSION MOLDING

William E. Sindelar, Westmont, Ill., assignor to Danly Machine Corporation, Chicago, Ill.  
Filed May 10, 1971, Ser. No. 141,753  
Int. Cl. B29h 5/24

U.S. Cl. 425—150

6 Claims



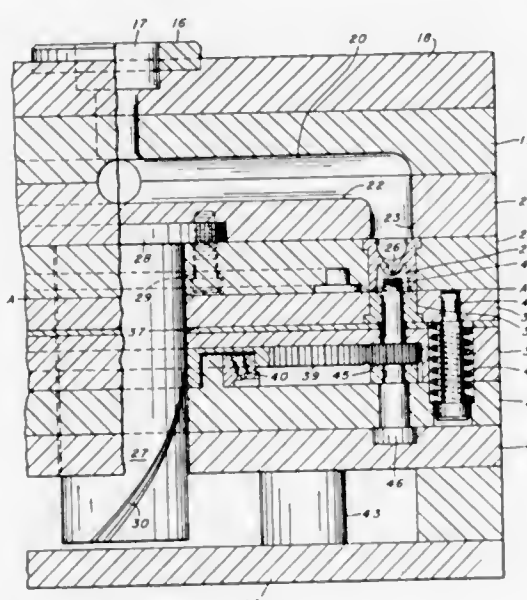
A press utilizing the press structure and controls of a metal working press but which is adapted for compression molding of large plastic parts on a production basis. Means are provided for driving the press slide slowly into bottom dead center (to be referred to herein as "dead center") position following rapid descent, for developing a high molding force, which may be substantially greater than the nominal rating of the press, and for sustaining that force during a curing interval. Pressure is reduced to a lower level to permit reestablishment of lubrication at the press bearings prior to moving the slide out of its dead center position for completion of the cycle. The hydraulic overload release device conventionally used is especially controlled to enable development of high molding pressure. In one embodiment molding pressure is developed by slow movement of the slide into its dead center position. In another embodiment the overload device is depressurized so that final movement of the slide into dead center occurs with only light loading, following which the requisite pressure is developed by pumping up the hydraulic overload release with the slide stationary. In both cases means are provided for bleeding fluid from the overload release mechanism to release the pressure on the slide before the slide begins to move out of dead center.

### 3,719,446 MOLD ASSEMBLY FOR PRODUCING THREADED ARTICLES WITH UNSCREWING MEANS INTEGRAL WITH THE ASSEMBLY

Bruce T. Cleavelly, Allegheny, Pa., assignor to Wheeling Stamping Company, Wheeling, Ohio  
Filed Dec. 22, 1970, Ser. No. 100,621  
Int. Cl. B29f 1/14

U.S. Cl. 425—249

14 Claims



A mold assembly is detailed for use with a molding apparatus, for rapidly producing threaded articles. The mold assembly has unscrewing means integral with the assembly to effect unscrewing of the threaded article from the mold simultaneous with opening of the mold.

### 3,719,447 GAS FUELED LIGHTERS

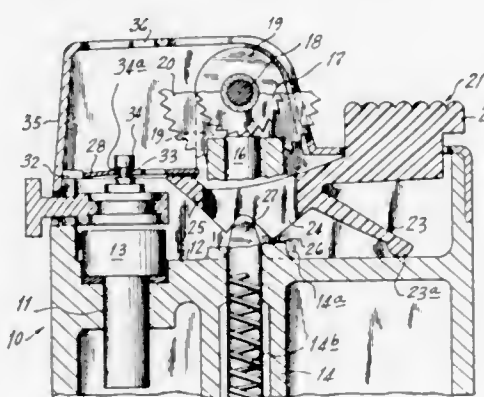
Peter Martin Robert Dessoy, Thornton Heath, England, assignor to Ronson Corporation, Woodbridge, N.J.  
Filed April 1, 1971, Ser. No. 130,306

Claims priority, application Great Britain, April 1, 1970, 15,537/70

Int. Cl. F23q 2/16

U.S. Cl. 431—254

6 Claims



A gas fueled cigarette lighter having a burner valve therein which is normally closed. The burner valve is opened to allow fuel vapors to pass therethrough by a removable plate pivotally attached to the burner valve in which the plate is actuated by a fingerpiece. The fingerpiece is fixed to the lighter casing and is pivotally mounted with respect to a ridge on the lighter which forms fulcrum. The plate has an enlarged opening therein which allows the plate to be positioned over the mouth of the burner valve and a narrow slot therein into which the neck of the burner valve is slid to prevent the removal of the plate from the burner valve.

## CHEMICAL

### 3,719,448 ORGANO-PHOSPHORUS COMPOUNDS CONTAINING PERFLUOROALKYL RADICALS AND THEIR APPLICATION TO CELLULOSIC TEXTILES

Leon H. Chance, and Jerry P. Moreau, both of New Orleans, La., assignors to The United States of America as represented by the Secretary of Agriculture  
Division of Ser. No. 843,200, July 18, 1969, Pat. No. 3,639,144. This application June 9, 1971, Ser. No. 151,556

Int. Cl. C07f 9/56, 9/40; D06m 13/28

U.S. Cl. 8—116 P

3 Claims

Perfluoroalkyl iodide monomer and telomer ester adducts of diethyl vinylphosphonate were prepared by free radical addition. Iodine of these adducts was replaced by hydrogen, and derivatives of the reduced phosphonate adducts were prepared, which include phosphonic acids, acid chlorides, and aziridinyl phosphine oxides. The aziridinyl phosphine oxides are used to impart oil and water repellency to cellulosic textiles. The other derivatives are useful as chemical intermediates as well as potential forming agents.

### 3,719,449 CROSSLINKED HETEROCYCLIC CELLULOSIC PRODUCTS

Jett C. Arthur, Jr., Metairie, La., Sujun Singh, Varanasi, India, and Ricardo H. Wade, New Orleans, La., assignors to the United States of America as represented by the Secretary of Agriculture  
No Drawing. Filed Apr. 27, 1972, Ser. No. 248,181

Int. Cl. D06m 13/20, 13/22, 13/34

U.S. Cl. 8—120

7 Claims

Fibrous cellulosic material is reacted with solutions containing a halo-substituted heterocyclic (furan and thiophene) acid chloride and 1,3-bis(4-pyridyl) propane. Cross-linking is effected by reaction between the cellulose halo-ester groups formed and the propane.

### 3,719,450 STABILIZING WOVEN FABRICS

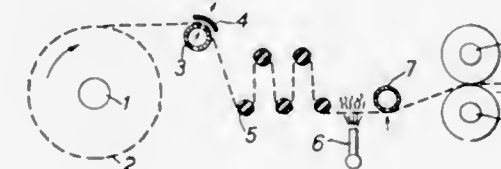
John Charles Burley, Brighton, England, assignor to Myron Ackerman, Acton near Nantwich, England  
Filed Aug. 6, 1971, Ser. No. 169,740

Claims priority, application Great Britain, Aug. 20, 1970, 40,131/70; June 17, 1971, 28451/71

Int. Cl. F26b 13/10

U.S. Cl. 8—149.2

3 Claims



Woven fabrics are stabilized by causing hot compressed air to pass at high velocity through a transverse region of a travelling or intermittently moving web of fabric for the purpose of generating static electricity in the fibers of the fabric. Subsequently the electrostatic charges are removed by moisturizing the fabric which is then dried.

### 3,719,451 PRODUCTION OF COPPER OXIDES AND ZINC OXIDE

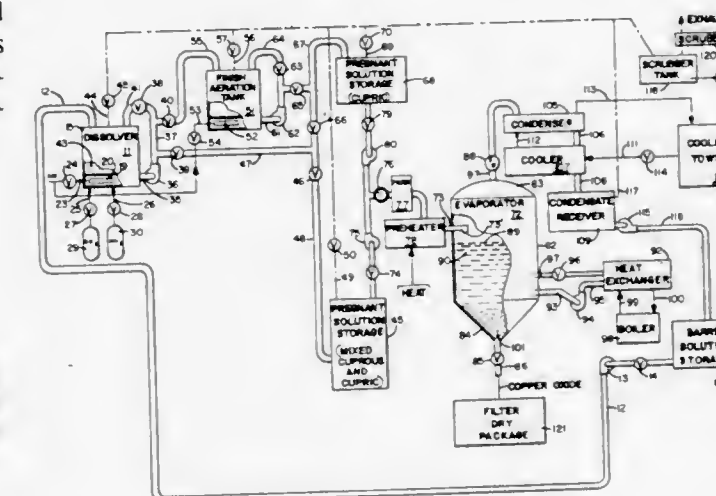
Zane L. Burke, 28 Bakersfield St., Cayucos, Calif. 93430

Original application Mar. 12, 1969, Ser. No. 806,386. Divided and this application Jan. 21, 1971, Ser. No. 108,338

Int. Cl. C01g 3/02, 9/02; C22b 19/00

U.S. Cl. 423—604

21 Claims



A hydrometallurgical system for producing copper or zinc oxide. A closed evaporator tank partially is filled with mild ammonia hydroxide maintained between 214° F. and 218° F. by recirculation through a heat exchanger external to the evaporator. A pressure of between 5 and 10 p.s.i. is maintained in the evaporator. When a metal-rich ammonia carbonate solution formed by leaching copper or zinc in an oxygenated dissolver tank is supplied to the ammonia hydroxide, a rapid reaction takes place, causing precipitation of the desired oxide and evaporation of NH<sub>3</sub>, CO<sub>2</sub> and water. The precipitated oxides may be removed either continuously or in batches from the evaporator. The evaporated gases are condensed and reused in the leach solution. Efficient oxygenation in the dissolver is achieved using a novel aerator comprising a hollow carbon rod.

### 3,719,452 CARBONACEOUS MATERIAL AND METHOD OF PREPARATION

Oliver E. Accountius, Tarzana, Calif., assignor to North American Rockwell Corporation

Continuation of Ser. No. 429,315, Aug. 1, 1965, abandoned.

This application Dec. 1, 1969, Ser. No. 881,293

Int. Cl. C01b 31/02, 31/04, 31/36

U.S. Cl. 23—209.2

6 Claims

A relatively pure carbonaceous material formed by compacting polyphenylene and pyrolyzing the compacted matter. The polyphenylene can be mixed with filler material to produce heterogeneous carbonaceous structures. If the filler is silicon in a stoichiometric ratio to the carbon, silicon carbide is produced by the pyrolyzation.



3,719,453

**DETECTION OF REDUCING CONDITIONS IN A FORMATION AS IN OIL PROSPECTING**

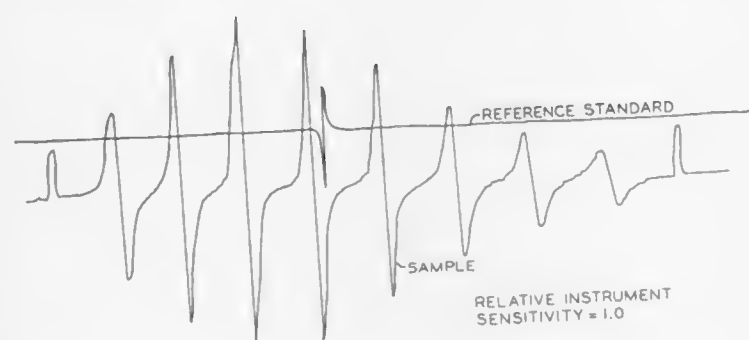
John G. Erdman, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Nov. 25, 1970, Ser. No. 92,697

Int. Cl. G01n 27/78, 33/24

U.S. Cl. 23—230 EP

6 Claims



Reducing conditions in a formation, as in a location in which petroleum forming conditions and/or petroleum may exist, are determined by introducing into the formation or into a sample thereof a substance such as a transition metal salt solution, e.g., a +5 vanadate ion, allowing reducing conditions which may exist to reduce the selected ion, e.g., +5 vanadate, to a lower valence state, e.g., to +4 vanadyl ion, and then testing for the lower valence state ion in the formation or in the sample as by an electron spin resonance method. Crude oil bearing strata or rock or the oil itself act to reduce the ion due to the presence of quite strongly reducing organic matter which acts to convert the valence state. An additive or catalyst can be added to enhance the apparent reduction of the ion used, e.g., an organic base, for example, pyridine.

3,719,454

**LASER CONTROLLED CHEMICAL REACTOR**

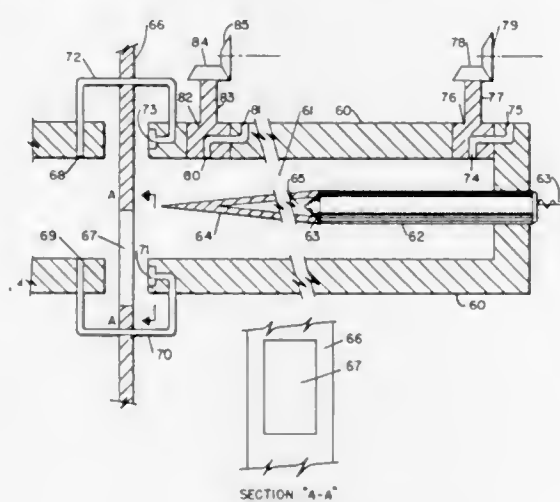
Jer-Yu Shang, Wilmington, Del., assignor to Sun Oil Company, Philadelphia, Pa.

Filed Jan. 19, 1970, Ser. No. 3,966

Int. Cl. H01s 3/00; B01j 1/10

U.S. Cl. 23—252 R

3 Claims



The invention involves a combination of a chemical reactor vessel and a laser cavity, said vessel having means for introducing a chemical reactant into said vessel, means for removing a reaction product from said vessel and means for recovering said reaction product in sufficiently pure form as to be a commercially valuable product, said vessel having a highly reflective interior surface and said laser cavity being coupled to said reactor whereby to enable the irradiation of said laser cavity by electromagnetic energy reflected from said surface and produced by a chemical reaction occurring within said vessel.

**MIXER-SETTLER EXTRACTOR**

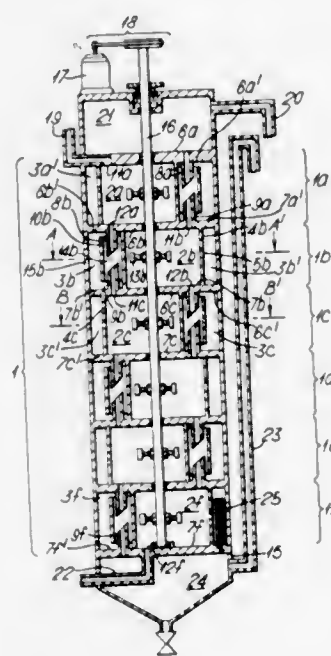
Tadao Ohono, Suita, Chiaki Shimizu, Takarazuka, and Junichi Iwatani, Amagasaki, Japan, assignors to Shinogi &amp; Co., Ltd., Osaka, Japan

Filed June 30, 1971, Ser. No. 158,228

Int. Cl. B01d 11/04

U.S. Cl. 23—270.5

10 Claims



Extracting operation between two or more liquids mutually miscible only incompletely is much facilitated by employing an apparatus composed of a plurality of superimposed unit stages, any given one of which is equally divided into a cylindrical mixing compartment which is vertically stacked with mixing compartments of the remainder of the unit stages in a staggered relationship and provided with a means of agitation and an annular cylindrical settling compartment eccentrically surrounding the mixing compartment by a vertical partition having a port which provides the communication between the two compartments in the same stage, in vertical alignment which constitutes a generally cylindrical column. Said eccentric shape of the annular settling compartments affords an improved flow of liquid within the compartments and said staggered disposition of the compartments permits the provision, within the settling compartments, of projecting downtake and suction pipes connected to ports which open at the mixing compartments which allow the direct and smooth introduction of liquids from the settling compartments of the unit stages immediately above and below that given stage into the mixing compartment of that stage.

3,719,456

**REACTION CHAMBER HEATED DEVICE FOR OXYGEN GENERATION**

James D. Bode, Southfield, Mich., assignor to The Bendix Corporation

Filed Mar. 19, 1971, Ser. No. 125,977

Int. Cl. B01j 7/00; C01b 13/02

U.S. Cl. 23—281

10 Claims

An apparatus for heating barium oxide to a reaction temperature with air to form barium peroxide. The apparatus has a housing with an air inlet passage which partially surrounds and is connected to an internal chamber. Centrally located in the internal chamber are hollow plate members interlocked by a series of frictional abutting slots to form rectangular columns. Inside of the hollow plate members between the slots a plurality

3,719,458

**FUEL COMPOSITION**

Raymond Cadorette, and George W. Eckert, both of Wappingers Falls, N.Y., assignors to Texaco, Inc., New York, N.Y.

Filed April 27, 1971, Ser. No. 137,981

Int. Cl. C10 1/22

U.S. Cl. 44—72

7 Claims

Hydrocarbon fuel composition in the gasoline and kerosene boiling ranges having bactericidal properties containing from about 0.001 to 0.005 weight percent of an N-alkyl-substituted-1,3-propanediamine having the formula:



in which R is an alkyl radical having from one to four carbon atoms and R' is hydrogen or an alkyl radical having from one to four carbon atoms.

3,719,459

**END MILL GRINDER**

John Robert Southland, Arcadia, Calif., assignor to Omark Industries, Inc., Portland, Ore.

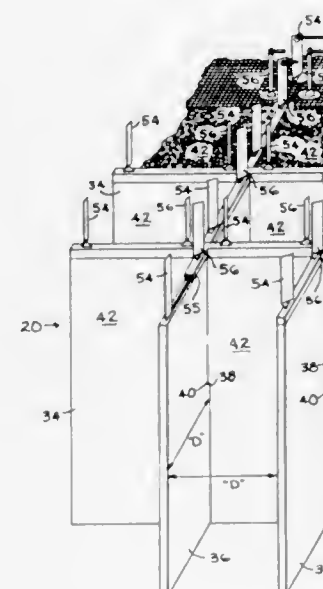
Continuation of Ser. No. 717,119, March 29, 1968,

abandoned. This application May 6, 1971, Ser. No. 140,972

Int. Cl. B24b 7/00, 9/00, 3/06

U.S. Cl. 51—96

21 Claims



energy is transferred through the columns to barium oxide crystals retained in the columns by mesh. As the temperature of the barium oxide crystals increases, air flow through the inlet passage and the columns forms barium peroxide while the unreacted gas and nitrogen flow through an outlet passage into the environment.

3,719,457

**CATALYTIC CONVERTER STRUCTURE**

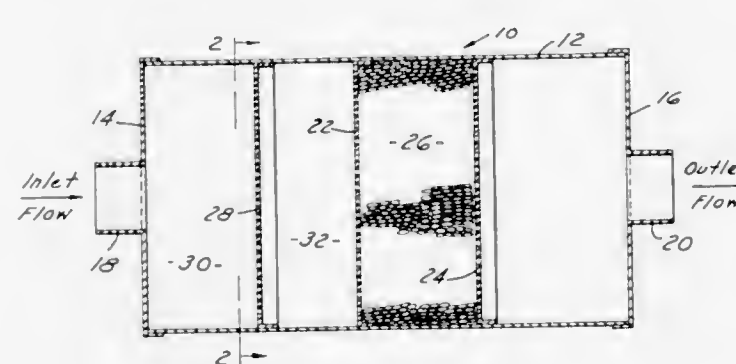
Brian H. Nagamatsu, Plymouth, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed April 26, 1971, Ser. No. 137,349

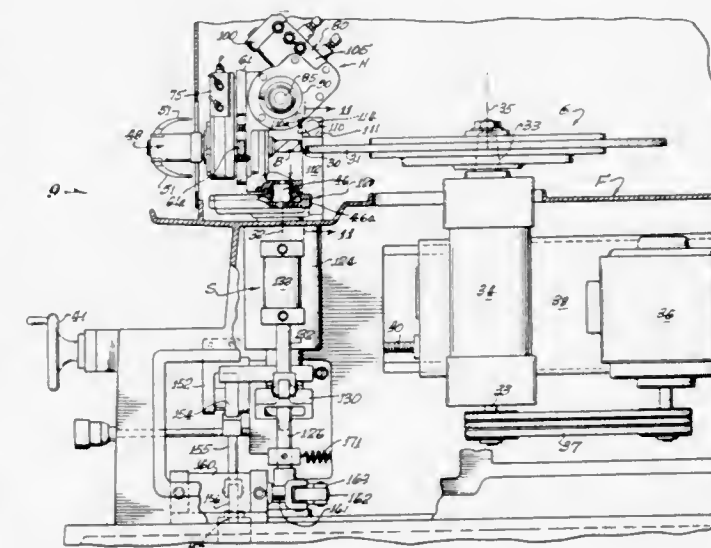
Int. Cl. F01n 3/14; B01j 9/04

U.S. Cl. 23—288 F

2 Claims



A catalytic converter for engine exhaust gas purification is described. The catalytic converter includes a housing having an inlet and an outlet. Upstream and downstream particulate catalytic material retention baffles are located between the inlet and outlet. Positioned in the flow channel between the inlet and outlet, the upstream catalytic retention baffle is a flow-control baffle having a plurality of substantially uniformly spaced openings therein, the openings being present over substantially the entire surface area of the baffle. Attrition of the particulate catalytic material is reduced.



A production type machine is designed to grind end mills at a high rate while maintaining rigid standards of accuracy of dimension. Adjustments are quickly and easily made for different profiles of the ground face, the number of flutes on the mill, the size of the end mill, and so on. Operation of the apparatus is fully automatic once the grind cycle is started, after necessary adjustments are made, as only the loading and unloading operations are manually performed.

3,719,460

**PAINT TOUCH-UP CAPSULE**

Edwin Brockman, 31 Joseph Drive,

Tonawanda, N.Y. 14242

Filed May 19, 1971, Ser. No. 144,881

Int. Cl. B24d 15/04

U.S. Cl. 51—181

8 Claims

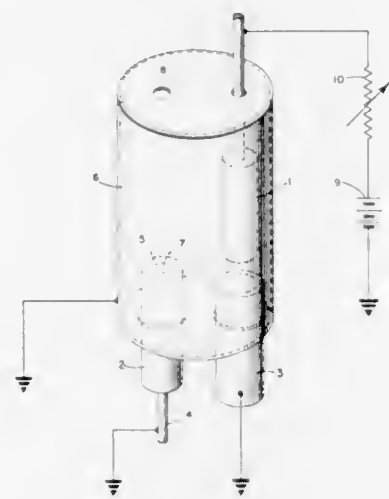
A touch-up capsule comprising a narrow cylindrical wall and a pair of spaced radial walls connected at their marginal edges to the cylindrical wall to form a container for a coating composition. The radial walls are collapsible under pressure to eject the container contents outwardly through a spout formed integral with the





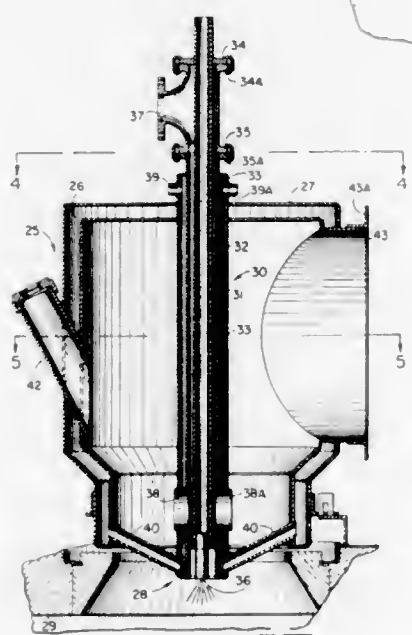


**3,719,470**  
**PROCESS AND DEVICE FOR THE FABRICATION OF ALLOYS**  
 Emile Vanderschueren, Petten, Netherlands, assignor to European Atomic Energy Community (Euratom), Kirchberg, Luxembourg  
 Filed Apr. 24, 1970, Ser. No. 31,719  
 Claims priority, application Luxembourg, Apr. 29, 1969, 58,530  
 Int. Cl. C22b 9/14; C21c 7/10; C22c 1/00  
 U.S. Cl. 75—65 2 Claims



A process for making alloys is disclosed wherein the alloying is carried out in a vacuum of at least  $10^{-4}$  torr. One of the substituents is in ionized vapor form and is deposited upon a vertically placed substrate containing the rest of the alloy ingredients. The substrate is kept at a temperature equal to the melting point of the desired alloy which falls by gravity into a container.

**3,719,471**  
**ANTI-POLLUTION BURNER SYSTEM**  
 William D. Jones, Point Pleasant, N.J., assignor to American Metal Climax, Inc., New York, N.Y.  
 Filed Jan. 23, 1970, Ser. No. 5,250  
 Int. Cl. C22b 9/00, 15/14; C21b 3/04  
 U.S. Cl. 75—65 1 Claim



A system is provided for recovering copper from insulated copper scrap containing electrical insulation of

the type comprising plastic, rubber and the like which, upon being thermally decomposed and partially combusted, forms a waste gas which may pollute the atmosphere. The scrap is thermally treated in a cupola to form blister copper and the thermally decomposed insulation is separated as a waste gas and passed through an after burner where it is substantially completely combusted and the effluent gas therefrom then scrubbed and passed through an electrostatic precipitator following which it is vented to the atmosphere as relatively clean gas.

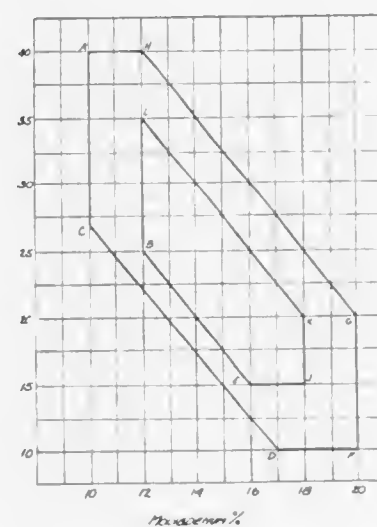
**3,719,472**  
**PROCESS FOR THE PURIFICATION OF BERYLLIUM METAL**  
 Frank Lerman, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.  
 Filed Nov. 17, 1970, Ser. No. 90,307  
 Int. Cl. C22b 35/00

U.S. Cl. 75—84 12 Claims  
 Beryllium metal is produced from impure beryllium or in situ reduced beryllium containing materials by solid phase separation from a molten mixture of beryllium-rich aluminum and/or silicon.

**3,719,473**  
**REMOVAL OF MERCURY FROM WATER USING NUT WASTES**  
 Anthony C. Weiss, Jr., Pinole, Judith A. Kuhnle, Alameda, and Mabry Eileen Wiley, El Cerrito, Calif., assignors to the United States of America as represented by the Secretary of Agriculture  
 Filed June 18, 1971, Ser. No. 154,369  
 Int. Cl. C22b 43/00

U.S. Cl. 75—121 13 Claims  
 Mercury is effectively removed from water by contact with a nut waste such as peanut skins, walnut expeller meal, peanut hulls, and the like.

**3,719,474**  
**ULTRA HARD IRON-COBALT-MOLYBDENUM-NICKEL ALLOYS**  
 Clarence George Bieber, Suffern, N.Y., and John Raymond Mihalisin, North Caldwell, N.J., assignors to The International Nickel Company, Inc., New York, N.Y.  
 Original application Sept. 7, 1966, Ser. No. 577,683, now Patent No. 3,485,620, dated Dec. 23, 1969. Divided and this application Nov. 6, 1969, Ser. No. 874,142  
 Int. Cl. C22c 39/00, 37/00  
 U.S. Cl. 75—123 8 Claims



Ferrous base alloys containing cobalt, molybdenum and nickel in correlated amounts afford exceptionally high levels of hardness, i.e., up to about Rockwell C ( $R_c$ ) 70. The presence of other constituents in controlled amounts, notably titanium and/or aluminum, is beneficial.

**3,719,475**  
**LOW CARBON FERROUS ALLOY CONTAINING CHROMIUM**  
 Louis Habraken, Cointe, Vincent Leroy, Liege, Marcel Meulemans, Brussels, and Florent Carleels, Aaigem, Belgium, assignors to Centre National de Recherches Metallurgiques, Brussels, and Centre d'Etude de l'Energie Nucleaire, Mol, Belgium  
 No Drawing. Filed Feb. 13, 1970, Ser. No. 11,344  
 Claims priority, application Luxembourg, Feb. 14, 1969, 58,006

Int. Cl. C22c 39/14 1 Claim  
 U.S. Cl. 75—126 D  
 The alloy contains Cr, 13 to 25%, Ti 2 to 7%, and optionally one or more of the following metals: Al 0 to 6%, V 2 to 7%, Si 2 to 7%, Mo 0 to 3%, rare earth metals 0 to 0.5% each. The balance is Fe with at most 0.005% C. The properties of the alloy are improved by solution heat-treatment followed by hot-working.

**3,719,476**  
**PRECIPITATION-HARDENABLE STAINLESS STEEL**  
 Harry Tanczyn, Baltimore, Md., assignor to Armco Steel Corporation, Middletown, Ohio  
 Filed Aug. 29, 1969, Ser. No. 854,253  
 Int. Cl. C22c 39/54

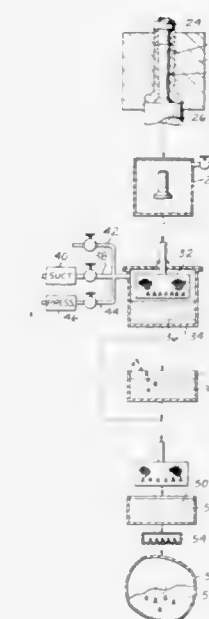
U.S. Cl. 75—125 5 Claims  
 Precipitation-hardenable stainless steel combining strength and corrosion-resistance and method of hardening the same. The steel contains the four essential ingredients chromium, cobalt, molybdenum and copper, with remainder iron, the chromium amounting to about 11 to 18 percent, the cobalt about 5 to 14 percent, the molybdenum about 1 to 9 percent, and the copper about 1 to 5 percent. Neither the carbon nor the nitrogen content should exceed about 0.15 percent. Where desired, tungsten and/or vanadium may be partially substituted for molybdenum, this in amounts up to about 6 percent. As annealed, the steel is martensitic. Hardening from the annealed condition is had by heating at descending or cascading precipitation temperatures, i.e., 1,000° to 1,300° F. and then 850° to 1,000° F. In precipitation-hardened condition it is suited to a wide variety of applications in the food-handling, petro-chemical and aircraft industries.

**3,719,477**  
**COPPER-LEAD ALLOYS**  
 Charles E. Lundin, Evergreen, and Robert Turkisher, Manitou Springs, both of Colo., assignors to Colorado Springs National Bank, Colorado Springs, Colo.  
 Continuation-in-part of Ser. No. 706,640, Feb. 19, 1968, Pat. No. 3,556,779. This application July 10, 1970, Ser. No. 53,953. The portion of the term of this patent subsequent to Jan. 19, 1988, has been disclaimed.  
 Int. Cl. C22c 9/48

U.S. Cl. 75—135 15 Claims  
 A method of making a copper-lead alloy having a fine and even dispersion of the phases and the alloy and its uses, wherein the method comprises adding an effective amount of a homogeneity promoter to a mixture of molten lead and copper. The promoter comprises elemental carbon and an alkali and/or alkaline earth metal compound capable of reacting to form a gas. The mechanism provided by the promoter is one of inoculation of a fine dispersion of the lead particles in a copper matrix. Examples of the metal compound are sodium carbonate and calcium carbonate. Uses for the alloy include bearings, lubricants and as an additive to petroleum and vegetable based lubricating compounds.

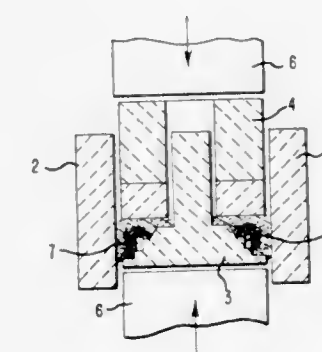
**3,719,478**  
**TIRE STUD HAVING POROUS IMPREGNATED BODY**  
 Rolf J. Cantz, Grove City, Pa., assignor to Kennametal Inc., Latrobe, Pa.  
 Filed Dec. 15, 1969, Ser. No. 885,127  
 Int. Cl. B60c 11/14

U.S. Cl. 75—208 R 3 Claims



The specification discloses a tire stud in which the body is formed of sintered metal powder and is about 60 per cent theoretical density. The pores in the stud body are impregnated with a plastic material.

**3,719,479**  
**METHOD OF FABRICATING RING SHAPES BY HOT PRESSING**  
 C. Erman Flanagan, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.  
 Filed Feb. 12, 1971, Ser. No. 114,900  
 Int. Cl. B22f 3/24 6 Claims



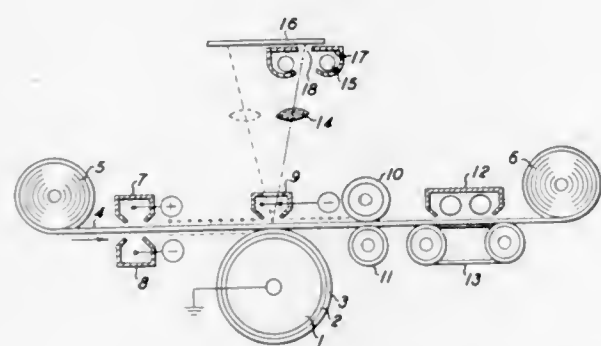
Refractory powders are hot pressed into ring shapes of approximately theoretical density by compressing the powders at a temperature of about 1,000° to 2,000°C. under a pressure of about 200 to 5,000 pounds per square inch in a mold cavity containing a metal ring. The ring is located within the cavity at the highest stress point in the ring shape created during the pressing, and during the hot-pressing the metal ring melt-diffuses into pressed refractory powder. The resulting ring shapes are strong and essentially stress free.



### 3,719,480 ELECTROPHOTOGRAPHIC COMPOSITIONS AND ELEMENTS

Thomas B. Brantly, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.  
No Drawing. Filed May 19, 1971, Ser. No. 145,015  
Int. Cl. G03g 5/06  
U.S. Cl. 96—1 PC 6 Claims  
Certain 5-benzylidenerhodanines are useful as photoconductors.

3,719,481  
ELECTROSTATOGRAPHIC IMAGING PROCESS  
Katsuo Makino, Odawara; Akira Yoshikawa, Meguro-ku, and Toshio Nagashima, Tokyo, all of Japan, assignors to Xerox Corporation, Stamford, Conn.  
Filed March 4, 1971, Ser. No. 121,052  
Claims priority, application Japan, March 7, 1970, 45/19027  
Int. Cl. G03g 13/22  
U.S. Cl. 96—1 R 13 Claims



An electrically insulating web is charged on a first side with an electrostatic charge of one polarity and charged on a second side with an electrostatic charge of a second polarity. The first side of the web is brought into contact with a photoconductive layer and the layer is then exposed to a light pattern. The second side of the web is subjected to ions having a polarity of charge opposite to the polarity of charge on the second side. The resulting electrostatic latent image formed on the second side of the web may be developed with electroscopic toner particles.

3,719,482  
IMAGING SYSTEM  
William L. Goffe, Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.  
Continuation-in-part of Ser. Nos. 837,780, June 30, 1969, and Ser. No. 460,377, June 1, 1965, and Ser. No. 483,675, Aug. 30, 1965, Pat. No. 3,656,990, and Ser. No. 695,074, Jan. 2, 1968, Pat. No. 3,542,545, said Ser. No. 837,780, is a continuation-in-part of Ser. No. 725,676, May 1, 1968, abandoned, and Ser. No. 460,377, June 1, 1965, Pat. No. 3,520,681, and Ser. No. 483,675, Aug. 30, 1965, Pat. No. 3,656,990, said Ser. No. 725,676, is a continuation-in-part of Ser. No. 460,377, June 1, 1965, Pat. No. 3,520,681, and Ser. No. 483,675, Aug. 30, 1965, Pat. No. 3,656,990, and Ser. No. 403,002, Oct. 12, 1964, abandoned, said Ser. No. 460,377, is a continuation-in-part of Ser. No. 403,002, Oct. 12, 1964, abandoned, said Ser. No. 483,675, is a continuation-in-part of Ser. No. 403,002, Oct. 12, 1964, abandoned, said Ser. No. 695,074, is a continuation-in-part of Ser. No. 520,434, Jan. 13, 1966, abandoned. This application Dec. 31, 1969, Ser. No. 889,457  
Int. Cl. G03g 13/22  
U.S. Cl. 96—1 R 29 Claims

An imaging system wherein an imaged migration imaging member, this member typically having a substrate, a softenable layer, and migration marking material with some of the marking material migrated toward the substrate or disrupted

in an image-wise configuration, is provided and the member is electrically charged to produce an electrostatic latent image on the member.

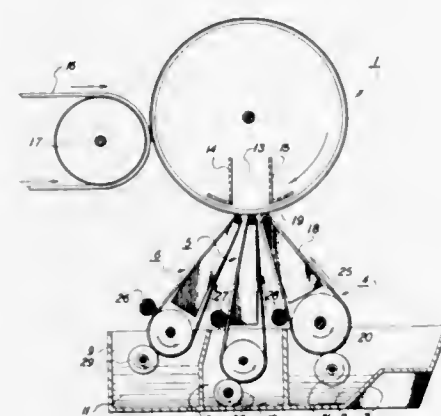
### 3,719,483 METHODS OF ORGANIZED THERMOPLASTIC XEROGRAPHY AND PHOTORECEPTOR STRUCTURE THEREFOR

Lloyd F. Bean, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.  
Continuation-in-part of Ser. No. 58,806, July 28, 1970, which is a continuation of Ser. No. 576,648, Sept. 1, 1966, abandoned. This application Sept. 18, 1970, Ser. No. 73,406  
Int. Cl. B41m 5/20; G03g 13/22  
U.S. Cl. 96—1.1 28 Claims

The present invention is directed to organized thermoplastic xerography techniques and more particularly to photoreceptor structure, methods of forming such photoreceptor structure and methods of using such photoreceptor structure to form viewable frost deformation patterns which are everywhere periodic on the surface of a thermoplastic layer. According to an embodiment of the present invention, photoreceptor structure which includes at least a photoconductive layer and an overcoated thermoplastic layer is provided in a manner such that an interface is formed therebetween. A periodic physical profile is established at the interface between such photoconductive and thermoplastic layers so that upon charging, selective exposure and development the thermoplastic layer is forced to deform in a regular periodic manner which is exposure related.

### 3,719,484 PHOTOELECTROPHORETIC IMAGING METHOD Raymond K. Egnaczak, Williamson, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 6, 1971, Ser. No. 104,333  
Int. Cl. G03g 13/22  
U.S. Cl. 96—1.2 9 Claims



A photoelectrophoretic ink is subjected to light and electric field a plurality of times during a single scanning pass over the ink by a plurality of web electrodes positioned within the boundaries of a narrow slit scanning light image.

3,719,485  
PHOTOCONDUCTIVE ELEMENTS INCLUDING  
BARRIER LAYER OF CONDUCTIVE OLIGOMERS  
Anthony Ferro, Middlebury, Conn., assignor to Uniroyal, Inc., New York, N.Y.  
Division of Ser. No. 679,956, Oct. 12, 1967, abandoned. This application May 1, 1970, Ser. No. 43,655  
Int. Cl. G03g 5/10, 5/02  
U.S. Cl. 96—1.5 5 Claims

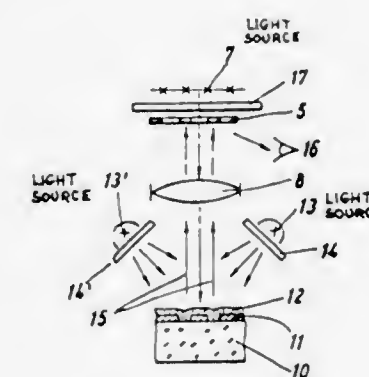
Coated articles, for example photoelectrostatic recording members, are made with a coating of an oligomer having the formula  $H[CH_2CR'COOM]_a[CH_2CR^2X]_b - SO_3M'$  wherein M and M' are water soluble cations; R' and R<sup>2</sup> are hydrogen or

methyl; X is a —CN or —CONH<sub>2</sub> group; a + b is from 10 to 60 and b/a + b is from 0.1 to 0.4 on a base.

3,719,486  
PHOTOCONDUCTIVE ELEMENTS CONTAINING  
ORGANO-METALLIC PHOTOCONDUCTORS  
Martin Goldman, and Arthur L. Johnson, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.  
Division of Ser. No. 650,664, July 3, 1967, Pat. No. 3,647,429.  
This application June 17, 1971, Ser. No. 154,163  
Int. Cl. G03g 5/06  
U.S. Cl. 96—1.6 15 Claims

Photoconductive compositions and elements containing a Group Va organo-metallic photoconductive compound.

3,719,487  
METHOD FOR PRODUCING MICROSTRUCTURES  
Hans Jurgen Schutze, Freising, and Klaus Hennings, Ulm (Danube), Germany, assignors to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm (Danube), Germany  
Continuation of abandoned application Ser. No. 613,347, Feb. 1, 1967. This application Sept. 16, 1970, Ser. No. 72,849  
Int. Cl. G03c 5/06  
U.S. Cl. 96—27 R 23 Claims

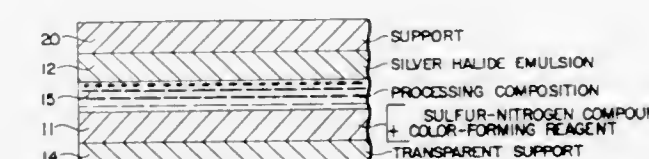
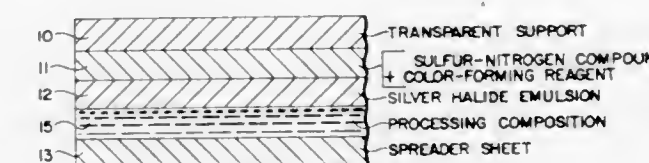


A photographic process for producing microstructures, i.e., structures with micron or submicron dimensions, on a substratum in alignment with each other. After a first microstructure has been applied to the substratum, an image of the first microstructure is formed through a lens, and a photomask of a second microstructure is aligned with the first microstructure in the plane of the first microstructure's image. The second microstructure is then imaged through the lens onto a light-sensitive layer on the substratum to produce the second microstructure on the substratum in alignment with the first microstructure.

3,719,488  
NOVEL PHOTOGRAPHIC PROCESSES AND PRODUCTS  
Louis Locatelli, Jr., Wellesley Hills; Frank A. Meneghini, Belmont, and Howard G. Rogers, Weston, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.  
Filed June 21, 1971, Ser. No. 155,000  
Int. Cl. G03c 1/54, 7/00, 7/32  
U.S. Cl. 96—29 D 51 Claims

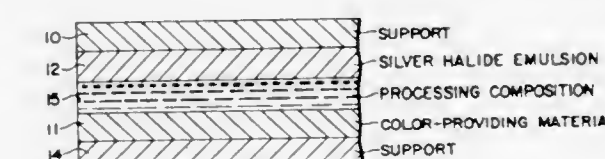
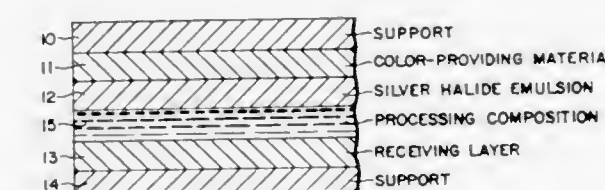
This invention relates to photographic processes for producing color images by reacting (a) a dye intermediate containing a carbonyl group and selected from an aldehyde and a ketone with (b) a color-forming reagent to form a complete dye wherein an imagewise distribution of at least one of said dye intermediate and said color-forming reagent is formed as a function of developing an exposed silver halide layer followed by reacting the color-forming reagent with the

carbonyl group of the dye intermediate to form a corresponding imagewise distribution of a complete dye. In a preferred embodiment, a sulfur-nitrogen compound capable of undergoing cleavage in the presence of silver ions and/or soluble silver



complex made available as a function of development is used to release one or both of the dye-forming reagents in an imagewise distribution corresponding to said silver ions and/or said complex.

3,719,489  
NOVEL PHOTOGRAPHIC PROCESSES  
AND PRODUCTS  
Ronald F. W. Ciecuch, Boston, Roberta R. Lubowy, Watertown, Frank A. Meneghini, Belmont, and Howard G. Rogers, Weston, Mass., assignors to Polaroid Corporation, Cambridge, Mass.  
Filed June 21, 1971, Ser. No. 155,123  
Int. Cl. G03c 5/54, 1/40  
U.S. Cl. 96—29 D 48 Claims



This invention relates to photographic processes employing photographically inert compounds which are stable in the photographic processing composition but capable of undergoing cleavage in the presence of an imagewise distribution of silver ions and/or soluble silver complex containing silver ions made available as a function of development to liberate a reagent in an imagewise distribution corresponding to that of said silver ion and/or said complex. In one embodiment, the photographically inert compound is substantially non-diffusible in the photographic processing composition and the reagent released therefrom as a function of development is diffusible in the processing composition. In another embodiment, the diffusible reagent released is a diffusible dye. Compounds particularly useful for liberating a reagent are 1,3-sulphur-nitrogen compounds, e.g., thiazolidines, and their vinyl and phenylene analogs.



3,719,490

**PHOTOSENSITIVE ELEMENT CONTAINING A PHOTOREDUCTION PALLADIUM COMPOUND AND THE USE THEREOF IN PHYSICAL DEVELOPMENT**

Joseph S. Yudelsohn, Rochester, and Henry J. Gysling, Bronx, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 13, 1967, Ser. No. 653,025

Int. Cl. G03c 5/24, 1/00

U.S. Cl. 96—48 PD

10 Claims

Light-sensitive palladium compounds are reduced on exposure to actinic light to nuclei which are catalytic centers for the deposition of metal from a physical developer. The palladium nuclei are catalysts for deposition of metal from stable physical developers, which developers do not respond to catalysts used in the physical development of silver latent images.

3,719,491

**DIAZO-TYPE REPRODUCTION PROCESS**

Michael F. Mizianty, Binghamton, N.Y., assignor to GAF Corporation, New York, N.Y.

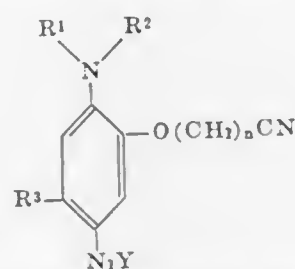
Division of Ser. No. 737,854, June 18, 1968, Pat. No. 3,597,413. This application March 11, 1971, Ser. No. 123,437

Int. Cl. G03c 5/34, 1/54

U.S. Cl. 96—47

3 Claims

A high-speed diazo-type reproduction material suitable for both one-component and two-component diazo-type reproduction processes comprising a diazonium salt of the formula



wherein  $R^1$  and  $R^2$  are selected from alkyl, aralkyl, and the atoms necessary to form a heterocyclic ring with the amino nitrogen atom;  $R^3$  is selected from hydrogen, alkoxy, and halogen;  $n$  is an integer of up to 4; and  $Y$  is an anion.

Such diazonium salts are especially suited in two-component diazo reproduction processes utilizing ammonia development.

3,719,492

**COMPLEXED p-PHENYLENEDIAMINE CONTAINING PHOTOGRAPHIC ELEMENT AND DEVELOPMENT PROCESS THEREFOR**

Charles R. Barr, Rochester, N.Y., and Maurice Pfaff, Vincennes, France, assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Mar. 5, 1971, Ser. No. 121,590

Int. Cl. G03c 7/00

U.S. Cl. 96—55

24 Claims

Color photographic elements comprising a support coated with at least one hydrophilic colloid layer containing light-sensitive silver halide and a nondiffusible coupler that reacts with oxidized aromatic primary amine color developing agent to form a nondiffusible dye and coated on the same side of the support at least one hydrophilic colloid layer containing a photographically compatible, inactive color developing agent precursor formed by reacting (1) a water-soluble polyvalent metal salt with (2) a water-soluble and diffusible p-phenylenediamine color developing agent or acid salt thereof. The immediate elements have good stability with substantially no change produced by the color developing agent precursor during storage and are advantageously color developed by contacting the photographic element with an aqueous alkaline activator solution which rapidly releases active color developing agent from the precursor.

3,719,493

**RAPID COLOR PROCESSING**

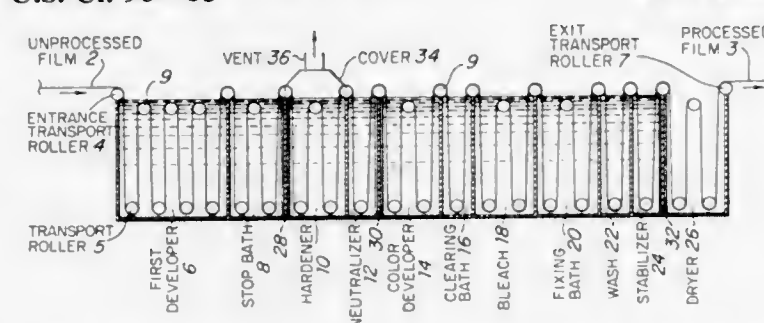
Donald J. Forst, Webster, N.H., assignor to Ittek Corporation, Lexington, Mass.

Continuation-in-part of applications Ser. No. 699,576, Jan. 22, 1968, and Ser. No. 831,226, June 6, 1969, both now abandoned. This application Mar. 24, 1971, Ser. No. 127,689

Int. Cl. G03c 7/00

U.S. Cl. 96—55

41 Claims



This disclosure relates to improved reversal color processing which includes hardening the color film emulsion subsequent to developing the negative image of the film. The improved process permits the use of relatively high temperatures in the steps subsequent to the hardening step thus permitting more rapid film processing while maintaining good color properties. The process steps include first developing the negative image, subsequently hardening the emulsion to be stable to water at 140° F. or above, and then completing processing with steps such as color developing, fixing and stabilizing at elevated temperatures.

3,719,494

**SILVER HALIDE EMULSION CONTAINING A DIHYDROAROMATIC QUATERNARY SALT NUCLEATING AGENT AND THE USE THEREOF**

Donald W. Kurtz, and Donald W. Heseltine, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 30, 1970, Ser. No. 85,706

Int. Cl. G03c 1/28

U.S. Cl. 96—107

8 Claims

Reactive cyclammonium quaternary salts including a dihydroaromatic ring nucleus, a dihydropyridinium nucleus for example, are useful nucleating agents in direct positive photographic emulsions. The salts include such compounds as a 1,2-dihydro-3-methyl-4-phenylprido[2,1-b]-5-phenylbenzoxazolium salt. They are conveniently prepared by reacting an appropriate cyclammonium precursor compound in an organic solvent medium for a time sufficient to form the dihydroaromatic derivative.

3,719,495

**USE OF MEROCYANINE COMPOUNDS IN PHOTOTHERMOSENSITIVE SYSTEMS**

Bernard A. Lea, London, England, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sept. 29, 1970, Ser. No. 76,628

Claims priority, application Great Britain, Oct. 3, 1969, 47,850/69

Int. Cl. G03c 1/02

U.S. Cl. 96—114.1

18 Claims

A light-sensitive system including an intimate mixture of a light-insensitive silver salt which yields a visible change upon reduction, and light-sensitive silver halide in an amount sufficient to catalyze reduction of the light-insensitive silver salt upon exposure of the system to light followed by heating in the presence of a reducing agent, the mixture being characterized by including a tri-nuclear merocyanine dye capable of sensitizing the mixture to the longer wavelength portion of the visible spectrum. Also described are novel merocyanine dyes and light-sensitive sheets containing the above-described mixture.

3,719,496

**ARTICLES OF WHITE FOOD FOR FEEDING AQUATIC ANIMALS AND METHOD OF MANUFACTURE**

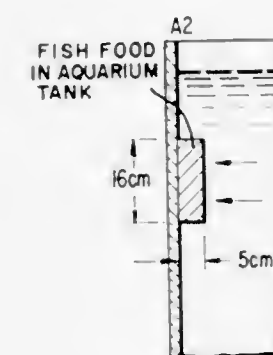
David T. Y. Chen, 12 Chang An Rd., E., Section 2, Taipei, and Ten Fuh Shih, 45, Alley 3, Lane 16, Chung Shan Rd., Lu Chou Hsiang, Taipei Hsien, both of China/Taiwan

Filed Sept. 17, 1970, Ser. No. 73,011

Int. Cl. A23k 1/00

U.S. Cl. 99—2 R

6 Claims



High protein content food for fishes and like aquatic animals is prepared by dehydrating selected worms, quickly freezing a mass of the dehydrated worms, and then freeze drying the mass.

3,719,497

**PROCESS FOR PRODUCING A SIMULATED NUTMEAT**

Edward Louis Galle, St. Paul, and Marvin Olaf Mikkelsen and Joseph Francis Kolosky, Minneapolis, Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed June 15, 1970, Ser. No. 46,092

Int. Cl. A23j 3/00; A23i 1/20

U.S. Cl. 99—14

9 Claims

Simulated nutmeat products are prepared by forming a homogeneous dispersion composed of minute droplets of fat or oil suspended in a continuous phase composed of a hydrophilic film-former such as an aqueous protein suspension. The dispersion is atomized and dried to provide particles composed of an oleaginous internal phase encapsulated within the protein film. The particles are placed in a press and subjected to sufficient pressure to cause the particles to become bonded together at their points of contact and to exclude most of the air to form a self-supporting structure having the shape of natural nutmeat preferably. These pieces are then unified by exposure to moisture vapor for a period of time sufficient to increase the moisture level by between about 3 and 30 percent (typically about 10 to 15 percent). The pieces are thereafter dried in air to bring the final moisture content to between 1 and 3.5 percent.

3,719,498

**SAUSAGE ANALOG PROCESS**

Harold T. Leidy, New City, N.Y., Charles M. Kerrigan, Wayne, N.J., and Robert T. Tewey, Dobbs Ferry, and Louis Bartenbach, Thornwood, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 65,716, Aug. 20, 1970. This application Dec. 29, 1970, Ser. No. 102,549

Int. Cl. A23i 1/20

U.S. Cl. 99—17

4 Claims

A meat analog is formed from a protein gel precursor that has incorporated frozen non-rendered animal fatty tissue prior to a heating operation which causes gelation of the vegetable protein.

3,719,499

**MEAT ANALOGS**

Atta Mohammed Hai, Palisades Park, and Charles M. Kerrigan, Wayne, N.J., and Harold T. Leidy, New City, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

No Drawing. Filed Dec. 29, 1970, Ser. No. 102,548

Int. Cl. A23i 1/20

U.S. Cl. 99—17

5 Claims

Meat analogs are formed from a vegetable protein concentrate that has incorporated a frozen vegetable oil and/or frozen rendered animal fat prior to a heating operation which causes gelation of the vegetable protein.

3,719,500

**PREPARATION OF A BREWERS' WORT**

Martin Francis Walmsley and John Valentene Cross, London, Ontario, Canada, assignors to John Labatt Limited, London, Ontario, Canada

Filed July 27, 1970, Ser. No. 58,631

Claims priority, application Great Britain, July 25, 1969, 37,462/69

Int. Cl. C12c 7/00

U.S. Cl. 99—52

10 Claims

A brewers' wort is prepared from a mash containing less than about 30% by weight malt by heating a raw cereal grain to 65° C. to about 90° C. in the presence of an added discrete  $\alpha$ -amylase enzyme whereby the starch in the grain is solubilized and liquefied. Thereafter, the liquefied mass is cooled to 40° C. to 65° C. at which temperature it is subjected to the action of a discrete proteolytic enzyme to produce soluble nitrogen-containing compounds and a discrete  $\beta$ -amylase enzyme or source thereof to produce fermentable sugars.

This invention also includes a process for the manufacture of beer or like non-distilled alcoholic beverages from such brewers' worts.

3,719,501

**PROCESS FOR PREPARING A SNACK FOOD PRODUCT**

Joseph M. Rispoli, Douglaston, and Anthony C. Capossela, Jr., North Tarrytown, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Oct. 7, 1968, Ser. No. 765,679

Int. Cl. A23i 1/10

U.S. Cl. 99—83

5 Claims

A snack food product comprising popped popcorn in a dough matrix containing flours and starch. The snack food product preferably contains comminuted popcorn in a cooked dough matrix of tapioca flour, corn flour and potato starch, and is deep fat fried. The process for preparing the product is also described.

3,719,502

**APPARATUS AND METHOD FOR HYDROKINETICALLY COOKING LEGUMES**

Richard Thomas Keely, Grand Rapids, Mich., assignor to J. P. Burroughs & Son, Inc., Saginaw, Mich.

Filed Sept. 18, 1969, Ser. No. 859,075

Int. Cl. A23i 1/20, 3/34

U.S. Cl. 99—98

14 Claims

The continuous preparation of legumes comprising the forming of an aqueous slurry of legumes, and then cooking the legumes by passing the slurry through a conduit with a predetermined pressure and at a predetermined temperature. Apparatus is provided for regulating the pressure within the conduit and the temperature of the slurry in the conduit. The slurry preferably is formed so that the weight of the legumes does not exceed the weight of the slurry water.



3,719,503

## PROCESS OF PREPARING CMC GELS

Thomas J. Podlas, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Nov. 25, 1970, Ser. No. 92,933

Int. Cl. A231 1/04, 1/06

U.S. Cl. 99—129

3 Claims

CMC gels are prepared at controlled duration of gelation by mixing together (a) a water solution of certain chelated aluminum salts adjusted to a pH of 4.5–9.0, and (b) a water solution of CMC, the pH of the final mixture being about 4.5–7.0. Preferred aluminum salts are aluminum sulfate, sodium, potassium or ammonium alum. Citric acid and its sodium, potassium and other water soluble salts are preferred as chelants.

3,719,504

## MEAT TENDERIZER

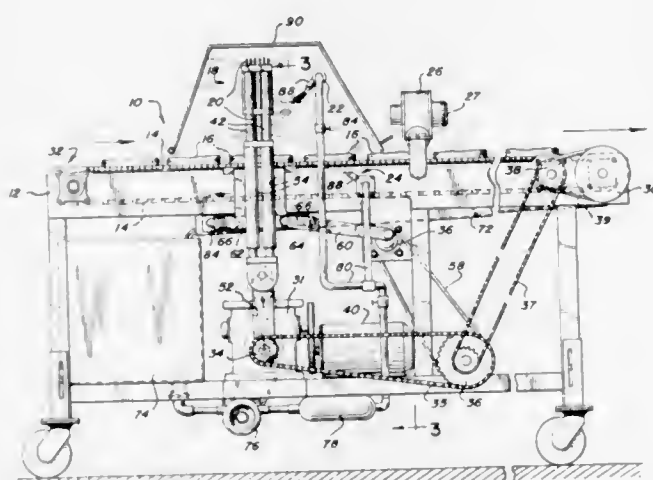
Joseph Greenspan, Evergreen Park, Ill., and Clay E. Hawkins, Springfield, Mo., assignors to Frigidmeats, Inc., Chicago, Ill.

Filed Sept. 24, 1971, Ser. No. 183,531

Int. Cl. A22c 9/00

U.S. Cl. 99—353

9 Claims



A meat tenderizing device for expeditiously tenderizing meat pieces regardless of the size, shape or surface configuration of the meat. The meat tenderizing device includes a framework carrying an endless conveyor which has a continuous movement so that meat pieces traveling thereon can be processed by the tenderizing device at an optimum rate. Aperturing means positioned on the framework is operable in synchronization with the continuous conveyor movement to accomplish perforation of the meat pieces passing thereunder. A liquid dispensing means positioned on the framework means applies a liquid tenderizing solution to the top and bottom surfaces of the meat pieces immediately after their perforation. The continuous movement of the meat pieces allows the liquid dispensing means to apply the liquid tenderizer in a uniform pattern. In this regard, large orificed nozzles are utilized with the distributing means so that clogging is eliminated. A liquid distributing means is positioned on the framework means to evenly distribute the tenderizing solution on the top surface of the meat pieces and to remove the unabsorbed tenderizing solution therefrom. In this manner, a greater volume and a better quality of meat processing is accomplished.

3,719,505  
HOUSEHOLD ELECTRIC MACHINE FOR BREWING AND DISPENSING BEVERAGES

Lamberto Mazza, Pordenone, Italy, assignor to Kantor International S.A., Luxemburg, Luxemburg

Filed June 1, 1971, Ser. No. 148,811

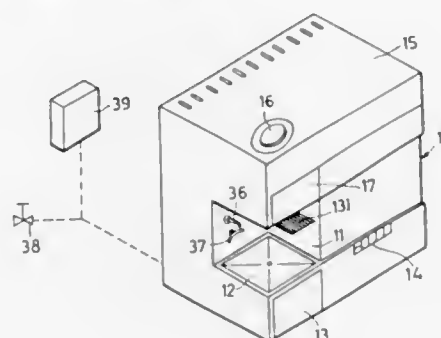
Claims priority, application Italy, June 4, 1970,

25,527/70

Int. Cl. A231 1/00

U.S. Cl. 99—275

8 Claims



A household machine for the instant preparation of hot or cold drinks is disclosed, of the kind in which a sealed cartridge containing a soluble ingredient is punctured and then fed with a liquid. The machine is characterized in that the cartridges are placed in a drawer-like cartridge holder, with distinct recesses for the cartridges intended for brewing hot drinks and cold drinks respectively. Selection switching means are provided for selecting between cold-liquid feed and hot-liquid feed. Cartridge-puncturing means in the form of nozzles are provided and a cam disc effects the selection of the liquids.

3,719,506

## COFFEE EXTRACT SLUSH EXTRUSION APPARATUS

Charles Warren Ehrgott, Rumson, N.J., assignor to General Foods Corporation, White Plains, N.Y.

Original application Feb. 24, 1970, Ser. No. 13,407.

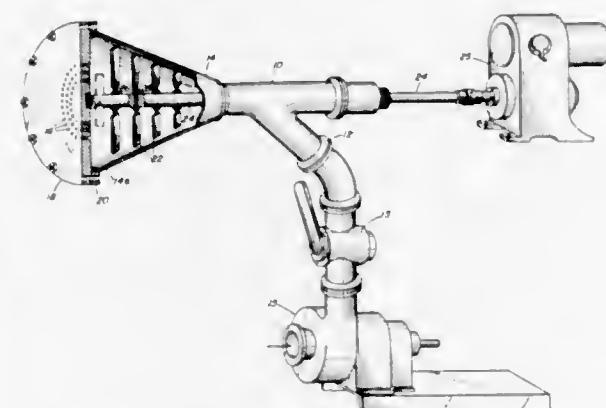
Divided and this application June 18, 1971, Ser.

No. 154,691

Int. Cl. B01f 7/16

U.S. Cl. 99—275

5 Claims



Apparatus for mixing and extruding semi-frozen concentrated coffee extract in the form of a partially frozen slush extrudate of ice crystals uniformly distributed throughout an unfrozen matrix of concentrated coffee extract.

3,719,507

## COOKING APPLIANCE

William M. Bardeau, 44 Princess Margaret Blvd., Islington, Ontario, Canada

Filed March 1, 1971, Ser. No. 119,646

Int. Cl. A47j 37/06

U.S. Cl. 99—375

12 Claims

This invention relates to a cooking appliance in which a cover section having a lower heat-conductive grilling surface

overlies a base section presenting an upper heat-conductive grilling surface, the opposed surfaces being contoured such that they are adapted to mate in overlying relation to define an

3,719,510

## PREPARATION OF EXPANDED SILICATE-BASED AGGREGATES

Ralph E. Temple, Chardon, and William T. Gooding, Jr., Mentor, Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

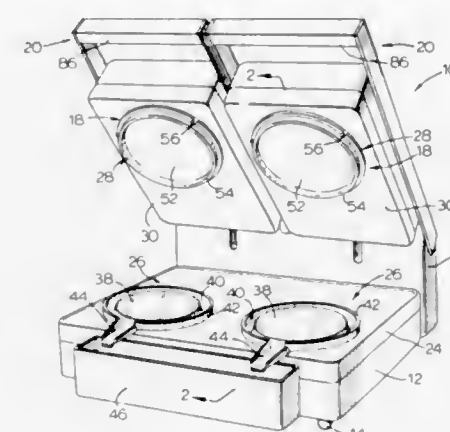
No Drawing. Filed Sept. 29, 1971, Ser. No. 184,943

Int. Cl. C04b 31/02

U.S. Cl. 106—40

1 Claim

A process is provided for the preparation of an expanded insoluble aggregate from a mixture of aqueous and anhydrous alkali metal silicates, having weight ratios of 1:3.0–7.0, with primary and secondary insolubilizers. The anhydrous silicate is added to obtain a silicate solids content within the range of 80–40 percent. After mixing and curing, the composition is ground to a particulate form and subsequently expanded at temperatures in excess of 800° F. The primary insolubilizer, e.g., sodium silicofluoride, serves to reduce the hygroscopicity of the ground particulate material prior to expansion, while the secondary insolubilizer, e.g., calcium carbonate, reacts at expansion temperatures to provide an insoluble lightweight aggregate.



upper internal cavity for the reception of an article of food to be cooked draining downwardly peripherally through a narrow passage formation into a lower surrounding channel formation open to the atmosphere.

3,719,508

## ELECTROLESS NICKEL SOLUTION

Michael Gulla, Newton, and Oleh B. Dutkewych, Medfield, Mass., assignors to Shipley Company, Inc., Newton, Mass.

No Drawing. Continuation-in-part of application Ser. No. 65,301, Aug. 19, 1970, which is a division of application Ser. No. 785,350, Dec. 19, 1968, both now abandoned. This application Nov. 16, 1971, Ser. No. 199,306

Int. Cl. C23c 3/02

U.S. Cl. 106—1

10 Claims

The invention relates to electroless nickel solutions characterized by the addition of a small but effective amount of a source of iodate ions for increased bath stability. It is known in the art that solutions for electroless nickel plating are unstable and tend to decompose with use. It is also known that decomposition can be retarded and the useful life of a plating solution increased by the addition of various additives, frequently catalytic poisons, in very small concentrations. In accordance with the present invention, it has been found that the stability of an electroless nickel plating solution can be substantially increased by the addition of a source of cuprous ions.

3,719,509

## METHOD OF STABILIZING POLYMERIC ORGANIC COMPOSITIONS WITH 3',5'-DIBROMO-2'-HYDROXYACETOPHENONE

Stanley J. Buckman and John D. Pera, Memphis, Tenn., assignors to Buckman Laboratories, Inc., Memphis, Tenn.

No Drawing. Filed Jan. 4, 1971, Ser. No. 103,815

Int. Cl. C09d 5/14, 5/16; C09k 3/28

U.S. Cl. 106—15 FP

18 Claims

The preparation of 3',5'-dibromo-2'-hydroxyacetophenone and its use as an ultraviolet light absorber and as a fire retardant for polymeric and organic coating compositions are described.

3,719,511

## NON-HARDENABLE, HIGH-DENSITY FILL

## COMPOSITION AND PROCESS FOR MAKING SAME

Marion Wallace Bevard, Route 1, Box 478, Clinton, Md.; Samuel Street Bevard, Jr., 11524 Old Fort Road, Washington, D.C., and Frederick Groom, III, 9029 Falls Chapel Way, Potomac, Md.

Filed Oct. 26, 1970, Ser. No. 84,147

Int. Cl. C04b 7/02

U.S. Cl. 106—90

4 Claims

An improved non-hardenable, high-density composition especially useful as a backfill material for high-voltage cable installation along with a method for making and using the composition is disclosed. The composition is characterized as an admixture of particulate materials, such as sand, gravel, and crushed stone aggregate, a filler such as portland cement, with or without pulverized limestone, clay, etc. and a lubricant. A quantity of water sufficient to give the admixture good workability can be added in a manner which prevents the cement from hardening. The improved composition is useful as ship ballast in addition to its use in construction as a backfill material for pipes, cables, tunnel liners or the like.

3,719,512

## BRICK COMPOSITION

Joseph U. Danielis, 8622 Basswood, Apartment 5, Pierrefonds, Quebec, Canada

Filed July 27, 1970, Ser. No. 58,711

Int. Cl. C04b 9/02

U.S. Cl. 106—106

9 Claims

Indoor brick, tile or siding, light-weight, fire-resistant, light-fast, non-curling and easy to install. The product is made of a composition of magnesium oxychloride binder, a main filler of particulate non-metallic material in the nature of finely divided vegetable or inert mineral material and a pigment filler in the nature of metallic oxides. The magnesium oxychloride is a reaction product of magnesium chloride and magnesite in a water medium, the magnesite prior to the reaction having been present (on a dry weight basis) to the magnesite of from about 70 percent to about 100 percent. The main filler is present in an amount of from about 150 percent to about 250 percent (on a dry volume basis) to the magnesite. The pigment filler is present in an amount of from about 17 percent to about 80 percent to the magnesite calculated as substantially dry weight basis. The product is made by preparing a solution of magnesium chloride of from 15° to 25° Baume, adding to the solution the pigment filler, adding magnesite, adding the main filler, mixing the resulting composition to form a paste, pouring the paste into a mould in a layer, if desired



dividing the layer into sections, and allowing the resulting product to harden.

3,719,513

# SPRAYABLE GYPSUM PLASTER COMPOSITION

Ralph J. Bragg, Arlington, Mass., and Raymond E. Rothfelder, La Canada, Calif., assignors to W. R. Grace & Co., Cambridge, Mass.

Filed March 10, 1971, Ser. No. 122,703  
Int. Cl. C04b 11/00

7 Claims

U.S. Cl. 106—114

Fire-retardant coatings for structural metal members are obtained by spraying onto the metal settable plaster compositions which are air-containing pumpable aqueous slurries of compositions consisting essentially of, on a dry weight basis, from 52 to 62 percent calcined gypsum, from 2.5 to 18 percent high wet bulking cellulosic fiber, sufficient foaming agent to achieve good workability and satisfactory pumping characteristics, and enough lightweight aggregate to complete the formula.

3,719,514

# STARCH BINDER COMPOSITION

Kelley G. Taylor, Decatur, Ill., assignor to A. E. Staley Manufacturing Company, Decatur, Ill.

Continuation of Ser. No. 685,328, Nov. 24, 1967. This application June 29, 1970, Ser. No. 56,093  
Int. Cl. C09d 3/20

3 Claims

U.S. Cl. 106—210

An insolubilizable mineral coating composition useful in the manufacture of paper wherein the binder or adhesive portion of the coating composition is an anionic starch in combination with a polyalkylenimine. The polyalkylenimine is generally present in an amount of less than 10% by weight of the anionic starch and the anionic starch is preferably a starch material containing carboxyl groups.

3,719,515

# FIRE FIGHTING METHOD EMPLOYING SOLUTIONS OF PVA AND ALKALI METAL BORATE

Edward R. Degginger, Convent Station, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 59,778, July 23, 1970, Pat. No. 3,676,169. This application Aug. 2, 1971, Ser. No. 168,428  
Int. Cl. A01n 3/00; C09d 5/18

9 Claims

U.S. Cl. 117—3

An aqueous solution of 0.1 to 10 percent by weight of polyvinyl alcohol and an aqueous solution of 0.1 to 10 percent by weight of an alkali metal borate, when combined, form a dilatant fluid having excellent properties as a fire retardant and fire suppressant.

3,719,516

# TWO STAGE COATING PROCESS FOR NUCLEAR FUEL PARTICLES

Derek William James Sturge, Dorchester, and Geoffrey William Meaden, West Lulworth, England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Mar. 27, 1970, Ser. No. 23,182

Claims priority, application Great Britain, Mar. 27, 1969, 16,245/69

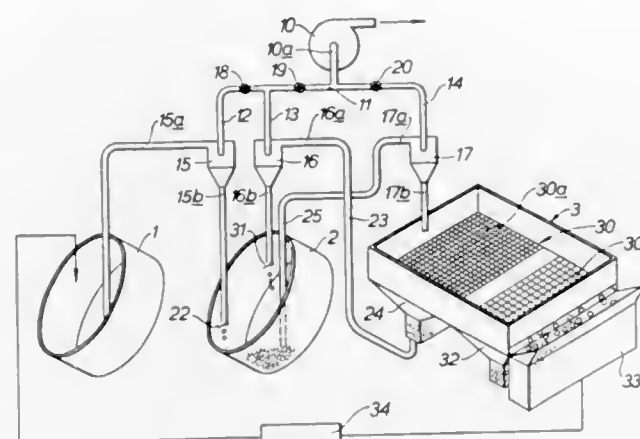
Int. Cl. G21c 3/06

U.S. Cl. 117—16

4 Claims

To produce a batch of fission product retaining nuclear fuel particles, with an outer overcoating of powdered graphite, such that all the product particles are within a narrow size range, the overcoating process is split into two stages through which the particles pass in succession. A

grading operation follows the second stage and those product particles which are undersized are recycled to the second stage, those which are correctly sized are passed to store and those which are oversized are rendered to the uncoated condition to be recycled to the first stage. The



whole process lends itself to the production of uniformly sized overcoated nuclear fuel particles which are more suited for preparing fuel elements with a uniform distribution of fission product retaining fuel in the filler material than are non-uniformly overcoated fuel particles.

3,719,517

# DECORATIVE FINISH

James E. Gladstone, 37 Western Way, Whitley Bay, Northumberland; James E. Wilcox, 3 Woodburn Close, Winlaton Co., Durham, and John Hawthorn, Dunnehan Hartside, Birtley Co., Durham, all of England

Filed July 22, 1970, Ser. No. 57,368

Claims priority, application Great Britain, Sept. 17, 1969, 45,937/69

Int. Cl. B44d 5/06

U.S. Cl. 117—37 R

14 Claims

A decorative finish is applied to substrate material such as leather by a process which comprises forming on the substrate, a coating comprising an aqueous resin/pigment dispersion (a) and a liquid (b) which is substantially immiscible with dispersion (a) under the conditions of the forming and which is not an aqueous component. Preferred resin materials are the polymers and copolymers of acrylic acid, methacrylic acid, and itaconic acids and polymers and copolymers of esters and amides of the same acids.

3,719,518

# PROCESS OF FORMING A CARBIDE LAYER OF VANADIUM, NIOBIUM OR TANTALUM UPON A STEEL SURFACE

Noboru Komatsu; Tohru Arai, and Masayoshi Mizutani, all of Nagoya, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi-ken, Japan

Filed Oct. 29, 1970, Ser. No. 85,043

Claims priority, application Japan, Nov. 1, 1969, 44/87805  
Int. Cl. C23c 9/10; C23f 7/00, 17/00

U.S. Cl. 117—49

21 Claims

A process for the surface treatment of an iron or iron alloy stock comprising heating a mixture of boric acid or borate. A V-a group element of the periodic table consisting of vanadium, niobium and tantalum, or a substance containing the same, and carbon or a carbon containing substance to its fusing state in a bath vessel, and immersing the stock in the molten bath of said mixture, thereby forming a carbide layer of said element on the stock thus treated. The present invention can be performed without adding carbon to a mixture in the case when either said stock or said vessel includes carbon.

3,719,519

# PROCESS OF FORMING PROTECTIVE COATINGS ON METALLIC SURFACES BY SPRAYING A COMBINATION OF POWDERS OF A METAL ALLOY, CHROMIUM AND A CERAMIC OXIDE

Giancarlo Perugini, 11 Via Giacomo Leopardi, Merano, Italy

Continuation-in-part of abandoned application Ser. No. 570,283, Aug. 4, 1966. This application Oct. 23, 1970, Ser. No. 83,592

Claims priority, application Italy, Aug. 6, 1965, 17,797/65

Int. Cl. B44d 1/16; C23c 7/00

U.S. Cl. 117—71 M

18 Claims

Described is a protective treatment as antioxidant barrier and as heat barrier for ferrous and non-ferrous metallic surfaces. The treatment comprises spray depositing in a molten state a combination of powders of three components comprising a metal alloy A, a metal B, and a metal oxide C onto the base surface.

3,719,520

# SYNTHETIC LEATHER

Yasua Fujimoto, Machida; Koichi Nagaoka, Tokyo; Keizo Tatsukawa, Machida, and Yoichi Koiwa, Tokyo, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan  
Division of Ser. No. 761,853, Sept. 23, 1968, abandoned. This application Nov. 13, 1970, Ser. No. 89,466

Claims priority, application Japan, Oct. 20, 1967, 43/67192; June 4, 1968, 44/37769

Int. Cl. D06n 3/04, 3/12

U.S. Cl. 117—76 T

6 Claims

Synthetic leather-like coating composition containing a major amount of polyglutamic acid- $\gamma$ -ester and a minor amount of an acidic amino acid derivative. The amino acid derivative is alkyl or aralkyl or acyl esters such as, for example amino maleic acid, aspartic acid, glutamic acid,  $\alpha$ -aminosuberic,  $\alpha$ -aminosebacic acid,  $\beta$ -methylaspartic acid,  $\beta$ -hydroxyaspartic acid,  $\beta$ -alkoxyaspartic acid,  $\beta$ -hydroxyglutamic acid,  $\beta$ -alkoxyglutamic acid, 2-pyrrolidone-5-carboxylic acid and the like, and the alkyl or aralkyl or acyl esters of N,N-dialkyl compounds of said acidic amino acids. The composition is coated on or impregnated into a cloth substrate.

3,719,521

# POLYESTER AND GRADED ACRYLIC RUBBER-URETHANE-ACRYLATE PAINT AND PAINTING PROCESS

Olin B. Johnson, Livonia, and Santokh S. Labana, Dearborn Heights, Mich., assignors to Ford Motor Company, Dearborn, Mich.

No Drawing. Filed Dec. 21, 1970, Ser. No. 100,392

Int. Cl. B44d 1/50

U.S. Cl. 117—93.31

10 Claims

A radiation-curable paint binder dispersion comprises vinyl monomers, an alpha-beta olefinically unsaturated polyester resin having molecular weight in excess of about 1,000, and the addition product of a hydroxy-functional, acrylic graded-rubber particle, a diisocyanate and a hydroxyalkyl acrylate. The dispersion is applied to substrates as a paint film and cured thereon by exposure to ionizing radiation, e.g., an electron beam.

3,719,522

# VINYL RESIN AND ACRYLIC RUBBER-URETHANE-ACRYLATE PAINT AND PAINTING PROCESS

Olin B. Johnson, Livonia, and Santokh S. Labana, Dearborn Heights, Mich., assignors to Ford Motor Company, Dearborn, Mich.

No Drawing. Filed Dec. 21, 1970, Ser. No. 100,496

Int. Cl. C08g 41/04

U.S. Cl. 117—93.31

15 Claims

A radiation-curable paint binder dispersion comprises vinyl monomers, an alpha-beta olefinically unsaturated

vinyl resin having molecular weight in excess of about 1,000 and, an addition product of a hydroxy-functional acrylic rubber particle, a diisocyanate and a hydroxyalkyl acrylate. The dispersion is applied to substrates and cured thereon by exposure to ionizing radiation, e.g., an electron beam.

3,719,523

# HYDROXY-VINYL COPOLYMER AND GRADED-RUBBER PAINT AND PROCESS

Olin B. Johnson, Livonia, and Santokh S. Labana, Dearborn Heights, Mich., assignors to Ford Motor Company, Dearborn, Mich.

No Drawing. Filed Dec. 21, 1970, Ser. No. 100,541

Int. Cl. C08f 15/00, 19/00

U.S. Cl. 117—93.31

17 Claims

A radiation-curable paint which on a pigment and particulate filler-free basis consists essentially of vinyl monomers and a unique, alpha-beta olefinically unsaturated, rubber-comprising resin formed by reacting a monohydroxy copolymer containing carboxy functionality with a carboxy (acyl chloride)-functional, graded-rubber particle and reacting the resultant polymeric product with an epoxyacrylate monomer. The dispersion is applied to substrates as a paint film and cured thereon by exposure to ionizing radiation, e.g., an electron beam.

3,719,524

# VARIABLE FLOW STEAM CIRCULATOR

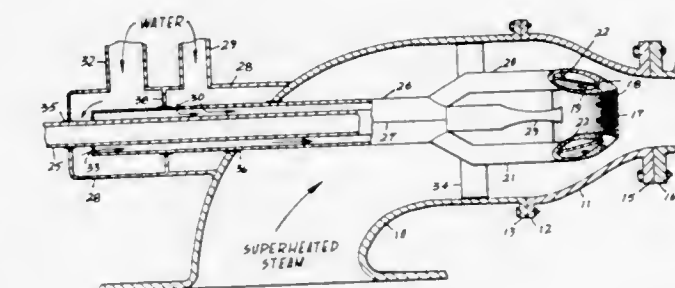
Charles C. Ripley and Gerald L. O'Neill, San Jose, Calif., assignors to General Electric Company

Original application Apr. 10, 1968, Ser. No. 720,320. Divided and this application May 13, 1970, Ser. No. 48,642

Int. Cl. F04f 5/46, 5/48; G21c 17/28

U.S. Cl. 417—180

2 Claims



An improved thermopresser capable of part load operation. In a steam thermopresser in which water droplets are injected into flowing superheated steam, a system is provided by which water flow can be decreased as steam flow decreases, while maintaining an optimum thermopresser throat configuration at any flow rate. Such a system has particular utility in steam cooled nuclear reactors.

3,719,525

# MAGNETIC RECORD MEMBERS HAVING A PROTECTIVE RECORDING SURFACE AND METHOD OF MAKING

Pravin K. Patel, Los Angeles, and Joo H. Liu, Monterey Park, Calif., assignors to Control Data Corporation, Minneapolis, Minn.

Filed Jan. 9, 1969, Ser. No. 790,129

Int. Cl. H01f 10/06

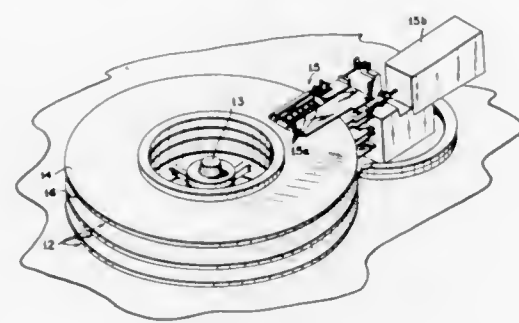
U.S. Cl. 117—237

2 Claims

A record disc having a protected thin-film magnetic record surface is disclosed wherein the magnetic record medium comprises a thin-film of cobalt-phosphorous and a protective overlayer including in combination thin-film



oxides formed on the surface of the record medium and firmly bonded thereto by a process including heating in an air-flow oxidizing atmosphere and in a temperature range from 220° C. to 280° C. for a period of time sufficient to form said thin-film of oxides on the surface of the record medium, and a thin-film lubricant of silicone oil which is made integral with the oxides of the overlayer for permanent retention thereby.



3,719,526

## RECHARGEABLE METAL HALIDE BATTERY

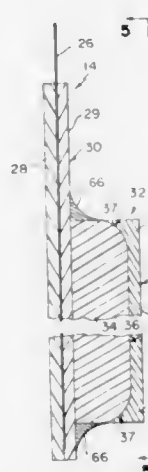
Ralph Zito, Jr., Westford, Mass., assignor to The Zito Company, Inc., Derry, N.H.

Filed Feb. 3, 1971, Ser. No. 112,254

Int. Cl. H01m 35/00

U.S. Cl. 136—6

15 Claims



Electrode structures for a rechargeable metal halide battery include: a cathodic electrode comprising a halogen-inert electroconductive layer and bonded to one of the major surfaces thereof, a halogen-entrapment structure comprising a halogen-adsorbent layer and a surface layer comprising porous, electrically non-conductive halogen-inert, electrolyte-inert, and halogen non-adsorbent particles, having an average largest dimension less than about 10 mils and a halogen-inert bonding agent bonding the particles together into an integral non-conductive mass which essentially retains the porosity of the particles; and an anodic electrode having a coating of such electrically non-conductive particles on the electroplating surface of the electrode.

3,719,527

## THERMAL BATTERY

Ronald W. Carlsten and Donald A. Nissen, Albuquerque, N. Mex., assignors to the United States Atomic Energy Commission

Filed Jan. 31, 1972, Ser. No. 222,029

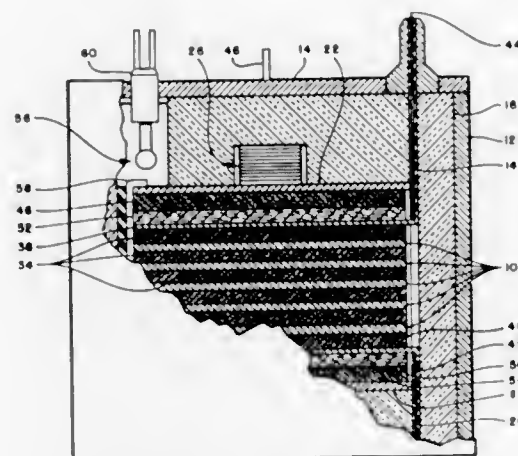
Int. Cl. H01m 21/14

U.S. Cl. 136—83 T

8 Claims

A thermal battery activatable above a preselected temperature including a casing with a plurality of electro-

chemical cells therein, each of which includes a halide cathode and a solid electrolyte having substantially greater conductivity after a phase transition, and an



anode separated from the cathode by an electrolyte; means are provided in the casing for heating the cells to temperature and initiating the heating means to activate the battery.

3,719,528

## FUEL CELL CONTAINING AN ELECTROLYTE CONSISTING OF AN AQUEOUS SOLUTION OF ARSENIC ACID

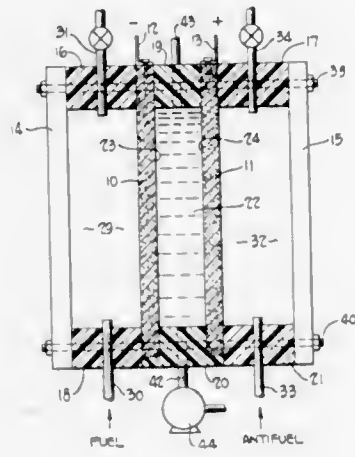
Robert K. Grasselli, Cleveland, and James L. Callahan, Bedford, Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation of application Ser. No. 659,827, May 26, 1967, which is a continuation-in-part of application Ser. No. 144,647, Oct. 12, 1961, both now abandoned. This application Oct. 12, 1970, Ser. No. 80,143

Int. Cl. H01m 27/00

U.S. Cl. 136—86 R

5 Claims



Improved ion-containing and conducting medium for electrochemical reaction apparatus comprising phosphoric acid and/or arsenic acid and water.

The principles of this invention, for exemplary purposes, will be described in reference to a fuel cell for directly converting chemical energy into electrical energy, it being understood, however, that these principles are applicable to other types of electrochemical reaction apparatus as well.

3,719,529

## VOLTAIC CELL AND METHOD USING DILUTE FUEL GASES FOR GENERATE ELECTRICAL POWER

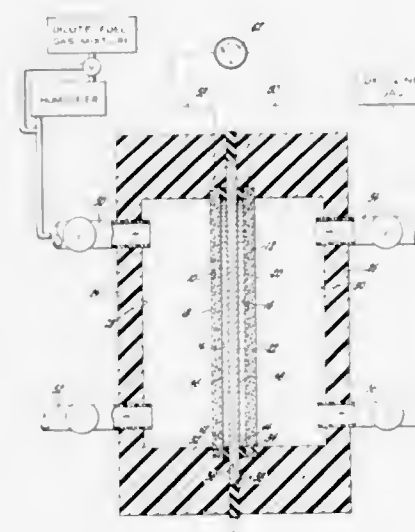
David P. Lake, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 30, 1971, Ser. No. 185,220

Int. Cl. H01m 27/30

U.S. Cl. 136—86 R

6 Claims



A voltaic cell operating on oxidizing gaseous mixtures containing a dilute fuel gas. Functionally similar catalytic gas electrodes are used with a phosphoric acid electrolyte and an ion exchange resin gas diffusion barrier in between. The electrodes are saturated with electrolyte. Means are provided to reduce current variation due to water content variation in the phosphoric acid. The cell can operate on fuel gas mixtures of air containing low concentrations of carbon monoxide.

3,719,530

## ELECTRIC BATTERIES AND ALLOYS THEREFOR

John Frederick King, Manchester, and Robert Kenneth Packer, Dorset, Weymouth, both of England, assignors to Magnesium Elektron Limited, Manchester, England

Filed Aug. 6, 1969, Ser. No. 849,284

Claims priority, application Great Britain, Aug. 9, 1968, 38,087/68

Int. Cl. H01m 17/02

U.S. Cl. 136—100 M

12 Claims

This invention relates to electrical batteries having an anode made essentially of a magnesium base alloy containing 1 to 15 percent by weight thallium, 0 to 10 percent aluminum and to foil made of such alloy.

3,719,531

## CATIONICALLY-CONDUCTIVE CERAMICS, THEIR PREPARATION AND USE

Matthew A. Dzieciuch, Dearborn Heights, and Neill Weber, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 604,100, Nov. 21, 1966, Pat. No.

3,535,163, which is a continuation-in-part of Ser. No. 500,500, Oct. 22, 1965, abandoned. This application Dec. 22, 1969, Ser. No. 886,806

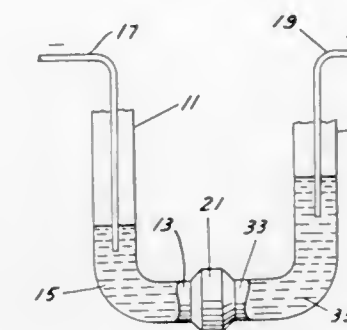
Int. Cl. H01m 11/00; B01k 3/12

U.S. Cl. 136—153

20 Claims

A crystalline article of manufacture consists essentially of a structural lattice and cations which are mobile in relation to the lattice under influence of an electric field. The structural lattice consists essentially of a major proportion by weight of ions of aluminum and oxygen and a minor proportion by weight of ions of metal having a valence not greater than 2 in

crystal lattice combination. The cations which are mobile in



relation to the crystal lattice are alkali metal cations, preferably sodium ions.

3,719,532

## THERMOGENERATOR WITH THERMOELECTRIC ELEMENTS IN EXHAUST DUCTS

Dieter Falkenberg, Erlangen, and Josef Winkler, Nurnberg, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

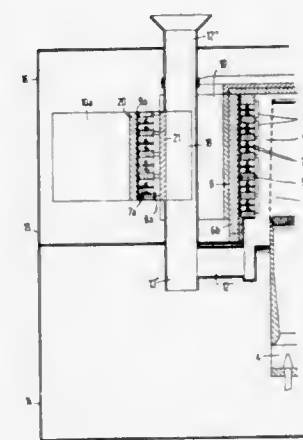
Filed June 18, 1970, Ser. No. 47,223

Claims priority, application Germany, June 25, 1969, P 19 32 087.7

Int. Cl. H01v 1/30

U.S. Cl. 136—208

1 Claim



The hot heat exchangers of a plurality of p and n conductivity thermoelement legs positioned between hot and cold heat exchangers are housed in a combustion chamber and are heatable by combustion gases in the chamber. An exhaust duct for the combustion chamber is coupled thereto in a manner whereby the flow direction of the combustion gases in the combustion chamber is reversed and at least part of the combustion gases again flows over the hot heat exchangers.

3,719,533

## WITHDRAWN

3,719,534

## ANTI-CORROSIVE COATING COMPOSITIONS

Clifford A. Vessey; Geoffrey M. Gibson, and Kenneth U. Holker, all of Harrogate, England, assignors to Associated Chemical Companies Limited

Continuation of Ser. No. 628,310, April 4, 1967, abandoned.

This application May 20, 1970, Ser. No. 37,488

Claims priority, application Great Britain, April 5, 1966, 15,082/66; Sept. 29, 1966, 43,631/66; Oct. 25, 1966, 47,875/66; Nov. 24, 1966, 52,631/66

Int. Cl. C23f 7/26

U.S. Cl. 148—6.2

6 Claims

The invention relates to processes for coating metal surfaces and to corrosion resistant coating compositions for use



in the processes. The compositions of the invention are solutions of a chromic acid salt of one or more organic bases having at least one straight or branched chain containing at least six carbon atoms in an organic solvent having a boiling point not greater than 250° C. at atmospheric pressure. The salts used are restricted to those which are sufficiently soluble in the solvent at 20° C. to provide a solution containing at least 0.2% CrO<sub>3</sub> w/v in the solution.

Preferred bases are primary, secondary or tertiary amines and quaternary ammonium bases.

In a preferred embodiment the composition also contains a material capable of effecting reduction of at least a part of the hexavalent chromium in the composition.

For particular applications in which the composition is applied to metals which have been pretreated, washed and not dried the composition also contains a surfactant and, if necessary, a solubilizing agent for the surfactant.

### 3,719,535 HYPERFINE GEOMETRY DEVICES AND METHOD FOR THEIR FABRICATION

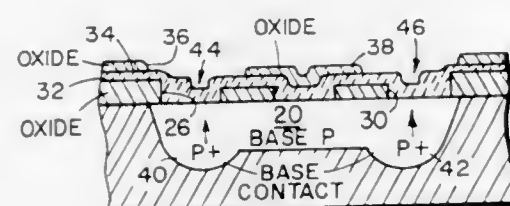
Demir S. Zoroglu, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 21, 1970, Ser. No. 100,154

Int. Cl. H011 7/44

U.S. Cl. 148—187

8 Claims



A hyperfine geometry device and the method for the making thereof is disclosed which method employs the combination of a patterned oxide layer having apertures designating all the regions to be diffused into a substrate body. A layer of amorphous silicon is formed over the upper surface of the substrate body including the surface of the substrate exposed through the apertures as well as the oxide formed on said upper surface. A third layer of silicon dioxide is formed over the amorphous silicon layer and is patterned to expose selected apertures within the initial or first oxide layer. The patterning of this third layer need not be precise. A diffusion is performed through such exposed amorphous silicon areas into the substrate body. After such diffusion, the amorphous silicon is chemically changed into an oxide for protecting the diffusion aperture from additional diffusions or alternatively, a new passivating layer is formed over such previously diffused areas. In this manner apertures in the first oxide layer are selectively exposed as required in the sequence for manufacturing the desired semiconductor device.

### 3,719,536 MECHANOCHEMICAL SHEET METAL BLANKING SYSTEM

Lawrence M. Rheingold, Baldwin, Milton Berlin, Forest Hills, Louis De Lallo, Syosset, and Alfred Schierwagen, Richmond Hill, N.Y., assignors to The Alumet Corporation, Hicksville, N.Y.

Filed Feb. 12, 1971, Ser. No. 114,883

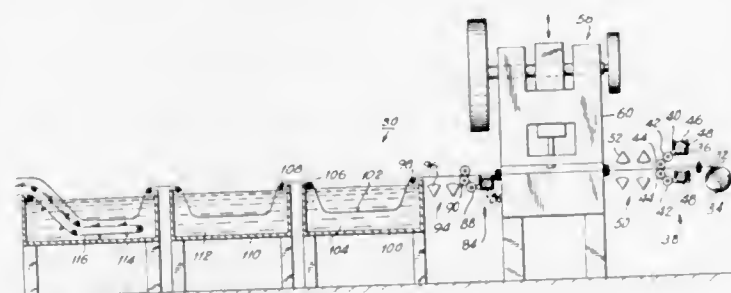
Int. Cl. C23f 17/00; H05k 1/00

U.S. Cl. 156—6

14 Claims

A system of blanking sheet metal by using a punch and die to partially stamp a part out of sheet metal stock in a fashion such that a considerable portion of the thickness of the part protrudes from the stock but the remainder is retained therein, being separated from the stock by a peripheral shear crack or fault zone. Prefer-

ably at least some portions of the part and stock have a coating or layer of an etch resistant material. The opening in the stock from which the part was partially punched out is freshly exposed unprotected metal. Subsequently, the stock and part are etched. The etching fluid attacks the metal at the exposed portion of the opening and in the peripheral shear crack (fault zone) to loosen the hold of the stock on the part. The part finally is released from the stock. Etch resistant material may be applied to the die-facing side of the stock and part after the partial punching operation has been completed and may be a subsequent second application of such



material, the first being prior to the punching step. Such an after-punching etch resist coating can be used to retain the part in the stock when the part is loosened by etching so that the part will be held to the stock until such etch resistant coating is removed. The etching step, in addition to loosening the part from the stock, desirably eliminates the burr which conventionally is present on the punch-facing side of the part so that the part does not have to be deburred in a subsequent step. An etching step may be practiced to deburr a completely stamped out part by protecting all surfaces of the part except in the region adjacent the burr.

### 3,719,537 PROCESS OF MAKING PILE FABRIC FLOOR COVERING

Roger L. Wilcox, P. O. Box 534, Amagansett, N.Y.

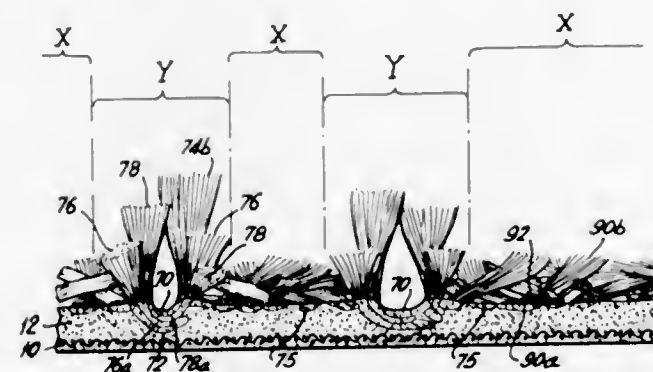
Division of Ser. No. 705,976, Feb. 16, 1968, Pat. No.

3,575,778. This application Nov. 23, 1970, Ser. No. 92,209

Int. Cl. D04h 11/00

U.S. Cl. 156—72

4 Claims



As an article, and its method of manufacture, a non-woven fabric useful as a floor covering having a composite tread surface structure presenting pile tuft and flat textile elements.

### 3,719,538 METHOD OF FORMING A COMPOSITE METALLIC PREFORM TAPE

Robert G. Carlson and Carl A. Steinhagen, Cincinnati, Ohio, assignors to General Electric Company

Filed Apr. 12, 1971, Ser. No. 133,207

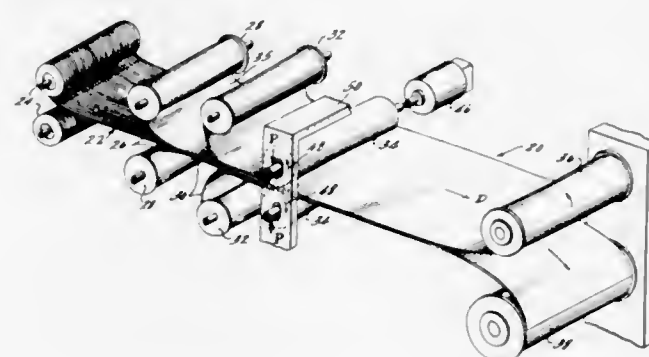
Int. Cl. B32h 31/06, 31/08, 31/12, 31/20

U.S. Cl. 156—179

8 Claims

A composite metallic preform tape for use as laminae in the manufacture of metallic composite articles is made

from a pair of metallic foils and high strength, high modulus filaments aligned between the foils. One form of the method involves first coating either the foil inner surfaces or the filament outer surfaces, or both, with a thin, non-metallic adhesive bonding material which will decompose leaving substantially no residue upon heating at a temperature below that at which the foil and filaments will melt, and preferably below that at which they will bond together. The foil and the aligned filaments are themselves aligned and, in a continuous form of the method, are moved at substantially the same rate and in the same direction so that the coated surface is between



the foil and filaments. At the same time, the foil and filaments are pressed toward one another with a force sufficient to adhesively bond together the foil and filaments and to plastically deform the foil around at least a portion of substantially each filament.

In a preferred form, at least one plastically deformable, strippable outer film is applied for protection and, if desired, for a quality control record. Deformation of the foils around at least a portion of substantially each filament results in an article having a sandwich construction including centrally aligned filaments maintained in spaced apart relationship.

### 3,719,539 RADIATION CURING OF UNSATURATED POLYESTER COMPOSITIONS

George Edwin Robert Lamb; Dusan Ciril Prevorsek, and Hendrikus Johan Oswald, all of Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Aug. 22, 1969, Ser. No. 852,459. The portion of the term of this patent subsequent to July 14, 1987, has been disclaimed.

Int. Cl. B29c 25/00

U.S. Cl. 156—199

4 Claims

A cold-forming method for forming shapes from a laminate which has a thermosetting resinous core and thermoplastic face sheets is disclosed. The thermoplastic face sheets are of sufficient thickness and strength so that the sandwich containing the thermosetting core between the face sheets may be cold formed into shaped articles and such shape as is imparted to it is retained by the thermoplastic face sheets without substantial external constraint on the shape as the thermosetting core is cured by a catalyst system consisting essentially of a peroxide catalyst in conjunction with high energy radiation.

### 3,719,540 PREPARATION OF TRANSVERSELY FIBRILLATED FILM

John N. Hall, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed May 4, 1970, Ser. No. 34,030

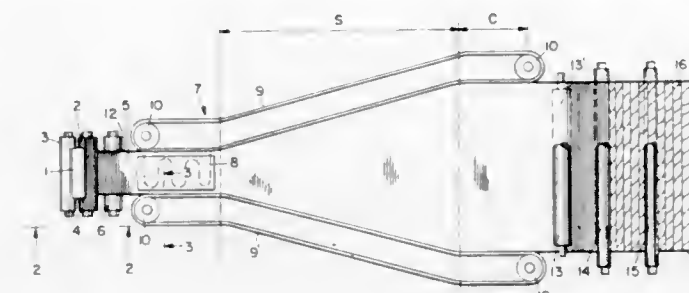
Int. Cl. B32h 31/16

U.S. Cl. 156—267

7 Claims

Transversely fibrillated films are prepared by embossing a molten thermoplastic film with transverse striations, transver-

sely stretching the film while leaving an unstretched edge portion which, after stretching is at least 100 percent thicker than the embossed and stretched section. The film is then subjected to fibrillating stress under conditions whereby the thick edges



are not affected. These edges then serve to hold the transverse fibers, resulting from the fibrillation, together in an integral structure for further handling. The fibrillation structure is useful for preparing laminar nonwoven fabrics having the filaments in different layers disposed at an angle to one another.

### 3,719,541 PROCESS FOR THE PRODUCTION OF PRECOATED METAL

Masao Takahashi; Jiro Mibae; Takamitsu Ino; Ryuhei Takigawa, and Shuji Fujioka, all of Ohtsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

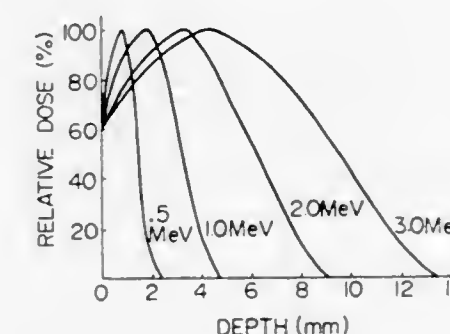
Filed March 9, 1970, Ser. No. 17,643

Claims priority, application Japan, March 11, 1969, 44/18027

Int. Cl. B01j 1/10

U.S. Cl. 156—272

2 Claims



Process for the production of a precoated metal which comprises laminating a film resin layer on the surface of a metal material through an intermediate layer comprising a radical curable resin and achieving unification of said laminated product by irradiating said laminated product from above with an electron beam having an energy capable of being transmitted to the surface of the metal material.

### 3,719,542 APPARATUS FOR CONNECTING THE TRAILING END OF ONE METAL STRIP TO THE LEADING END OF A SUCCEEDING METAL STRIP

Gunther Schmitz; Hans Weber, and Christian Vogt, all of Duisburg, Germany, assignors to DEMAG Aktiengesellschaft, Duisburg, Germany

Filed March 31, 1970, Ser. No. 24,244

Claims priority, application Germany, May 21, 1969, P 19 25 845.8

Int. Cl. B65h 69/02

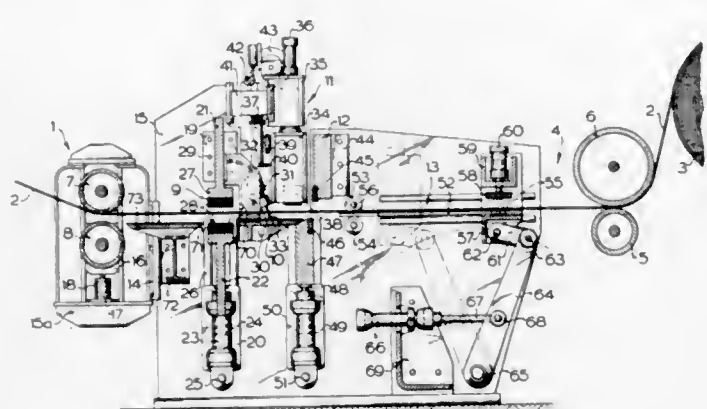
U.S. Cl. 156—502

16 Claims

In processing metal strips, the leading end of a succeeding strip is secured to the trailing end of a preceding strip by cutting the unuseable parts of the ends to be connected and applying an adhesive tape completely across the width of at least one of the ends. The ends are aligned in contacting rela-

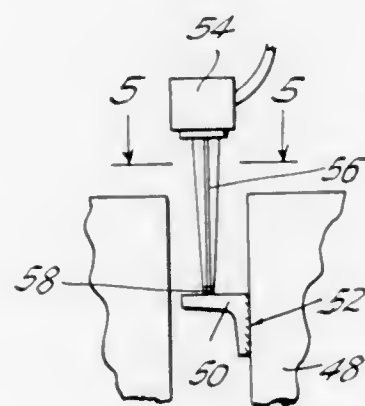


tionship, preferably one overlaying the other and a pressure member secures them together. If necessary, heat can be applied with the pressure to effect the securing of the adhesive



to the metal strips. The adhesive tape is placed across the width of the ends of the metal strips and is cut off before its application to the strip is completed so that it extends for exactly the width of the strip.

**3,719,543**  
**ELECTROACOUSTIC MEANS FOR SEPARATION OF GLUED JOINTS**  
Arthur M. Harris, 135 Southwood Road, Fairfield, Conn.  
Filed Sept. 3, 1968, Ser. No. 767,538  
Int. Cl. B32b  
U.S. Cl. 156—584 9 Claims

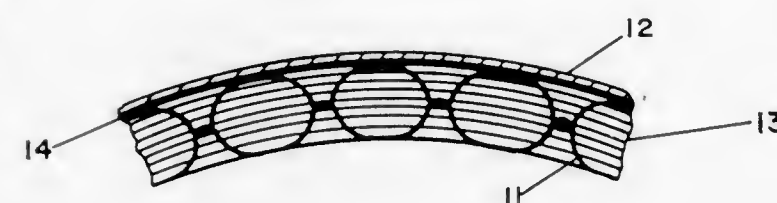


A method and means for separating glued joints by subjecting at least one of the joined members to ultrasonic vibrations through either direct contact with an electroacoustic transducer, or else indirect contact therewith through a liquid, gaseous or solid medium. The application of the vibrations may be accompanied by a pulling force, exerted as by a suction applied to the joined member.

**3,719,544**  
**NOVEL ADHESIVE AND OPTICAL DEVICES LAMINATED THEREWITH**  
Harold O. Buzzell, Wollaston, Mass., assignor to Polaroid Corporation, Cambridge, Mass.  
Continuation-in-part of Ser. No. 697,019, Jan. 11, 1968, Pat. No. 3,639,311. This application Feb. 1, 1971, Ser. No. 111,725  
Int. Cl. G02b 5/30; G08f 29/46; C09j 3/16  
U.S. Cl. 161—1 2 Claims

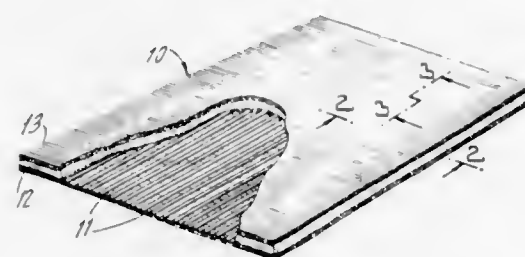
Many of the physical problems encountered in the product of an optically perfect lamination between polymethyl methacrylate and cellulose acetate butyrate may be obviated by utilizing an adhesive comprising approximately 95 percent methyl methacrylate monomer, approximately 4 percent nitrocellulose having a viscosity within the range of 600 to 1,000 seconds<sup>-1</sup> and about 1 percent of a polymerization initiator for the monomer.

**3,719,545**  
**REINFORCED LAMINATED MATERIAL**  
Harry A. Lawler, Youngstown, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.  
Filed March 15, 1971, Ser. No. 124,079  
Int. Cl. B32b 3/06, 7/08  
U.S. Cl. 161—50 4 Claims



A laminated material made up of densified layers of flexible material such as films or fabrics. The flexible layers are stitched together with reinforcing filaments and then densified under heat and pressure to form a compressed rigid laminate which is suitable as a backing for personnel armor.

**3,719,546**  
**LUBRICATED NON-WOVEN FABRIC**  
David B. Parlin, Thompsonville, Conn., assignor to Bigelow-Sanford, Inc., New York, N.Y.  
Division of Ser. No. 713,186, March 14, 1968, Pat. No. 3,576,687. This application Feb. 3, 1971, Ser. No. 112,247  
Int. Cl. B32b 5/12, 5/06  
U.S. Cl. 161—55 10 Claims



A needled non-woven fabric which comprises a needled web of crimped fibers of a synthetic thermoplastic material such as a polyolefin or a polypropylene. Said web and the fibers thereof being lubricated and including a series of lengthwise extending, spaced warp threads of a material such as cotton which are relatively inextensible in comparison with the needled web of fibers.

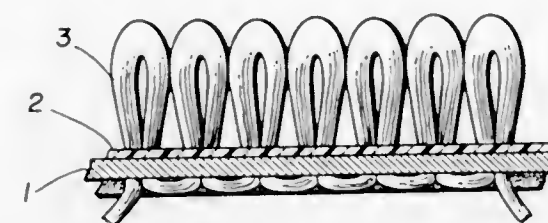
The thermoplastic fibers comprising the needled web being bonded or fused into engagement with each other on one or both exterior surfaces of the fabric. The fibers on one such surface also being bonded or fused into engagement with the warp threads. The remaining or interior fibers of the fabric being unfused and mobile or movable relative to each other.

The fibers of the needled fabric being lubricated with a lubricant such as coconut oil to increase the mobility of the unfused fibers and to reduce the noise resulting from tufting of the fabric. The lubricant also prevents overheating of the tufting needles.

**3,719,547**  
**FLAME RETARDANT PILE FABRIC**  
Donald H. Martin, Gulf Breeze, and Donald A. Holmer, Dennis J. Durant, Roland J. Bryan, Jr., James H. Saunders, and William B. Black, Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.  
Filed Dec. 9, 1970, Ser. No. 96,403  
Int. Cl. D03d 27/00; D04h 11/00  
U.S. Cl. 161—67 5 Claims

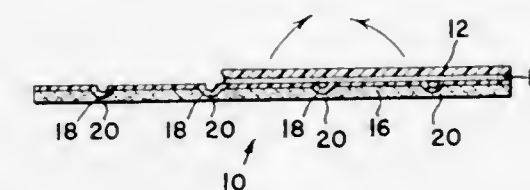
A flame retardant pile fabric is provided. A fibrous layer composed of combustible filaments or fibers extends from the top surface of a fibrous backing to present a pile sur-

face. A coating of a film forming halogen-containing polymer and a water-insoluble organo-phosphorous compound is applied to and confined essentially to the top surface



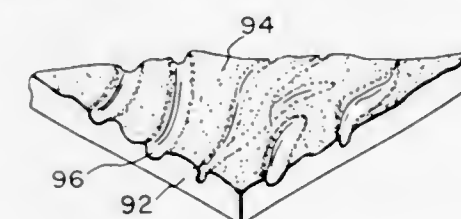
of the backing. Where the backing is made in the main of a thermoplastic material, a coating of the halogen-containing polymer without the organo-phosphorous compound renders the fabric sufficiently flame retardant.

**3,719,548**  
**FRACTURABLE ADHESIVE BACKING**  
Jerry L. Keck, Chicago, and James Robert Rowley, Calumet Park, both of Ill., assignors to Ludlow Corporation, Needham Heights, Mass.  
Filed Aug. 6, 1971, Ser. No. 169,653  
Int. Cl. B32b 3/30  
U.S. Cl. 161—117 3 Claims



A process and apparatus for selectively compressing paper stock of the type which is used as a protective backing sheet for adhesive-coated systems. The process comprises use of a novel compression tool, the precise characteristics of which depend on the paper stock being utilized. The compression tool comprises a blunt, rotatable, circular, working edge which has a radius of at least 0.02, but preferably at least 0.04 inches in diameter and at least one half of the thickness of the paper being weakened. This tool advantageously comprises the compressing edge, being mounted integrally with a bearing surface which makes pressure control easier and limits penetration of the tool. In the preferred embodiments of the invention, the bearing surface is faced with elastomeric material. Disclosure is also made of a novel release sheet and adhesive sheet assembly which is manufactured utilizing the process and apparatus of the invention.

**3,719,549**  
**ABRADED SUEDE-LIKE SHEETING AND PROCESS FOR SAME**  
Emmanuel Mittman, Forest Hills, N.Y., assignor to W. R. Grace & Co., New York, N.Y.  
Filed Feb. 5, 1971, Ser. No. 112,899  
Int. Cl. B32b 3/00, 31/00  
U.S. Cl. 161—119 8 Claims

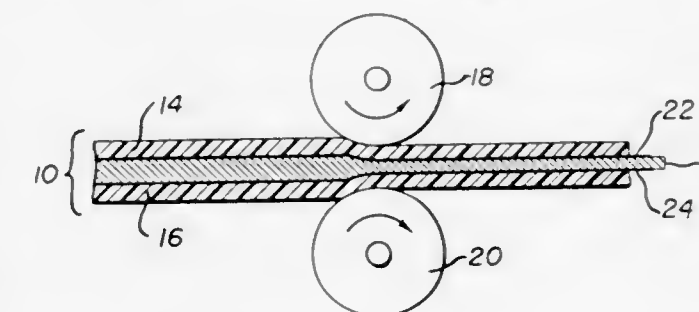


The invention disclosed is for preparation of a new suede-like plastic sheeting having a desirably configured surface which provides an improvement in the surface textural characteristic thereof.

**3,719,550**  
**CERAMIC ARTICLES AND METHOD OF SEALING CERAMICS**  
Ronald H. Arendt, Schenectady, N.Y., assignor to General Electric Company  
No Drawing. Filed Apr. 28, 1971, Ser. No. 138,305  
Int. Cl. C04b 35/10, 35/50, 39/12  
U.S. Cl. 161—188 7 Claims

A method of forming a seal between high-density yttria bodies or between a high-density yttria body and a high-density alumina body is provided. The method involves placing an  $\text{Al}_2\text{O}_3\text{-Ga}_2\text{O}_3\text{-Y}_2\text{O}_3$  mixture between the bodies to be sealed and heating the mixture to a temperature above the melting point of  $\text{Ga}_2\text{O}_3$  and below the deformation temperature of the bodies such that an  $\text{Al}_2\text{O}_3\text{-Ga}_2\text{O}_3\text{-Y}_2\text{O}_3$  seal forms between the bodies. Ceramic articles having a gas tight seal are made by the method.

**3,719,551**  
**PROCESS FOR PRODUCING A LEAD-PLASTIC LAMINATE AND A LAMINATE PRODUCED BY THE PROCESS**  
Schrade F. Radtke, New Canaan, Conn., and Jerry Miron, Livingston, Pradip Bhatt, Newark, Bharat C. Shah, Hoboken, and Irving Skeist, Summit, N.J., assignors to International Lead Zinc Research Organization, Inc., New York, N.Y.  
Filed Nov. 3, 1970, Ser. No. 86,519  
Int. Cl. B21b 1/27; B32b 15/08  
U.S. Cl. 161—213 18 Claims



A process for producing a laminate, comprising a lead foil arranged between two sheets of a thermoplastic polymer, and a laminate produced by the process. The process includes the step of rolling the otherwise finished laminate in a two-roll mill to reduce its total thickness. This rolling step, which is preferably carried out in a direction perpendicular to the sheet plastic stress lines, substantially improves the extensibility of the laminate.

**3,719,552**  
**BLEACHING OF LIGNOCELLULOSIC MATERIALS WITH OXYGEN IN THE PRESENCE OF A PEROXIDE**  
Charles Edward Farley, Norwalk, and Martin Grayson, Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.  
No Drawing. Continuation-in-part of abandoned applications Ser. No. 34,543, May 4, 1970, and Ser. No. 145,567, May 20, 1971, the latter being also a continuation-in-part of the former. This application June 18, 1971, Ser. No. 154,689  
Int. Cl. D21c 9/16  
U.S. Cl. 162—65 11 Claims

The rate at which sulfate-process pulp is brightened by oxygenated aqueous medium is accelerated by the presence in the medium of a dissolved peroxide when the pH of the medium is in excess of 11.



3,719,553

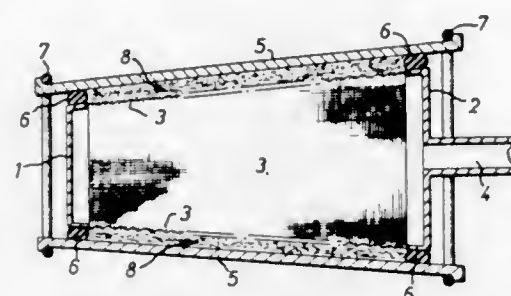
# FORMING FIBROUS ARTICLES WITH A VACUUM SCREEN FORMER WITH PRESSER PLATES FOR SMOOTHING THE OUTSIDE SURFACES

David Trevor Dorril, Kidderminster, and Charles Frank Cooper, Stourport-on-Severn, both of England, assignors to Morganite Research and Development Limited, London, England

Filed Sept. 28, 1970, Ser. No. 76,175  
Int. Cl. D21j 7/00

U.S. Cl. 162-227

4 Claims



A fibrous article is formed from a slurry by deposition on the walls of a vacuum screen former submerged within the slurry. Presser plates which are resiliently mounted to the screen former press and smooth the outside surfaces of the article under the action of the applied suction once the space between the plates and the screen former has become filled with the fibers. The applied suction can be supplemented or replaced by external pressure applied to the slurry surface.

3,719,554

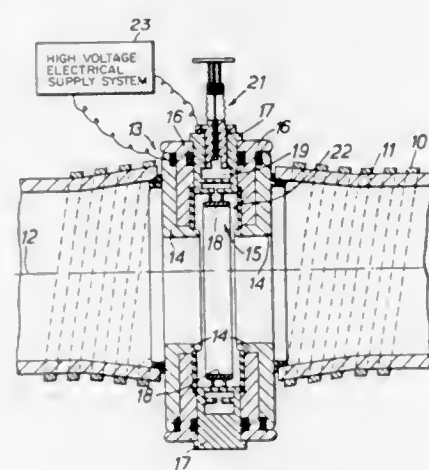
# HALL CURRENT ACCELERATOR ADAPTED FOR INJECTION OF IONS INTO PLASMA CONFINEMENT SYSTEM

Herbert Charles Cole, Abingdon, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Sept. 11, 1970, Ser. No. 71,565  
Claims priority, application Great Britain, Sept. 17, 1969, 45,927/69  
Int. Cl. G21b 1/00

U.S. Cl. 176-3

6 Claims



Gas is introduced into an accelerator which operates on the principle of a Hall accelerator. The anode and cathode are concentric annuli with the cathode innermost. The magnetic field is parallel to the axis. The gas is ionized in the accelerator and the ions accelerated radially inwardly towards the axis. The arrangement is especially suitable for injection of ions into a Stellarator type of plasma confinement system since the magnetic field of the confinement system may be used as the magnetic field of the accelerator. This reduces the problem of getting ions from outside to the inside of the magnetic trap.

3,719,555

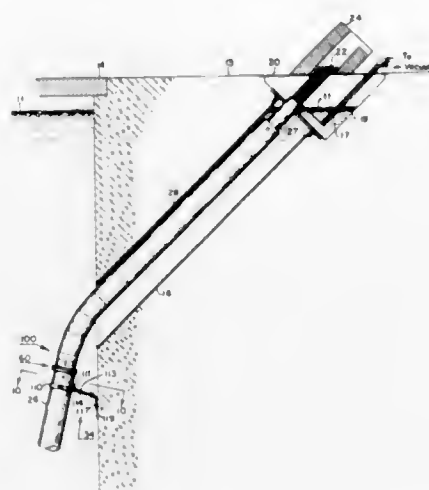
# IRRADIATION TEST FACILITY

Grover L. Davis, Fremont, Calif., assignor to General Electric Company, San Jose, Calif.

Filed Oct. 18, 1968, Ser. No. 771,087  
Int. Cl. G21g 1/00

U.S. Cl. 176-17

6 Claims



A test facility for use with a nuclear reactor to test instruments, fuel samples, etc., in a reactor environment under varying conditions is disclosed. This facility includes an insulated, gamma ray heated, pressurized boiler and reflux condenser system to provide an inherently stable temperature control system. Thus, the test environment may be varied with respect to temperature and pressure. In addition, test samples may be subjected to a boiling water environment, closely duplicating conditions in the core of a boiling water type power reactor.

3,719,556

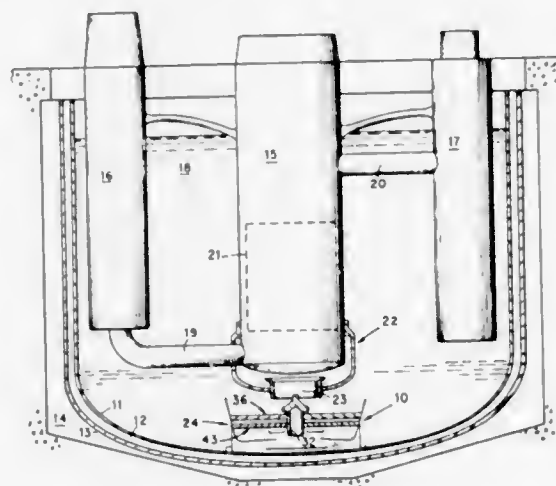
# NUCLEAR FUEL DEBRIS RETENTION STRUCTURE

Harold J. Snyder, Jr., Danville, and Ralph W. Guenther, San Jose, both of Calif., assignors to The United States of America as represented by the United States Energy Commission

Filed Dec. 2, 1971, Ser. No. 204,267  
Int. Cl. G21c 9/00

U.S. Cl. 176-38

10 Claims



A nuclear fuel debris retention structure which accommodates the dispersion, collection and cooling of the fuel debris resulting from a nuclear accident. The structure includes features which: (1) provides for the disbursement of fuel debris by expulsion action of entrapped sodium, (2) provides all-around cooling for chunks of debris, (3) provides for radial disbursement by the contour and direction of the grid vanes, (4) provides separate cooling to the primary structural support, and (5) allows for the accumulation of finer debris and molten materials due to the shape of the grids.

3,719,557

# CIRCULATING SYSTEM FOR A NUCLEAR REACTOR

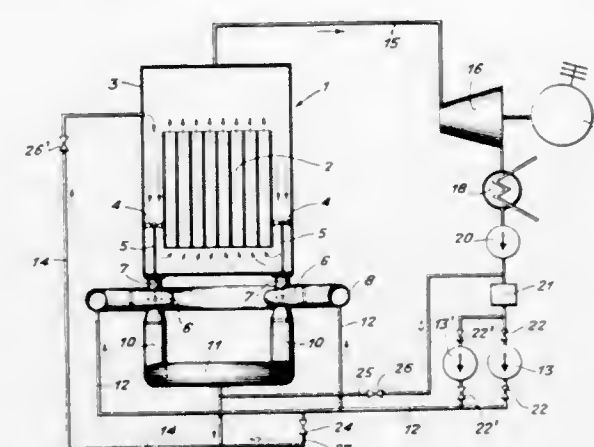
Dusan Florjancic, Winterthur, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland

Filed April 15, 1970, Ser. No. 28,573

Claims priority, application Sweden, May 21, 1969, 6047/69  
Int. Cl. G21c 15/24

U.S. Cl. 176-56

12 Claims



The circulating pump inside the pressure vessel is driven by a turbine outside the pressure vessel which in turn is driven by the flow of liquid working medium. The turbines can be situated above or below the pressure vessel. In either case, the need for seals to externally seal the pump shaft is eliminated and the axial thrust of the pump and turbine can be balanced.

3,719,558

# LIQUID-COOLED NUCLEAR REACTOR

Andre Leclou, Fosses, France, assignor to Commissariat A L'Energie Atomique, Paris, France

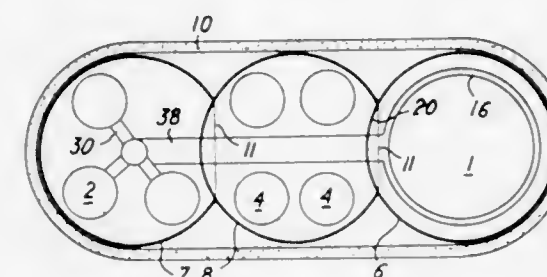
Filed March 22, 1968, Ser. No. 715,384

Claims priority, application France, March 28, 1967, 67100504

Int. Cl. G21c 19/28

U.S. Cl. 176-65

11 Claims



A liquid-cooled nuclear reactor comprising at least one pump for circulating the liquid through the reactor core and through at least one heat exchanger for cooling said liquid, said pump, said heat exchanger and said reactor core are immersed in a same mass of said liquid and disposed respectively in three vertical tanks which contain said liquid mass and which open at the top into a same inert gas atmosphere, said tanks have the shape at least partially of cylinders which are substantially identical in diameter and secant in pairs.

3,719,559

# FUEL PIN SPACER STRUCTURE

John C. Bass, La Jolla, Calif., assignor to Gulf General Atomic Incorporated, San Diego, Calif.

Filed Sept. 26, 1969, Ser. No. 861,336

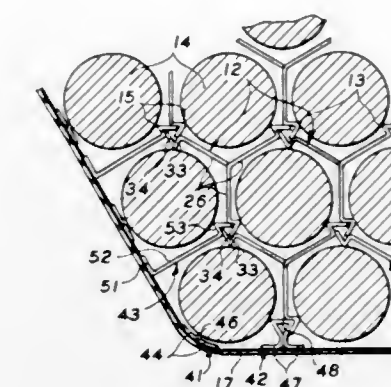
Int. Cl. G21c 3/34

U.S. Cl. 176-78

6 Claims

A spacer structure is described for maintaining a spaced relation between a plurality of generally parallel fuel pins in a

nuclear reactor. The spacer structure is comprised of a plurality of spacer elements constructed from flat plate stock and



bent in a way so that when the separate pieces are assembled together, they support each fuel pin at a plurality of points and interlock each other to form a grid-like assembly.

3,719,560

# FUEL ASSEMBLY FOR A NUCLEAR REACTOR USING ZIRCONIUM ALLOY CLAD FUEL RODS

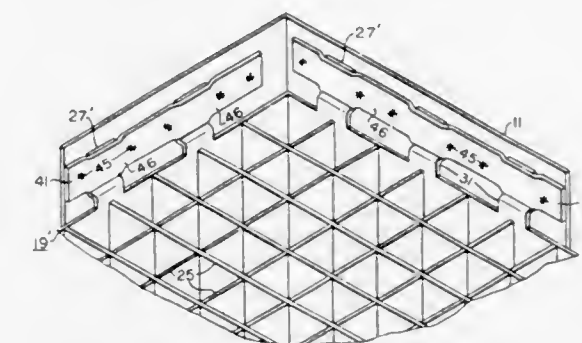
Joseph B. Mayers, Greensburg, and Stanley Kmonk, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed April 29, 1969, Ser. No. 820,107

Int. Cl. G21c 3/34

U.S. Cl. 176-78

13 Claims



Zirconium alloy structural materials for fuel rods are desirable in nuclear fuel assembly construction due to their low neutron absorption cross section properties. However, zirconium alloys are difficult to utilize due to their inability to be welded with other commonly-used fuel assembly construction materials such as inconel or stainless steel and their thermal expansion coefficient, which is significantly smaller than the inconel or stainless steel alloys commonly-used. The latter characteristic may result in buckling of the fuel assembly in a changing thermal environment. To obviate these difficulties in utilizing fuel rod cladding and/or fuel assembly cans of zirconium alloy with other structural elements such as a spacer grid formed from other materials, provisions are made herein for: (1) a fuel assembly construction having a zirconium alloy enclosure including means for attaching structural elements such as nozzles or grids of other materials thereto, and (2) a stainless steel enclosed fuel assembly having zirconium alloy clad fuel rods, including means for permitting relative movement of the fuel assembly parts due to differences in the thermal expansion rates of elements in the fuel assembly.



3,719,561

**PROCESS FOR PRODUCING DIAMINOPIMELIC ACID**

Katsunobu Tanaka, Machida-shi, and Kazuo Oshima and Yoh Tokoro, Tokyo, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

No Drawing. Continuation-in-part of application Ser. No. 663,217, Aug. 25, 1967. This application Aug. 7, 1968, Ser. No. 750,780

Claims priority, application Japan, Aug. 26, 1966, 41/55,832

Int. Cl. C12d 13/06

U.S. Cl. 195—28 R 14 Claims

A process for producing diaminopimelic acid which comprises culturing a microorganism capable of producing diaminopimelic acid under aerobic conditions in an aqueous nutrient medium containing at least one hydrocarbon as the main carbon source, and accumulating and recovering said diaminopimelic acid from the resultant culture liquor. Hydrocarbons which may be employed include, for example, n-paraffins, preferably having from 11 to 18 carbon atoms, kerosene, light oils, heavy oils, paraffin oils, naphtha, etc. Particular lysine-requiring strains of hydrocarbon-assimilating microorganisms are especially preferred in the process, for example, *Arthrobacter paraffineus* ATCC 21087 and 21088, *Brevibacterium ketoglutamicum* ATCC 21089 and *Corynebacterium hydrocarboclastus* ATCC 21090.

3,719,562

**PRODUCTION OF POLYNUCLEOTIDE PHOSPHORYLASE**

John W. Rothrock, Watchung, and Stuart R. Michelson, Englishtown, both of N.J., assignors to Merek & Co., Inc., Rahway, N.J.

Filed Oct. 1, 1970, Ser. No. 77,334

Int. Cl. C07g 7/28

U.S. Cl. 195—66 R

5 Claims

Polynucleotide phosphorylase is prepared by a novel process which comprises separating the cell paste from a *Micrococcus lysodeikticus* fermented broth, and rupturing this cell paste utilizing a homogenizer; substantially saturating the homogenized, ruptured cell slurry with ammonium sulfate, thereby precipitating unwanted by-products, and separating the latter from the supernatant liquid containing the desired enzyme product; dialyzing this supernatant solution against a Tris chloridetmagnesium acetate buffer, thereby removing inorganic salts; adding sufficient cold ethanol to the retentate to bring the ethanol concentration to approximately 40 percent, thereby precipitating enzyme product; and separating said enzyme product, the polynucleotide phosphorylase, from the resulting mixture. The polynucleotide phosphorylase is utilized in the enzymatic polymerization of nucleoside diphosphates, such as cytidine diphosphate and inosine diphosphate, to the corresponding polynucleotides, polyribocytidylic acid and polyriboinosinic acid.

3,719,563

**PROCESS FOR PRODUCING 7 - (5-AMINO-5-CARBOXYVALERAMIDO) - 7 - METHOXYCEPHALOSPORAMIC ACID**

Robert L. Hamill, New Ross, and Calvin E. Higgins and Marvin M. Hoehn, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of application Ser. No. 847,923, Aug. 6, 1969. This application Aug. 3, 1970, Ser. No. 60,556

Int. Cl. C12d 9/00

U.S. Cl. 195—80 R

3 Claims

Antibiotic A16884 and its salts, having antibacterial and anthelmintic activity, prepared by fermentation of *Streptomyces lipmanii* NRRL 35984.

**METHOD OF DETERMINING A REDUCIBLE GAS CONCENTRATION AND SENSOR THEREFOR**

Arnys C. Lilly, Jr., and Calvin O. Tiller, Richmond, Va., assignors to Philip Morris Incorporated, New York, N.Y.

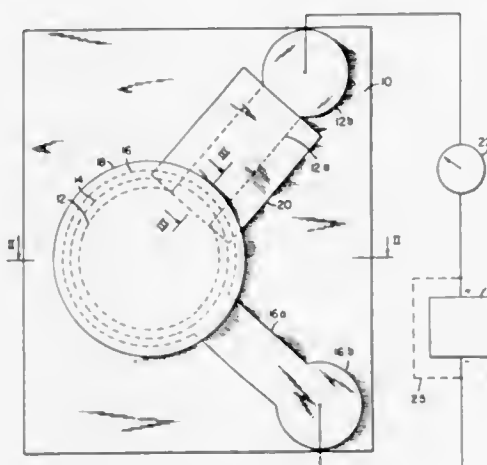
Continuation-in-part of applications Ser. No. 878,287, Nov. 20, 1969, and Ser. No. 45,713, June 12, 1970, both now abandoned, Ser. No. 45,804, June 12, 1970, now Patent No. 3,657,016, and Ser. No. 46,158, June 15, 1970. This application May 10, 1971, Ser. No. 141,779

The portion of the term of the patent subsequent to Oct. 17, 1989, has been disclaimed

Int. Cl. G01n 27/00, 27/46

U.S. Cl. 204—1 T

29 Claims



A reducible gas sensor comprising an electrochemical cell including a cathode, an anode and an electrolyte of a rare earth fluoride. The cell provides ambient reducible gas with ingress to the electrolyte and the conductivity of the electrolyte is accordingly modified, thus providing the cell with a measurable characteristic indicative of ambient concentration of the gas. A rugged miniature sensor, adapted for use in physically disturbed environments and preferably self-powered, is formed by thin film deposition of the cell elements.

3,719,565

**METHOD AND MEANS FOR MEASURING THE DEPOSITION RATE IN METALLIC PLATING BATHS**

Gunther Herrmann, Fuerth, Germany, assignor to Photocircuits Division of Kollmorgen Corporation, Glen Cove, N.Y.

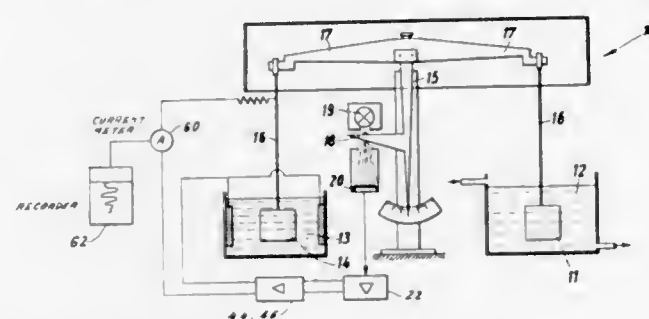
Filed Aug. 9, 1971, Ser. No. 170,001

Claims priority, application Germany, Aug. 10, 1970, P 20 39 634.3

Int. Cl. G01n 27/00

U.S. Cl. 204—1 T

9 Claims



A method and arrangement for measuring the instantaneous deposition rate of material on work pieces within metallic plating baths. A test body is immersed in the plating bath and suspended from a weighing scale. A second comparator body is also suspended from the scale and immersed in a second comparator bath. Any increase in weight of the test body due to being plated is registered as an unbalance in the scale. The unbalance is converted into an electrical current which is used

to plate the comparator body so that its weight becomes equal to the test body and the weighing scale is returned to a balanced state. The electrical current is measured and the current measurement is an indication of the instantaneous deposition rate.

3,719,566

**PROCESS FOR MAKING INTEGRATED CIRCUIT PACKAGES**

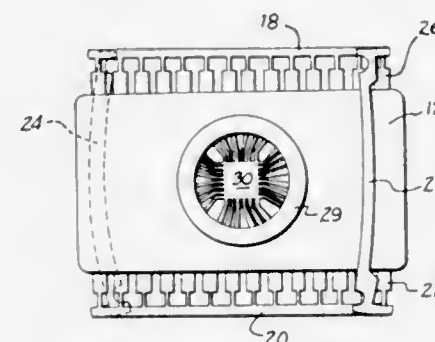
Robert E. King, and David F. Thompson, both of Warren, Pa., assignors to Sylvania Electric Products Inc.

Filed Jan. 4, 1971, Ser. No. 103,511

Int. Cl. C23b 5/48

U.S. Cl. 204—15

4 Claims



An improvement to a process wherein the electrically conductive parts of an integrated circuit package having a portion of the conductive parts external to a glass-ceramic seal are electroplated with a metal. The improvement comprises fabricating the glass ceramic seal while the electrically conductive portions are in a substantially flat rectangular relationship, then bending two sides of the frame to enable the exposed electrically conductive segments to serve as an electrode, electroplating and removing the two bent sides.

3,719,567

**METHOD FOR PRODUCING A CONTACT REED**

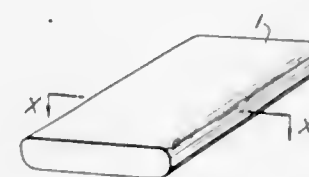
Kazumasa Ono, Takuya Tanii, both of Tokyo; Gen-ichi Kamoshita, Koganei; Mikio Hirano, Tokyo, and Masafumi Motouchi, Hachioji, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation and Hitachi, Ltd., both of Tokyo, Japan

Continuation-in-part of Ser. No. 723,433, April 23, 1968, abandoned. This application Dec. 31, 1970, Ser. No. 103,144

Int. Cl. C23b 5/50

U.S. Cl. 204—34

25 Claims



A method for producing a contact reed especially suitable for use in a reed switch to ensure a long life and low electric contact resistance of the switch, comprising electrolytically polishing the reed which is conducted in an electrolyte of  $H_3PO_4$  being kept at a temperature range of from about 50° C to 60° C under the application of an electric current of from about 2 to 5 A/dm<sup>2</sup> for from about 40 to 50 minutes to obtain a reed which will have a slightly rounded and smooth surface after being plated and then plating the electrolytically polished reed. The contact reed made thereby has a flat surface which is free from partial contact and undesirable pits.

**NICKEL ELECTROPLATING COMPOSITION AND PROCESS**

Roy W. Klein, St. Clair Shores; Robert A. Tremmel, Woodhaven, and Richard J. Clauss, Allen Park, all of Mich., assignors to Oxy Metal Finishing Corporation, Warren, Mich.

Filed Dec. 11, 1970, Ser. No. 97,346

Int. Cl. C23b 5/08, 5/46

U.S. Cl. 204—49

10 Claims

A process for the production of semi-bright electrodeposits of nickel and nickel alloys containing at least 80 percent nickel wherein the electroplating bath used is an aqueous solution containing at least one nickel salt and brightening and/or leveling amounts of a propylene oxide adduct of propargyl alcohol and a coumarin material. In a preferred embodiment, the electroplating bath also contains butyne diol.

3,719,569

**METHOD AND APPARATUS FOR COUNTERSINKING CAVITIES IN A WORKPIECE**

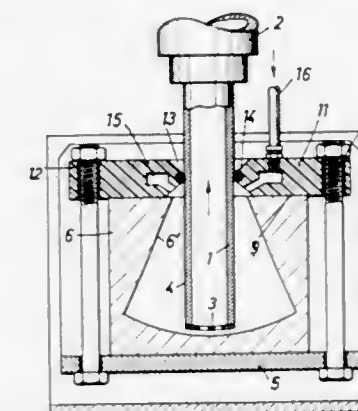
Peter Gosger, Remscheid-Luttringhausen, Germany, assignor to AEG-Eloterm G.m.b.H., Remscheid Hasten, Germany

Filed Oct. 13, 1970, Ser. No. 80,280

Int. Cl. B23p 1/00

U.S. Cl. 204—129.55

3 Claims



A method and apparatus for electrochemically countersinking a cavity having at least one cross sectional dimension which increases with depth. In one embodiment an electrode tool is infed into a workpiece and moved relative to the cavity in a pendulum motion. In a further embodiment, an arcuate hollow tool is mounted in a tool holder which follows a rotating cam member to infed the electrode into the workpiece.

3,719,570

**ELECTROLYTIC PROCESS**

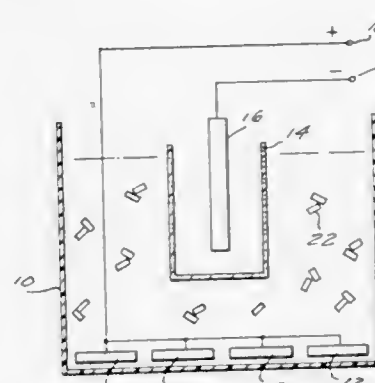
Leslie E. Lancy, Ellwood City, Pa., assignor to Resource Control, Inc., West Haven, Conn.

Filed July 8, 1970, Ser. No. 53,333

Int. Cl. B01k 3/10, 3/00

U.S. Cl. 204—151

22 Claims



A process and cell produces an oxidant or reductant from a solution containing an electrolytically decomposable oxida-



tion or reduction causing precursor compound for use with a waste solution, the oxidant or reductant being obtained by adding an electrolytically decomposable precursor compound to a solution in a vessel having an anode and cathode, one of which is isolated in a porous cup, so that when an electrical current flows between the electrodes the desired oxidizer or reductant will be formed outside the isolated electrode.

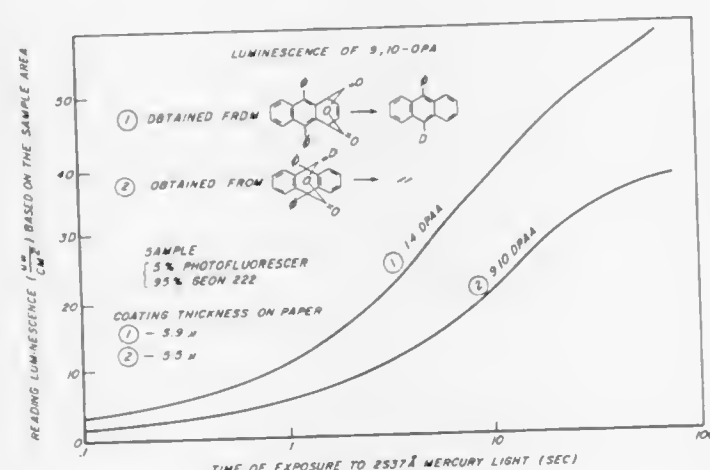
3,719,571

# PHOTODECOMPOSITION OF DIHYDRO-AROMATIC AND SIMILAR ANHYDRIDES

Arnold Zweig, Westport, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 764,311, Oct. 1, 1968, abandoned. This application Aug. 8, 1969, Ser. No. 848,577  
Int. Cl. B01j 1/10; C07c 15/00  
U.S. Cl. 204—158 R

11 Claims



A system for storage and retrieval of information comprising the use of non-fluorescent material capable of conversion to a fluorescent material under light of a particular wavelength, or heat, said material being an anhydride of a polycyclic aromatic compound, which can be made to fluoresce, after such conversion, by stimulating light radiation of a longer wavelength. A fluorescent image may be formed and detected by the system.

3,719,572

# AQUEOUS LATICES OF HIGH POLYMER COMPOSITIONS AND PROCESSES AND MEANS FOR THE PRODUCTION THEREOF

Oliver W. Burke, Jr., P. O. Box 1260, Fort Lauderdale, Fla.

Division of Ser. No. 767,790, Oct. 15, 1968, Pat. No. 3,622,127, which is a continuation-in-part of Ser. No. 621,997, March 7, 1967, Pat. No. 3,503,917, and a continuation-in-part of Ser. No. 691,823, Dec. 19, 1967, abandoned. This application Sept. 2, 1971, Ser. No. 177,461  
Int. Cl. B01j 1/00; B01t 7/00; C08f 3/16  
U.S. Cl. 204—159.15

1 Claim

The preparation of aqueous latices from solvent dispersions of elastomers and other high polymer compositions has presented problems including excessive viscosity during processing and foaming and coagulation, which have produced losses and increased costs. Herein combinations of steps are disclosed which reduce or eliminate various of these problems; enable the preparation of latices from high solids, high viscosity cements as well as from high solids cements of low molecular weight polymer; enable preparation of latices of grafted or filler extended or filler reinforced elastomers; enable preparation of latices of low molecular weight polymer which are then modified to materially increase the molecular weight of the polymer and/or the latex particle size; and en-

able the preparation of improved latices both dilute and of high solids contents, which are useful for example for adhesive and film forming purposes. The process in common with that of related copending applications is characterized, inter alia, by the establishment of a flow of latex through the separating zone and the impingement on said flow of the coalesced latex droplets from the solvent vapor stream in which they are delivered to the separator, and in certain embodiments by the use of particular additive materials. New combinations of steps and of apparatus for performing the same are also disclosed and claimed. The process disclosed is applicable to the production of latices from specified rubbery and non-rubbery polymer compositions, and certain of such latices are new and useful products also claimed herein.

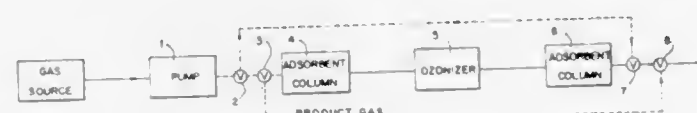
3,719,573

# PERIODICALLY REVERSED GAS FLOW OZONE PRODUCTION METHOD AND APPARATUS

Masayuki Kawahata, Scotia, N.Y., assignor to Environment/One Corporation, Latham, N.Y.

Division of Ser. No. 5,853, Jan. 26, 1970, Pat. No. 3,663,418. This application Oct. 15, 1971, Ser. No. 189,704  
Int. Cl. C01b 13/10  
U.S. Cl. 204—176

12 Claims



A periodically reversed gas flow method and apparatus for ozone production is described. Because moisture reduces the efficiency of most ozonizers, moisture is removed from an oxygen containing fluid before it passes through the ozonizer and the moisture is returned to the oxygen and ozone containing fluid after the ozonizer. At least two moisture adsorbent material columns are used so that the oxygen containing fluid is first passed serially through the two columns with the ozonizer interposed and then periodically reversed to pass serially through the three components in the opposite direction so that at least one column is always in an adsorbent cycle while at least another column is always in a desorbent cycle. The pressure of the oxygen containing fluid may be increased immediately upstream of the adsorber column and reduced immediately downstream of the adsorber column, for increased efficiency. The heat of adsorption is transferred from the adsorber column to the desorber column to provide the heat of desorption at the latter column, with the ozonizer serially interposed; the coolant fluid flow is preferably co-current to the oxygen fluid flow and reversed everytime that the oxygen containing fluid flow is reversed.

3,719,574

# APPARATUS FOR MEASURING IN A CONTINUOUS MANNER THE OXYGEN IN A MOLTEN METAL

Frederick Denys Richardson, Epsom, England, assignor to Metallurgie Hoboken-Overpeit, Brussels, Belgium and RST International Metals Limited, London, England, part interest to each

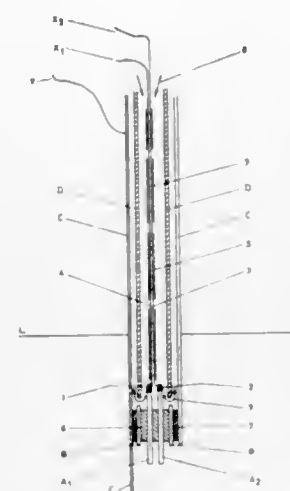
Filed July 6, 1970, Ser. No. 52,373. The portion of the term of this patent subsequent to May 9, 1989, has been disclaimed.  
Int. Cl. G01n 27/30

U.S. Cl. 204—195 S

15 Claims

Apparatus for the continuous measurement by immersion of oxygen contained in a molten metal which includes solid oxygen electrolyte rod or strip; reference electrode having known oxygen potential; means for measuring the elec-

trochemical potential present between the reference electrode and the metal which is to be tested; a protective tube sur-



rounding the electrolyte; and wherein the electrolyte is held in the end of the tube by means of an oxide cement.

3,719,575

# SENSOR WITH ION EXCHANGE RESIN ELECTROLYTE

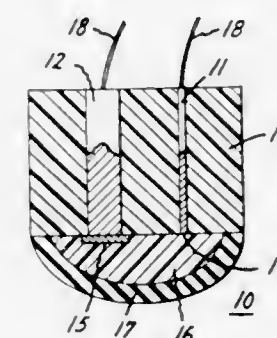
Leonard W. Niedrach and William H. Stoddard, Jr., Schenectady, N.Y., assignors to General Electric Company

Filed Oct. 15, 1970, Ser. No. 80,903

The portion of the term of the patent subsequent to Nov. 21, 1989, has been disclaimed  
Int. Cl. G01n 27/46

U.S. Cl. 204—195 P

3 Claims



A sensor has a rigid electrically insulating matrix, at least a pair of generally parallel, elongated current collectors embedded in the matrix, the current collectors electrically insulated from each other and opposite ends exposed, an electrochemically active region in electrical contact with the exposed end of each current collector at one end of the matrix, an electrical lead in contact with each current collector at the opposite end of the matrix, an ion exchange resin electrolyte contacting both electrochemically active regions, and an outer sheath of diffusion barrier material encapsulating the electrochemically active regions and the electrolyte. Methods of manufacturing such sensors are also described.

3,719,576

# ELECTRODE FOR MEASURING CO<sub>2</sub> TENSION IN BLOOD AND OTHER LIQUID AND GASEOUS ENVIRONMENTS

Robert A. Macur, Milwaukee, Wis., assignor to General Electric Company

Filed Jan. 29, 1971, Ser. No. 110,957

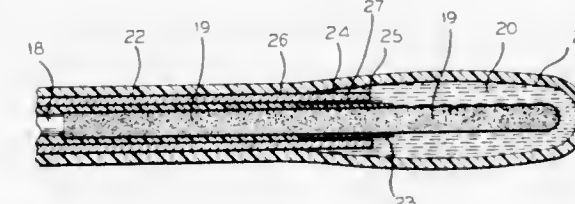
Int. Cl. G01n 27/30

U.S. Cl. 204—195 P

11 Claims

A sensor of the partial pressure of carbon dioxide in blood, other fluid, or gaseous mixture comprises a reference half-cell and a sensing half-cell immersed in a com-

mon electrolyte comprising chloride and bicarbonate ions. The sensing half-cell may be palladium-palladium oxide (Pd-PdO) or iridium-iridium oxide (Ir-IrO) and the reference half-cell may be silver-silver halide. The sensing half-cell is a wire coated at its distal end with its own oxide. The reference half-cell may be a silver tube which is coated on its tip with silver halide and slipped over an insulated section of the wire. The distal ends of the tube and wire are dipped into electrolyte which adheres and



then into a polymer which forms a carbon dioxide permeable and ion-impermeable membrane or barrier on the whole assembly when the polymer cures. The proximal ends of the silver tube and wire are connected by means of a coaxial cable to a high impedance voltmeter which is calibrated in terms of partial pressure of carbon dioxide in millimeters of mercury. Means are provided for standardizing the sensor and keep it equilibrated during storage.

3,719,577

# MAGNETIC FIELD CONTROL IN ELECTROLYSIS CELLS USING PLATES AND/OR BARS

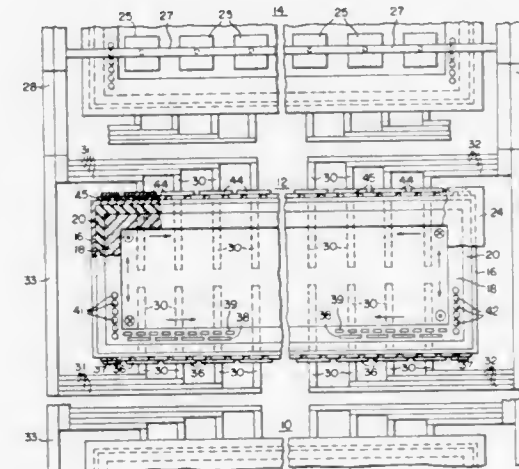
Robert F. Robl, Monroeville, and Wayne J. Walker, Lower Burrell, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed March 18, 1971, Ser. No. 125,584

Int. Cl. C22d 3/02

U.S. Cl. 204—243 M

13 Claims



A plurality of elongated, magnetic flux conducting structures magnetically spaced adjacent the sides of a cell for producing molten aluminum by electrolysis. The magnetically spaced, flux conducting structures are effective to shield the cell from and to substantially reduce the strength of a magnetic field component extending within the cell in a direction substantially parallel to the length dimension of the elongated structures without substantially affecting magnetic field components extending in directions other than the magnetic field component extending parallel to the elongated structures.



3,719,578

**ELECTROLYSIS CELL WITH ANODE SUPPORT MEANS**  
Jean Berthoux, Declines; Charles Hostein, Terrasson, and Robert Mugnier, Lyon, all of France, assignors to Progil, Paris, France

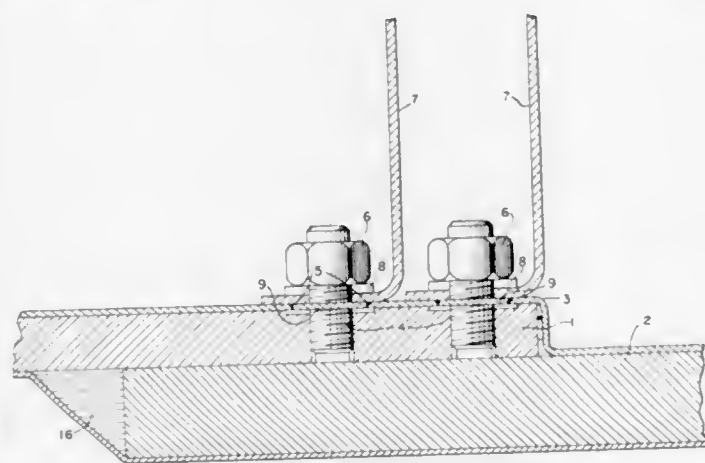
Filed Aug. 21, 1970, Ser. No. 65,765

Claims priority, application France, Sept. 22, 1969, 6932270

Int. Cl. B01k 3/10

U.S. Cl. 204-252

6 Claims



Electrolysis cell which is a series of cathodes and anodes, the anodic arrangement being a support-plate used for current inlet, the plate being coated on the outside with a thin sheet of chemically resistant metal and with a metal anode battery fixed on the support plate by bolts, the anodes being connected by a linking device.

3,719,579

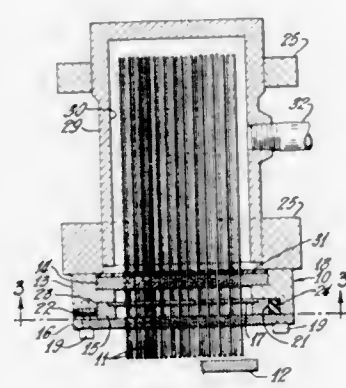
**TOOL HOLDER**

Donald E. Cross and William E. Blackburn, Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation  
Continuation of abandoned application Ser. No. 880,552, Nov. 28, 1969. This application May 24, 1971, Ser. No. 146,436

Int. Cl. B01k 3/04; B23r 9/16; C23b 5/70

U.S. Cl. 204-286

13 Claims



A device for holding a plurality of elongated tools in a parallel spaced relationship for simultaneously machining a predetermined pattern of holes in a workpiece. The tools are passed sequentially through similar patterns of aligned holes in three spaced, parallel plates: a fixed first plate, a linearly movable second plate and a fixed third plate. After the ends of the tools are aligned for simultaneously engaging the workpiece, a set screw is used to move the second plate in a direction parallel to the first and third plates to simultaneously lock the tools in place. A urethane spring is used to bias the second plate against the set screw. The device is particularly suitable for holding a large number of closely spaced hollow electrodes for either electrical discharge machining or electrochemical machining a large number of small holes in a relatively small surface area.

3,719,580

**ELECTROPHORETIC APPARATUS**

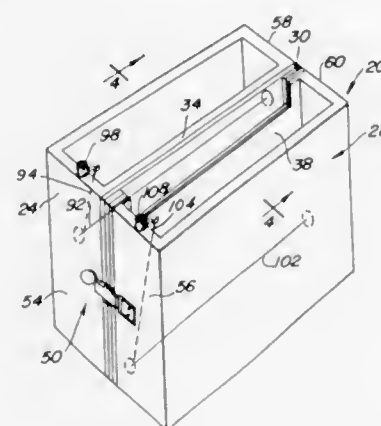
Richard M. Roberts, 15176 Rochdale Circle, Lombard, Ill., and John Stephen Jones, 2 Lynton Close, Gayton, Heswall, England

Filed June 4, 1971, Ser. No. 150,150

Int. Cl. B01k 5/00

U.S. Cl. 204-299

18 Claims



An electrophoretic apparatus in which the gel medium is set while disposed in a vertical attitude, the apparatus including vertically arranged first and second buffer solution containers defining therebetween a zone or cavity for holding a gel-forming solution, the latter solidifying in situ to form an electrophoresis gel medium. The apparatus is further characterized in that it includes a fluid flow barrier which separates the buffer containing chamber from the gel medium cavity, a preferred form of the barrier constituting a semi-permeable membrane which permits the passage of electrically charged particles therethrough but precludes gross transfer of liquid between the buffer chamber and the gel-containing cavity.

3,719,581

**APPARATUS FOR PRODUCING WET PROCESS CERAMIC BODIES**

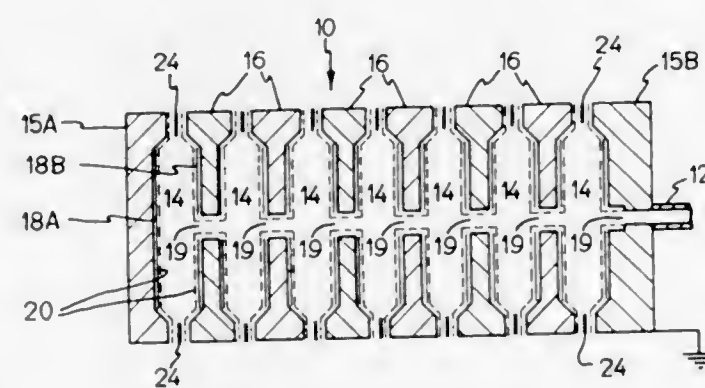
Lawrence M. Burrage, South Milwaukee, and Darrel D. McStrack, New Berlin, Wis., assignors to McGraw-Edison Company, Milwaukee, Wis.

Continuation of abandoned application Ser. No. 852,399, Aug. 22, 1969. This application Feb. 25, 1972, Ser. No. 229,298

Int. Cl. B01d 13/02; B01k 5/00

U.S. Cl. 204-299

10 Claims



A filter press has a group of chambers for receiving ceramic slip under pressure. Each chamber has a pair of separated electrodes connected to a direct current source. The walls of the chambers have vertical grooves and are coated with an insulating material. A filtering material covers the electrodes.

3,719,582

**ION SOURCE FOR SLOW-ION SPUTTERING**  
Norbert Ernst Fritz Hansen, Roetgen, and Walter Fritz Konrad Littmann, Eildendorf, near Aachen, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

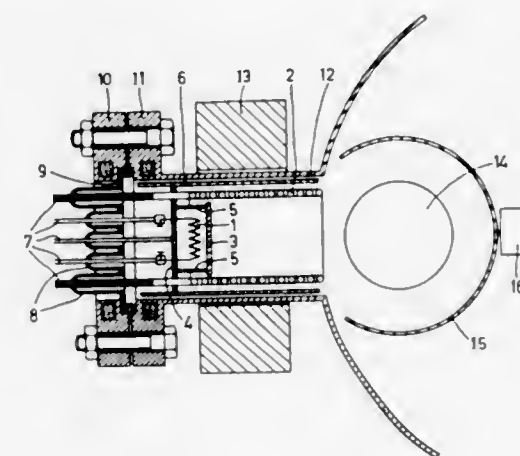
Filed Oct. 15, 1970, Ser. No. 80,972

Claims priority, application Germany, Oct. 21, 1969, P 19 53 659.5

Int. Cl. C23c 15/00

U.S. Cl. 204-298

3 Claims



An ion source for a sputtering apparatus comprising an open cylinder in which at one end a filament cathode is arranged, which is screened by two screening plates at right angles to the axis. An axial magnetic field in the anode of a few hundred gauss brings about a low burning voltage of about 30 to 40 v.

3,719,583

**APPARATUS FOR THE SEPARATION OF IONS FROM SOLUTION**

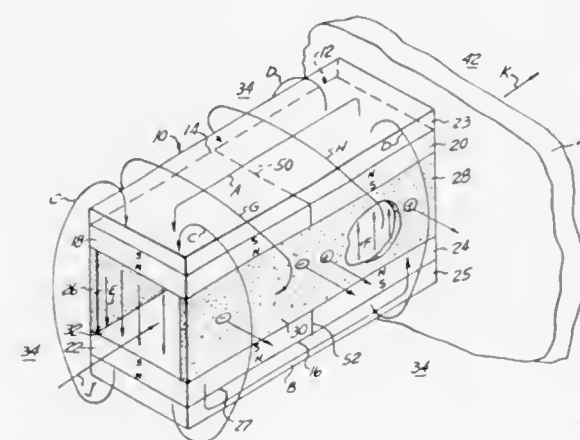
Daniel D. Ustick, 20024 Goddard Street, Detroit, Mich.

Filed July 6, 1970, Ser. No. 52,615

Int. Cl. B01k 5/00; C02b 1/82; B01k 1/00

U.S. Cl. 204-301

4 Claims



An ionized solution or electrolyte, such as sea water, is caused to flow through a conduit while passing through a magnetic field produced between magnets of opposite polarity disposed in spaced relationship adjacent opposite wall portions of the conduit. Extending between these magnets are two spaced opposite conduit wall portions of electrically non-conducting porous material, such as porous ceramic material, through the pores of which the positive and negative ions in a solution such as sea water can pass. When subjected to the magnetic field extending between the magnets, the positive

and negative ions are deflected laterally away from each other in opposite directions toward the porous walls, and are expelled from the conduit through the pores. The opposite but approximately parallel flow of positive and negative ions through this transverse magnetic field generates an electric current density, a very large percentage of which passes through the faces of the conduit's porous walls. The magnitude of the current density flowing out from the pores of the conduit and into the external medium is a measure of the relative concentration of salt water undergoing desalination by passing constituent ions (in this case from a salt water solution) through the conduit. If there is no measurable current density at a station downstream along the conduit adjacent the external side of its porous walls, the deionized water leaving the outlet orifice of the conduit is essentially free from salts.

To prevent external ions from entering the conduit through its porous walls by diffusion or otherwise, fluid adjacent the porous walls inside and outside the conduit should maintain parallel flow. An ionized solution, such as sea water, flowing past the pores outside the conduit faster than the partially deionized solution inside the conduit will produce a Venturi suction which draws off some of the processed solution of lowered salinity through the pores into the outside flow stream. This forms a thin boundary layer of lowered salinity along the external porous surface of the conduit which assists in preventing the external ion intrusion mentioned above. An internal over-pressure sustained by a dynamic flow pressure along the external porous surface balances any hydrostatic pressure tending to force ions back into the conduit.

To minimize the outward expansion of the external magnetic field generated by the device and its components, the magnets on opposite sides of the conduit are preferably arranged in a series with alternating polarities on each side. Ferromagnetic materials with high magnetic permeability, such as soft silicon steel, are used to provide an easy magnetic flux path for an otherwise open magnetic circuit external to the conduit. Minimizing the external magnetic field is desirable because this field acts to drive ions back into the device and is a source of inefficiency during operation. The magnets are preferably permanent magnets but may alternatively be electromagnets.

A modification of FIG. 3 (FIGS. 5 and 6) provides a barrier between the bodies of flowing electrolyte within the outer conduit and also provides gas escape ports in the upper wall of the outer conduit. The barrier is composed of electrically conducting walls separated from one another by an electrically insulating layer, and conductors electrically connected to these walls carry off current generated in operation and which may be used to actuate electrical devices in external circuits.

3,719,584

**ELECTRIC TREATER WITH GRAVITY-LIQUID HEAT BARRIER**

Delber W. Turner, Houston, Tex., assignor to Petrolite Corporation, St. Louis, Mo.

Filed July 19, 1971, Ser. No. 163,637

Int. Cl. B01d 13/02; H01b 7/34

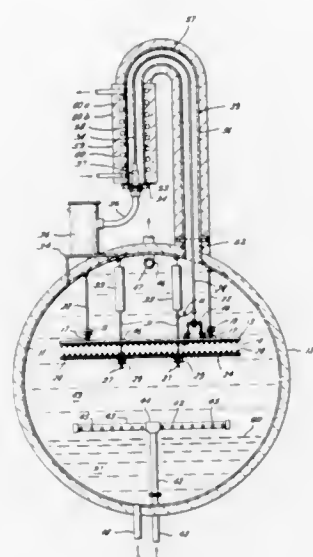
U.S. Cl. 204-308

18 Claims

A system for electrically treating emulsions which includes a vessel containing inlet and outlets and an electric field formed by electrodes connected to an external transformer. A rigid conduit extends from the vessel to a closed end containing an entrance bushing connected to the transformer and an electrical conductor extends through the conduit between the entrance bushing and the electrodes. The electrical conductor is supported concentrically and in electrical isolation from the conduit. The conduit has an upright portion extending from the vessel, an intermediate bight portion with an 180° return bend forming a thermal dam, and a downwardly extending portion which connects to the closed end. The downwardly extending portion of the conduit carries a heat exchanger for creating a temperature gradient between the entrance bushing and the interior of the vessel. The liquid within the vessel can



be carried at relatively elevated temperatures (e.g., 500°F.) while the entrance bushing remains at relatively low temperatures (e.g., 100°–200° F.). Electrical resolution of emulsions at



elevated temperatures for extended periods can be obtained without temperature-induced destruction of the entrance bushing.

3,719,585

#### SOLVENT DEWAXING WITH SEPARATION OF SOLVENT BY LIQUID-LIQUID EXTRACTION

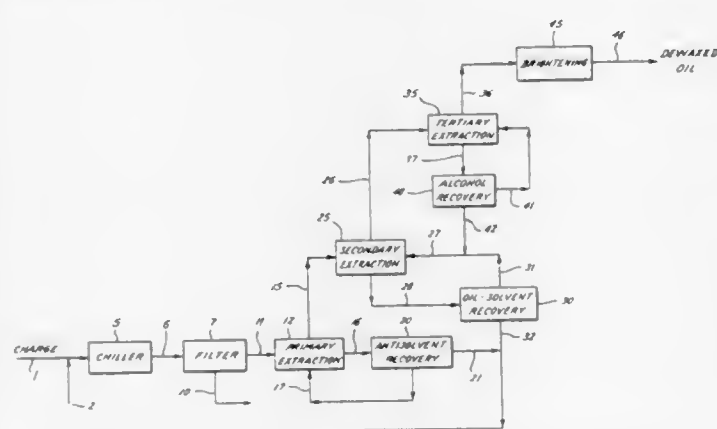
James Alan Brasher; Paul Preston Bozeman, both of Groves, and Norman Raymond Odell, Nederland, all of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 28, 1970, Ser. No. 101,735

Int. Cl. C10g 43/08

U.S. Cl. 208—33

10 Claims



In a dewaxing process wherein a wax-bearing mineral oil is diluted with a solvent mixture comprising an oil-solvent and a wax-antisolvent, the resultant oil-solvent mixture is cooled effecting separation of wax and the solvent mixture is separated from wax free oil by re-extraction. Re-extraction is effected by contacting the oil and solvent mixture with solvents for the wax-antisolvent and for the oil-solvent. The dewaxed oil is subjected to a final brightening.

3,719,586

#### NAPHTHA CONVERSION PROCESS INCLUDING HYDROCRACKING AND HYDROREFORMING

Robert I. Benner, Upper Chichester, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed May 24, 1971, Ser. No. 146,391

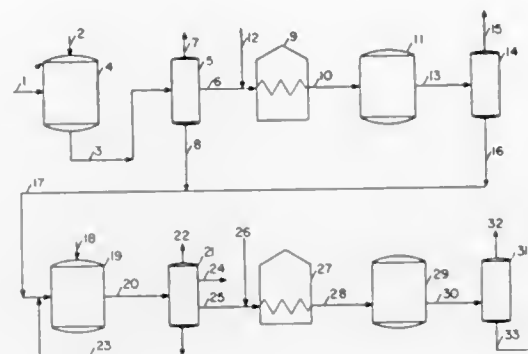
Int. Cl. C10g 37/10, 39/00

U.S. Cl. 208—66

6 Claims

Light and heavy naphtha fractions are converted by hydroreforming and hydrocracking to high quality motor fuel in high yield. Light naphtha (180–400° F.) is re-

formed catalytically and the stabilized reformat blended with heavy naphtha (400 to 500° F.). The mixture is



hydrocracked in the presence of Pd-zeolite catalyst at 650–800° F. Hydrocrackate (180–400° F.) is further reformed catalytically.

3,719,587

#### PURGING AND WASHING COAL NAPHTHA TO REMOVE DIHYDROGEN SULFIDE AND BASIC NITROGEN

Jean H. Karchmer, Houston, and Robert E. Pennington, Baytown, both of Tex., assignors to Esso Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 747,798, July 26, 1968,

abandoned. This application June 30, 1970, Ser. No. 51,382

Int. Cl. C10g 31/08

4 Claims

U.S. Cl. 208—208 R

Coal-derived naphtha boiling within the range from 80° F. to 450° F. has been found to contain sulfur as H<sub>2</sub>S and nitrogen as basic nitrogen compounds, particularly after the extract has been hydrocracked. By the present invention, the H<sub>2</sub>S is removed by purging the naphtha with an inert gas such as nitrogen, C<sub>1</sub>–C<sub>3</sub> hydrocarbons, hydrogen, flue gas, CO<sub>2</sub>, and mixtures thereof. Purging conditions may include a temperature from about 40° F. to about 200° F., a pressure from about 0 psig to about 150 psig, and a treat rate from about 50 SCF/B to about 300 SCF/B.

The basic nitrogen compounds are removed by washing the naphtha with water or with a dilute aqueous solution of strong acids. A concentration of 0 to 10 weight percent of acids, such as sulfuric acid, hydrochloric acid, phosphoric acid, and acetic acid, are suitably employed. Washing conditions are generally the same as those to be employed in the purging step and may include a temperature from about 40° F. to about 200° F., a pressure from about 0 psig to about 150 psig, and a treat rate from about 0.01 volume of acid per volume of naphtha to about 1.0 volume of acid per volume of naphtha.

3,719,588

#### HYDROTREATING OF HYDROCARBONACEOUS LIQUIDS WITH CARBON MONOXIDE-CONTAINING TREAT GAS

Lonnie W. Vernon, and Robert E. Pennington, both of Baytown, Tex., assignors to Esso Research and Engineering Company, Linden, N.J.

Filed Oct. 26, 1970, Ser. No. 84,089

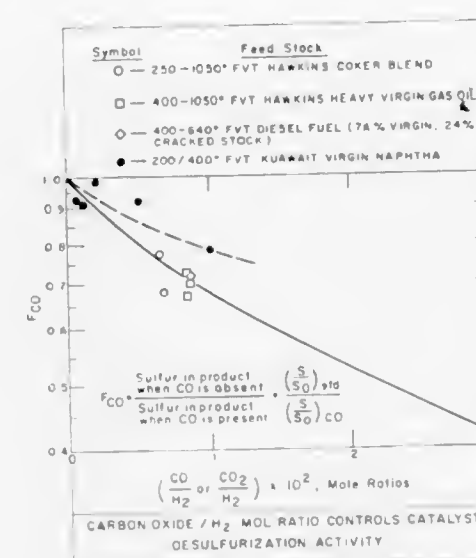
Int. Cl. C10g 17/00

U.S. Cl. 208—209

13 Claims

Hydrocarbonaceous liquids containing combined nitrogen and sulfur and boiling within the range from about 350° F. to about 1,000° F. can be hydrotreated in the presence of a carbon monoxide-sensitive hydrogenation catalyst with a carbon monoxide-containing treat gas containing at least 2 volume percent CO if from 1 to 20 mols of steam per mol of carbon monoxide are present in the treat gas. The treat gas may also contain from 0 to 96 volume percent of hydrogen. In the preferred mode, a coal-derived liquid boiling within the range

from 350° to 1,000° F. is hydrotreated in the presence of cobalt molybdate catalyst by a treat gas obtained as a synthesis gas and containing about 3 mol percent CO and 10 mol percent H<sub>2</sub>O, the hydrotreating conditions including a tempera-



ture from about 650° F. to about 800° F., a pressure from about 500 psig to about 2,500 psig, a treat gas-to-liquid ratio from about 3,000 SCF/B to about 12,000 SCF/B and a liquid space velocity from about 0.5 W/Hr/W to about 2.0 W/Hr/W.

3,719,589

#### ASPHALT SEPARATION IN DESULFURIZATION WITH AN OXIDATION STEP

Sheldon Herbstman, Spring Valley; Reese A. Peck, Fishkill; Frank E. Guptill, Jr., Fishkill, and Raymond F. Wilson, Fishkill, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed March 5, 1971, Ser. No. 121,585

Int. Cl. C10g 17/00, 23/00, 27/00

U.S. Cl. 208—208 R

17 Claims

Oil containing sulfur and asphalt is subjected to oxidation with organic peroxides or organic peracids at 75°–200° F. The oxidant residue is removed by heating the oxidized product to about 150°–450° F, and the heated oil is maintained at 300°–500° F to separate a lower asphalt layer and to separate the upper oil layer having a reduced sulfur content. The separated oil layer may undergo further desulfurization by thermal treatment at 500°–900° F or catalytic hydrotreatment at 650°–900° F.

3,719,590

#### LIQUID MEMBRANE SYSTEM FOR SEPARATION OF COMPONENTS OF LIQUID MIXTURES

Norman H. Li, Edison, and Robert P. Cahn, Millburn, both of N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Filed Dec. 17, 1970, Ser. No. 99,267

Int. Cl. C10g 21/00

U.S. Cl. 208—308

20 Claims

This invention relates to a separation process. Specifically, it pertains to the separation of elements of a mixture by selective permeation through a liquid surfactant membrane, which comprises one or more surface active agents, and an additive which selectively increases the solubility of at least one component of the mixture in the liquid membrane, into a solvent phase which may be a solvent for all elements. In a preferred embodiment, hexene-1 is separated from heptane, by use of a liquid surfactant membrane comprising at least 0.2 percent of a Saponin extract as the surface active agent, from 5 percent to 30 percent cuprous ammonium acetate as the solubility-increasing additive, and the balance water.

#### 3,719,591 METHOD FOR CONDENSATE FILTRATION AND DEMINERALIZATION

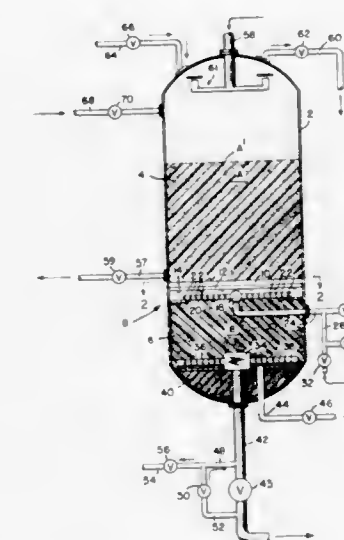
George J. Crits, Havertown, Pa., assignor to Crane Co., Chicago, Ill.

Filed March 5, 1971, Ser. No. 121,493

Int. Cl. B01d 15/02

U.S. Cl. 210—33

2 Claims



Two beds of ion exchange materials are arranged in series in a single tank for downflow of condensate. The upper bed is a cation exchange resin, an anion exchange resin, or a mixture of anion and cation exchange resins, for the purpose of primary demineralization and for filtration under conditions in which scrubbing is required more frequently than chemical regeneration. The lower bed also consists of ion exchange material, cation or anion exchange resin, or a mixture of such resins, but effects final polishing and requires either relatively infrequent regeneration, or may be discarded. This lower bed is protected from receiving filterable solids by reason of the filtering action of the upper bed. The apparatus involved prevents bed admixture which might otherwise result from removal of the upper bed for scrubbing (and regeneration) and its return for use.

3,719,592

#### FILTRATION PROCESS FOR CLARIFICATION

Yoshiro Hayashi, and Ayatoshi Obara, both of Tokyo, Japan, assignors to Erbara Inflico Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 2,705, Jan. 14, 1970,

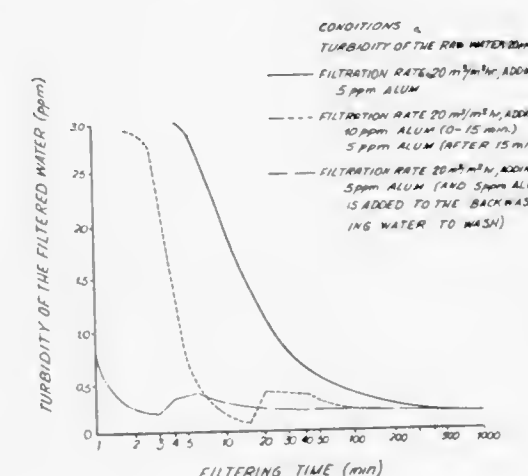
abandoned. This application Sept. 17, 1971, Ser. No. 181,442

Claims priority, application Japan, Jan. 17, 1969, 44/3265

Int. Cl. B01d 21/01

U.S. Cl. 210—53

2 Claims



The present invention is a filtration process for performing rapid filtration by adding an inorganic coagulant to a suspen-

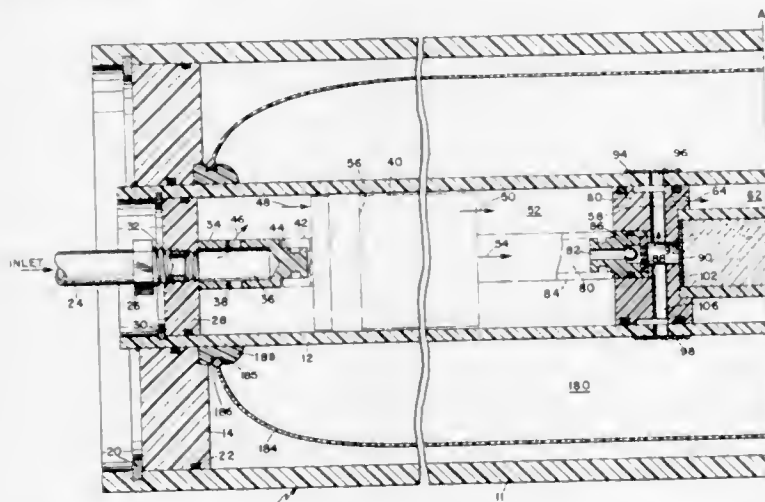


sion, consisting of adding a coagulant in the amount less than that with which formation of flocs is recognized to a suspension having the turbidity of raw water, keeping the time, as measured from the point of adding the coagulant to the suspension to the supplying of said suspension to the filtration tank, within a few minutes, treating said suspension at a filtration rate higher than the usual level, and varying the added amount of the coagulant or the filtration rate or both of them until the filtered water becomes stable after the beginning of filtration in the above filtration process.

3,719,593

## WATER PURIFYING DEVICE

Jaromir Astil, 626 Circle Drive E., Solana Beach, Calif.  
Continuation of Ser. No. 852,193, Aug. 22, 1969, abandoned.  
This application Sept. 25, 1970, Ser. No. 75,699  
Int. Cl. B01d 31/00  
U.S. Cl. 210—135 11 Claims

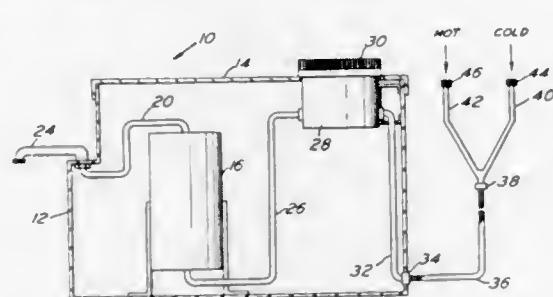


A water purifying device employing a reverse osmosis water purifying element that process feed water under line pressure producing purified product water that is accumulated in a compressible container. The container supplies the product water upon operation of a control valve to a product water supply outlet. The control valve directs feed water under line pressure to compress the compressible container and thus force the product water at line pressure to the water supply outlet. This use of the feed water causes an increased feed water flow through the reverse osmosis water purifying element flushing out the element. A bleed drain, drains off the feed water that is employed to compress the compressible container returning the system to the water purifying and storage condition after delivery of the product water.

3,719,594

## WATER-SOFTENING UNIT

Stuart Borochaner, Levittown, Pa., assignor to National Water-pure Corporation, Fallsington, Pa.  
Continuation-in-part of Ser. No. 852,293, Aug. 22, 1969, Pat. No. 3,680,703. This application June 17, 1971, Ser. No. 154,092  
Int. Cl. B01d 23/10  
U.S. Cl. 210—190 3 Claims



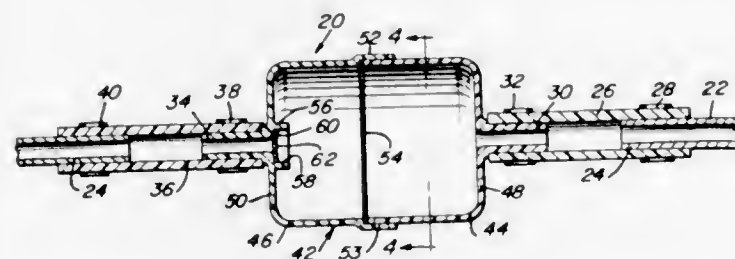
A portable water-softening unit which can be attached to any source of water, the unit comprising a housing having an

ion exchange chamber and a regeneration chamber, in the fluid circuit between the source of water and an outlet means extending from the housing. The regeneration chamber is adapted to selectively contain regeneration material for regenerating the ion exchange resin when necessary.

3,719,595

## FUEL FLOW RESTRICTING AND FILTER ASSEMBLY

Arthur O. Johnson, 212 N. 26th St., Miami, Fla. 33137  
Continuation-in-part of application Ser. No. 37,147, May 14, 1970. This application Sept. 24, 1971, Ser. No. 183,310  
Int. Cl. B01d 35/00  
U.S. Cl. 210—445 2 Claims



A tubular body for interposing in a fuel flow line to a fuel metering induction assembly of the type adapted to meter measured quantities of fuel for mixing with a combustion supporting gas. The body has a passage formed therethrough and a midportion of the passage defines a flow restrictive zone for reducing fluid pressure pulses. Also, the passage includes a zone of increased cross-sectional area intermediate the inlet end of the passage and the fuel flow restrictive zone for further reducing fluid pressure pulses. The zone of increased cross-sectional area is provided with a transverse filter body through which fuel flowing through the tubular body must pass and thus the filter body is afforded maximum filter area with each unit of cross-sectional area of the filter body subject to a minimum flow of fuel therethrough.

3,719,596

## PREPARATION OF ALKALINE-EARTH ALKYL BENZENE SULFONATES

Samuel Shore, Roselle, and Thaddeus M. Muzyczko, Melrose Park, Ill., assignors to The Richardson Company, Des Plaines, Ill.  
No Drawing. Continuation-in-part of abandoned application Ser. No. 566,758, July 21, 1966. This application Aug. 5, 1970, Ser. No. 61,418  
Int. Cl. C07c 143/24; C09k 3/00  
U.S. Cl. 252—1 13 Claims

Method of forming neutralized homogeneous alkaline-earth alkylbenzene sulfonate double salts with low water content from suspensions of alkaline-earth hydroxides. In the method, an alkylbenzene sulfonic acid is added to form the double salt and neutralize the hydroxide. An alkanolamine is added to adjust the pH to about 7, and distillation is carried out in the presence of an alcohol to remove most of the water. Clear solutions with typically 1 percent or less by weight of water result and are obtained without additional production steps, filtration and cost problems previously associated with similar products.

3,719,597

## ACYL-AMINO-PROPYL-DIALKYLAMMONIUM DIALKYL PHOSPHATES AS TEXTILE FINISHING AGENTS

Arno Wegerhoff, Worth am Main; Franz-Josef Schmitz, Erlendbach, and Carl Macura, Klingenberg, all of Germany, assignors to Akzona Incorporated, Asheville, N.C.  
Division of Ser. No. 799,999, Feb. 17, 1969, Pat. No. 3,634,117. This application Dec. 16, 1970, Ser. No. 98,966  
Int. Cl. D06m 13/44, 13/26  
U.S. Cl. 252—8.8 7 Claims

Acyl-amino-propyl-dialkylammonium dialkyl phosphates as surface active agents and their application to textile materials, especially polyester and polyamide fibrous materials, as a finishing agent, for example, in combination with an aqueous emulsion of a textile lubricating agent.

3,719,598

## AQUEOUS CUTTING FLUID WHICH PROTECTS FERROUS METALS AGAINST CORROSION

John Edward King, Perrysburg, Ohio, assignor to Master Chemical Corporation, Perrysburg, Ohio  
Filed Oct. 23, 1970, Ser. No. 83,657  
Int. Cl. C10m 1/54, 1/40  
U.S. Cl. 252—33.4 5 Claims

The aqueous cutting fluid consists essentially of a reaction product of boric acid with one to two molecular equivalents of an aliphatic amine having from one to three aliphatic radicals each of which contains from one to four carbon atoms, and having at least one hydroxy group attached to a carbon atom. Improved protection of ferrous metals against corrosion is provided by incorporating in the cutting fluid a petroleum sulfonate together with a non-ionic wetting agent.

3,719,599

## SOLID LUBRICANT COMPOSITION AND METHOD OF PREPARATION

Gianbattista Crivellaro, Milano, and Francesco Oldani, Bergamo, both of Italy, assignors to Gruppo Lepetit S.p.A., Milano, Italy  
Filed Nov. 4, 1970, Ser. No. 86,946  
Claims priority, application Italy, Nov. 25, 1969, 24835 A/69; Nov. 23, 1970, 20972 A/70  
Int. Cl. C10m 7/48, 7/02  
U.S. Cl. 252—46.4 4 Claims

A lubricating agent suitable for use in the preparation of water soluble tablets and a method of its preparation are disclosed. The agent comprises in combination a composition of substantially anhydrous sodium sulfate and a dimethyl-polysiloxane.

3,719,600

## LUBRICANT COMPOSITION CONTAINING POLYCARBOXYLIC ACID

David S. Bosniack, Baytown, Tex., and Harold Shaub, New Providence, N.J., assignors to Esso Research and Engineering Company, Linden, N.J.  
Filed Feb. 8, 1971, Ser. No. 113,741  
Int. Cl. C10m 1/26, 1/24  
U.S. Cl. 252—56 S 12 Claims

This invention is directed towards lubricant compositions comprising a lubricating oil and a corrosion inhibiting amount of a polycarboxylic acid containing at least four non-carboxylic carbon atoms and more than two carboxyl groups. These compositions, when based on synthetic ester oils, exhibit reduced tendencies to corrode metals used in construction of gas turbine engines, particularly, lead.

3,719,601

## MAGNESIUM SILICATE THICKENED HYDROCARBON INSULATING FLUIDS

Claud L. Jacocks, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.  
Filed Feb. 9, 1971, Ser. No. 114,075  
Int. Cl. C04b 43/04  
U.S. Cl. 252—62 5 Claims

Mineral oil viscosified with a finely divided fibrous magnesium silicate including asbestos products, is employed as a fluid insulating medium. Thermal injection wells for oil recovery are insulated therewith.

3,719,602

## CAPACITOR ELECTROLYTE

Daniel J. Anderson, and James C. Jimerson, both of Indianapolis, Ind., assignors to P. L. Mallory & Co. Inc., Indianapolis, Ind.  
Continuation of Ser. No. 804,986, March 6, 1969, abandoned.  
This application April 28, 1971, Ser. No. 138,309  
Int. Cl. H01g 9/02  
U.S. Cl. 252—62.2 1 Claim

Chromate radicals are used in a capacitor electrolyte comprising a polar organic solvent containing an ionizable salt in order to improve the elevated temperature properties, shelf life and storage life of electrolytic capacitors.

3,719,603

## NOVEL LOW BOILING COMPOSITIONS

Richard F. Stahl, Madison, N.J., assignor to Allied Chemical Corporation, New York, N.Y.  
Filed Oct. 30, 1968, Ser. No. 771,998  
Int. Cl. C09k 3/02  
U.S. Cl. 252—67 10 Claims

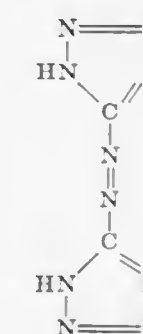
Trifluoromethane (CHF<sub>3</sub>) and sulfur hexafluoride (SF<sub>6</sub>), in certain proportions, form an azeotropic mixture and equivalent mixtures, which are especially adapted for use as refrigerants in high capacity, low temperature refrigeration systems.

3,719,604

## PRESSURIZING-GAS-PRODUCING CHARGES CONTAINING AN AMINO GUANIDINE TETRAZOLE AND AN OXYGEN-LIBERATING OR GAS-EVOLVING ADDITIVE

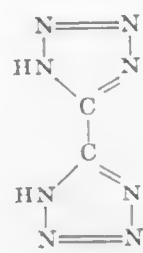
Josef Prior, 521 Troisdorf, and Werner Siegelin, Nuremberg, both of Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany  
Filed Jan. 28, 1971, Ser. No. 110,601  
Claims priority, application Germany, Feb. 3, 1970, P 20 04 620.2  
Int. Cl. C06d 5/00  
U.S. Cl. 252—186 8 Claims

Novel gas-generating compositions comprising 40 to 100 weight percent aminoguanidine salts of azotetrazole of the formula:



or of ditetrazole of the formula:





Optional other components of such compositions include oxygen-liberating or other gas-evolving substances which may be present in 0 to 60 weight percent of the composition. There are also disclosed pressurizing gas-actuated devices utilizing these compositions.

3,719,605

#### GERMICIDAL COMPOUND AND SOAP COMPOSITIONS INCORPORATING THE SAME

Eric Jungermann, Chicago, and Henry E. Reich, Wilmette, Ill., assignors to Armour and Company, Chicago, Ill.  
No Drawing. Original application Nov. 29, 1966, Ser. No. 597,526, now Patent No. 3,649,718. Divided and this application Oct. 28, 1971, Ser. No. 193,561  
Int. Cl. C11d 9/50

U.S. Cl. 252—107

4 Claims

Germicidal compounds, particularly useful as additives to soap, resulting from the reaction of a phosphinic acid halide having from 6 to 12 carbon atoms with a metallic salt of a halogen substituted phenyl compound having the general structure:



wherein X is selected from the group consisting of oxygen, sulfur and nitrogen; Y is a halogen radical selected from the group consisting of chloride, bromide and iodide and z is a positive integer from 1 to 3 inclusive.

3,719,606

#### MICROEMULSION OF INCREASED VISCOSITY FOR IMPROVED OIL RECOVERY

H. R. Froning and Warren S. Askew, Tulsa, Okla., assignors to Pan American Petroleum Corporation, Tulsa, Okla.  
Filed Aug. 8, 1969, Ser. No. 848,501  
Int. Cl. B01j 13/00

U.S. Cl. 252—306

8 Claims

In the use of microemulsions as solvents in miscible waterflooding, the displacement efficiency of such solvents is improved by increasing their viscosity with a compatible polymer thickener such as polysaccharide B-1459 or poly(glucosylglucans). Modified microemulsions of this type and their use in miscible flooding are described.

3,719,607

#### STABLE POSITIVELY CHARGED ALUMINA COATED SILICA SOLS AND THEIR PREPARATION BY POST-NEUTRALIZATION

Earl P. Moore, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.  
Continuation-in-part of Ser. No. 831,748, June 9, 1969, abandoned, which is a continuation-in-part of Ser. No. 745,714, July 18, 1968, abandoned. This application Jan. 29, 1971, Ser. No. 111,076  
Int. Cl. B01j 13/00; C01b 33/14

U.S. Cl. 252—313 S

9 Claims

An improved process for preparing a stable positively-charged silica sol is obtained by mixing a negatively charged silica sol with basic aluminum chloride, heating the mixture between 45° to 90°C. and then adding to the mixture an alkali metal base, alkaline earth metal base, ammonia or water solu-

ble organic base in the amount of 0.032 to 0.223 equivalents of base per equivalent of aluminum.

3,719,608

#### OXIDATION RESISTANT GRAPHITE COMPOSITIONS

Franciszek Olstowski, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 441,905, March 22, 1965, Pat. No. 3,492,197. This application Nov. 12, 1968, Ser. No. 775,097  
Int. Cl. H01b 1/06; C01b 31/00

U.S. Cl. 252—506

9 Claims

This invention relates to a vermicular expanded graphite composition having enhanced oxidation resistance. Such composition comprises an admixture of vermicular graphite with from 0.5 to 10 weight percent, based on the total weight of the mixture, of an oxide of boron or phosphorus or meta borate or phosphate wherein said admixture has been compressed to a density of from 10 to 120 pounds per cubic foot.

3,719,609

#### SYNTHESIS OF IONICALLY CONDUCTIVE COMPOSITIONS OF MATTER

Leo E. Topol, Canoga Park, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed Dec. 8, 1970, Ser. No. 96,227  
Int. Cl. H01b 1/02

U.S. Cl. 252—518

12 Claims

A process for the preparation of a solid ionically conductive composition of matter of either the formula:

1.  $MAg_nI_n$  in which M is Rb,  $NH_4$ , K, Cs, or a combination of these, Cs being present only as a minor constituent of M; or  
2.  $QA_gI_n$ , where n has a value from 3 to 39 inclusive and Q is an organic ammonium cation having an ionic volume between 30 and 85 cubic angstroms; comprising reacting approximately stoichiometric quantities, corresponding to the ionically conductive composition formed, of AgI and either MI or QI in a solution of NaI or LiI, the solvent for the NaI or LiI being water or a selected polar organic solvent, preferably acetonitrile or dimethyl formamide.

3,719,610

#### LOW LOSS ELECTRICAL CONDUCTIVE COATING AND BONDING MATERIALS INCLUDING MAGNETIC PARTICLES FOR MIXING

Winslow W. Prentice, Waterford, Conn., assignor to the United States of America as represented by the Secretary of the Navy

Original application Dec. 16, 1968, Ser. No. 783,976. Divided and this application Aug. 4, 1971, Ser. No. 168,928  
Int. Cl. H01b 1/02

U.S. Cl. 252—513

1 Claim

A conductive coating and bonding material for single element electrostrictive transducers and for those formed as a mosaic stack, or non-linear seriatim assembly of electrostrictive segments and including a matrix of known types of room temperature curing epoxy resin having uniformly dispersed therethrough, copper and silver flakes and nickel powder, the nickel powder being present for magnetic mixing. The term electrostrictive is used in the generic sense to encompass ceramic materials and piezoelectric natural or grown crystals.

3,719,611

#### SYNTHESIS OF IONICALLY CONDUCTIVE COMPOSITIONS OF MATTER USING AMINE SOLVENTS

Leo E. Topol, and Herman Mandel, both of Canoga Park, Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.

Filed Dec. 8, 1970, Ser. No. 96,226  
Int. Cl. H01b 1/02

U.S. Cl. 252—518

10 Claims

A process for the preparation of a solid ionically conductive composition of matter of either the formula:

1.  $MAg_nI_n$  in which M is Rb, K,  $NH_4$ , Cs, or combinations thereof, Cs being present only as a minor constituent of M; or

2.  $QA_gI_n$ , where n has a value from 3 to 39 inclusive and Q is an organic ammonium cation having an ionic volume between 30 and 85 cubic angstroms, comprising reacting approximately stoichiometric quantities, corresponding to the ionically conductive compositions formed, of AgI and either MI or QI in a liquid reaction medium that is a water-containing selected amine solvent, and separating the synthesize ionically conductive composition from the reaction medium.

3,719,612

#### SYNTHESIS OF IONICALLY CONDUCTIVE COMPOSITIONS OF MATTER

William V. Johnston, Camarillo, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed Dec. 8, 1970, Ser. No. 96,228  
Int. Cl. H01b 1/02

U.S. Cl. 252—518

10 Claims

A process for the preparation of a solid ionically conductive composition of matter of either the formula:

1.  $MAg_nI_n$  in which M is Rb, K,  $NH_4$ , Cs, or a combination of these, Cs being present only as a minor constituent of M; or  
2.  $QA_gI_n$ , where n has a value from 3 to 39 inclusive and Q is an organic ammonium cation having an ionic volume between 30 and 85 cubic angstroms; comprising reacting approximately stoichiometric quantities, corresponding to the ionically conductive compositions formed, of AgI and either MI or QI in a liquid reaction medium selected from hydriodic acid, hydrobromic acid, and methyl iodide, and separating the synthesized ionically conductive composition from the reaction medium.

3,719,613

#### DETERGENT COMPOSITION

Hideo Marumo, 5-4 Nishikubo 3-chome,

Musashino-shi, Tokyo 180, Japan

No Drawing. Filed Aug. 2, 1971, Ser. No. 168,413  
Claims priority, application Japan, Aug. 4, 1970, 45/68,145; May 10, 1971, 46/30,390, 46/30,391  
Int. Cl. C11d 3/28, 3/30

U.S. Cl. 252—542

7 Claims

A new detergent composition comprising, in combination, a water-insoluble metal salt of amphoteric surface active agent and a substance capable of dispersing and solubilizing this metal salt in water. This composition may be used either independently or by being included in any known detergent. In this latter instance, the detergency, bubble-forming ability and duration of bubbles of the base detergent are greatly improved. In particular, laundry which is cleansed with this composition either directly or jointly with a known detergent is invariably bestowed with an antistatic property, a resistivity to re-soiling and a soil-releaseability.

#### ERRATUM

For Class 260—590 see:  
Patent No. 3,719,280

3,719,614

#### PROCESS OF MAKING FOAM RUBBER, AND THE FOAM RUBBER THUS PRODUCED

Sam W. Wright, Calhoun, Ga., assignor to The Firestone Tire and Rubber Co., Akron, Ohio

Continuation-in-part of Ser. No. 42,552, June 1, 1970, abandoned. This application March 19, 1971, Ser. No. 126,253  
Int. Cl. C08f 47/08; C08c 17/08; C08d 13/08

U.S. Cl. 260—2.5 L

10 Claims

Foam rubber is produced by foaming an aqueous polymer latex containing at least 0.05 percent by weight zinc oxide, based on the polymer, and from 0.2 to 5.0 percent by weight ammonium polyphosphate, based on the polymer; then heat-

ing the foam to solidify and dry it. The ammonium polyphosphate can be the sole gellant; or a soluble ammonium salt gellant can be used in addition. Greater "gel tolerance" results in the latter case.

3,719,615

#### POLYHYDROXY CONDENSATES OF ISOCYANURIC ACID

Michel Buisson, "Les Esperelles," Chemi Henri Belin, and Daniel Durand, "Villa Biancho" Avenue de l'Oliveraie, both of 13 Martigues, France

Filed March 15, 1971, Ser. No. 124,594

Claims priority, application France, March 23, 1970, 7010332  
Int. Cl. C08g 22/44, 22/06

U.S. Cl. 260—2.5 AW

14 Claims

This invention is addressed to novel polyhydroxyl compounds prepared by reaction of isocyanuric acid, formaldehyde, and an alkanol amine and their polyalkylene oxides derivatives, and to polyurethanes prepared from these polyhydroxyl compounds and organic isocyanates.

3,719,616

#### ANTI-MIGRATORY ADDITIVE FOR EMULSIFIED PHENOLIC RESIN SYSTEMS SAID ADDITIVE BEING A WATER SOLUBLE POLYACRYLATE

Woodrow Hayes Ingram, II, Hampden, Mass., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 8,679, Feb. 4, 1970, abandoned. This application May 13, 1971, Ser. No. 142,905  
Int. Cl. C08g 37/20, 37/32

U.S. Cl. 260—7

8 Claims

The present invention relates to an anti-migratory (as respects impregnated porous sheet members) phenol-formaldehyde resole resin in water emulsions. The emulsion is rendered anti-migratory (when impregnated into paper through the addition thereto of an anti-migratory agent selected from the group consisting of polyelectrolytes, certain salts of inorganic acids, and combinations thereof. The composition is especially useful in the impregnation of filter paper.

3,719,617

#### TEXTILE SIZING COMPOSITION CONTAINING HIGHLY WATER SOLUBLE DEXTRIN PHOSPHATE

Ulrich Schobinger, Zug; Cla Christoffel, Wädenswil, and Kurt Berner, Pfäeffikon-SZ, all of Switzerland, assignors to Blattmann & Co., Wädenswil, Switzerland

Division of Ser. No. 826,707, May 21, 1969, Pat. No. 3,642,774. This application June 3, 1971, Ser. No. 149,823  
Claims priority, application Switzerland, May 21, 1968, 7533/68  
Int. Cl. C08b 25/02; C09j 3/06

U.S. Cl. 260—17.4 ST

7 Claims

Compositions for sizing textiles are provided which contain a major proportion of a low molecular, highly water soluble dextrin phosphate and a minor proportion of a high molecular nitrogen containing starch phosphate or a polymer selected from water soluble polyvinyl acetates, polyvinyl alcohols and polyacrylates, or of a mixture of such polymer and a high molecular nitrogen containing starch phosphate. The high molecular starch phosphate typically has a viscosity of about 40,000 to 60,000 cps when in 5 percent solution in water at 25° C. The low molecular dextrin phosphate is a thermally degraded phosphorylated starch having between 0.3 and 3 percent by weight of phosphorus molecularly bound therein and having a light color, a solubility higher than 30 percent in water at 25° C. and a viscosity in the range of about 5 to 500 cps when in 5 percent solution in water at 25° C.



3,719,618

**THERMOSETTING, NON-GELLED HYDROXYL FUNCTIONAL COATING COMPOSITIONS**  
Joseph M. Makhlof, Mars, Pa., assignor to P.P.G. Industries, Inc., Pittsburgh, Pa.

Filed June 21, 1971, Ser. No. 155,274  
Int. Cl. C09d 3/52

U.S. Cl. 260—21

8 Claims

Hydroxyl functional polymers can be produced by employing monomers derived from 12-hydroxystearic acid and glycidyl acrylates or methacrylates and reacting said monomers with other unsaturated monomers, thus providing polymers that form suitable thermosetting compositions when the polymers are co-cured with various crosslinking agents or other resinous compositions.

3,719,619

**QUICK DRYING COATINGS CONTAINING COPOLYMERS HAVING  $\alpha$ -ALIPHATIC HYDRO-CARBON GROUPS AND  $\beta$ -ALIPHATIC ALKYD RESINS**

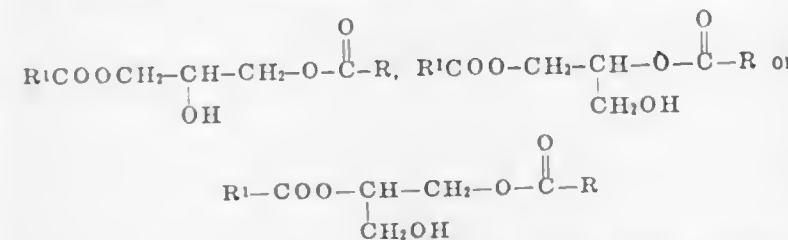
Nobuyoshi Nagata, Nara-shi, and Ryuzo Mizuguchi, Osaka, Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

No Drawing. Filed Sept. 2, 1970, Ser. No. 69,113  
Claims priority, application Japan, Sept. 8, 1969, 44/70,548

Int. Cl. C08b 21/08; C08f 21/04; C08g 39/10; C09d 3/64  
U.S. Cl. 260—22 CB

26 Claims

A quick drying coating composition comprising a solvent and a resin composition consisting essentially of (A) 100 parts by weight of a copolymer containing 5 to 70% by weight of a monomer represented by the formula:



wherein R stands for a tertiary aliphatic hydrocarbon group having in total 4 to 26 carbon atoms; R<sup>1</sup> stands for an  $\alpha,\beta$ -ethylenically unsaturated hydrocarbon group having 2 to 3 carbon atoms which may have one COOR<sup>2</sup> group wherein R<sup>2</sup> is a hydrogen atom or an alkyl group having 1 to 4 carbon atoms and 30 to 95% by weight of at least one unsaturated monomer copolymerizable therewith and (B) 5 to 600 parts by weight of an alkyd resin containing 1 to 70% by weight of a tertiary aliphatic carboxylic acid represented by the formula:



wherein R has the same meaning as defined above. Said coating composition is excellent in properties such as coating-workability, high build, weather-resistance, gloss, chemical resistance and adhesiveness.

3,719,620

**NONLINEAR POLYESTER RESIN COMPOSITIONS**  
Ralph Earl Layman, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Oct. 20, 1971, Ser. No. 191,087  
Int. Cl. C09d 3/52, 3/68

U.S. Cl. 260—22 D

10 Claims

Nonlinear polyester resin having enhanced flexibility characteristics comprising the esterification reaction product of (1) a mixture of an  $\alpha,\beta$  ethylenically unsaturated dicarboxylic acid and a phthalic acid, (2) a mixture of a simple polyhydric alcohol and a complex-ether polyhydric alcohol, and (3) a trimer acid composition of an ethylenically unsaturated aliphatic monocarboxylic acid having between 14 and 22 carbon atoms and a method for preparing the same are provided.

3,719,621

**PROCESS FOR PREPARING POLYURETHANES IN AN ISOCYANATE-REACTIVE SOLVENT SOLUTION**

Herwart C. Vogt, Grosse Ile, and Wayne G. Lajiness, Wyandotte, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

No Drawing. Continuation-in-part of application Ser. No. 813,322, Apr. 3, 1969, which is a continuation-in-part of application Ser. No. 629,919, Mar. 30, 1969, both now abandoned. This application May 21, 1971, Ser. No. 145,879

Int. Cl. C08g 22/16, 51/26, 51/34  
U.S. Cl. 260—30.4 N

10 Claims

A cosolvent system of a monohydric alcohol and an inert solvent, miscible therewith, is used to prepare a urethane polymer by reacting an isocyanate-terminated prepolymer, dissolved in the inert solvent, with a diamine chain-extending agent, dissolved in the monohydric alcohol solvent. The urethane polymer prepared in this manner forms a homogeneous solution of pronounced lower viscosity in the cosolvents utilized. The urethane polymer is thermoplastic, has excellent film-forming characteristics, and may be used in preparing coatings, films, castings, and like products.

3,719,622

**RAPID DRYING ALKYD COATING MODIFIED WITH AMINO AROMATIC CARBOXYLIC ACID**

Robert D. Holzinger, Homewood, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

No Drawing. Filed June 28, 1971, Ser. No. 157,696  
Int. Cl. C08g 17/16; C09d 3/64

U.S. Cl. 260—22 A

8 Claims

Modified short oil and medium oil length alkyd resins with rapid drying characteristics which yield tack-free films within from about 15 minutes to 110 minutes and which employ relatively small amounts, up to 15% by weight of the resin composition, of an amino benzoic acid, e.g. anthranilic acid or compounds which yield anthranilic acid during cooking of the resin, are provided. Methods of producing the aforementioned modified alkyd resins are also provided.

3,719,623

**RUBBERY POLYMERIC MIXTURES COMPRISING A MALEINIZED TYPE OIL**

Werner Josef Blank, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed April 1, 1971, Ser. No. 130,527  
Int. Cl. C09d 3/28, 3/74, 5/02

U.S. Cl. 260—23 AR

10 Claims

There is provided a composition of matter comprising a rubbery polymeric mixture of an unsaturated glyceride oil ranging from 30 to 60 percent of the over-all resin solids and a copolymer of: (A) a half ester reaction product of an  $\alpha,\beta$ -mono-ethylenically unsaturated dibasic acid, or corresponding anhydride dienophile, and an alcohol containing from four to 22 carbon atoms, said half ester being present in amount ranging from 10 to 55 percent of the over-all resin solids, and (B) a mono-ethylenically unsaturated compound in an amount ranging from 10 to 50 percent of the over-all resin solids.

3,719,624

**VINYL CHLORIDE POLYMERS HAVING IMPROVED THERMAL STABILITY AND METHOD OF MAKING**

Syed K. Mowdood, and Charles J. Gebhart, both of Akron, Ohio, assignors to The Goodyear Tire and Rubber Co., Akron, Ohio

Filed May 28, 1971, Ser. No. 148,204  
Int. Cl. C08f 45/8

U.S. Cl. 260—23 XA

3 Claims

Vinyl chloride is polymerized in the presence of a bicyclo [3.1.1] hept-2-ene heat stabilization sensitizer (i.e., 6,6-

dimethyl bicyclo [3.1.1] hept-2-ene-2-ethanol) also known as nopol to form a more ecologically acceptable polymer because the polymer can be thermally stabilized without the use of conventional tin and cadmium stabilizers.

3,719,625

**HIGH-MELTING WAX COMPOSITIONS**

Vernon D. Parker, Lawrence, Kans., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Jan. 27, 1971, Ser. No. 110,320  
Int. Cl. C08f 45/52, 19/10

U.S. Cl. 260—28.5 AV

12 Claims

Novel high-melting wax compositions are prepared by heat-curing a mixture of petroleum wax, an olefin-vinyl ester copolymer and an aluminum polyalkoxide. Novel coating methods utilizing the new wax compositions are also disclosed.

3,719,626

**CURABLE AQUEOUS MIXTURE OF (1) ADDUCT OF POLYGLYCIDYL ETHER AND ALLYLAMINE AND (2) CARBOXYLIC ACID**

Clayton A. May, Orinda, Calif., assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed Oct. 9, 1969, Ser. No. 865,178  
Int. Cl. B01k 5/02; C08g 30/08

U.S. Cl. 260—29.2 EP

2 Claims

An adduct of a polyepoxide and an ethylenically unsaturated amine is dispersed in water with an organic acid to provide cathodic electrodepositable coating compositions. Allyl amine and diallyl amine are preferred, and R<sub>1</sub>-CH=CH-CH<sub>2</sub>-NHR is disclosed. The adduct may further be reacted with additional polyepoxide, the product being dispersible and film forming.

3,719,627

**THERMOSET ORGANIC COMPOSITIONS CONTAINING CYCLIC TRISULFONES**

Girish Girdhar Parekh and Werner Josef Blank, Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Apr. 1, 1971, Ser. No. 130,448  
Int. Cl. C09g 51/24

U.S. Cl. 260—29.4 UA

6 Claims

A composition comprising (1) from about 40% to about 95%, by weight, of an anionic acrylic polymer containing at least a carboxyl or alcoholic hydroxyl function, (2) from about 4.9% to about 50%, by weight, of an amine-aldehyde cross-linking agent and (3) from about 0.1% to about 10%, by weight, of a cyclic trisulfone is provided. The composition finds utility in coating applications wherein low temperature cure of the said coated resinous composition can be attained with attendant high resistance to organic solvents.

3,719,628

**ETHYLENE/VINYL CHLORIDE/ACRYLAMIDE INTERPOLYMER AND STYRENE/BUTADIENE/UNSATURATED ACID TERPOLYMER POLYBLEND**

Joseph G. Bergomi, Jr., St. Louis, and Paul R. Graham, Ballwin, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Aug. 20, 1970, Ser. No. 65,712  
Int. Cl. C08f 37/18

U.S. Cl. 260—29.7 W

22 Claims

Composition comprising a polyblend of ethylene/vinyl chloride/acrylamide interpolpolymer and styrene/butadiene/unsaturated acid terpolymer useful as adhesive binder in inorganic paper-coating compositions.

3,719,629

**WATER THINNABLE COATING COMPOSITIONS FROM AMINOETHYLATED INTERPOLYMERS**

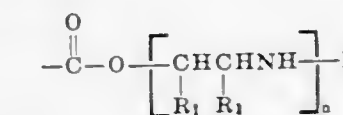
Patrick H. Martin, Lake Jackson, and Russell T. McFadden, Freeport, both of Tex., assignors to The Dow Chemical Corporation, Midland, Mich.

Filed March 31, 1971, Ser. No. 129,975  
Int. Cl. C08f 45/24, 45/34

U.S. Cl. 260—33.2 EP

7 Claims

Water thinnable coating compositions are prepared by incorporating therein as the pigment binder an acidified aminoethylated copolymer having pendant amino-alkylate groups of the formula



wherein R<sub>1</sub> and R<sub>2</sub> are independently selected from the group consisting of hydrogen and lower alkyl radicals of one to four carbon atoms and the average value of n ranges from about 1.0 to 2.5 and wherein the copolymer before aminoethylation contains at least 3 percent by weight pendant -COOH groups.

Water dispersant epoxy resin coating compositions are also disclosed.

3,719,630

**SOLVENT-FREE LIQUID ORGANOSILOXANE RESINS**

Robert C. Antonen, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 123,472, Mar. 11, 1971, which is a continuation-in-part of application Ser. No. 11,031, Feb. 12, 1970, both now abandoned. This application Sept. 20, 1971, Ser. No. 182,232  
Int. Cl. C08g 51/04

U.S. Cl. 260—37 SB

15 Claims

Liquid resins consisting essentially of 15-55 mol percent CH<sub>3</sub>SiO<sub>3/2</sub> units, 2-20 mol percent (C<sub>6</sub>H<sub>5</sub>)<sub>2</sub>SiO units, 20-40 mol percent C<sub>6</sub>H<sub>5</sub>SiO units, 10-40 mol percent of CH<sub>3</sub>(CH<sub>2</sub>=CH)SiO or CH<sub>2</sub>=CHSiO<sub>3/2</sub> units, 0-25 mol percent CH<sub>3</sub>(C<sub>6</sub>H<sub>5</sub>)SiO units and 0-25 mol percent (CH<sub>3</sub>)<sub>2</sub>SiO units are utilized as binders for ceramic formulations.

3,719,631

**ETHYLENE OXIDE POLYMER COMPOSITION**

Kenichi Hattori, Yuichi Ueda, and Yukio Tanino, Wakayama, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

No Drawing. Continuation-in-part of application Ser. No. 862,510, Sept. 30, 1969. This application May 28, 1971, Ser. No. 148,210  
Claims priority, application Japan, Oct. 3, 1968, 43/72,119

Int. Cl. C08g 51/60  
U.S. Cl. 260—45.8 SN

1 Claim

Stabilized ethylene oxide polymer compositions having an intrinsic viscosity greater than 0.03 and containing 0.05 to 15% by weight of an amino-2-mercaptobenzothiazole, or a benzothiazole or an oxobenzisulfonazole of Formulas I, II and III, respectively.

3,719,632

**ROOM TEMPERATURE CURABLE ORGANOPOLYSILOXANES**

Guenther Fritz Lengnick, Adrian, Mich., assignor to Stauffer-Wacker Silicone Corporation, Adrian, Mich.

Filed Dec. 30, 1970, Ser. No. 103,007  
Int. Cl. C08f 11/04

U.S. Cl. 260—46.5 G

4 Claims

The invention relates to siloxane cross-linking agents and to curable one-component organopolysiloxanes obtained from



the reaction of the siloxane cross-linking agents and a hydroxyl-terminated organopolysiloxane to form a composition which is curable in ambient moisture.

3,719,633

# METHOD FOR PREPARING POLYCARBORANYL-ENESILOXANE POLYMERS

Karl O. Knollmuller, Hamden, and John F. Sieckhaus, Milford, Conn., assignors to Olin Corporation  
No Drawing. Filed Oct. 18, 1971, Ser. No. 190,282  
Int. Cl. C08f 11/04

U.S. Cl. 260—46.5 E 10 Claims

A method for the preparation of high molecular weight linear polycarboranylenesiloxane polymers by the condensation of selected hydroxy terminated, silicon containing carboranes in the presence of a catalyst system consisting of a combination of a selected acid salt of tetramethylguanidine and the acid of said salt.

3,719,634

# ROOM TEMPERATURE VULCANIZABLE SILICONE ELASTOMERS CONTAINING METAL HYDROCARBONOXIDES

William H. Clark, Mount Pleasant, Thomas W. Greenlee, Midland, and Louis H. Toporcer, Ingersol Township, Midland County, Mich., assignors to Dow Corning Corporation, Midland, Mich.  
No Drawing. Filed June 18, 1971, Ser. No. 154,647  
Int. Cl. C08f 11/04

U.S. Cl. 260—46.5 G 10 Claims

Room temperature vulcanizable silicone elastomer compositions prepared by mixing a hydroxyl endblocked polydiorganosiloxane, an alkoxy silicon compound, a metal salt of a carboxylic acid and a metal hydrocarbonoxide, such as  $\text{Fe}(\text{OR}')_3$ ,  $\text{V}(\text{OR}')_3$ ,  $\text{Co}(\text{OR}')_2$ ,  $\text{MoO}_2(\text{OR}')_2$ ,  $\text{Zn}(\text{OR}')_2$ ,  $\text{Ce}(\text{OR}')_3$  and  $\text{Al}(\text{OCH}_2\text{CH}_3)_3$  where R' is ethyl, propyl, butyl or phenyl and R is ethyl, propyl or butyl has improved adhesion to metal surfaces.

3,719,635

# METAL HYDROCARBONOXIDES IN ROOM TEMPERATURE VULCANIZABLE SILICONE ELASTOMERS

William H. Clark, Mount Pleasant, Thomas W. Greenlee, Midland, and Louis H. Toporcer, Ingersol Township, Midland County, Mich., assignors to Dow Corning Corporation, Midland, Mich.  
No Drawing. Filed June 18, 1971, Ser. No. 154,648  
Int. Cl. C08f 11/04

U.S. Cl. 260—46.5 G 9 Claims

One package room temperature vulcanizable silicone elastomers with improved adhesion to metal surfaces are mixtures of polydiorganosiloxanes with hydroxyl, alkoxy or acetoxy endblocking, a silicon compound containing alkoxy or acetoxy functionality, a curing catalyst and a metal hydrocarbonoxide, such as  $\text{Fe}(\text{OR}')_3$ ,  $\text{V}(\text{OR}')_3$ ,  $\text{Co}(\text{OR}')_2$ ,  $\text{MoO}_2(\text{OR}')_2$ ,  $\text{Zn}(\text{OR}')_2$ ,  $\text{Ce}(\text{OR}')_3$  and  $\text{Al}(\text{OCH}_2\text{CH}_3)_3$  where R' is ethyl, propyl, butyl or phenyl and R is ethyl, propyl or butyl.

3,719,636

# METHOD FOR THE PREPARATION OF BIODEGRADABLE GLYCIDOL SURFACTANTS

John A. Wojtowicz, Cheshire, Conn., and Milton Lapkin, Barrington, R.I., assignors to Olin Corporation, New Haven, Conn.  
Filed April 9, 1970, Ser. No. 27,107  
Int. Cl. C07c 41/02, 41/10

U.S. Cl. 260—615 B 6 Claims

This invention relates to a novel method of preparing biodegradable glycidol surfactants by reacting selected aliphatic alcohols with glycidol in the presence of a polar, non-reactive, miscible solvent and to the surfactants produced by such method.

3,719,637

# PROCESS FOR POLYMERIZING TETRAOXANE

Masaru Yoshida, Yoshiaki Nakase, and Akihiko Ito, all of Takasaki, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan  
Filed May 18, 1971, Ser. No. 144,636

Claims priority, application Japan, May 20, 1970, 45/42381; July 4, 1970, 45/58143  
Int. Cl. C08f 1/18; C08g 1/00, 11/00

U.S. Cl. 260—67 FP 5 Claims

Tetraoxane is polymerized in the presence of both a carboxylic anhydride and a specific polymerization initiator, to obtain an oxymethylene polymer having excellent heat-stability. When thiirane or its derivatives, thiocyanates, or isothiocyanates are employed as the polymerization initiator, the thermal stability of the resulting polymer is further improved. An ionizing radiation or an ultraviolet light can concomitantly be employed before and/or in the course of polymerization.

3,719,638

# RADIATION CURABLE ACRYLIC URETHANE MONOMERS

Thomas F. Huemmer, 51967 U.S. Rt. 31, South Bend, Ind., and Thomas J. Miranda, 16731 Brick Rd., Granger, Ind.  
Continuation-in-part of Ser. No. 665,984, Sept. 7, 1967, abandoned. This application Oct. 29, 1969, Ser. No. 870,076  
Int. Cl. C08g 22/16; C08d 1/00

U.S. Cl. 260—77.5 CR 13 Claims

A radiation curable composition is provided by reacting about one mole of an organic diisocyanate with about one mole of a hydroxyacrylate to form a mono-urethane adduct which is subsequently reacted with a styrene-allyl alcohol copolymer having a molecular weight between about 200 and 30,000, the reaction product being essentially free of unreacted isocyanate groups.

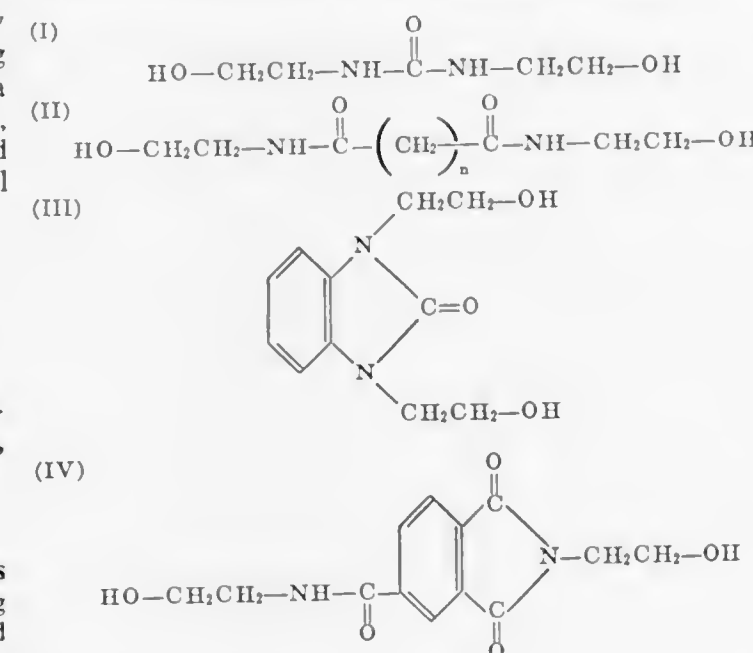
3,719,639

# FLAME RESISTANT POLYURETHANE POLYMERS

Theodor Reetz, Columbia, S.C., and J. W. Britain, New Martinsville, W. Va., assignors to Baychem Corporation, New York, N.Y.  
No Drawing. Filed Mar. 12, 1971, Ser. No. 123,873  
Int. Cl. C08g 22/16

U.S. Cl. 260—75 NQ 8 Claims

Flame-resistant polyurethane polymers are prepared by reacting a polyisocyanate with an organic compound having active hydrogen atoms which are reactive with —NCO groups and a chain-extending composition comprising a mixture of 2,2-bis(bromomethyl)-1,3-propanediol with a compound having one of the following formulas:



wherein n is 0, 1 or 2.

3,719,640

# POLY (AMIDE-IMIDE)POLYMERS HAVING RECURRING DIKETOPIPERAZINE GROUPS

Lester T. C. Lee, Parsippany, N.J., and Stephen S. Hirsch, New City, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.  
No Drawing. Continuation-in-part of abandoned application Ser. No. 39,509, May 21, 1970. This application July 21, 1971, Ser. No. 164,933

U.S. Cl. 260—78 A 10 Claims

Novel linear polymers containing recurring diketopiperazine groups are prepared by polymerizing the salt of a diamine and a nitrilotricarboxylic acid having the formula  $\text{HOOC}(\text{R})(\text{CH}_2\text{COOH})_2$  wherein R is a phenylene or alkylene radical. The polymers contain quaternizable tertiary nitrogen atoms which impart valuable properties to the polymers. The polymers may be formed into fibers, films and shaped articles, and may be blended with other polymers to improve their properties.

3,719,641

# POLYCARBONAMIDE HAVING IMPROVED BASIC DYE RECEPTIVITY

Norman Bernard Campbell, and Ross Nelson Frederick Wells, both of Arnprior, Ontario, Canada, assignors to Union Carbide Canada Limited, Toronto, Ontario, Canada  
Continuation-in-part of Ser. No. 776,855, Nov. 12, 1968, abandoned. This application Feb. 1, 1971, Ser. No. 111,671  
Int. Cl. C08g 20/06, 20/12

U.S. Cl. 260—78 A 6 Claims

Nylon filaments are made more receptive to basic dyes and differentially dye with basic dye in a bath containing acid and basic dyes by mixing the nylon with from 0.3 to 1.0 weight percent of glutaric acid, methyltetrahydrophthalic acid or 1,3,5-tricarboxypentane or alternatively with from 0.3 to 2.0 weight percent of glutaric anhydride, methyltetrahydrophthalic anhydride,  $\alpha$ -2(2-carboxyethyl)glutaric anhydride or succinic anhydride.

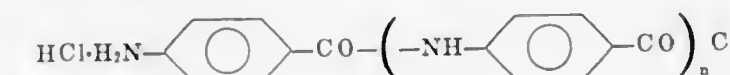
3,719,642

# INTERMEDIATES FOR P-BENZAMIDE POLYMERS

Thomas Albert Johnson, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.  
Filed April 20, 1971, Ser. No. 135,807  
Int. Cl. C08g 20/20

U.S. Cl. 260—78 A 10 Claims

A composition consisting essentially of a hydrochloride of a nitrogen containing base compound in admixture with a compound or mixtures of compounds of the formula:



where n is an integer of 1 to 50.

3,719,643

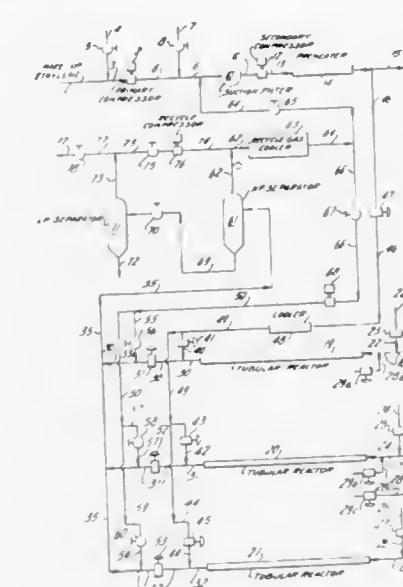
# HIGH PRESSURE PROCESS FOR POLYETHYLENE PRODUCTION

Ralph M. Knight, Los Angeles, Calif., assignor to Dart Industries Inc., Los Angeles, Calif.  
Filed Jan. 25, 1971, Ser. No. 109,416

U.S. Cl. 260—87.3 7 Claims

An improvement in a process for polymerizing ethylene is achieved by splitting the feed into at least two streams, continuously polymerizing each of the streams in the presence of free-radical initiator at elevated pressures and temperatures in separate reactor tubes, quenching the resulting reaction product stream, and separating and recovering polyethylene from the reaction product stream.

The length of each of the reactor tubes is designed so that the reaction temperature peak occurs within the tube



adjacent to the outlet and is calculated based on the following equation:

$$L = \frac{\bar{v} W (t_p - t_i)}{AR (3600)}$$

where:

$\bar{v}$  is the specific volume in units of cubic volume of ethylene feed per unit of weight,  
W is the ethylene feed rate through the reactor tube in units of weight per hour,  
 $t_p$  is the peak temperature of the reaction,  
 $t_i$  is the temperature of the ethylene feed at the inlet of the reactor tube,  
A is the cross-sectional area of the reactor tube in units of square length,  
R is the ethylene reaction rate in units of temperature rise per second,  
3600 is the constant to convert seconds to hours.

3,719,644

# METHOD FOR IMPROVING CRYSTALLINITY OF VINYLIDENE FLUORIDE POLYMERS

Masahiro Segawa and Yukichika Kawakami, Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan  
No Drawing. Filed June 15, 1971, Ser. No. 153,271  
Claims priority, application Japan, June 20, 1970, 45/53,941

U.S. Cl. 260—87.7 11 Claims

Polyvinylidene fluoride having improved crystallinity can be obtained by treating it with a solution of an inorganic electrolyte dissolved in water-soluble organic solvent or in a mixture of water and such organic solvent.

3,719,645

# POLYARYLENE TETRASULFIDE POLYMERS

Norman A. Hiatt, Hamden, Conn., assignor to Uniroyal, Inc., New York, N.Y.  
Filed Sept. 17, 1971, Ser. No. 181,633  
Int. Cl. C08g 23/00

U.S. Cl. 260—79 9 Claims

Monomeric cyclic diarylene bis-tetrasulfides are polymerized by heat alone at temperatures of 130°–210°C. to form new linear high polymers that are useful as adhesives, protective coatings, and formed articles.



For metal-to-metal adhesion, the polymers may be formed directly from the monomers at the locus of their application, between two metal surfaces to be adhered together, by heat and pressure.

For use as adhesive solutions, the polymers are produced by heating them in bulk or in solution in a solvent, the product in solution being useful in tire building, and for coating metallic and other surfaces.

### 3,719,646 METHOD OF PREPARING AQUEOUS EMULSION POLYMERS FROM MONOMERS CONTAINING AN AZIRIDINE RING

Robert Stecklen, Baltimore, and Fred Robinson, Columbia, both of Md., assignors to Akolac Chemical Corporation, Baltimore, Md.

Filed April 9, 1971, Ser. No. 132,916  
Int. Cl. C08f 15/40, 1/60

**U.S. Cl. 260—80.72** 7 Claims  
An emulsion polymer, the films of which have exceptional wet adhesion to painted substrates, is prepared by polymerizing an aqueous dispersion of either an acrylic acid ester or a methacrylic acid ester or a mixture thereof with an aqueous solution of an aziridinyl monomer previously neutralized with an acid whose PKa value is 3.7 or less, at a temperature of from 40° to 55° C., in the presence of a free radical type catalyst and preferably in the absence of air. Ordinarily, the pH of the said aqueous acid solution will be between 2 and 5, but this is not the significant factor in comparison with the PKa value. If the unneutralized aziridinyl polymer, i.e., copolymer or terpolymer, is desired, it can be liberated by treatment of the polymer with ion exchange resins, or alkali.

### 3,719,647 NEW POLYMERS AND DETERGENT COMPOSITIONS CONTAINING THEM

Frederick Edward Hardy, Newcastle-upon-Tyne, England; Peter Robson, Brussels, Belgium, and Peter Roscoe Hartley Speakman, Durham, England, assignors to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Jan. 25, 1971, Ser. No. 109,657  
Int. Cl. C08f 15/14, 15/16

**U.S. Cl. 260—86.1 R** 8 Claims  
New copolymers of acrylic and methyl acrylic acid (I) with acrylic and methacrylic acid — ethylene oxide condensates (II). The components have formulas:  
I.  $\text{CH}_2 = \text{C}(\text{R})\text{COOM}$   
II.  $\text{CH}_2 = \text{C}(\text{R})\text{COO}(\text{C}_2\text{H}_4\text{O})_n\text{H}$   
wherein R is H or  $\text{CH}_3$ ; M is H, alkali metal, ammonium or amine; and n is at least one. The preferred ratio of (I) to (II) is about 2:1 and n is preferably from 20 to 100.

These compounds are mixed with surface-active agents to form built detergents. They are most effective as whiteness maintenance agents when added to a detergent composition at a 0.1 to 5 percent level by weight of the final product.

### 3,719,648 PROCESS FOR THE PREPARATION OF POWDERY HOMO- OR COPOLYMERS OF ETHYLENE

Johannes M. Frielink, Sittard, Netherlands, assignor to Stam-icarbon N. V., Heerlen, Netherlands

Filed June 23, 1971, Ser. No. 155,798

Claims priority, application Netherlands, June 29, 1970, 7009555  
**Int. Cl. C08f 3/04, 15/04**  
**U.S. Cl. 260—85.5 R** 11 Claims  
A process for the recovery of powdery homopolymers or copolymers of ethylene from a polymerization system is disclosed, wherein the corresponding monomers are subjected to polymerization conditions in a reactor and the resulting

polymer, together with unconverted monomer, is discharged from the reactor and expanded to a lower pressure. At least part of this mixture is quenched by the addition of a cold gas, which gas is at least one of the polymerization monomers, to a temperature below the melting point of the polymer to solidify the polymer contained in such mixture as the form of a fine powder. Thereafter the powder is separated from the mixture and remaining unconverted monomer is recycled to the reactor. The process involves simpler equipment and reduced utility costs as compared to prior processes.

### 3,719,649 CROSSLINKED CHLOROPRENE/DIESTER POLYMER

Gert Jennes, Cologne-Flittard; Edmund Huther, Oplanden, and Willi Wolff, Schildgen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 728,350, May 10, 1968. This application

Feb. 19, 1971, Ser. No. 117,058

Claims priority, application Germany, June 6, 1967, F 52

611

**Int. Cl. C08f 15/26**  
**U.S. Cl. 260—86.3** 3 Claims  
A crosslinked copolymer of chloroprene and a diester of an unsaturated carboxylic acid, a composition comprising said cross-linked copolymer and a benzene-soluble chloroprene and process for producing the same.

### 3,719,650 HYDROLYZABLE FUNCTIONAL SYLYL ALKYL ALKYL PEROXIDES

John Richard Joy, Stevenson, Md., assignor to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 82,854, Oct. 21, 1970. This application

Dec. 8, 1971, Ser. No. 206,164

**Int. Cl. C08f 3/68, 7/04**  
**U.S. Cl. 260—89.5 A** 3 Claims  
Described herein are hydrolyzable functional silyl alkyl alkyl peroxides having the following general formula:



wherein, X is a hydrolyzable group, R is hydrogen or a monovalent organic radical which is bonded to the silicon atom through a carbon to silicon bond, R' is an alkenylene, cycloalkenylene, alkarylalkylene, or aralkylene, R'' is an alkyl or aralkyl, and n is 0 to 2 inclusive. These hydrolyzable silyl alkyl alkyl peroxides are useful as initiators for the polymerization of monomers having olefinic unsaturation and are also useful in forming silicones.

### 3,719,651 HYDROXYBUTYLMETHYLCELLULOSE AS A PROTECTIVE COLLOID IN VINYL MONOMER POLYMERIZATION

George K. Greminger, Jr., and Ronald L. Glomski, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 1, 1971, Ser. No. 111,630

**Int. Cl. C08f 3/30**

**U.S. Cl. 260—92.8 W** 3 Claims  
An improvement in the process for preparing polymers from substantially water-insoluble polymerizable ethylenically unsaturated monomer in aqueous suspension wherein such monomers form polymers which are insoluble in their monomer, said improvement comprising the use of hydroxybutylmethylcellulose as the protective colloid in the water-phase of an oil-in-water suspension system.

### 3,719,652 POLYMERIZATION OF CYCLOPENTENE

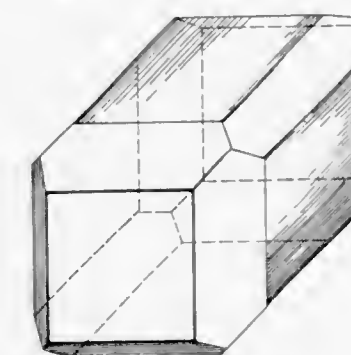
Wolfgang Oberkirch; Gottfried Pampus, and Peter Gunther, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 833,669, June 16, 1969, abandoned. This application May 5, 1971, Ser. No. 140,582

Claims priority, application Germany, June 21, 1968, P 17 70 688.6

**Int. Cl. C08f 1/56**  
**U.S. Cl. 260—93.1** 10 Claims  
Process for producing cyclopentene polymers which comprises contacting cyclopentene at a temperature of from -60° to +60°C with a catalyst comprising  
a tantalum compound (I)  
a halogen compound (II)  
an organo-aluminum compound (III)  
the components being in a molar ratio of I : II : III = 1 : 0.3-10 : 0.5-15.

method upgrades insulin from about 2 International Units (I.U.) per milligram to about 22-26 I.U. per milligram



### 3,719,653 NICKEL $\pi$ -ALLYL HALOGENOACETATES, THEIR USE AS CATALYSTS FOR THE STEREOSPECIFIC POLYMERIZATION OF UNSATURATED ORGANIC COMPOUND

Francois Dawans, 78 Bougival, France, assignor to Institut Francais Du Petrole Des Carburants Et Lubrifiants, Rueil Malmaison, France

Division of Ser. No. 753,769, Aug. 12, 1968, Pat. No. 3,660,445. This application July 23, 1970, Ser. No. 63,983

Claims priority, application France, Aug. 23, 1967, 67118816

**Int. Cl. C08d 1/14, 3/06; C08b 3/08**  
**U.S. Cl. 260—94.3** 11 Claims

A process for stereospecific polymerization of conjugated diolefins with a catalyst which is the reaction product of allyl halogenoacetate and nickel carbonyl or nickel olefin complex.

### 3,719,654 PROCESS FOR PREPARING METAL SALTS OF TALL OIL

James N. Stone, Augusta, Ga., assignor to Continental Can Company, Inc., New York, N.Y.

No Drawing. Filed Apr. 19, 1971, Ser. No. 135,454

**Int. Cl. C09f 1/04**  
**U.S. Cl. 260—97.5** 5 Claims

A process for preparing metal tallates wherein tall oil soap is reacted with an acid metal salt in an aqueous media and the metal tallate is extracted from the aqueous media using a water immiscible organic solvent in which the metal tallate is soluble.

### 3,719,655 PROCESS FOR THE CRYSTALLIZATION OF THE AMMONIUM AND ALKALI METAL SALTS IN INSULIN

Richard Lee Jackson, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 5, 1969, Ser. No. 882,563

**Int. Cl. A61k 17/04; C07a 7/00; C07c 103/52**  
**U.S. Cl. 260—112.7** 7 Claims

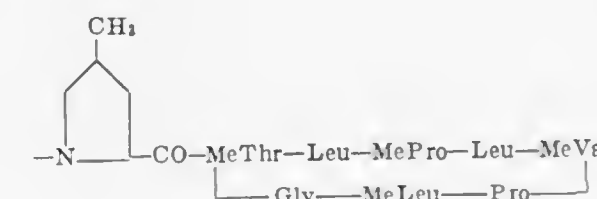
Insulin is isolated and purified from an insulin-containing solution by the adjustment of the basicity to about pH 7.2-10.0 and the alkali metal ion or ammonium ion concentration to about 0.2 M to 1.0 M, thereby causing crystallization of the alkali metal or ammonium salt of insulin. The

while recovering 90-95 percent of the insulin from an aqueous-acid pancreatic extract.

### 3,719,656 NEW CYCLOPEPTIDES

Georges Jolles, Sceaux (Hauts-de-Seine), France, assignor to Rhone-Poulenc S.A., Paris, France  
Continuation-in-part of Ser. No. 770,436, Oct. 24, 1968, abandoned. This application Dec. 24, 1969, Ser. No. 888,045  
Claims priority, application France, Oct. 25, 1967, 67125842; March 19, 1968, 68,44421; Nov. 12, 1967, 6781425

**Int. Cl. C07c 103/52**  
**U.S. Cl. 260—112.5** 4 Claims  
Cyclopeptides having antitubercular activity derived from antibiotics of the formula: R-cyclopeptide A wherein cyclopeptide A designates a nonapeptide residue of the formula:



in which MePro signifies L-trans-4-methyl-proline; MeThr signifies L-N-methylthreonine; MeVal signifies L-N-methylvaline; MeLeu signifies D-N-methylleucine; Pro signifies L-proline; Gly signifies glycine, and Leu signifies L-leucine, and R represents hydrogen or an alkanoyl, alkenoyl, alkadienoyl, alkoxy carbonyl, aroyl, aralkenoyl, arylsulphenyl, arylsulphonyl, aryl sulphonyl, cycloalkylcarbonyl, heterocyclylcarbonyl or heterocyclylalkanoyl radical, or a residue of a linear or cyclic peptide radical attached through a carbonyl group to the nitrogen atom of the L-trans-4-methyl-proline grouping the side chain of the cyclopeptide A, and non-toxic acid addition and quaternary ammonium salts thereof, possess antitubercular activity and activity against gram-positive and gram-negative microorganisms.



3,719,657

**MONOAZO DYESTUFFS CONTAINING A CARBOX-AMIDO-4(3H)-QUINAZOLONE GROUP**

Kinjiro Hama, Nishinomiya, Nobuo Mishima, Hirakata, and Kazuo Miyamoto, Takarazuka, Japan, assignors to Sumitomo Chemical Co., Ltd.

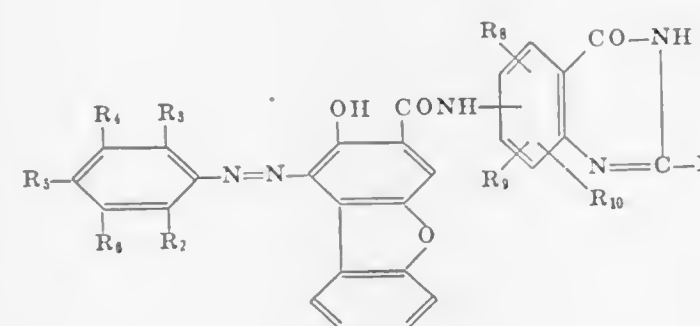
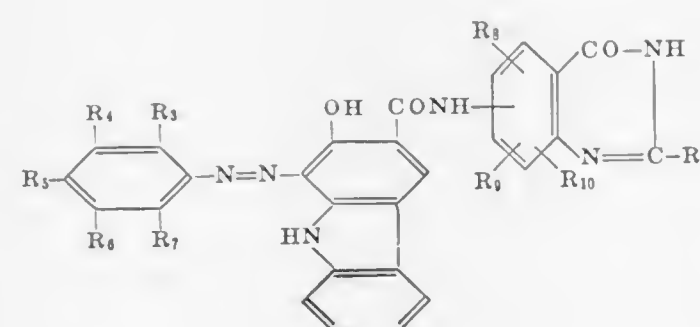
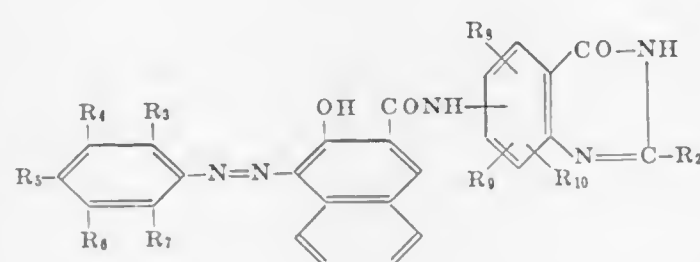
No Drawing. Filed Jan. 12, 1970, Ser. No. 2,405  
Claims priority, application Japan, Jan. 17, 1969, 44/3,704

Int. Cl. C09b 29/36, 43/12

U.S. Cl. 260—154

9 Claims

Compounds of the formulae:



wherein  $R_2$  is hydrogen,  $C_1$ - $C_4$  alkyl,  $C_1$ - $C_4$  alkoxy (for second and third formulae only), phenyl, benzyl or methyl-, methoxy- or chlorine-substituted benzyl, each of  $R_3$ ,  $R_4$ ,  $R_5$ ,  $R_6$  and  $R_7$  is hydrogen, chlorine, bromine,  $C_1$ - $C_4$  alkyl,  $C_1$ - $C_4$  alkoxy, nitro, cyano, trifluoromethyl,  $C_1$ - $C_4$  alkoxy-carbonyl,  $C_1$ - $C_4$  alkylsulfonyl, phenylsulfonyl, ureido, carbamoyl,  $N$ - $C_1$ - $C_4$  alkylcarbamoyl,  $N$ -phenylcarbamoyl, sulfamoyl,  $N$ - $C_1$ - $C_4$  alkylsulfamoyl,  $N$ -phenylsulfamoyl, acetyl, propionyl, butyryl, phenylacetyl, benzoyl, acetyl-amino, propionyl-amino, butyryl-amino, phenylacetyl-amino or benzoyl-amino, and each of  $R_8$ ,  $R_9$  and  $R_{10}$  is hydrogen, chlorine, bromine,  $C_1$ - $C_4$  alkyl or  $C_1$ - $C_4$  alkoxy, are provided, which are useful as water insoluble dyestuffs characterized by high fastness to solvents, migration and light.

3,719,658

**BENZIDINE YELLOW TYPE PIGMENT**

Joseph W. Conley, Fort Edward, N.Y., assignor to Hercules Incorporated, Wilmington, Del.

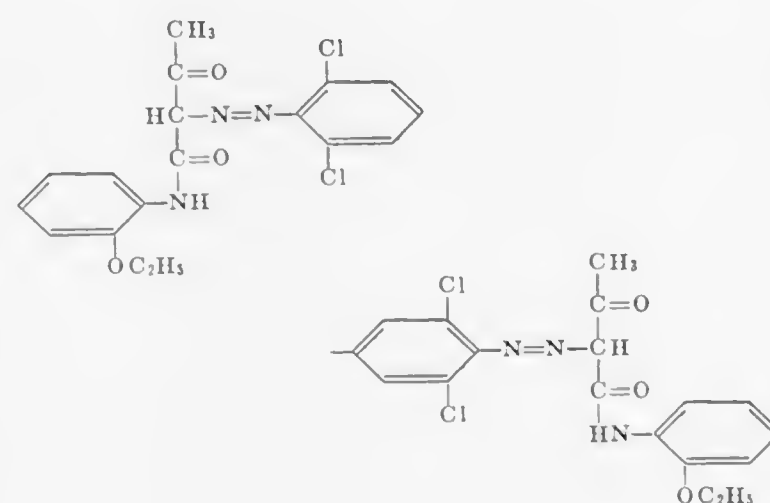
Filed March 12, 1969, Ser. No. 806,724

Int. Cl. C09b 35/10, 35/24; C09d 11/16

U.S. Cl. 260—176

1 Claim

A benzidine yellow type pigment of unusually good lightfastness and superior strength is described. The pigment, which is a compound of the formula



is produced by tetrazotizing 3,3',5,5'-tetrachlorobenzidine and then coupling the tetrazotized product with aceto-acet-o-phenetidine. In a preferred method  $N,N'$ -diacetyl-3,3',5,5'-tetrachlorobenzidine is hydrolyzed to the corresponding amine in situ in the acid solution which is to be used for the tetrazotizing step.

3,719,659

**INTERMEDIATES FOR MAKING LINCOMYCINS AND PROCESS FOR PREPARING THE SAME**

Barney J. Magerlein, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Feb. 10, 1970, Ser. No. 10,290

Int. Cl. C07c 47/18

U.S. Cl. 260—210 R

8 Claims

Lower-alkyl 1-thio- $\alpha$ -D-galacto-hexodialdo-1,5-pyranosides useful as intermediates in the preparation of lincomycins are prepared by periodate oxidation of lower-alkyl 1-thio- $\alpha$ -D-galacto-hepto- and octopyranosides containing a hydroxyl group in the 7-position and a hydroxyl or amino group in the 6-position.

3,719,660

**2-FURFURYLTHIOINOSINE-5'-PHOSPHATE COMPOUNDS**

Kin-ichi Imai, Yoshio Yoshioka, Jun Toda, and Hisashi Aoki, all of Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed June 10, 1970, Ser. No. 45,222

Claims priority, application Japan, June 13, 1969, 44/47113; June 21, 1969, 44/49180

Int. Cl. C07d 51/54

U.S. Cl. 260—211.5 R

5 Claims

2-Furfurylthioinosine-5'-phosphate and a physiologically acceptable salt thereof have excellent ability for improving and/or enhancing the flavor of foods and beverages. Moreover, there is a significant synergistic action between these compounds and monosodium glutamate. Also provided are novel starting materials for preparing these compounds.

3,719,661

**STARCH THICKENER**

John W. Robinson; George N. Bookwalter, and John V. Tuschhoff, all of Macon County, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Division of Ser. No. 476,742, Aug. 2, 1965, Pat. No. 3,437,493.

This application Aug. 29, 1968, Ser. No. 778,882

Int. Cl. C08b 19/01

U.S. Cl. 260—233.3 R

2 Claims

A starch thickener comprising phosphorus oxyhalide cross-linked hydroxypropyl cereal starch having a hydroxypropyl D.S. of at least 0.10 and pH 6.5 buffered salt CIV viscosity of about 200 to 400 gram-centimeters after 10 minutes and 190 to 300 gram-centimeters after 40 minutes prepared by reacting a phosphorus oxyhalide with granular hydroxypropyl cereal starch.

3,719,662

**STARCH PHOSPHATE ESTERS**

Martin M. Tessler, Edison, N.J., assignor to National Starch and Chemical Corporation, New York, N.Y.

Filed April 7, 1971, Ser. No. 132,167

Int. Cl. C08b 19/04

U.S. Cl. 260—233.5

9 Claims

A method for the preparation of starch phosphate esters wherein aqueous slurries or dispersions of a starch base are reacted with  $\alpha$ -carboxyaryl phosphates or salts thereof. The starch products may also be prepared employing non-aqueous solvents or by means of a dry reaction procedure.

3,719,663

**PREPARATION OF CELLULOSE ETHERS**

Eugene D. Klug, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed June 7, 1971, Ser. No. 150,709

Int. Cl. C08b 11/00

U.S. Cl. 260—231 R

9 Claims

An improved process is provided for preparing cellulose ethers of the viscosity desired. Their viscosity is regulated during or after the etherification reaction used in their preparation. The viscosity regulating agents used are an organic hydroperoxide in conjunction with a metal catalyst. Now preferred are tert butyl hydroperoxide in conjunction with a cobalt or manganese salt.

3,719,664

**WARP SIZING AGENT**

Lester P. Hayes; Raymond L. Drury, Jr., and Edward H. Grosse, all of Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Continuation-in-part of Ser. No. 12,859, Feb. 19, 1970, abandoned. This application Oct. 27, 1971, Ser. No. 192,841

Int. Cl. C08b 25/02

U.S. Cl. 260—233.5

6 Claims

A method of acylating starch with dibasic acid anhydrides and forming salts of the acylated starch with amines devoid of Zerewitinoff hydrogen at pH 5.0–7.0. The resultant amine salts of the starch half esters are useful as sizing agents for yarns containing synthetic fibers.

3,719,665

**CHONDROITIN SULPHURIC ACID SALTS**

Albert H. Beaufour and André Esanu, Paris, France, assignors to Societe d'Etudes de Produits Chimiques, Issy-les-Maulineaux, Hauts-de-Seine, France

No Drawing. Filed Aug. 23, 1971, Ser. No. 174,126

Int. Cl. C07c 69/32

U.S. Cl. 260—234 R

5 Claims

This invention relates to new salts of Chondroitin sulphuric acids, forms A and C, with betaine and pyridoxine.

These compounds are useful for their therapeutic activity in the field of myocardial infarction and as anti-atheromatic agent.

Process for the preparation of the said compounds is indicated and pharmacological activity is described.

3,719,666

**IMINO SUBSTITUTED  $\alpha,\beta$ -UNSATURATED ALIPHATIC ESTERS**

Richard J. Anderson, Clive A. Henrick, and John B. Siddall, Palo Alto, Calif., assignors to Zeecon Corporation, Palo Alto, Calif.

No Drawing. Filed Jan. 13, 1971, Ser. No. 106,273

Int. Cl. C07d 23/02

U.S. Cl. 260—239 E

10 Claims

Novel imino aliphatic esters prepared by reaction of haloketone with alkali azide, reduction of ketone, and conversion of azido alcohol to the imino which are useful for the control of insects.

3,719,667

**EPIMERIZATION OF 6-ACYLAMIDO AND 6-IMIDO PENICILLIN SULFOXIDE ESTERS**

Gerald E. Gutowski, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed Aug. 24, 1970, Ser. No. 66,594

Int. Cl. C07d 99/16

U.S. Cl. 260—239.1

11 Claims

This invention is addressed to a reversible process for the epimerization of 6 $\alpha$  and 6 $\beta$ -epimers of 6-acylamido and 6-imido penicillin sulfoxide esters wherein either the  $\alpha$ -epimer or the  $\beta$ -epimer is contacted with a  $N,O$ -bis-(trialkylsilyl)acetamide in the presence of an inert organic solvent to produce an equilibrium mixture of the  $\alpha$  and  $\beta$  epimers.

3,719,668

**SEMI-SYNTHETIC PENICILLIN ESTERS**

Erling Knud Frederiksen, Holte, and Wagn Ole Godtfredsen, Vaerloese, both of Denmark, assignors to Lovens Kemiske Fabrik Produktion-saktieselskab, Ballerup, Denmark

Filed March 13, 1970, Ser. No. 19,462

Claims priority, application Great Britain, March 18, 1969, 14,218/69; July 21, 1969, 36,581/69. The portion of the term of this patent subsequent to Oct. 10, 1989, has been disclaimed.

Int. Cl. C07d 99/14

U.S. Cl. 260—239.1

7 Claims

A new group of semi-synthetic penicillin esters, which are esters of a  $\alpha$ -aryl- $\beta$ -aminoethyl penicillins, are described and claimed together with a process for their production.

3,719,669

**AMINO (OR AMIDO)-PHENYL-ALKYL-BENZAZEPINE ANALGESICS AND NARCOTIC ANTAGONISTS**

Bola Vithal Shetty, Bombay, India, assignor to Pennwalt Corporation, Philadelphia, Pa.

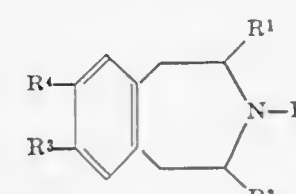
Continuation-in-part of Ser. No. 711,897, March 11, 1968, abandoned. This application March 27, 1972, Ser. No. 238,637

Int. Cl. C07d 41/08

U.S. Cl. 260—239 BB

21 Claims

Compounds of the general formula:





or acid addition salts thereof wherein R is aminophenyl-lower alkyl, lower alkanoylamidophenyl-lower alkyl, methyl-aminophenyl-lower alkyl, ethylaminophenyl-lower alkyl, or dimethylaminophenyl-lower alkyl in which said amino moiety is either ortho, meta, or para to said lower alkyl moiety; R<sup>1</sup> and R<sup>2</sup> are independently H or lower alkyl; R<sup>3</sup> and R<sup>4</sup> are independently H or OH or lower alkoxy. The compounds are useful as analgesics and narcotic antagonists.

3,719,670

## SUBSTITUTED CARBINOL DERIVATIVES

Eugene E. Galantay, Morristown, and Dietmar A. Habeck, Dover, both of N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

Continuation-in-part of Ser. No. 778,777, Nov. 25, 1968, abandoned. This application Sept. 10, 1970, Ser. No. 71,279  
Int. Cl. C07c 169/20, 173/00

U.S. Cl. 260—239.55 C

11 Claims

The compounds are steroidal 17-allenyl carbinol derivatives, e.g., 17 $\alpha$ -propadienylestra-4,9-dien-17 $\beta$ -ol-3-one. The compounds have, e.g., progestational activity and are useful in fertility control.

3,719,671

## 10-IMIDOYLPHENOTHIAZINES

Yao Hua Wu, and Walter G. Lobeck, Jr., both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Filed May 27, 1971, Ser. No. 147,667

Int. Cl. C07d 93/14

U.S. Cl. 260—243 A

21 Claims

Novel 10-imidoylphenothiazines are prepared by reacting a phenothiazine which may have hydrogen, trifluoromethyl, methylthio, alkyl, alkoxy or halogen substituents in the 2 or 4 position with a carboxamide selected from the group consisting of amides and lactams in the presence of phosphorus oxychloride. Typical embodiments are 10-[2-(5-methyl-1-pyrrolinyl)]phenothiazine and 10-[2-(5,5-dimethyl-1-pyrrolinyl)]phenothiazine. The phenothiazine amidine products are useful as intestinal relaxant and antithromogenic agents.

3,719,672

## 4-SUBSTITUTED METHYLENE-7-AMINO-8-OXO-5-THIA-1-AZA-BICYCLO[4,2,0]OCT-2-ENE-2-CARBOXYLIC ACIDS

Karl Heusler, Basel, Switzerland; Robert Burns Woodward, Cambridge, Mass., and Ivan Ernest, Birsfelden, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 2, 1969, Ser. No. 881,639

Claims priority, application Switzerland, Dec. 11, 1968, 18499/68; July 8, 1969, 10372/69

Int. Cl. C07d 99/24

U.S. Cl. 260—243 C

25 Claims

7-amino-4-methylene-8-oxo-5-thia-1-azabicyclo[4,2,0]oct-2-ene-2-carboxylic acid compounds, in which the 4-methylene group is substituted and the 7-amino group may be acylated exhibit antibacterial properties or may be used as intermediates for the manufacture of compounds having such properties.

3,719,673

## DERIVATIVES OF 7-AMINOCEPHALOSPORANIC ACID

Hans Bickel, Binningen; Rolf Bosshardt, and Johannes Mueller, both of Arlesheim, all of Switzerland, assignors to Ciba-Geigy Corp., Ardsley, N.Y.

Filed Nov. 17, 1970, Ser. No. 90,470

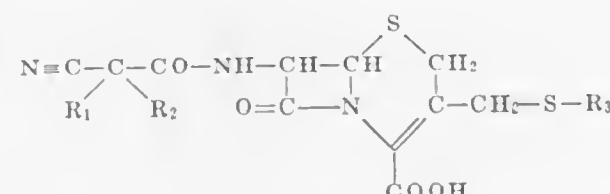
Claims priority, application Switzerland, Nov. 28, 1969, 17731/69; Dec. 24, 1969, 19243/69; Feb. 17, 1970, 2281/70; April 20, 1970, 5877/70; June 2, 1970, 8199/70

Int. Cl. C07d 99/24

U.S. Cl. 260—243 C

13 Claims

Compounds of the formula



in which R<sub>1</sub> and R<sub>2</sub> each represent a hydrogen atom or an unsubstituted or substituted monovalent hydrocarbon radical or an unsubstituted or substituted monovalent heterocyclyl radical bound by way of a carbon atom, or together represent a divalent hydrocarbon radical that may be interrupted by one or more hetero atoms and/or substituted, and R<sub>3</sub> represents a heterocyclyl radical having aromatic character which is bound to the sulphur atom by way of a carbon atom and which contains at least two nitrogen atoms and a further hetero atom selected from the group consisting of nitrogen, oxygen and sulphur. They have antimicrobial activity.

3,719,674

## 1,2-SUBSTITUTED INDENE COMPOUNDS

Donald L. Trepanier, Indianapolis, Ind., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 757,102, Sept. 3, 1968, Pat. No.

3,636,116. This application Feb. 8, 1971, Ser. No. 113,744

Int. Cl. C07d 87/14

U.S. Cl. 260—244 R

10 Claims

1,2-Substituted indene compounds such as 3-(substituted phenyl)-3a,8b-dihydro-4H-indeno[2,1-d]-isoxazoles are prepared by the reaction of indene with substituted chlorobenzhydroxamic acid. The indeno-isoxazole compounds can be converted to other substituted indene compounds by reduction to produce 2-( $\alpha$ -amino-substituted-benzyl)-1-indanols, which in turn can be reacted with cyanogen bromide to produce substituted  $\alpha$ -(1-hydroxy-2-indanyl)benzylcyanamides, which can be cyclized to prepare further substituted indene compounds, namely, 2-amino-4-(substituted phenyl)-4,4a,5,9b-tetrahydroindeno[2,1-e]oxazines. The compounds are useful in the study of animal behavior and are particularly useful as potentiators of amphetamine and of barbiturates such as hexobarbital.

3,719,675

## DINITROPHENOXYMETHYL AMINES

Joseph W. Baker, Kirkwood, and Ignatius Schumacher, Webster Groves, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed July 13, 1970, Ser. No. 54,605

Int. Cl. C07d 87/32

U.S. Cl. 260—247.7 C

2 Claims

Dinitrophenoxymethyl amines as new chemical compounds. These compounds have been found to be useful in the control of bacteria.

3,719,676  
ANTHINFLAMMATORY OXAZOLO TRIAZINE COMPOUNDS

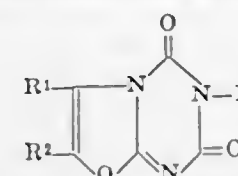
George Crank, Kensington, New South Wales, Australia, assignor to Lilly Industries Limited, London, England  
No Drawing. Filed Oct. 30, 1970, Ser. No. 85,791

Int. Cl. C07d 99/02

U.S. Cl. 260—248 NS

4 Claims

Oxazolo triazine compounds of the formula:



wherein R is aryl or substituted aryl, R<sup>1</sup> and R<sup>2</sup> independently represent hydrogen, lower alkyl, phenyl or substituted phenyl and additionally, when R<sup>2</sup> is hydrogen, R<sup>1</sup> represents trifluoromethyl or —COX where X is lower alkoxy or amino, are useful in the treatment of inflammation in warm-blooded mammals when administered in daily doses between 5 and 350 mg./kg. of body weight.

3,719,677

## TETRAHYDRO-3,6-DIPHENYLIMIDAZO(1,2-B)-AS-TRIAZINES

Bernard Loev, Broomall, Pa., assignor to Smith Kline & French Laboratories, Philadelphia, Pa.

Filed Sept. 8, 1971, Ser. No. 178,838

Int. Cl. C07d 55/10

U.S. Cl. 260—249.5

4 Claims

The compounds are tetrahydro-3,6-diphenylimidazo-[1,2-b]-as-triazines which have hypotensive activity.

3,719,678

## 2-ACYLIMINO-1,3-DIAZACYCLOALKANES

Robert Armistead Lucas, Mendham, and Herbert Morton Blatter, Summit, both of N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 884,322, Dec. 11, 1969, Pat.

No. 3,627,889, which is a continuation-in-part of Ser. No.

839,704, July 7, 1969, Pat. No. 3,655,895. This application

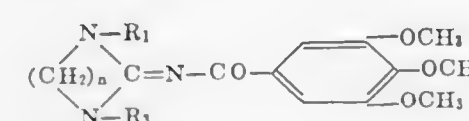
April 7, 1970, Ser. No. 26,433

Int. Cl. C07d 51/18, 49/30, 53/02

U.S. Cl. 260—256.4 H

3 Claims

1-R<sub>1</sub>-2-trimethoxybenzoylimino-1,3-diazacycloalkanes, e.g. those of the formula



R<sub>1</sub> = aliphatic or cycloaliphatic radical

R<sub>2</sub> = H, alkyl or alkanoyl

n = 2-4

or salts thereof exhibit hypnotic effects.

3,719,679

## 9-(1-PIPERAZINYL)-9,10-DIHYDRO-9,10-ETHANOANTHRACENES AND THEIR SALTS

Jacques Robert Boissier, Paris, and Roger Ratouis, Saint-Cloud, both of France, assignors to Societe anonyme dite: Societe Industrielle pour la Fabrication des Antibiotiques (S.I.F.A.), Puteaux, France

Continuation of Ser. No. 730,650, May 20, 1968, abandoned.

This application Aug. 20, 1971, Ser. No. 173,685

Claims priority, application France, June 8, 1967, 67109575; Sept. 6, 1967, 67120105

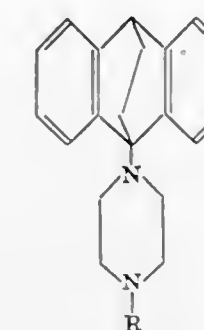
Int. Cl. C07d 51/70

U.S. Cl. 260—268 PC

2 Claims

The compounds are new 9-(1-piperazinyl)-9,10-dihydro-

9,10-ethanoanthracenes and their acid addition and quaternary ammonium salts; they correspond to the formula:



(1)

R : hydrogen atom, lower alkyl, lower hydroxyalkyl, lower alkoxy carbonyl or lower hydroxyalkoxyalkyl radical or —X—Ar radical (X : lower alkylene radical — Ar : phenyl radical eventually substituted by halogen atoms, lower alkyl or lower alkoxy radicals).

They are very useful substances for human therapeutics, namely as antihistaminics and antianaphylactics.

Processes for the preparation of compounds of formula 1.

3,719,680

## NOVEL N-(PIPERAZINYLETHYL)-CARBAMATES

Franklin W. Abbate, North Haven, and William J. Farrissey, Jr., Northford, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed March 2, 1970, Ser. No. 15,925

Int. Cl. C07d 51/70

U.S. Cl. 260—268 R

4 Claims

N-(piperazinylethyl)-carbamates are prepared in good yield by reacting at an elevated temperature an N-hydrocarbylcarbamate with triethylenediamine or an N-hydrocarbylcarbamate, triethylenediamine and an added alkylating agent. The N-piperazinyl derivatives so-formed are useful as catalysts in the manufacture of polyurethanes, in the preparation of acid-soluble and acid-dyeable polyurethanes.

3,719,681

## POLYACYLOXAMIDRAZONE SOLUTIONS

Hans-Dieter Rupp, Erlenbach; Erhard Siggel, Seckmauern; Gerhard Meyer, Oberburg; Ernst-Georg Worbs; Michael Wallrabenstein, both of Erlenbach, and Albert Schopf, Hering/Odw., all of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Division of Ser. No. 719,027, April 5, 1968, Pat. No.

3,583,953. This application July 6, 1970, Ser. No. 60,991

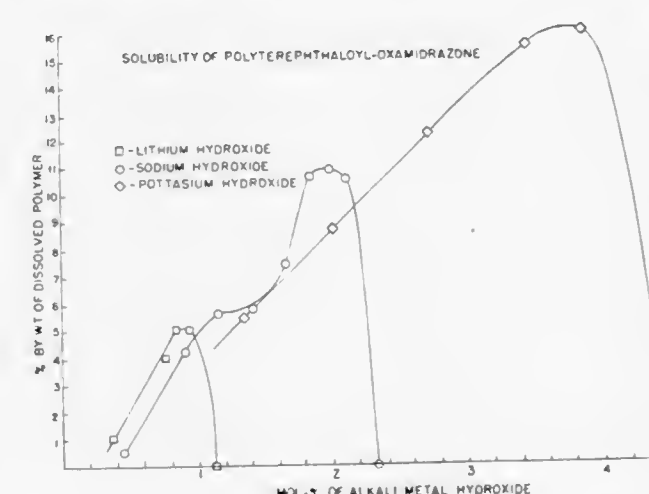
Claims priority, application Germany, April 8, 1967, G

49779; April 8, 1967, G 49780

Int. Cl. C08g 51/24; C08j 1/46; C09d 5/02; C09g 1/04

U.S. Cl. 260—29.2 N

10 Claims



An aqueous alkali metal hydroxide solution in which there is dissolved a polyacyloxamidrazone, the resulting alkaline polymer solution being useful for the production of heat-re-



sistant shaped products such as filaments, films, coatings and the like. A process for producing these products includes the steps of forming the polymer solution into a filament or film in contact with an acid precipitation bath, washing the precipitate and subsequently heating to a temperature of approximately 230°-350°C.

It is known that polytriazoles can be obtained by the reaction of dinitriles with dihydrazides or by heating cyanocarboxylic hydrazides. The resulting products are resistant to high temperatures, particularly if they contain aromatic groups in the polymer chain.

3,719,682

## (THIO-, SULFINYL-AND SULFONYL) CONTAINING PYRIDINE COMPOUNDS

Penelope B. Domenico, Danville, Calif., assignor to The Dow Chemical Company, Midland, Mich.

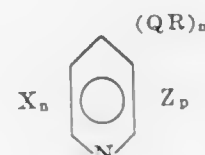
Division of Ser. No. 861,506, Sept. 26, 1969, Pat. No. 3,639,413. This application May 17, 1971, Ser. No. 144,332

Int. Cl. C07d 31/50

U.S. Cl. 260—294.8 F

4 Claims

The present disclosure is directed to (thio-, sulfinyl- and sulfonyl) containing pyridine compounds corresponding to the formula



wherein R represents hydrogen, alkyl, monohaloalkyl, alkenyl, monohaloalkenyl, cycloalkyl, monohalocycloalkyl, phenyl, aralkyl, alkaryl or monohalophenyl; Q represents sulfide (—S—), sulfinyl



each X independently represents chlorine, bromine or fluorine; Z represents one of cyano (—CN), carbamoyl (—CONH<sub>2</sub>) or carboxy (—COOH) or the salts thereof; n represents an integer of 0 to 3, inclusive; m represents an integer of 1 to 3, inclusive; p represents an integer of 1 or 2 and the sum of n+m+p equals an integer of 2 to 5, inclusive, with the proviso that when Q is other than sulfide (—S—), R is other than hydrogen, and when R is H, m is not greater than 2. The preparation of these compounds and their utility as pesticides is also taught.

3,719,683

## IMIDAZO(4,5-b)PYRIDINES

Michael Mullen Robison, Riehen, Switzerland, and Neville Finch, West Orange, N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

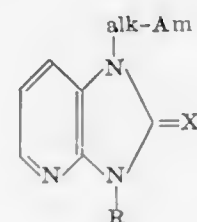
Filed Nov. 20, 1970, Ser. No. 91,595

Int. Cl. C07d 31/50

U.S. Cl. 260—294.8 C

4 Claims

1-Aminoalkyl-2,3-dihydro-imidazo[4,5-b]pyridines, e.g. those of the formula



Am = an amino group  
alk = alkylene with at least 2C  
X = O or S

R = H, aliphatic, araliphatic or aromatic radical acyl derivatives, N-oxides, quaternaries or salts thereof are antidepressants.

3,719,684

## 1,2,3,11B-TETRAHYDROPYRIDO-[3,4,5:M,N] THIOXANTHENES, THE ACID ADDITION SALTS THEREOF

Richard Unger, and Helmut Muller-Calgan, both of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Germany

Filed Aug. 20, 1970, Ser. No. 65,680

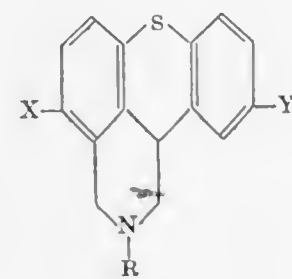
Claims priority, application Germany, Aug. 22, 1969, P 19 42 755.5

Int. Cl. C07d 31/50

U.S. Cl. 260—294.8 A

15 Claims

1,2,3,11b-Tetrahydropyrido[3,4,5:m,n]thioxanthenes of the formula



wherein X and Y each are H, alkyl of 1-4 carbon atoms or Cl and R is H or alkyl of one to four carbon atoms have psychotropic activity, including tranquilizing, hypnotic, antidepressant and narcosis-potentiating activity.

3,719,685

## PROCESS FOR THE ALKYLATION OF PYRIDINE DERIVATIVES

Francesco Minisci and Franco Bertini, Milan, Remo Galli, Torricella del Pizzo, and Adolfo Quilico, Milan, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Filed Apr. 9, 1971, Ser. No. 132,902

Claims priority, application Italy, Apr. 14, 1970, 23,273/70; July 30, 1970, 28,087/70

Int. Cl. C07d 31/36

U.S. Cl. 260—295 R

9 Claims

A process for alkylating pyridinic derivatives is disclosed, and more particularly the alkylation of derivatives of isonicotinic acid, in order to obtain 2-alkyl derivatives having the formula:



wherein R represents an alkyl group having from 1 to 4 carbon atoms and Y represents a hydrogen atom or a functional group COOR' (wherein R' is an alkyl group having from 1 to 4 carbon atoms), CONH<sub>2</sub> or CN, the process being characterized in that the pyridinic derivative is treated in an acid aqueous solution with a mixture prepared separately from a dialkylketone having from 4 to 6 carbon atoms and from hydrogen peroxide, in the presence of a ferrous salt, under atmospheric pressure and at a temperature between 0° and 50° C.

3,719,686

## THIOPHOSPHATE DERIVATIVES OF TRIAZOLINE THIONES

Tony Cebalo, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

No Drawing. Continuation-in-part of application Ser. No. 835,221, June 20, 1969. This application Apr. 28, 1970, Ser. No. 32,715

Int. Cl. C07f 9/16, 9/24, 9/40

U.S. Cl. 260—308 C

11 Claims

A novel composition of matter comprising phosphate derivatives of Δ<sup>2</sup>-1,2,4-triazoline compounds having highly desirable utility as insecticides and acaricides.

3,719,687

## N-(2-DIALKYLAMINOALKYLENE)AMIDES OF 1,1-DIHYDROPERFLUOROALKOXY-SUBSTITUTED ARYL ACIDS AND SALTS THEREOF

Arthur Mendel, Vaden Heights, and William E. Coyne, Woodbury, both of Minn., assignors to Riker Laboratories, Inc., Northridge, Calif.

Filed July 22, 1970, Ser. No. 57,352

Int. Cl. C07c 103/30; C07d 27/02

U.S. Cl. 260—326.3

16 Claims

N-(2-Dialkylaminoalkylene)amides of aromatic acids. Also included are pharmaceutically acceptable acid addition salts thereof. These compounds have valuable antiarrhythmic activity.

3,719,688

## PROCESS FOR THE PRODUCTION OF 2,2-DIHYDROCARBYL - 2,3 - DIHYDRO-BENZO - 1,3-OXAZONE-3-4

Peter Teichert, Germering, and Hans-Ludwig Vogel, Unterpfaffenhofen, Germany, assignors to Chemische Fabrik Aubing Dr. Kurt Bloch Nachf., Munich, Germany

No Drawing. Filed July 13, 1970, Ser. No. 54,587

Claims priority, application Germany, July 14, 1969, P 19 35 754.1

Int. Cl. C07d 87/08

U.S. Cl. 260—244 R

6 Claims

Salicylamide is reacted with a ketone, using excess ketone as solvent. The reaction is carried out by means of a carboxylic acid anhydride in the presence of a substance of the class consisting of proton donors and Lewis acids at temperatures up to 70° C.

3,719,689

## ALPHA,ALPHA-DIHALO-BETA-LACTONES

Donald A. Reich, Barberton, and Henry C. Stevens, Akron, Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Continuation of application Ser. No. 660,617, Aug. 15, 1967, which is a continuation-in-part of application Ser. No. 547,412, May 4, 1966. This application Mar. 26, 1970, Ser. No. 20,478

Int. Cl. C07d 3/00

U.S. Cl. 260—343.9

2 Claims

Alpha, alpha-dihalo-beta-lactones are prepared by reacting a dihaloketene with a carbonyl compound, optionally in the presence of a solvent. The lactones can be polymerized to yield polyesters.

3,719,690

## BASIC AMINO-ACID SALTS OF TOCOPHERYLSUCCINATE

Shizumasa Kijima, and Norio Minami, both of Tokyo, Japan, assignors to Eisai Co. Ltd., Tokyo, Japan

Filed Nov. 5, 1970, Ser. No. 87,304

Claims priority, application Japan, Nov. 13, 1969, 44/90479

Int. Cl. C07d 7/22

U.S. Cl. 260—345.5

6 Claims

Water-soluble basic amino-acid salts of tocopheryl succinate are prepared by reacting tocopheryl succinate with the basic amino-acid, such as arginine, lysine and ornithine.

3,719,691

7α-METHYL-13β-ALKYL-17α-HYDROCARBYL-17β-OXY-Δ<sup>4,9,11</sup>-GONATRENE-3-ONES

Robert Bucourt; Lucien Nedelec, both of Clichy-sous-Bois, and Jean-Claude Gasc, Bondy, all of France, assignors to Roussel Uclaf, Paris, France

Filed July 27, 1970, Ser. No. 58,666

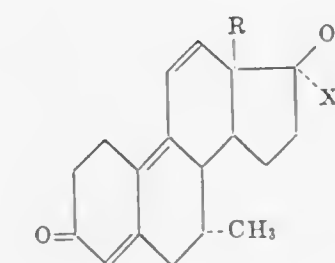
Claims priority, application France, July 28, 1969, 6925700

Int. Cl. C07c 167/14

U.S. Cl. 260—397.45

4 Claims

A novel process for the preparation of 7α-methyl-13β-R-17α-X-17β-OY-Δ<sup>4,9,11</sup>-gonatriene-3-ones of the formula



wherein R is lower alkyl of one to four carbon atoms, X is saturated or unsaturated, substituted or unsubstituted, straight or branched aliphatic hydrocarbon of one to four carbon atoms and Y is selected from the group consisting of hydrogen and acyl of an organic carboxylic acid of one to 18 carbon atoms and novel intermediates formed therein.

3,719,692

## NOVEL AMINO-SUBSTITUTED BENZOATES

Reginoldus Havinga, Schalkhaar, and Pieter D. Swaters, Lochem, both of Netherlands, assignors to Koninklijke Industriële Maatschappij Noury & Van der Lande N.V., Deventer, Netherlands

Filed July 8, 1970, Ser. No. 53,315

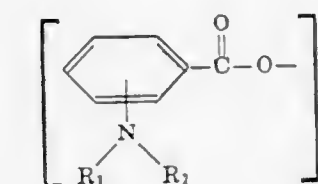
Claims priority, application Netherlands, July 24, 1969, 6911367

Int. Cl. C07c 103/32

U.S. Cl. 260—404.5

20 Claims

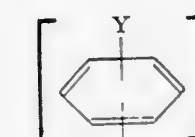
Ultraviolet light absorbing compounds for polymers and copolymers are disclosed having the general formula:



wherein R<sub>1</sub> is hydrogen or a lower alkyl group;

R<sub>2</sub> is hydrogen, a lower alkyl group, an acyl group having nor more than 20 carbon atoms, a substituted or non-substituted aryl group, or a substituted or non-substituted benzene sulfonyl group; and

X is phenylene or a biphenyl fragment having the formula:



wherein Y represents hydrogen or a halogen, and

Z is a sulfonyl group or an alkylidene group having from three to eight carbon atoms.



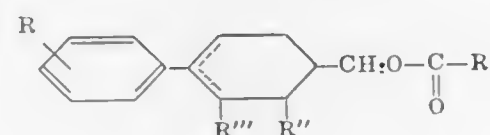
3,719,693

ALKENYL ESTERS OF 2 (LOWER ALKYL)-3-(LOWER ALKYL)-4-ACYL 3-OR-4 CYCLOHEXENCARBINOLS  
George Karmas, Bound Brook, N.J., assignor to Ortho Pharmaceutical Corporation, Raritan, N.J.

Division of Ser. No. 728,900, May 14, 1968, Pat. No. 3,557,129. This application Sept. 14, 1970, Ser. No. 72,181  
Int. Cl. C07c 69/52, 33/06

U.S. Cl. 260—410.5

Compounds of the general formula



are disclosed wherein —R is selected from the group consisting of hydrogen, hydroxy, lower alkoxy of up to eight carbon atoms, lower alkyl of up to eight carbon atoms, and lower alkyl anilino of up to four carbon atoms; —R' is selected from the group consisting of alkyl and alkenyl of up to 20 carbon atoms, cycloalkyl lower alkyl of up to three carbon atoms in the alkyl portion, adamantyl, pyridyl, furyl, lower alkyl carboxylic acids and their alkali metal salts, esters and carbamates; and R'' and R''' are selected from the group consisting of lower alkyl of up to three carbon atoms. These compounds exhibit estrogenic properties and when given in a single subcutaneous dose have long acting effects in the suppression of animal reproduction.

3,719,694

SOLID NITROTRIACETATE-IRON AND ZINC METAL COMPLEXES

William A. Feiler, Kirkwood, and Chung Yu Shen, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Sept. 29, 1969, Ser. No. 862,069

Int. Cl. C07f 3/06, 15/02

U.S. Cl. 260—429.9

7 Claims

Solid nitrotriacetate (NTA)-metal complexes having a molar ratio of at least 1.5 to 1, the metal being cobalt, iron, nickel or zinc, are useful as micronutrients for plants and as catalysts in various chemical reactions. The solids complexes are prepared by reaction of the metal salts with NTA in a molar ratio of at least 1:1.5. An acid is used to adjust pH and stabilize the solid complexes.

3,719,695

NOVEL PROCESS FOR THE PREPARATION OF ALKYL-ALUMINUM HALIDES OR ALCOHOLATES & TRIALKYLBORANES

Scott Hubert Eidt, Seabrook, Tex., assignor to Texas Alkyls, Inc., Deer Park, Tex.

Filed Oct. 20, 1970, Ser. No. 82,527

Int. Cl. C07f 5/06

U.S. Cl. 260—448 A

15 Claims

There is disclosed a convenient process for the simultaneous preparation of alkylaluminum halides or alcoholates and trialkylboranes by means of the reaction between a boron trihalide or trialcoholate and an aluminum trialkyl. Novel dialkylaluminum halides and alkylaluminum alcoholates resulting from this process are also disclosed.

3,719,696

ORGANOSILICON POLYMERS CONTAINING SILACYCLOBUTANE STRUCTURES

David Andrew Jonas, Pencoe, and William John Owen, Penarth, Wales, assignors to Dow Corning Limited, London, England

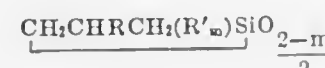
No Drawing. Filed Mar. 12, 1971, Ser. No. 123,855

Int. Cl. C07d 103/02; C07f 7/08

U.S. Cl. 260—448.2 D

3 Claims

Organosilicon homopolymers and copolymers containing



units wherein R is H or lower alkyl, R' is hydrocarbyl, fluorohydrocarbyl or alkoxyalkyl and m is 0 or 1, are prepared by hydrolysis or cohydrolysis of silanes containing



where R, R' and m are as above defined and Y is a hydrolyzable atom or group. These new polymers are useful as water repellents and coating compositions on textiles, glass fibers and powdery substrates as well as in manufacture of silicon rubbers and resins.

3,719,697

TRIS-TRIMETHYLSILOXY AMINES

Keith W. Michael, and Yolanda A. Peters, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Sept. 29, 1971, Ser. No. 184,917

Int. Cl. C07f 7/10

U.S. Cl. 260—448.2 N

3 Claims

Amines of the formula  $(\text{Me}_3\text{SiO})_3\text{Si}(\text{CH}_2)_3\text{NHMe}$  and  $(\text{Me}_3\text{SiO})_3\text{Si}(\text{CH}_2)_3\text{NMe}_2$  are useful as bactericides and fungicides.

3,719,698

POLYFLUORINATED ESTERS OF ACIDS CONTAINING SILICON AND AMINO GROUPS

Giuliana C. Tesoro, Dobbs Ferry, N.Y., and Richard Ring, Wood-Ridge, N.J., assignors to J. P. Stevens & Co., Inc., New York, N.Y.

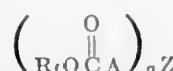
Continuation-in-part of Ser. No. 178,572, March 9, 1962, Pat. No. 3,575,961. This application Nov. 27, 1967, Ser. No. 685,946

Int. Cl. C07c 101/20; C07d 23/06; C07f 7/13

U.S. Cl. 260—448.8 R

4 Claims

Polyfluorinated esters of the formula



wherein  $R_f$  is a polyfluorinated hydrocarbon radical containing at least three fluorine atoms and up to 20 carbon atoms, A is an alkylene radical of up to six carbon atoms, Z is the residue of an amine component selected from the group consisting of amines and amine salts which have had at least one hydrogen atom removed, and q is an integer selected from 1 and 2, useful as textile finishing agents.

3,719,699

PROCESS FOR THE PRODUCTION OF POLYISOCYANATES

James D. McClure, and George W. Conklin, both of Oakland, Calif., assignors to Shell Oil Company, New York, N.Y.

Filed Dec. 31, 1970, Ser. No. 103,347

Int. Cl. C07c 119/04

U.S. Cl. 260—453 PC

14 Claims

An improved process for preparing carbocyclic aromatic isocyanates comprises contacting a carbocyclic aromatic polynitro compound with carbon monoxide in the presence of a catalyst system consisting of certain noble metal halides, heteroaromatic nitrogen compounds and a metal molybdate wherein the metal is iron or manganese.

3,719,700

BIS-PHOSPHORYLATED IMIDODITHIOCARBONATES AND METHODS FOR THEIR PREPARATION

Roger Williams Addor and David Edgar Ailman, Pennington, N.J., assignors to American Cyanamid Company, Stamford, Conn.

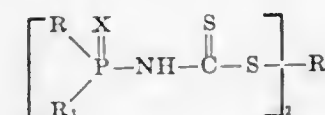
No Drawing. Continuation-in-part of application Ser. No. 640,836, May 24, 1967. This application July 27, 1970, Ser. No. 58,677

Int. Cl. C07c 155/08

U.S. Cl. 260—455 P

6 Claims

Alkylene - bis-phosphinyldithiocarbamates represented by the structure:



wherein R and  $R_1$  are each members selected from the group consisting of lower alkyl, lower alkoxy and phenyl; X is sulfur and oxygen; and  $R_3$  is a lower alkylene radical, such as ethylene, lower alkyl substituted ethylene, trimethylene, lower alkyl substituted trimethylene, oxydimethylene, tetramethylene and lower alkyl substituted tetramethylene. They find utility as insecticides and arachnids and are highly effective against both the larval and adult stages of insects.

3,719,701

PROCESS FOR THE PREPARATION OF UNSATURATED NITRILES

Hartwig C. Bach, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Nov. 23, 1970, Ser. No. 92,165

Int. Cl. C07c 121/00

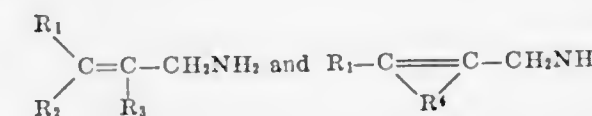
U.S. Cl. 260—465.9

5 Claims

Nitriles of the formula



are prepared by the catalytic oxidation of an amine of the formula



respectively, in the liquid phase at temperatures between about —5° C. and about 150° C. where molecular oxygen is the oxidant and a cupric ion-nitrogen base complex is the catalyst.  $R_1$ ,  $R_2$  and  $R_3$  represent hydrogen or monovalent organic radicals and  $R_4$  represents a divalent organic radical, wherein said radicals are not oxidizable and do not inactivate the catalyst under the reaction conditions of the process.

3,719,702

NEW CARBAMATES USEFUL AS ANTHELMINTIC AGENTS

Walter Traber, Riehen; Alfred Margot, Basel, and Jean-Jacques Gallay, Baselland, all of Switzerland, assignors to Geigy Chemical Corporation, Greenburgh, N.Y.

Division of Ser. No. 549,497, May 12, 1966. This application April 4, 1969, Ser. No. 835,277

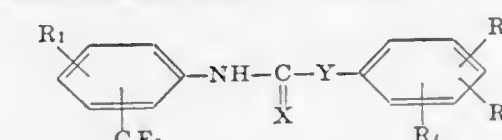
Claims priority, application Switzerland, May 18, 1965, 6927/65

Int. Cl. C07c 125/06

U.S. Cl. 260—471 C

1 Claim

There are disclosed anthelmintic compositions containing carbamates and thiocarbamates of the formula



in which each of  $R_1$  and  $R_2$  independently represents hydrogen, halogen or halogenoalkyl;  $R_3$  represents hydrogen, halogen, nitro, cyano, hydroxyl, amino, carbamoyl, sulphonyl, phenoxy or sulphonic acid group, alkyl, alkenyl, halogenoalkyl, aralkyl, alkoxy, alkylthio, alkoxyalkyl, alkylthioalkyl, alkylsulphonyl, alkylsulphonyl, S-alkylsulphonylamino, alkylsulphamoyl, dialkylsulphamoyl, alkylcarbamoyl, dialkylcarbamoyl, alkylamino, dialkylamino, acylamino, acyl or carbalkoxy;  $R_4$  represents hydrogen, halogen or alkyl; and X and Y each independently represents oxygen or sulphur. These compounds and their salts have anthelmintic properties and can be incorporated into animal feeds.

3,719,703

SEPARATION OF SULFONIC ACIDS FROM SULFURIC ACID

James S. Fritz, Ames, Iowa, Robert K. Gillette, Kettering, Ohio, and Donald R. Beuerman, Ames, Iowa, assignors to the United States Atomic Energy Commission

No Drawing. Filed Apr. 29, 1969, Ser. No. 820,318

Int. Cl. C07c 143/24

U.S. Cl. 260—505 P

1 Claim

A method of separating aromatic sulfonic acids from sulfuric acid and sulfates contained in an aqueous solution by contacting the solution with a long-chain tertiary aliphatic amine so that the sulfonic acid is taken up by the amine, separating the amine from the aqueous solution and back-extracting the sulfonic acid from the amine.

3,719,704

COLOR REDUCTION OF OLEFIN SULFONATES

David M. Marquis, Lafayette, Calif., assignor to Cheron Research Company, San Francisco, Calif.

Filed May 13, 1970, Ser. No. 37,041

Int. Cl. C07c 143/02, 143/16

U.S. Cl. 260—513 R

7 Claims

The color of an olefin sulfonate is improved by treatment of the olefin prior to sulfonation with minor amounts of sulfur trioxide, slaked lime and bauxite.

3,719,705

METHOD FOR MANUFACTURING SULFITE PULP COOKING LIQUOR FROM SULFITE PULP SPENT LIQUOR

Akio Mita, and Toshio Ishida, both of Tokyo, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Dec. 28, 1970, Ser. No. 101,984

Claims priority, application Japan, Jan. 20, 1970, 45/527070; Dec. 27, 1969, 44/104670

Int. Cl. C01f 11/46; C01d 5/14

U.S. Cl. 423—519

1 Claim

Sulfite pulp cooking liquor is produced from sulfite pulp spent liquor by combusting condensed sodium-based spent







3,719,720

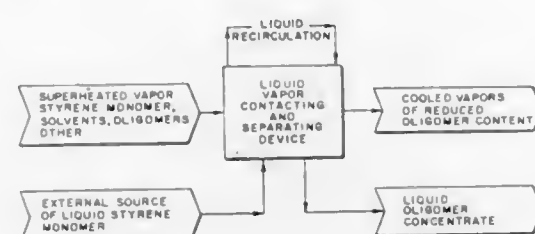
**REMOVING OLIGOMERS FROM STYRENE VAPOR**  
Wallace G. Bir, Creve Coeur, and Louis C. Tsang, St. Louis,  
both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Aug. 16, 1971, Ser. No. 172,188

Int. Cl. C07c 15/10

U.S. Cl. 260—669 A

5 Claims



Process for reducing the concentration of styrene oligomers in a super-heated vapor stream composed of styrene monomer, organic solvent, styrene oligomers, and miscellaneous hydrocarbons normally present as low level impurities in commercial grade styrene monomer. The process involves contacting such a vapor feed with a liquid phase composed generally of the same ingredients and continuously separating the resulting liquid and vapor phase and withdrawing a stream of the liquid which becomes rich in oligomers.

3,719,721

**DEHYDROGENATIVE PROCESS AND CATALYST**  
Rowland C. Hansford, Yorba Linda, Calif., assignor to Union  
Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 844,653, July 24, 1969,  
abandoned, which is a continuation-in-part of Ser. No.  
661,777, Aug. 21, 1967, Pat. No. 3,480,684. This application  
Feb. 26, 1971, Ser. No. 119,354. The portion of the term of this  
patent subsequent to Nov. 25, 1986, has been disclaimed.

Int. Cl. C07c 5/27

U.S. Cl. 260—673.5 R

20 Claims

Hydrocarbons are dehydrogenated to olefins and/or dehydrocyclized to aromatic hydrocarbons at elevated temperatures in the presence of a catalyst comprising an intimate association of alumina and chromium oxide upon which is deposited a minor proportion of a promoter selected from the oxides of niobium and tantalum. The catalyst preferably also contains a minor proportion of an alkali and/or alkaline earth metal oxide.

3,719,722

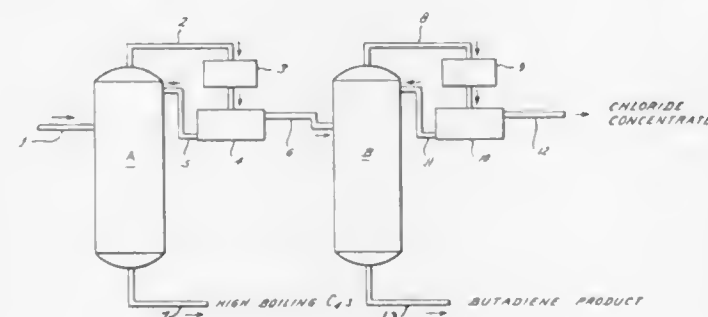
**PURIFICATION OF UNSATURATED PRODUCT**  
Lloyd D. Tschopp, Humble, Tex., assignor to Petro-Tex Chemi-  
cal Corporation, Houston, Tex.

Filed Sept. 30, 1970, Ser. No. 76,751

Int. Cl. C07c 11/16, 7/04

U.S. Cl. 260—680 D

5 Claims



Methyl Chloride and vinyl chloride can be essentially eliminated from a butadiene stream derived from an oxidative

dehydrogenation of n-butenes in the presence of chlorine by first separating the butadiene from the higher boiling C<sub>4</sub>'s and concentrating the methyl chloride and vinyl chloride in the butadiene fraction by fractionation then fractionating the butadiene fraction to produce a concentrate of methyl chloride and vinyl chloride as an overhead and producing a butadiene product essentially free of chlorides. The loss in butadiene based on the initial feed to this purification is less than 0.15 percent volume. The use of chlorine in the oxidative dehydrogenation which necessitates the purification produces 5 to 15 mole percent absolute more butadiene than the same process in the absence of chlorine thus justifying the purification.

3,719,723

**EPOXY RESIN-SILOXANE PAINT**

John D. Nordstrom, Detroit, Mich., assignor to Ford Motor  
Company, Dearborn, Mich.

Division of Ser. No. 777,551, Nov. 18, 1968, Pat. No.

3,577,263. This application Dec. 17, 1970, Ser. No. 99,245

Int. Cl. C08f 35/02

U.S. Cl. 260—827

15 Claims

A radiation-curable paint is provided by mixing about 80 parts by weight of an alpha-beta olefinically unsaturated resin and about 80 to about 20 parts by weight of an alpha-beta olefinically unsaturated siloxane. The resin is the reaction product of a diepoxide and acrylic or methacrylic acid. The unsaturated siloxane is the reaction product of at least two molar parts of a monomeric, monohydroxy ester of an alpha-beta olefinically unsaturated monocarboxylic acid, e.g. acrylates, methacrylates, crotonates, cinnamates, with one molar part of a siloxane wherein at least two silicon atoms have one valence satisfied by a hydroxyl group or an alkoxy group. The reaction is a conventional condensation reaction. Vinyl monomers may also be included in the paint dispersion.

3,719,724

**RAPID CURING RESIN COMPOSITIONS COMPRISING A MODIFIED ALDEHYDE CONDENSATION POLYMER COREACTED WITH AN EPOXIDE-ALDEHYDE MIXTURE**

Harlan G. Freeman, Seattle, Wash., assignor to  
Weyerhaeuser Company, Tacoma, Wash.

No Drawing. Continuation-in-part of application Ser. No.  
821,999, May 5, 1969. This application Mar. 29, 1971,  
Ser. No. 129,240

Int. Cl. C08g 37/38, 45/08, 45/10

U.S. Cl. 260—828

22 Claims

This invention describes reaction products having particular utility as low temperature rapid curing adhesives for wood and other materials, and processes for making the adhesive compositions. The reaction products are made by reacting (1) an aldehyde condensation polymer having reactive alkylol groups such as a phenol-formaldehyde polymer, with (2) amines such as primary aromatic amines, bis(aminoaryl) compounds, primary amino-naphthalenes, and certain heterocyclic nitrogen-containing compounds, to obtain an amine-modified polymer. On blending a curing agent comprising an epoxide-aldehyde mixture with the amine-modified polymers the resulting resin compositions cure very rapidly at ambient temperature to form insoluble, infusible polymers. When pieces of wood are spread with the preferred adhesives employing the resins of this invention and brought into contact with another wood surface the bond strength develops within minutes. The durability, strength and flexibility of the cured adhesives of this invention under adverse weathering conditions are excellent.

3,719,725

**RESINOUS COMPOSITION CONTAINING POLYESTER-EPOXIDE RESIN ADDUCT AND ETHERIFIED AMIN-ALDEHYDE RESIN**

Yoichi Murakami, and Hikaru Watanabe, both of Amagasaki-shi, Japan, assignors to Dainippon Ink and Chemicals, Incorporated, Tokyo, Japan

Filed Jan. 19, 1971, Ser. No. 107,857

Claims priority, application Japan, Jan. 22, 1970, 45/5436

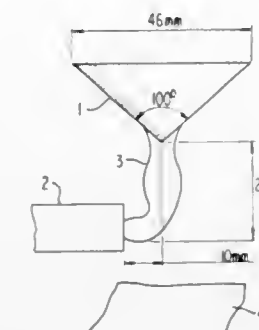
Int. Cl. C08g 45/10, 45/14

U.S. Cl. 260—834

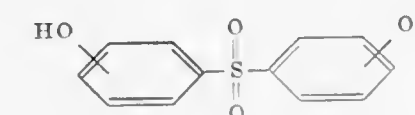
2 Claims

A resin composition suitable for use as paints is prepared by blending a polyfunctional high-molecular-weight linear polyester having a number average molecular weight of at least about 6,000 with an amino resin generally known as aminoplast or a polyisocyanate such as aliphatic or aromatic diisocyanate. The polyfunctional polyester is obtained by reacting a linear polyester having a number average molecular weight of about 1,000 to about 8,000 and a ratio of the terminal carboxyl group to the terminal hydroxyl group of at least 1 with a diepoxide at the epoxy group to the terminal carboxyl group ratio of from 0.5 to 2. The composition can give a baked film having excellent hardness, adhesion, chemical resistance, soiling resistance, and impact resistance.

porated therein in an amount of 0.4 to 4.0 weight percent as phosphorus to the polyester, the said polyaryl phosphonate



being not less than 6 in the degree of polymerization and containing as its diol component a sulfone compound of the formula:



wherein the benzene ring(s) may bear one or more lower alkyl groups with or without any other diol compound.

3,719,728

**RADIATION CURABLE COMPOSITIONS**

Thomas J. Miranda, Granger, Ind., assignor to The O'Brien  
Corporation, South Bend, Ind.

Continuation-in-part of Ser. No. 654,391, July 19, 1967,

abandoned. This application Feb. 12, 1970, Ser. No. 11,026

Int. Cl. C08f 11/02, 21/00

U.S. Cl. 260—861

9 Claims

Radiation curable compositions are made from polymer precursors which are reaction products of aliphatic polycarboxylic acids and monoepoxide compounds containing at least one vinyl group. The precursors, which have molecular weights up to 1000, may be diluted with polymerizable solvents such as styrene to produce radiation curable coating compositions which are essentially 100 percent convertible.

3,719,729

**ORIENTED POLYPROPYLENE RESIN MODIFIED POLYETHYLENE POLYETHYLENE TEREPHTHALATE FILMS WITH IMPROVED ELECTRICAL PROPERTIES**

Rene Le Paranthoen, St-Maurice de Beynost, and Georges Bon-  
jour, Lyon-Bron, both of France, assignors to La Cellophane,  
Paris, France

Continuation-in-part of Ser. No. 743,627, July 10, 1968,

abandoned. This application May 5, 1970, Ser. No. 34,858

Claims priority, application France, Aug. 8, 1967,  
67117168; Dec. 24, 1969, 6944797

Int. Cl. B29g 7/00; C08g 39/10

U.S. Cl. 260—87.3

2 Claims

Oriented films of polyethylene terephthalate of improved physical characteristics are prepared by introducing into the polyethylene terephthalate during the polycondensation thereof or immediately prior to the extrusion thereof from 0.01 percent to 1 percent by weight of a polypropylene resin. The oriented film of improved physical characteristics is prepared by subsequent monoaxial or biaxial stretching of the extruded film containing the polypropylene resin.

3,719,727

**FIREPROOF, THERMOPLASTIC POLYESTER-POLYARYL PHOSPHONATE COMPOSITION**

Yukito Masai, Otsu-shi; Yasuo Kato, Shiga-gun, and Nobuhiko  
Fukui, Otsu-shi, all of Japan, assignors to Toyo Boseki  
Kabushiki Kaisha (Toyo Spinning Co., Ltd.), Kita-ku,  
Osaka-shi, Osaka-fu, Japan

Filed March 18, 1971, Ser. No. 125,709

Claims priority, application Japan, March 19, 1970,  
45/23910

Int. Cl. C08g 39/10, 51/54

U.S. Cl. 260—860

13 Claims

A fireproof, thermoplastic polyester composition which  
comprises a polyester and a polyaryl phosphonate incor-



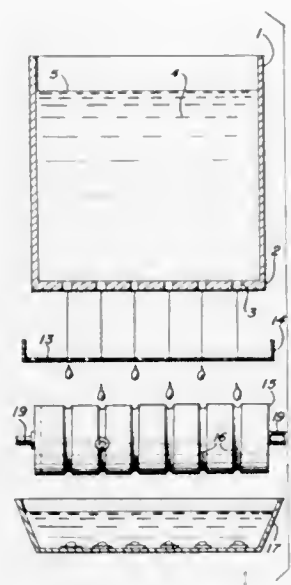
### 3,719,730 MODIFICATION OF ALFIN POLYMERS AND PRODUCT

Virgil L. Hansley, Harry Greenberg, Fred Keith Morgan, and Lowell D. Grinninger, Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

No Drawing. Filed Jan. 18, 1967, Ser. No. 609,998

Int. Cl. C08d 5/02; C08f 19/08, 27/10  
U.S. Cl. 260—877 22 Claims  
A process is provided for producing modified and graft alfin polymers by adding side chains or groups at reactive sites along the polymer chain bearing active residual alkali metal atoms attached to aliphatic carbon atoms. A compound capable of reacting with the alkali metal atoms is reacted therewith, and a substituent derived from the reactive compound is thereby attached to the polymer chain. There is also provided a branched chain alfin polymer having a plurality of randomly distributed graft branches attached to chain carbon atoms in the molecule, in an amount of one for from about each 1,000 to about 100,000 molecular weight units of a polymer.

cobalt, copper or iron. These shaped particles are produced by a melt drop technique whereby individual drops of alloy are dropped into a water bath or onto a cold flat



### 3,719,731 HIGH-IMPACT MOULDING COMPOSITIONS AND PROCESS FOR PREPARING SAME

Herbert Schuster, Karl Nutz, Karl Dinges, and Karl-Heinz Ott, all of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft

Filed July 29, 1970, Ser. No. 59,349

Claims priority, application Germany, Aug. 6, 1969, P 19 39 894.8

Int. Cl. C08f 1/04, 19/00  
U.S. Cl. 260—878 R 12 Claims  
A process for the production of high-impact moulding compositions by the bulk polymerization, bulk-suspension polymerization or suspension polymerization of olefinically unsaturated monomers in the presence of a rubber component and a catalyst, wherein the rubber component comprises  
A. a block copolymer of  
a. 99 to 1 percent by weight of blocks of ethylene-propylene copolymer or ethylene-propylene terpolymer rubber, and  
b. 1 to 99 percent by weight of blocks of a diene rubber or polypentenamer rubber,  
and the olefinically unsaturated monomers comprise  
B. a mixture of  
a. 90 to 50 percent by weight of styrene, an  $\alpha$ -alkyl styrene, a nuclear-alkylated styrene, methyl methacrylate or a mixture thereof, and  
b. 10 to 50 percent by weight of acrylonitrile, methacrylonitrile, methyl methacrylate or a mixture thereof, said rubber component comprising from 1 to 20 percent by weight of said moulding composition and said olefinically unsaturated monomers comprising from 99 to 80 percent by weight thereof.

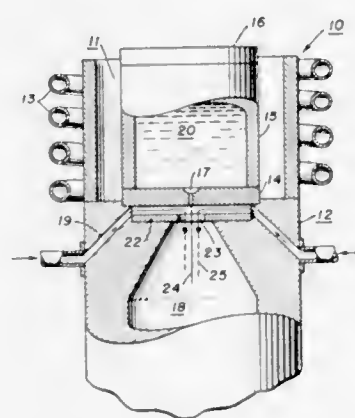
plate. In one preferred embodiment, a steady stream is segmentally cut by a vibrating wire or screen to produce drops prior to contacting the water bath or plate.

### 3,719,733 METHOD FOR PRODUCING SPHERICAL PARTICLES HAVING A NARROW SIZE DISTRIBUTION

Lawrence F. Rakestraw, Raleigh, and John W. Mottern, Cary, both of N.C., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 3, 1970, Ser. No. 94,712  
Int. Cl. B01j 2/04

U.S. Cl. 264—9 4 Claims



A method is provided for producing small diameter spherical particles in a narrow size distribution from low viscosity melts. Inert gas is constrained to uniformly envelope and move co-currently with a free stream extruded from the melt. The stream attenuates in diameter and disintegrates into spherical-like droplets under the influence of surface tension. The droplets quickly solidify into small diameter spherical particles having a narrow size distribution.

### 3,719,732 METHOD FOR PRODUCING ALUMINUM ALLOY SHAPED PARTICLES AND ACTIVE RANEY CAT- ALYSTS THEREFROM

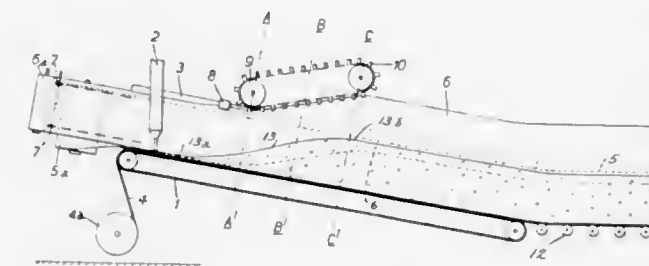
Richard A. Diefenbach, Columbia, and Thomas H. Cheavens, Glenwood, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Dec. 17, 1970, Ser. No. 99,014

Int. Cl. B01j 2/18 23 Claims  
U.S. Cl. 264—9  
This invention comprises methods for producing shaped aluminum alloy particles. These particles can range from 1-99 percent aluminum, although for subsequent use as active metal catalysts, the concentration ranges from 50 to 90 percent aluminum and 10 to 50 percent of nickel,

### 3,719,734 METHOD FOR PRODUCING POLYURETHANE FOAM BLOCKS WHICH HAVE FLAT UPPER SURFACES

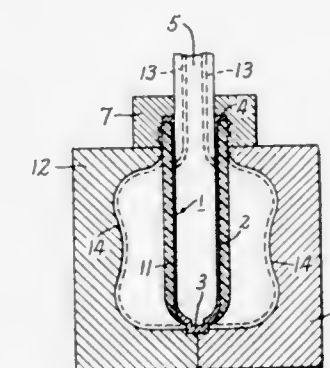
Nicholas G. Petzetakis, Athens, Greece, assignor to Unifoam A.G., Glarus, Switzerland  
Continuation-in-part of application Ser. No. 738,962, June 21, 1968, which is a continuation-in-part of application Ser. No. 591,550, Nov. 2, 1966. This application Oct. 17, 1969, Ser. No. 867,218  
Claims priority, application Greece, Nov. 12, 1965, 31,732; July 1, 1967, 35,300  
Int. Cl. B29d 27/00  
U.S. Cl. 264—51 5 Claims



A process and apparatus for producing polymeric foam blocks (known as "buns") with a substantially flat upper surface. A mixture of, e.g. polyurethane, foam-forming reactants is moved along a trough-shaped conveyor where the reactants are confined during foaming by side and bottom surfaces moving with the expanded foam material. The side surfaces of the conveyor include thin flexible lining material which moves downstream with the expanding foam material and is simultaneously moved upwardly in the foaming region along with the rising surface of the foam material so as to maintain the side margins of the upper surface of the foam at substantially the same height as the central portion of the upper surface of the foam. The downstream and upward movement of the lining material is effected by mechanism which is adjustable to compensate for variations in the location and rate of expansion of the foam so as to ensure that the upper surface of the foam is maintained flat.

### 3,719,735 METHOD FOR MOLDING PLASTIC CONTAINERS

Emery I. Valyi, 5200 Sycamore Ave., Riverdale, N.Y. 10471  
Filed Dec. 21, 1970, Ser. No. 100,050  
Int. Cl. B29c 9/00, 17/04, 17/07; B29d 3/02  
U.S. Cl. 264—89 16 Claims



Method for pressure molding a parison to be subsequently blow molded. A relatively thin sleeve of plastic corresponding to the shape of the blow core is placed over the blow core prior to molding the parison therearound to insulate the blow core from the temperature of the molten plastic to protect the blow valve from clogging and the blow core from erosion by the plastic during the molding step.

### 3,719,736 METHOD OF PRODUCING PERFORATED PLASTIC FILM

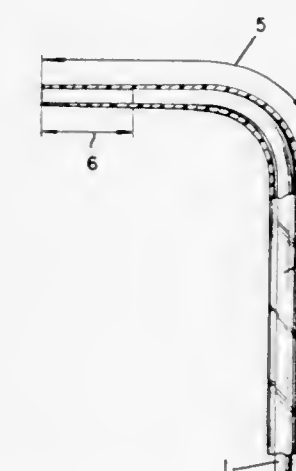
George M. Woodruff, Farmington, Conn., assignor to General Foods Corporation, White Plains, N.Y.  
Continuation of abandoned application Ser. No. 795,271, Jan. 30, 1969. This application Oct. 8, 1970, Ser. No. 79,330  
Int. Cl. B28b 1/48  
U.S. Cl. 264—156 3 Claims



A new method of perforating plastic films has been discovered which results in a perforated film having about 2000 holes per square inch which can be effectively utilized as a filtration medium. The perforated film is prepared by piercing the plastic material with heated pins and maintaining the temperature of the pins above the melting point of the plastic for a sufficient period of time to cause the flap material to form a reinforced ring around the holes. The result is a perforated film which retains most of its original strength and is free of ragged edges or flaps.

### 3,719,737 METHOD OF MAKING A PREFORMED CURVED EPIDURAL CATHETER

Vincent L. Vaillancourt, Livingston, and Thomas H. Bohner, Berkely Heights, both of N.J., assignors to C. R. Bard Inc., Murray Hill, N.J.  
Continuation of Ser. No. 822,677, May 7, 1969, abandoned.  
This application Dec. 9, 1970, Ser. No. 96,593  
Int. Cl. B28b 11/10; B29c 17/02  
U.S. Cl. 264—162 5 Claims



A length of polytetrafluoroethylene tubing is passed over a rigid curved mandrel and then heated to a temperature above approximately 620°F to cause the tubing to become clear. The tubing is rapidly cooled to cause the tubing to set in a curved shape. The tubing is then removed from the mandrel and permitted to stabilize. A portion of the tubing adjacent an end is then stretched and the end of the stretched portion trimmed to form a curved catheter.



3,719,738

# METHOD FOR PRODUCING COMPOSITE FIBERS OF ACRYLONITRILE TYPE

Makoto Fujii, Fujishi, Japan, assignor to Ash Kasei Kogyo Kabushiki Kaisha, Kitaku, Osaka, Japan

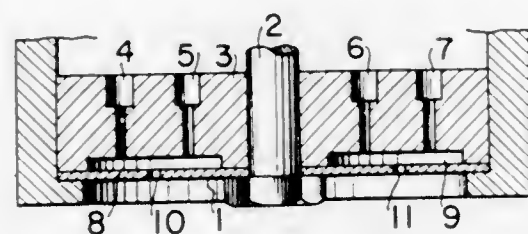
Filed April 28, 1969, Ser. No. 819,736

Claims priority, application Japan, May 8, 1968, 43/30246

Int. Cl. B29f 3/10

U.S. Cl. 264—171

5 Claims



Method for producing composite fibers of acrylonitrile type having excellent properties which comprises mixing a three component copolymer A consisting of acrylonitrile, methyl acrylate or methyl methacrylate and methallyl sulfonic acid, which satisfies specified conditions and a four component copolymer B consisting of acrylonitrile, methyl acrylate or methyl methacrylate, acryl amide and methallyl sulfonic acid, which satisfies specified conditions in such a proportion that the copolymer A occupies 25 to 75 percent by weight in the resultant copolymer mixture C and extruding the copolymer A and the copolymer mixture C from a common spinneret so as to form composite fibers having an eccentric arrangement (side by side or sheath and core arrangement) in the cross section by using a nitric acid type solvent.

## ERRATUM

For Class 423—604 see:  
Patent No. 3,719,451

3,719,739

# METHOD OF PREPARING A CATALYST

Charles E. Thompson, Warren, N.J., assignor to Esso Research and Engineering Company

Filed Jan. 29, 1970, Ser. No. 6,973. The portion of the term of this patent subsequent to Jan. 25, 1989, has been disclaimed.

Int. Cl. B01d 53/34

U.S. Cl. 423—213

6 Claims

Catalysts comprising ruthenium and iridium on a conductive support give excellent results in removing nitrogen oxides from exhaust gases from internal combustion which contain less than 2 percent oxygen. Ruthenium and iridium can be present as metals, oxides, or mixtures thereof; iridium constitutes about 10 to 60 percent of combined amount of ruthenium and iridium. Metal supports, especially ferrous metal such as stainless steel or chromium steel, are preferred. Conventional shapes, e.g., fabricated sheet metal or screens, can be used.

3,719,740

# PURIFICATION OF HYDROGEN

David B. Larimore, Berkeley, and Robert T. Christensen, San Rafael, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Nov. 16, 1970, Ser. No. 89,674

Int. Cl. C01b 17/04

U.S. Cl. 423—228

5 Claims

The present invention is directed to an improved absorbent regeneration process for use in an overall hydrotreating process. In the overall hydrotreating process

hydrogen-rich recycle gas is contacted with an aqueous absorbent to absorb  $H_2S$  and  $NH_3$  and the  $H_2S$  and  $NH_3$  are stripped from the absorbent in a regenerator vessel and removed together with water vapor as an overhead stream via the overhead line from the top of the regenerator vessel. The improvement which is made in the absorbent regeneration process includes the following steps:

- (a) injecting a recirculating water stream into the top of the regenerator vessel or into the overhead line from the top of the regenerator vessel so as to absorb  $NH_3$ ;
- (b) cooling the overhead stream so as to condense  $H_2O$ , passing the cooled overhead stream to an overhead separator vessel;
- (c) withdrawing a gaseous stream of  $H_2S$  containing less than 5 percent  $NH_3$  from the separator;
- (d) withdrawing a liquid stream comprising  $H_2O$ ,  $NH_3$ , and  $H_2S$  from the separator; and
- (e) stripping  $H_2S$  and  $NH_3$  from the liquid stream to obtain a purified water stream which is recirculated and injected into the regenerator overhead system as aforesaid to absorb  $NH_3$ .

3,719,741

# SILICA PIGMENTS AND PREPARATION THEREOF

Oliver W. Burke, Jr., P.O. Box 1266, Pampano Beach, Fla.

Continuation of Ser. No. 698,358, Jan. 16, 1968, abandoned, which is a continuation-in-part of Ser. No. 480,143, Aug. 16, 1965, abandoned. This application Oct. 3, 1969, Ser. No.

864,954

Int. Cl. C01b 33/00, 33/14, 33/18

U.S. Cl. 423—339

7 Claims

Silica pigments are precipitated by the acidulation of aqueous sodium silicate solution with carbon dioxide, and for controlling the characteristics of the silica pigment obtained, as evidenced by the physical properties imparted to rubber vulcanizates thereby when used as a rubber reinforcing filler, the silicate solution is maintained at different average temperatures during different stages of such acidulation, which end respectively, with the appearance of a Tyndall effect, the subsequent precipitation of at least 10 percent of the silica, the subsequent precipitation to at least 90 percent of the silica, and the final neutralization and flocking of the precipitate.

3,719,742

# PROCESS FOR THE REMOVAL OF SULFUR DIOXIDE FROM A SULFUR DIOXIDE-CONTAINING GAS

Jack D. Terrana, Tampa, and Leo A. Miller, Lakeland, both of Fla., assignors to Wellman-Lord, Inc., Lakeland, Fla.

Continuation-in-part of Ser. No. 773,344, Nov. 4, 1968, abandoned. This application July 23, 1970, Ser. No. 57,824

Int. Cl. C01b 17/04, 17/60

U.S. Cl. 423—242

12 Claims

A process for treating metal pyrosulfites such as potassium, cesium, and rubidium pyrosulfites to obtain the corresponding metal sulfide therefrom is disclosed, particularly in a system where the pyrosulfite is obtained as a result of reacting  $SO_2$ -containing gases with an aqueous absorbing solution of the corresponding metal sulfite to produce a spent absorbing solution containing dissolved metal bisulfite, and then recovering the metal bisulfite therefrom in the form of the corresponding metal pyrosulfite (e.g., by cooling the spent absorbing solution to crystallize out the pyrosulfite). The process involves heating the pyrosulfite in the presence of a reducing agent such as carbon, carbon monoxide, hydrogen, hydrogen sulfide, or their mixtures to convert the pyrosulfite to the corresponding metal sulfide. The metal sulfide may then be reacted with water and  $CO_2$  to form the corresponding metal carbonate (which can be recycled to the  $SO_2$  absorbing solution) and  $H_2S$ . The  $H_2S$  from the latter step can be mixed with  $SO_2$  and the mixture subjected to the Claus reaction to produce elemental sulfur and water.

3,719,743

# MAGNESIUM CHLORIDE DEHYDRATION

Maurice M. Simon, and Jakob de Swaan Arons, both of Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

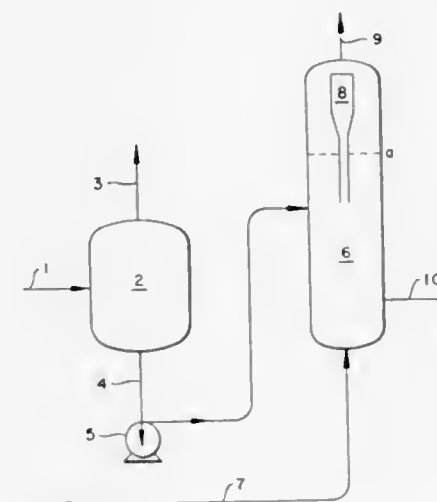
Filed Feb. 26, 1971, Ser. No. 119,242

Claims priority, application Netherlands, March 31, 1970, 7004512

Int. Cl. C01f 5/34

U.S. Cl. 423—498

3 Claims



A two-step process for the dehydration of magnesium chloride is disclosed. In the first step an aqueous slurry of magnesium chloride crystals in from 2 to 4 moles of water per mole of magnesium chloride is formed. In the second step this water is removed in a fluidized bed in the presence of added hydrochloric acid gas.

3,719,744

# MANUFACTURE OF SULFUR

Alfred Servasier, Bougival, France, assignor to Societe Nationale des Petroles d'Aquitaine tour d'Aquitaine, Courbevoie, France

Continuation-in-part of Ser. No. 728,296, May 10, 1968, abandoned. This application Dec. 1, 1970, Ser. No. 94,164

Claims priority, application France, May 12, 1967, 67106406

Int. Cl. C01b 17/04

U.S. Cl. 423—574

10 Claims

This invention provides a process which, in the catalytic production of sulfur by reacting hydrogen sulfide and sulfur dioxide, includes the steps of stopping the introduction of air and gas containing hydrogen sulfide into the sulfur producing zones and flushing the catalytic reaction zone with steam, superheated and expanded to a temperature of 300°–500° C., whereby the residual sulfur-containing material is removed from the catalytic reaction zone without reducing the temperature at which the catalysts in the reaction zone are active.

3,719,745

# COARSE, LIGHT SODIUM CARBONATE

Walter C. Saeman, Hamden, Conn., assignor to Olin Corporation

Continuation-in-part of application Ser. No. 915, Jan. 6, 1970. This application Oct. 19, 1970, Ser. No. 81,700

The portion of the term of the patent subsequent to Mar. 7, 1989, has been disclaimed

Int. Cl. C01b 7/38

U.S. Cl. 423—421

11 Claims

Coarse, granular, free-flowing low-density sodium carbonate and sodium carbonate-sodium bicarbonate mixtures in the form of substantially hollow beads having an apparent density of 15 to 40 pounds per cubic foot

are prepared from a sodium bicarbonate product produced in the form of hollow beads having an apparent density of 20 to 45 pounds per cubic foot. The hollow beads of sodium bicarbonate are produced by hydrating light soda ash (sodium carbonate) to form particles of the desired final size, carbonating in the presence of free moisture to produce a bicarbonate-containing intermediate, volatilizing the liberated moisture and recovering coarse, granular, free-flowing, dust-free, low-density sodium bicarbonate. The hollow beads of sodium bicarbonate on calcination produce hollow beads of sodium carbonate having an apparent density of 15 to 30 pounds per cubic foot. To produce granular sodium carbonate having an apparent density of 25 to 40 pounds per cubic foot, lower density beads are moistened with sodium carbonate solution and re-dried. The calcined sodium carbonate products and carbonate-bicarbonate products have particular utility in detergent compositions.

3,719,746

# AQUEOUS SYNTHESIS OF IONICALLY CONDUCTIVE COMPOSITIONS OF MATTER

William V. Johnston, Camarillo, Calif., assignor to North American Rockwell Corporation

Filed Dec. 8, 1970, Ser. No. 96,229

Int. Cl. H01b 1/06; C01b 9/00; C01g 1/06, 3/04, 7/00, 9/04

U.S. Cl. 423—463

9 Claims

An aqueous process for the preparation of a solid ionically conductive composition of matter having the formula  $MAGI_3$  in which M is Rb, K,  $NH_4$ , Cs, or a combination of these, Cs being present only as a minor constituent of M, comprising preparing a substantially saturated solution of MI in water, intimately admixing four molar equivalents of AgI with the MI solution to effect reaction between the MI and AgI, and removing the water to recover  $MAGI_3$  as the synthesized ionically conductive composition.

3,719,747

# HYDROTHERMAL PROCESS FOR MAKING HYDROGEN FLUORIDE

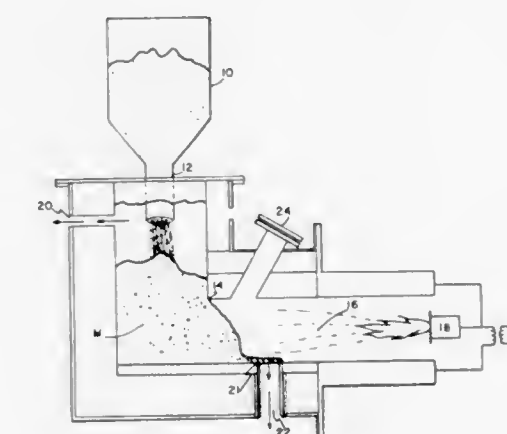
John S. Hayford, Stamford, Conn., assignor to Stauffer Chemical Company, New York, N.Y.

Filed March 4, 1971, Ser. No. 121,087

Int. Cl. C01b 7/22, 33/24

U.S. Cl. 423—485

2 Claims



This invention provides a hydrothermal process for the manufacture of hydrogen fluoride. The process comprises adding a mixture of calcium fluoride and silica to a reaction zone, providing a heat source to supply the necessary water to be reacted with the calcium fluoride silica mixture and to heat the mixture to a temperature of between about 3500° and 5000°F., and recovering the gaseous hydrogen fluoride product.



3,719,748

## METHOD FOR CLARIFYING TITANIUM SULPHATE SOLUTIONS

Willy Manfroy, 49 Neudorfstrasse, Horgen, Switzerland, and Kurt Adolf Fleig, 7495 S.W. 105 Terrace, Miami, Fla.

Filed Nov. 2, 1970, Ser. No. 86,337

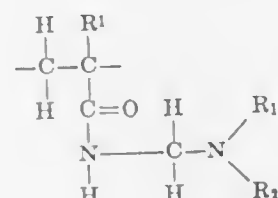
Claims priority, application Great Britain, Nov. 5, 1969, 54,285/69

Int. Cl. C01g 23/00, 23/04, 49/14

U.S. Cl. 423—544

14 Claims

A process for the clarification of the black liquor obtained in the acid leaching of titaniferous ores and titanium slag feed, which process comprises adding to the black liquor a water-soluble cationic polymer flocculant containing monomer units having the formula:



wherein R' is hydrogen or methyl and R<sub>1</sub> and R<sub>2</sub> are alkyl groups, for example methyl or ethyl groups and preferably contain not more than four or five atoms.

3,719,749

## HYDROGEN PRODUCTION

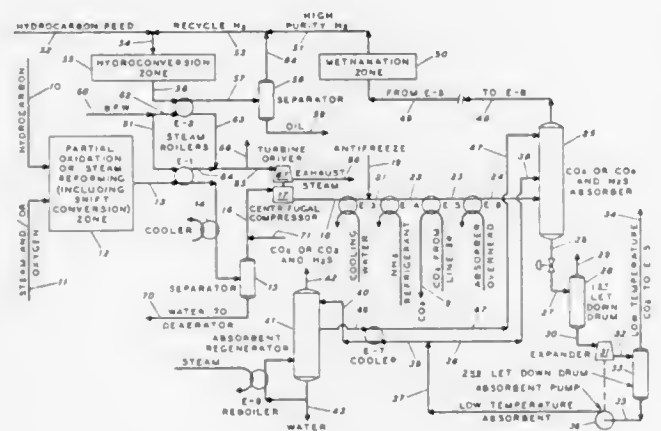
Calvin S. Smith, and William J. McLeod, both of El Cerrito, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 736,520, May 17, 1968, Pat. No. 3,618,331, which is a continuation-in-part of Ser. No. 665,106, Sept. 1, 1967, abandoned. This application Feb. 16, 1971, Ser. No. 115,554

Int. Cl. C01b 1/02, 1/16, 1/32

U.S. Cl. 423—650

13 Claims



A process for manufacturing high pressure, high purity hydrogen which comprises (a) generating at a pressure below about 450 psig a hydrogen-rich gas containing sufficient CO<sub>2</sub> so that the molecular weight of the hydrogen-rich gas is at least four; (b) centrifugally compressing the hydrogen-rich gas from a pressure below about 450 psig to a substantially higher pressure above 450 psig to obtain high pressure hydrogen-rich gas; (c) removing CO<sub>2</sub> from the high pressure hydrogen-rich gas to obtain high purity hydrogen, at least part of the CO<sub>2</sub> being removed by absorbing CO<sub>2</sub> in a mixed absorbent comprising a chemical absorbent and a physical absorbent.

## ERRATUM

For Class 423—519 see:  
Patent No. 3,719,705

3,719,750

## RADIOACTIVE PREPARATION ABSORBABLE IN ORGANISM AND METHOD OF OBTAINING SAME

Nikolai Gennadievich Serebryakov, Anatoly Nikolaevich Dedenkov, and Mikhail Akimovich Kiryakov, Obninsk, U.S.S.R., assignors to Institut Meditsinskoi Radiologii Amn SSSR, Obninsk Kalughskoi oblasti, U.S.S.R.

No Drawing. Filed Mar. 16, 1970, Ser. No. 20,047

Int. Cl. A61k 27/04

U.S. Cl. 424—1

5 Claims

Absorbable radioactive articles for tissue implantation are obtained by mixing methyl hydroxypropyl cellulose with water to form a viscous mixture. The mixture is centrifuged and the centrifugate is then mixed with a solution of a radioisotope of gold or yttrium. A shaped article is formed which is dried at a temperature below 150° C.

3,719,751

## PESTICIDE AND A PROCESS FOR ITS MANUFACTURE

Herbert Rauscher, Im Uhug 54, and Werner Schoom, Bergerstrasse 342, both of Frankfurt am Main, Germany

Filed Feb. 5, 1970, Ser. No. 9,073

Claims priority, application Germany, Jan. 22, 1970, P 20 02 655.5; Feb. 8, 1969, P 19 06 413.2

Int. Cl. A01m 1/20

U.S. Cl. 424—27

7 Claims

Pesticidal compositions comprise water-decomposable compounds, adapted to generate toxic gases upon contact with water, held on a porous, fibrous carrier material.

3,719,752

## AEROSOL PACKAGE CONTAINING A HOMOGENEOUS SINGLE PHASE LIQUID SKIN-CONDITIONER

Frederick G. Taylor, Bloomfield, N.J., assignor to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 509,207, Nov. 22, 1963, abandoned. This application July 27, 1970, Ser. No. 58,671

Int. Cl. A61k 7/00

U.S. Cl. 424—47

4 Claims

A single phase, liquid skin-conditioning formulation which can be discharged from an aerosol-type container by means of a halogenated alkane propellant is disclosed. The liquid formulation contains a non-soap, surface-active agent and the propellant dissolved in a solvent system comprising water and a lower-alkanol. When expelled from the pressurized container through a suitable nozzle, the composition forms a stable, non-sticky foam.

3,719,753

## COCCIDIOSTATS

Julius Berger, Passaic, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Continuation-in-part of application Ser. No. 672,729, Oct. 4, 1967. This application Mar. 6, 1969, Ser. No. 804,974

Int. Cl. A61k 21/00

U.S. Cl. 424—122

4 Claims

Compositions containing the antibiotic having the designation X-537A, useful for the treatment and prevention of coccidiosis in poultry feed compositions containing the antibiotic and methods of treating coccidiosis are disclosed.

3,719,754

## PROCESS FOR PRODUCING INTERFERON-INDUCING PARTICLES AND COMPOSITION CONTAINING SAID PARTICLES

Lawrence E. Day and Lee F. Ellis, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed June 30, 1971, Ser. No. 158,587

Int. Cl. C12d 13/00

U.S. Cl. 424—177

6 Claims

Virus-like particles which are obtained from cephalosporin-producing organisms are active in inducing the production of interferon.

3,719,755

## O-ALKYL-S-PHTHALIMIDOMETHYL ALKYL-DITHIOPHOSPHONATES AS INSECTICIDES AND MITICIDES

Karoly Szabo, Syracuse, N.Y., and John Gary Brady, Kalamazoo, Mich., assignors to Stauffer Chemical Company, New York, N.Y.

Division of Ser. No. 585,247, Oct. 10, 1966, Pat. No. 3,457,283, which is a continuation-in-part of Ser. No. 442,792, March 25, 1965, abandoned, which is a continuation-in-part of Ser. No. 265,072, March 14, 1963, abandoned, which is a continuation-in-part of Ser. Nos. 121,836, July 5, 1961, abandoned, and Ser. No. 217,302, Aug. 16, 1962, abandoned.

This application March 12, 1969, Ser. No. 813,397

Int. Cl. A01n 9/36

U.S. Cl. 424—200

14 Claims

O-alkyl-S-phthalimidomethyl alkyl dithiophosphonates effective as pesticides in controlling a variety of pest organisms, for example, mites and insects.

3,719,756

## COMPOSITIONS FOR INHIBITING ANOMALOUS DEPOSITION AND MOBILIZATION OF CALCIUM PHOSPHATE IN ANIMAL TISSUE

Marion D. Francis, Springfield Township, Hamilton County, Ohio, assignor to The Proctor &amp; Gamble Company, Cincinnati, Ohio

Filed Oct. 30, 1970, Ser. No. 85,803

Int. Cl. A61r 27/00

U.S. Cl. 424—204

6 Claims

Compositions for inhibiting anomalous deposition and mobilization of calcium phosphates in animal tissue, comprising an effective amount of a poly(vinylidenediphosphonate) in a pharmaceutical carrier; and a method for treating conditions involving pathological calcification and hard tissue demineralization in an animal comprising administering to such animal said compositions.

3,719,757

## METHOD FOR UTILIZING BISPHOSPHORYLATED IMIDODI-THICARBONATES AS INSECTICIDES OR ARACHNIDICIDES

Roger Williams Addor, and David Edgar Ailman, both of Pennington, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 58,676, July 27, 1970. This application

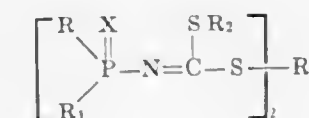
May 18, 1972, Ser. No. 254,522

Int. Cl. A01n 9/36, 9/00

U.S. Cl. 424—204

6 Claims

Bis-N-phosphorylated compounds represented by the structure:



wherein R and R<sub>1</sub> are each members selected from the group consisting of loweralkyl, lower alkoxy, and phenyl; X is sulfur or oxygen; R<sub>2</sub> is loweralkyl, loweralkenyl, benzyl, or halo-substituted benzyl; and R<sub>3</sub> is a lower alkylene radical, such as methylene, ethylene, loweralkyl-substituted ethylene, trimethylene, loweralkyl-substituted trimethylene, oxydimethylene, tetramethylene, or loweralkyl-substituted tetramethylene. They find utility as insecticides and arachnidicides and are highly effective against both the larval and adult stages of insects.

3,719,758

## METHOD OF PROMOTING GROWTH AND IMPROVING FEED EFFICIENCY IN POULTRY AND SWINE VIA ORAL ADMINISTRATION OF CEPHALOSPORIN C

Charles E. Jordan, Greenfield, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed June 19, 1970, Ser. No. 47,859

Int. Cl. A61k 27/00

U.S. Cl. 424—246

3 Claims

Method of promoting growth and improving feed efficiency in poultry and swine comprising administering orally thereto an effective amount of cephalosporin C [7-(5'-aminoadipamido) cephalosporanic acid], and compositions containing said cephalosporin C.

3,719,759

## ANTIPROTOZOAL COMPOSITIONS CONTAINING NITROIMIDAZOLES

Lewis H. Sarett, Princeton, and Dale R. Hoff, Basking Ridge, N.J., and David W. Henry, Menlo Park, Calif., assignors to Merck &amp; Co., Inc., Rahway, N.J.

No Drawing. Application Aug. 2, 1966, Ser. No. 569,595, which is a continuation-in-part of application Ser. No. 350,639, Mar. 10, 1964. Divided and this application July 22, 1969, Ser. No. 843,749

Int. Cl. A61k 27/00

U.S. Cl. 424—273

13 Claims

Compositions containing a 1-substituted -2-aryl-5-nitroimidazole, 1-substituted-2-aryl-4-nitroimidazole or a related isoindole or dihydroisoquinoline compound as the active ingredient are prepared. The compositions are utilized as antiprotozoals, antibacterials, anthelmintics and the like.

3,719,760

## N-TRITYL-IMIDAZOLIUM SALTS AS A FUNGICIDE

Karl Heinz Buchel, Wuppertal-Elberfeld; Ferdinand Grewe, Leverkusen; Hans Scheinplug, Leverkusen; Helmut Kaspers, Leverkusen, and Erik Regel, Wuppertal-Elberfeld, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

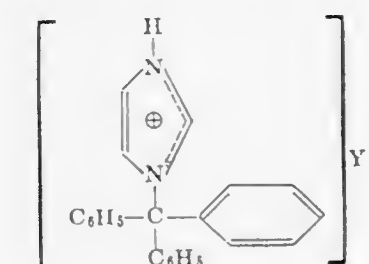
Filed Sept. 18, 1970, Ser. No. 73,638

Int. Cl. A01n 9/22

U.S. Cl. 424—273

20 Claims

Plant fungicidal compositions are produced which comprise an amount of a compound of the formula:



wherein Y is the anion of an inorganic or organic acid, sufficient to be effective for killing, combatting or controlling plant fungi, in combination with a solid or liquid diluent or carrier. Methods for killing, combatting or controlling fungal diseases in plants comprise applying to the fungi or to the plant to be protected an effective or toxic amount of the above compound.

3,719,761

## METHOD OF ENHANCING MEMORY AND LEARNING

Nicholas Peter Plotnikoff, Lake Bluff, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Jan. 27, 1972, Ser. No. 221,395

Int. Cl. A61k 27/00

U.S. Cl. 424—274

4 Claims

Covers the use of L-prolyl L-leucyl glycine amide in enhancing learning rate and retention levels of warm-blooded animals such as humans.



3,719,762

## USE OF ACETOACETYLAMINO DIPHENYL AMINES AS ANTIINFLAMMATORY AGENTS

Kurt Thiele, Frankfurt, Germany, assignor to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

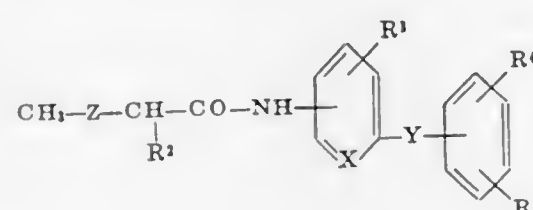
No Drawing. Continuation-in-part of applications Ser. No. 682,616, Nov. 13, 1967, and Ser. No. 840,816, July 10, 1969. This application Aug. 25, 1970, Ser. No. 66,883

Claims priority, application Germany, Nov. 16, 1966, D 51,561; Sept. 1, 1967, D 53,982  
Int. Cl. A61k 27/00

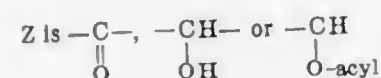
U.S. Cl. 424—324

15 Claims

N-aromatic substituted acid amide compounds of the formula



wherein:



wherein

the acyl is the acyl group of a lower aliphatic, preferably, alkyl carboxylic acid or of a monoaliphatic, preferably, alkyl ester of carbonic acid,

R<sup>2</sup> is H or lower alkyl,

R<sup>3</sup> is H, halogen, lower alkyl or lower alkoxy, each of R<sup>4</sup> and R<sup>5</sup> taken individually is hydrogen, halogen, lower alkyl, nitro, trifluoromethyl, lower alkoxy, lower alkyl amino, amino, hydroxy, acyl-oxy as defined above or acyl-amino as defined above,

X is =N— or =CH— and

Y is —CH<sub>2</sub>— or —NH—

and wherein when Z is



X is CH and Y is NH at least one of R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup> and R<sup>5</sup> is other than hydrogen.

Such compounds have valuable pharmaceutical properties, such as, antiinflammatory, analgesic, antipyretic and/or antispasmodic properties.

3,719,763

## BINARY AMINO OVICIDAL COMPOSITION

Richard F. Cline, and Donald P. Wilton, both of Savannah, Ga., assignors to The United States of America as represented by the Secretary of Health, Education and Welfare

Filed Sept. 29, 1969, Ser. No. 862,056

Int. Cl. A01n 9/20

U.S. Cl. 424—325

6 Claims

A binary aqueous spray ovidical composition useful in controlling *Aedes aegypti* consisting of a minor amount (0.05 to .4 percent) of an apolar amine (e.g., decylamine) and a major amount (1 to 2 percent) of a polar amine (e.g., ethanolamine).

3,719,764

## DRUGS DERIVED FROM PYRAZOLONE

Pierre Girault, Paris, and Guy Hagemann, Nogent Sur Marne, both of France, assignors to Roussel Uclaf, Paris, France

Filed July 27, 1971, Ser. No. 166,564

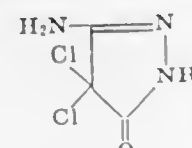
Claims priority, application France, Aug. 14, 1970, 7030026

Int. Cl. A61k 27/00

U.S. Cl. 424—273

2 Claims

According to the invention the 3-amino-4,4 dichloro pyrazolone of formula I



I

and its salts with a therapeutically compatible mineral or organic acid are pharmaceutically useful compounds. They are endowed with interesting antibacterial and antifungic properties.

3,719,765

## SUBSTITUTED TRIMESONITRILES FOR REGULATING PESTS ON PLANTS

Robert D. Battershell, Palmsville, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Division of Ser. No. 772,052, Oct. 30, 1968, Pat. No.

3,637,796. This application Aug. 17, 1970, Ser. No. 64,587

Int. Cl. A01n 9/20

U.S. Cl. 424—304

4 Claims

Substituted trimesonitriles are disclosed along with their preparation through reaction of chlorinated trimesonitrile with aniline and substituted anilines. The compounds disclosed herein are active as pesticides including fungicidal, viricidal and bactericidal applications.

## ELECTRICAL

3,719,766

## WALL EASEL

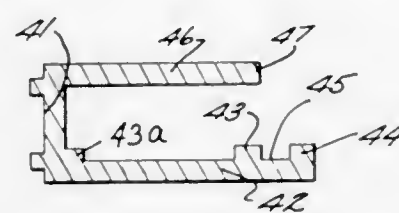
Dieter Fichtel, Muskegon, Mich., assignor to American Store Equipment Corporation, Muskegon, Mich.

Filed Sept. 10, 1971, Ser. No. 179,456

Int. Cl. A47b 97/04

U.S. Cl. 35—63

19 Claims



The easel frame includes extruded elements of C-shaped cross section, having spaced legs joined by a web. One leg is longer than the other and includes a longitudinal channel for receiving and anchoring a chalk board or other panel which abuts the end of the other leg. The other leg provides a chalk tray mounting surface. A wall mounting bracket includes a support post extending up from the lower leg which fits in a socket recess on the lower easel frame member for pivotally supporting the easel about the post. A self-lubricating bushing is inserted in the socket and includes an indexing stop portion engageable with the lower frame element to index the bushing within the socket and prevent relative rotation between the bushing and easel frame. An alternative arrangement provides a pair of easels mounted for rotation relative to each other. A channel lock slips over the upper portions of each frame for locking the frames in a fixed relationship to each other. An alternative mounting bracket includes magnetic means securing the easel to the wall.

3,719,767

## SIGNAL-SELECTING SYSTEM FOR A KEYBOARD TYPE ELECTRONIC MUSICAL INSTRUMENT

Kenji Matumoto, Nara, Masuo Omura, Hirakata, and Masahiko Tsunoo, Suita, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 9, 1971, Ser. No. 196,894

Claims priority, application Japan, Nov. 29, 1970, 45/105,349

Int. Cl. G10h 1/00

U.S. Cl. 84—1.01

11 Claims



A signal-selecting system for a keyboard type electronic musical instrument which has a plurality of gen-

erators generating tone signals having frequencies corresponding to the notes of the musical scale. The signal-selecting system has a plurality of keyswitches each having a movable-contact and a make-contact, and a plurality of memory means each having a set terminal, a reset terminal, a common reset terminal and an output terminal. The set terminal is coupled to a corresponding one of the keyswitches. A plurality of gate means is provided, one being coupled between each memory means and a corresponding tone generator so as to produce a selected output tone signal. A reset means is coupled between the output terminals and the common reset terminals. An electric power source is connected through a common line to the keyswitches. A plurality of reset elements is provided, one being connected between each of the keyswitches and the reset terminal of the memory means next adjacent to the memory means corresponding to said each of said keyswitches, and a plurality of diodes are provided which are connected in series, and each diode is also connected between reset terminals of two adjacent memory means.

3,719,768

## CONSTRUCTION PANEL

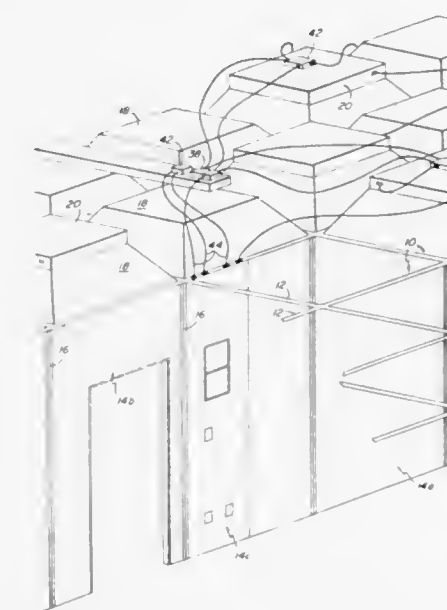
Nils G. Jonsson, Woburn, Mass., assignor to American Modular Systems Designs, Inc., Cambridge, Mass.

Filed May 27, 1971, Ser. No. 147,458

Int. Cl. H02g 3/28

U.S. Cl. 174—49

5 Claims



A flexible, versatile building system including movable wall panels has a portion of an electrical system as an integral part of the panel. The panels may be rearranged easily to provide a variety of wall and floor plan configurations adapted to suit a particular purpose. The portion of the electrical system which is integral with the panel is connected to one or more main electrical distribution systems by special easily disconnectable connectors which are formed permanently as an integral part of the panel at the upper marginal edge of the panel. The electrical distribution system is disposed above and map rest on the ceiling and includes flexible, easily accessible cords which may be reconnected to the panel after the panel has been moved to a new location. The system avoids conventional concepts of permanent wiring. The connectors integral with the panels are of special design to preclude inadvertent mismatching of connectors when the electrical system in the building includes a number of distinct circuits for different purposes such as lighting controls, communications etc.



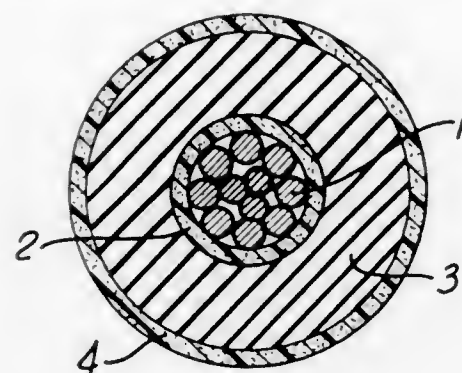
### 3,719,769 INSULATED ELECTRIC CABLE HAVING AN EXTERNAL SEMICONDUCTIVE LAYER

Hirokazu Miyauchi, and Hironaga Matsubara, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Oct. 5, 1970, Ser. No. 77,918

Int. Cl. H01b 9/02

U.S. Cl. 174—120 SC



An insulated electric cable having an external semiconductive layer with easy stripping qualities for termination wherein the cable is insulated primarily with crosslinked polyethylene or a crosslinked polyethylene copolymer and the external semiconductive layer consists of an ethylene vinyl acetate copolymer containing 25-55 wt-percent vinyl acetate and 2,5-dimethyl-2',5'-di(tertiary butylperoxy)-hexene-3 and an inclusion of an electric conductive substance such as carbon black to render the layer semiconductive.

### 3,719,770 LINE POST INSULATOR WITH SELF-RESTORING HINGE MEANS

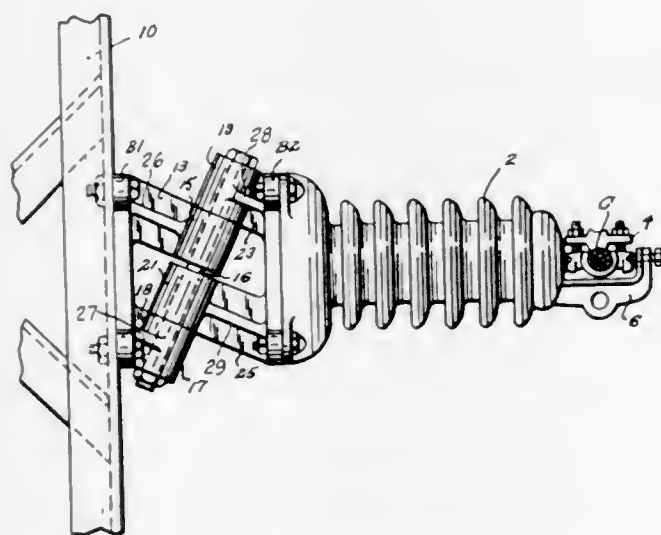
Albert S. Richardson, Jr., Lexington, Mass., assignor to Interpace Corporation, Parsippany, N.J.

Continuation-in-part of Ser. No. 43,817, June 5, 1970, abandoned. This application June 2, 1971, Ser. No. 149,318

Int. Cl. H01b 17/16

U.S. Cl. 174—161 R

2 Claims



Impact stresses which result from breaking of an electrical transmission line, under a shock load, act to break post insulators which support the line and are secured to supporting poles. The shock load is controlled effectively by supporting proximal ends of the post insulators for pivotal movements through arcuate paths of travel about axes which extend upwardly and outwardly from their respective poles, whereby the shock load is converted into rotary motion and the weight of the line works to dampen the shock load. The pivoting movement is achieved by means of compact, sturdy, inclined hinge

assemblies connected between the poles and the proximal ends of their respective post insulators.

### 3,719,771 STRIPED FILTERS FOR COLOR VIDEO SIGNAL GENERATORS

Yoshizumi Eto, Hachioji, and Masao Hibi, Kodaira, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

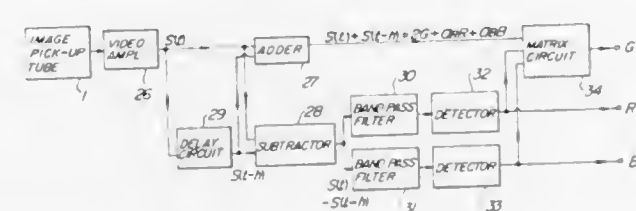
Filed March 8, 1971, Ser. No. 121,955

Claims priority, application Japan, March 9, 1970, 45/19286

Int. Cl. H04n 9/06

U.S. Cl. 178—5.4 ST

2 Claims



A striped filter structure for color video signal generators comprising a first striped filter consisting of an alternate arrangement of transparent stripes and yellow stripes and a second striped filter consisting of an alternate arrangement of transparent stripes and cyanic stripes, the stripes of the first striped filter being at an angle to the stripes of the second striped filter.

### 3,719,772 COLOR TELEVISION MATRIXING CIRCUIT

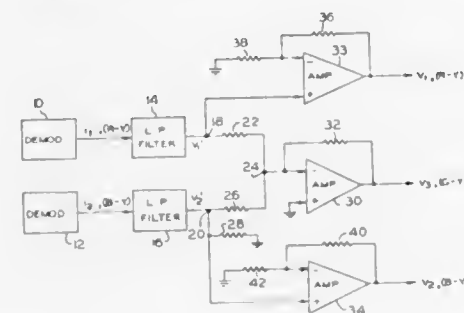
Stephen A. Roth, Beaverton, Oreg., assignor to Tektronex, Inc., Beaverton, Oreg.

Filed March 22, 1971, Ser. No. 126,701

Int. Cl. H04n 9/52

U.S. Cl. 178—5.4 MA

10 Claims



A circuit employing three operational amplifiers provides three color difference signals in proper phase relation without requiring auxiliary delay means. The (R-Y) and (B-Y) outputs are supplied by noninverting operational amplifiers having high impedance inputs connected to the outputs of (R-Y) and (B-Y) low-pass filters. The filters are provided with terminating resistors which also form summing input resistors for a third, inverting, operational amplifier, the inverting input terminal of which is a virtual ground. The output of this third amplifier is the (G-Y) color difference signal.

### 3,719,773 IMAGE TRANSDUCING SYSTEM

Charles B. Dougherty, Torrance, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Dec. 27, 1971, Ser. No. 212,536

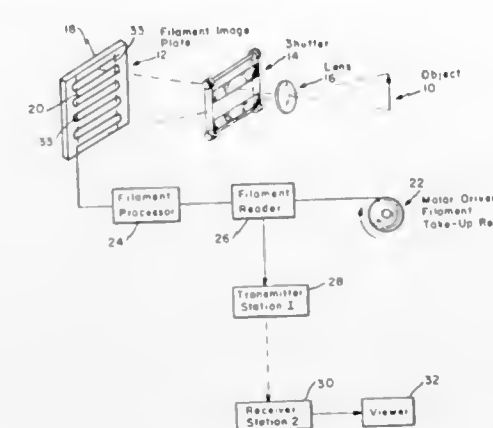
Int. Cl. H04n 1/10

U.S. Cl. 178—6

10 Claims

A photographic film is formed by winding a photosensitive filament sinusously on a backing plate. The filament is weakly

adherent to the backing plate. After image exposure, the filament is peeled off the backing plate and drawn lengthwise through a developer and then through a photocell reader to



convert the image to a corresponding electrical signal. The electrical signal is transmitted to another station where it is processed to reconstruct the original image.

### 3,719,774 VIDEO REPEATER FAULT ALARM SYSTEM

Hans Kraaijenbrink, Gouda, Netherlands, assignor to De Staat der Nederlanden, Ten Deze Verlegenoordigd Door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie, The Hague, Netherlands

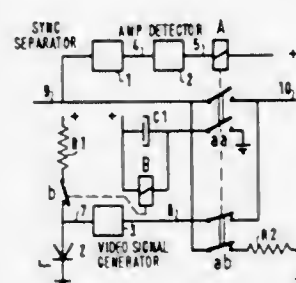
Filed March 12, 1971, Ser. No. 123,657

Claims priority, application Netherlands, March 13, 1970, 7003588

Int. Cl. H04n 7/00

U.S. Cl. 178—6

5 Claims



A wideband transfer system comprises a transmitter, a receiver and a plurality of sections therebetween separated by repeaters, which sections are adapted to be selectively enabled by means applying a signal characteristic of a repeater to the input of this repeater.

Said means include a detector for each repeater, which detector determines the amplitude of line synchronization pulses of a video signal, automatically controls the application of the characteristic signal, which is a video signal composed of pulses for line synchronization only, and is adapted to actuate an alarm in the receiver.

The system is particularly suitable in the transfer of video signal across, for instance, a coaxial cable.

### 3,719,775 IMAGE PICKUP SYSTEM BY LINEARLY RADIATED LASER LIGHT

Takashi Takaoka, Kawasaki, Sadao Takahashi, Tokyo, Takeo Fukuda, Kawasaki, and Teruhisa Hori, Tokyo, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Mar. 2, 1970, Ser. No. 15,810

Claims priority, application Japan, Mar. 1, 1969, 44/15,584

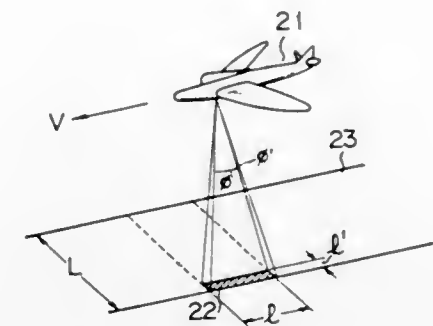
Int. Cl. H04n 5/84

U.S. Cl. 178—6.7 R

13 Claims

An image pickup system installed in a movable body which transversely scans the image of a foreground ob-

ject in a direction perpendicular to that in which said body travels, using a pulsed linear laser light beam ad-



vancing parallel to said traveling direction, thereby obtaining in said movable body the two-dimensional image of said object and information on the undulations thereof.

### 3,719,776 APPARATUS FOR PHOTOGRAPHING AN IMAGE OF A SPECIMEN

Tatsuo Fujiyasu, Katuta, and Yoshio Ohnuma, Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

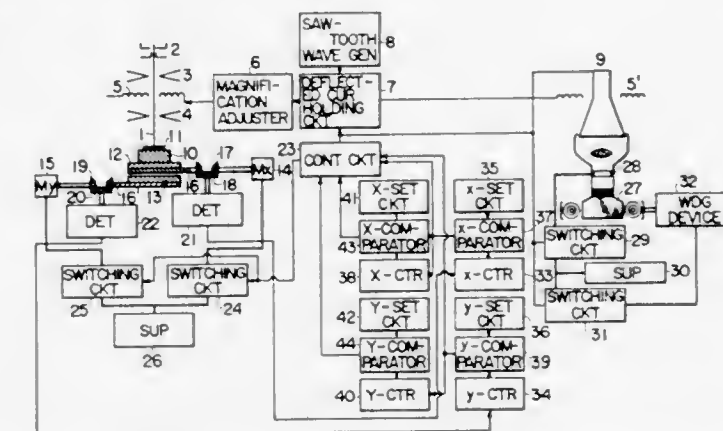
Filed Aug. 11, 1970, Ser. No. 62,863

Claims priority, application Japan, Aug. 11, 1969, 44/62,876

Int. Cl. H04n 5/84; H01j 37/26

U.S. Cl. 178—6.7 R

12 Claims



An apparatus for automatically and continuously photographing an image of a specimen having a control arrangement for scanning a predetermined region of the specimen by means of an electron beam; means for displaying the image of said region of the specimen on a screen of a cathode ray tube synchronized with said scanning; a camera for photographing the image displayed on the screen; and means for shifting the specimen along X and Y axes in accordance with a predetermined sequence.

### 3,719,777 PROCESS AND APPARATUS FOR CONVERTING IMAGE ELEMENTS TO ELECTRIC IMPULSES

Fernando von Reichenbach, City Bell, Argentina, assignor to Instituto Torcuato di Tella, Capital Federal, Argentina

Filed April 19, 1971, Ser. No. 135,006

Claims priority, application Argentina, April 17, 1970, 228168

Int. Cl. G06k 9/12, 11/02; H04n 7/18

U.S. Cl. 178—6.8

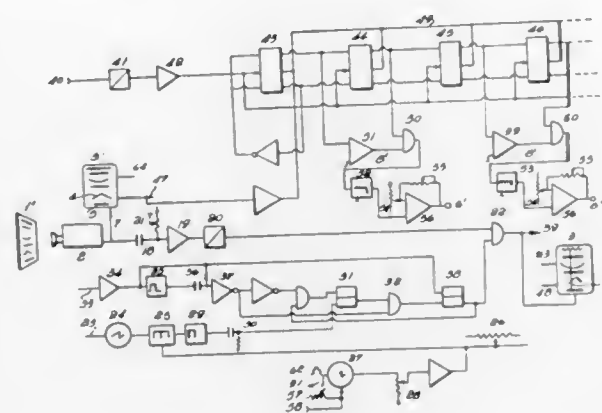
2 Claims

Process and apparatus by which numerical values or image elements represented in graph form on paper or other similar material are converted into electric impulses. In a preliminary



stage, the graphic numerical values can be successively analyzed and modified, readjusting them to the requirements of the case, in relation to the electric impulses they generate. The graphic numerical values are converted into variable elec-

tering the resistance of the associated circuit—thereby altering the pulse repetition rate—and a conversion circuit for converting the pulses into sinusoidal output waves having a frequency proportional to the pulse repetition rate. This transmitter is capable of transmitting data at high bit rates without



trical voltages in order to program processes controlled by voltage or intensity, but they can also be utilized in the programming of processes controlled by pulses of variable duration or by counting the pulses.

### 3,719,778 MULTIELECTRODE SIGNAL PLATE STORAGE TUBE FOR STANDARDS CONVERSION OF ELECTRICAL SIGNALS

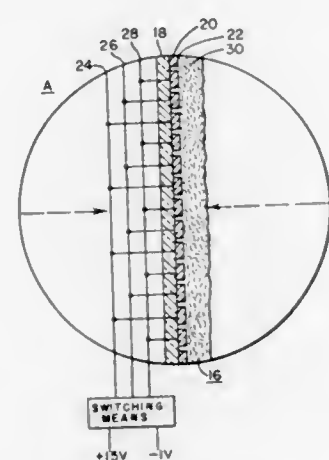
Martin Green, Big Flats, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed March 2, 1971, Ser. No. 120,280

Int. Cl. H04n 5/02

U.S. Cl. 178—6.8

5 Claims



An electrical signal conversion system is provided which includes a multielectrode signal plate storage electrode for conversion of electrical signals of a first scan rate into electrical signals of a second scan rate.

### 3,719,779 HIGH SPEED FREQUENCY SHIFT KEYED TRANSMISSION SYSTEM

Kenneth A. Wilson, Bridgeport, Conn., assignor to American Chain & Cable Company, Inc., New York, N.Y.

Filed May 22, 1970, Ser. No. 39,712

Int. Cl. H04l 27/10, 27/12, 27/14

U.S. Cl. 178—66 R

5 Claims

A frequency shift keyed data transmission system utilizes a transmitter comprising an oscillator for producing a series of output voltage pulses whose repetition rate is governed by the time constant of an associated RC circuit, a key switch for al-

introducing significant frequency transients. A receiver which utilizes a discriminator comprising circuitry similar to that of the above-described transmitter can be used to detect FSK information in a manner which is substantially independent of variations in the signal amplitude.

### 3,719,780 RECORDING AND DISPLAY LASER SCANNING SYSTEM USING PHOTOCHROMIC SUBSTRATES

Maryse Gazard, and Lucien Barbet, both of Paris, France, assignors to Thomson-CSF, Paris, France

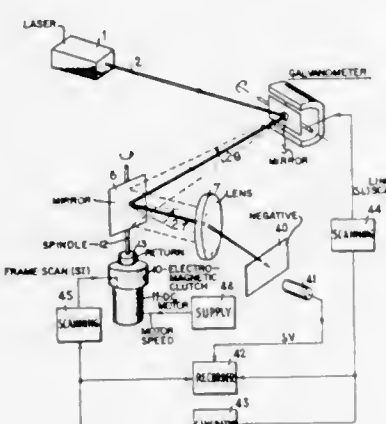
Filed March 17, 1971, Ser. No. 125,287

Claims priority, application France, March 17, 1970, 7009517

Int. Cl. H04n 3/08

U.S. Cl. 178—7.6

4 Claims



A system is provided for producing high-linearly optical field scanning, which can be synchronized by external electrical systems and enables ready exploitation of photochromic substrates to be effected.

It comprises a laser, a light modulator, a line-scan deflector with a galvanometer mirror, a frame-scan deflector with a flat mirror associated with a disengageable constant speed drive and a device for returning the mirror to the original position, an optical focusing lens, and a circuit producing the video signal SV which is to be displayed, and the line-scan and frame-scan signals SL and SI respectively.

### 3,719,781 CONTROL SYSTEM FOR HIGH SPEED PRINTER

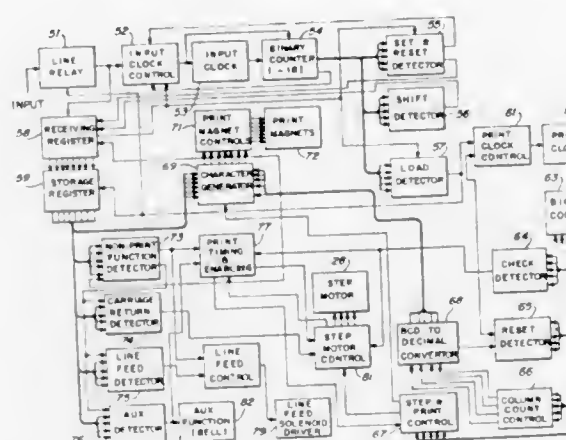
John R. Fulton, Brookfield, and Walter J. Zenner, Des Plaines, both of Ill., assignors to Xerox Corporation, Chicago, Ill.

Filed March 19, 1971, Ser. No. 126,004

Int. Cl. H04l 21/00

U.S. Cl. 178—30

16 Claims



An all-electronic control system for a high-speed dot matrix printer, using a permutation code input signal comprising individual code words each including a fixed number of data pulses preceded by a start pulse. The control system comprises a line relay for receiving the input signal, an input clock triggered by the start pulse in each code word and developing a clock signal at a frequency equal to a predetermined multiple of the input pulse frequency, and an electronic shift register as a buffer store for recording each pulse, in a code word, in sequence as received, on a given count of the clock. The system further comprises an operational store, a load detector for stopping the input clock and transferring recorded data from the buffer store to the operational store whenever the data pulses of a complete code word have been recorded in the buffer store, and operational control means to actuate the printer in accordance with data in the operational store while a further code word is recorded in the buffer store. The operational control means includes a print clock, started upon transfer of data to the operational store, for timing the functions of the printer, including carriage advance or return, print rod actuation, line feed, and others.

### 3,719,782 SYSTEM FOR CHANGING THE OUTPUT RE- SPONSE CHARACTERISTICS OF AN ACOUS- TIC INPUT

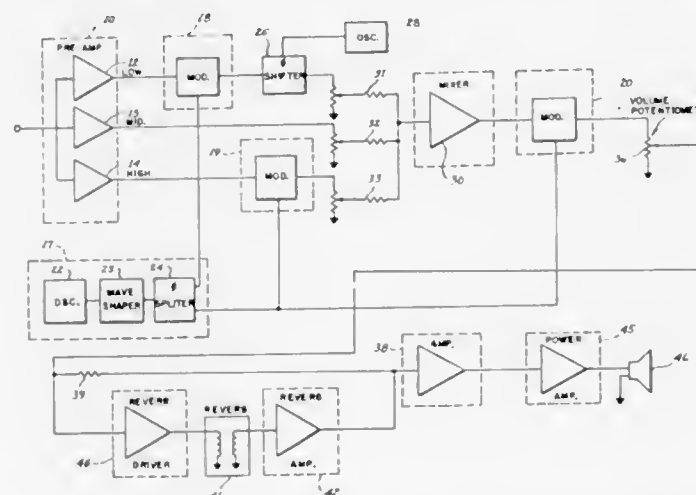
Phillip R. Barnum, Mesa, Ariz., assignor to James E. Breene, Chandler, Ariz.

Filed Oct. 12, 1971, Ser. No. 188,418

Int. Cl. H03h 7/00; G10h 1/00

U.S. Cl. 179—1 J

14 Claims



A sound system is disclosed incorporating a frequency divider for dividing a sound signal into predetermined

frequency ranges. Each frequency range is selectively subjected to phase shifting and/or amplitude modulation to produce a desired effect. The modulated frequency ranges are recombined in a mixer and the mixed signal is applied to appropriate amplifying and transducing means through a parallel arrangement of a resistance and a reverb system. Adjustments are provided for altering the inter range phase relationship and for inducing tremolo in selected frequency ranges; tremolo is also selectively provided for the combined and mixed frequency ranges.

### 3,719,783 ACOUSTIC COUPLER

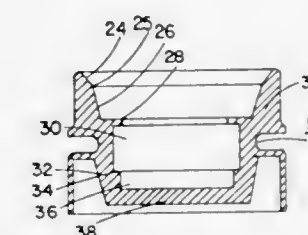
John P. Kennedy, 2198 Woodstock Road, Columbus, Ohio

Filed April 23, 1971, Ser. No. 136,963

Int. Cl. H04m 11/00

U.S. Cl. 179—1 C

6 Claims



A rubber-like housing for an acoustic coupler adapted to couple a telephone handset to a transducer for data communication. The configuration and material makeup of the housing insures intimate contact with the telephone handset. The upper portion of the housing is of rigid elastic material and somewhat elongated to completely secure the handset into a gripping position; whereas the lower portion of the housing is made up of relatively thin elastic material acting as a shock absorber. The upper and lower portion is separated by a continuous indentation. The durometer of the material and the indentation permits omnidirectional movement of the handset without affecting the coupling or its operation. A pair of such housings are oriented in an enclosure at an angle similar to the standard telephone to readily receive and immediately seal in position the telephone handset.

### 3,719,784 ATTENDANT TO TRUNK COUPLER

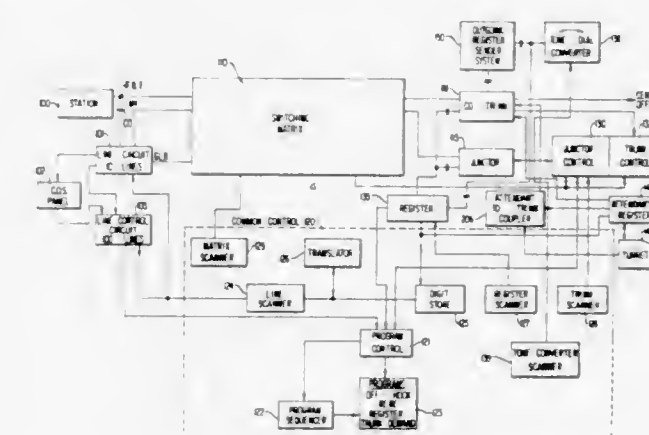
John A. Adams, Jr., Fairport, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Dec. 23, 1970, Ser. No. 100,890

Int. Cl. H04m 3/00, 5/08

U.S. Cl. 179—27 CA

12 Claims



An attendant to trunk coupler includes a plurality of switching circuits connected to the attendant's turret, the register associated with the turret and a plurality of trunks. Each switching circuit includes a four layer diode which provides exclusive access by preventing a conductive path between the



attendant's register and a truck through transmission or control logic leads. Break down of the diode provides a low impedance path to enable only the attendant connected with that particular switching circuit to be connected with a truck.

3,719,785

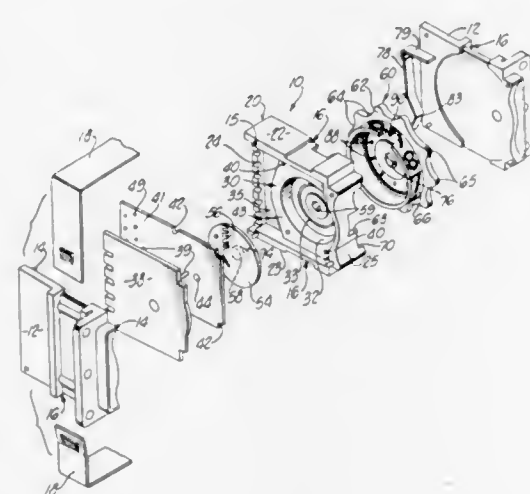
# THUMBWHEEL SWITCH ASSEMBLY WITH IMPROVED GANG HOUSING INTERLOCKING MEANS

Thomas L. Kendall, Duarte, and Thomas C. Lincoln, Arcadia, both of Calif., assignors to Bectron, Dickinson Electronics Company, Pasadena, Calif.

Filed April 13, 1971, Ser. No. 133,633  
Int. Cl. H01h 19/58, 21/78

U.S. Cl. 200—11 TW

7 Claims



A case of a switch structure is provided which has a partition wall which extends from the front to the rear thereof and which divides the case into parts. Rotary electrical contacts are mounted on one side of the partition wall and fixed electrical contacts are mounted on a printed circuit board adjacent to the rotary electrical contacts. A cover plate is provided which holds the printed circuit board in place in the switch case against the partition wall. The cover plate has pins formed on the inside thereof which project through corresponding holes formed in the partition wall. The pins also engage notches and a central aperture formed in the printed circuit plate. The pins of the cover plate accurately align the printed circuit plate for cooperation with the rotary electrical contacts. The cover plate is permanently mounted in position by heat staking the ends of the cover plate pins from the opposite side of the partition wall or by means of hooks on the ends of the pins. The cover plate and the printed circuit plate are thus accurately aligned and permanently held in position against the partition wall.

3,719,786

# PUSHBUTTON SLIDE SWITCH ASSEMBLIES WITH INTERCONNECTED LAMINATED SLIDER SWITCH SET ASSEMBLIES ALLOWING ONLY ONE ACTIVATED SWITCH IN A PARTICULAR SET

James A. Mallett, Dorchester, and Edward B. Mitchell, Belmont, both of Mass., assignors to Ark-Les Switch Corp., Watertown, Mass.

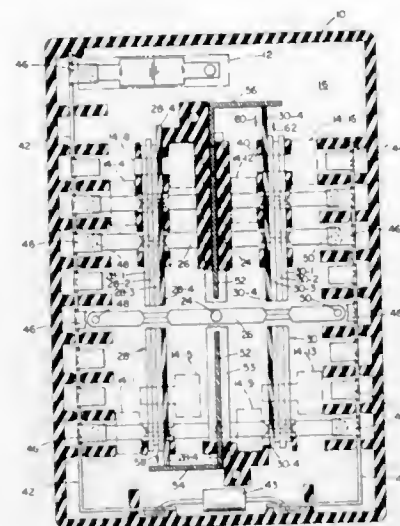
Filed April 2, 1971, Ser. No. 130,604  
Int. Cl. H01h 9/26

U.S. Cl. 200—5 EB

3 Claims

A pushbutton slide switch includes two sets of switches, two sets of slides in side by side relationship, each slide set including actuating slides movable for selectively actuating a switch within the corresponding switch set, and interlocking disengagement means comprising an interlock connector and an in-

terlock slide in each slide set. The interlock slides are movable by the connector for simultaneous disengagement of at least



one switch in a first switch set in response to closing a switch in the other switch set.

3,719,787

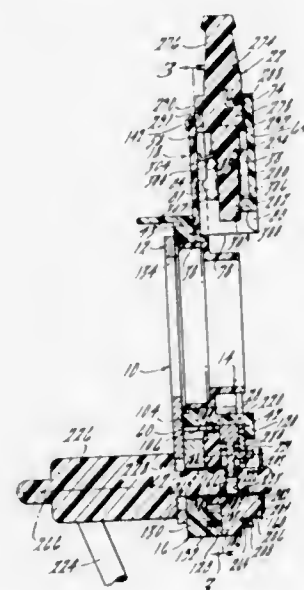
# TURN SIGNAL APPARATUS WITH IMPROVED SWITCH STRUCTURE AND PRINTED CIRCUIT BOARD

Jerry J. Tomecek, 1330 Dorre, Troy, Mich.  
Continuation of Ser. No. 23,937, March 30, 1970, abandoned.  
This application June 1, 1971, Ser. No. 148,855

Int. Cl. H01h 3/16

U.S. Cl. 200—61.27

25 Claims



There is herein disclosed a control switch unit for association with the steering column of a vehicle and comprising a one-piece plastic housing member which mounts a plurality of switches, including a turn signal and/or lane change indicating switch and an emergency signal switch, for association with a printed circuit board forming an integral part of the unit.

3,719,788

# SWITCH HAVING GANGED CONTACTS MOUNTED ON OPPOSITE SIDES OF CIRCUIT BOARD

Kenneth C. Holland, and Anthony E. Sprando, both of Portland, Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

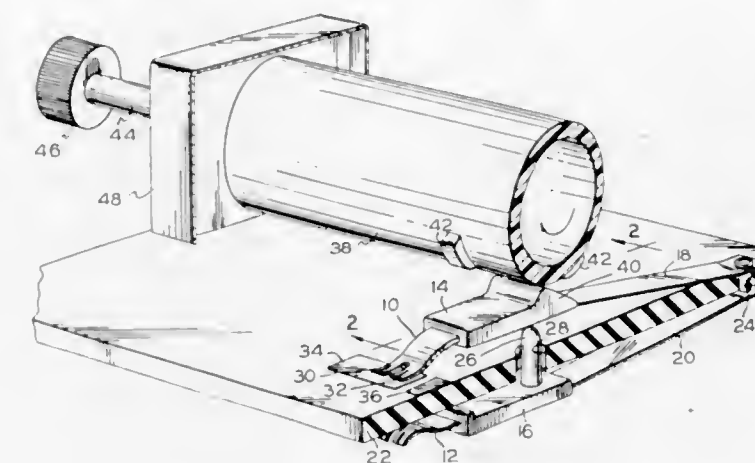
Filed Feb. 4, 1971, Ser. No. 112,583  
Int. Cl. H01h 3/42, 19/62

U.S. Cl. 200—153 LB

17 Claims

A switch apparatus is described including a pair of movable contacts separately mounted on opposite sides of an etched circuit board and ganged together by a loose coupling including a coupling member extending through a hole in such cir-

cuit board. Fixed contacts are provided as conductive strips on both sides of the circuit board and the movable contacts are moved in and out of engagement with such fixed contacts by a rotary cam actuator mounted on such circuit board. In one embodiment, a cam follower surface is provided on one of a pair of insulator members joining the movable contacts to mounting springs, while in another embodiment the cam fol-



lower surface is provided on one end on the coupling member and such coupling member extends through a hole in the support portion of one of the movable contacts, while its other end engages the support portion of the other movable contact. The movable contacts may be short circuiting contacts each including a pair of spaced leg portions through which current flows in opposite directions to produce opposing fields which reduce the contact inductance.

3,719,789

# INDUCTION COOKING APPLIANCE INCLUDING TEMPERATURE SENSING OF INDUCTIVELY HEATED COOKING VESSEL BY "MODULATED" LIGHT

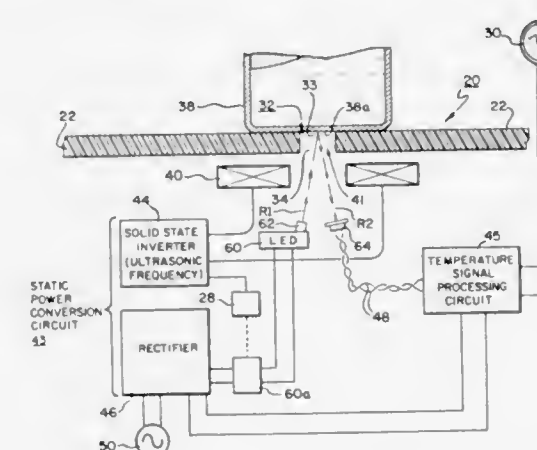
John D. Harnden, Jr., Schenectady, N.Y., assignor to General Electric Company

Filed Dec. 29, 1971, Ser. No. 213,352

Int. Cl. H05b 5/08

U.S. Cl. 219—10.49

19 Claims



Herein disclosed is an induction cooking range having a counter on which there is supported a cooking vessel to be inductively heated by an induction coil having a central aperture; the induction coil being located below the counter. The cooling vessel, or utensil, has at least on portion thereof coated or covered with a material which changes at least one optical property thereof in response to temperature changes. The coated portion of the vessel which rests on the counter covers a passage provided in the counter; said passage being axially aligned, or in register, with the central aperture of the coil. The range includes a temperature sensing unit comprising an LED for directing monochromatic light through the central aperture and passage onto the vessel's coating. The

temperature sensing unit also includes a photodetector for detecting the light reflected from the coating whereby the temperature of the vessel is determinable. In another embodiment the counter is made of light transmitting material and the aforesaid passage is not required; the directed and reflected light passing through the counter.

3,719,790

# COMPOSITION AND METHOD FOR FORMING A WELD-SURFACED ALLOYED STEEL LAYER OF STEEL

Erwin Plockinger; Hermann Ornig, and Alfred Schmidt, all of Kapfenberg, Austria, assignors to Gebrüder Bohler & Co. Aktiengesellschaft, Kapfenberg, Austria

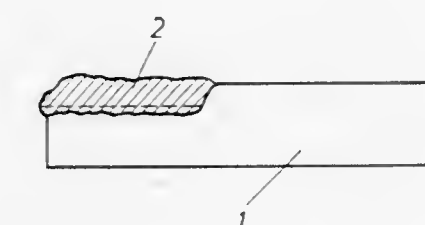
Continuation-in-part of Ser. No. 580,157, Sept. 15, 1966, which is a continuation-in-part of Ser. No. 490,789, Sept. 28, 1965, abandoned. This application June 21, 1968, Ser. No. 744,603

Claims priority, application Austria, Sept. 17, 1965, A 8490/65; Sept. 17, 1965, A 8491/65

Int. Cl. B23k 9/16

U.S. Cl. 219—73

4 Claims



This invention relates to articles having a wearing surface affixed thereto by means of welding. The invention is particularly applicable to workpieces and tools, such as machine knives.

In particular, the invention discloses novel compositions and methods for cladding or surfacing a metal article by means of a so-called band or flat strip electrode thereby producing a very hard wearing layer of alloyed steel on said article. The use of flat strip electrodes results in a flat and uniform penetration and, consequently, in a slight and uniform mixing with the base material of the article.

3,719,791

# MOBILE FLUID-TIGHT SEALING DEVICE

Jean-Pierre Peyrot, Domaine du Bel-Abord, Chilly-Mazarin, France

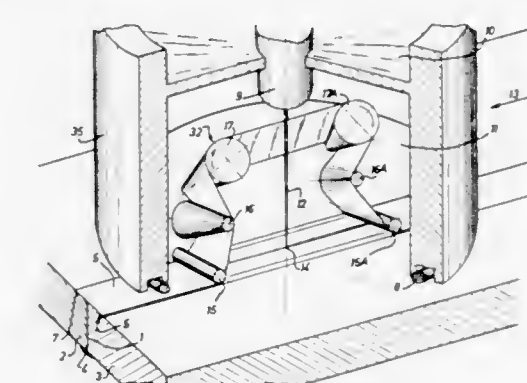
Filed Sept. 16, 1970, Ser. No. 72,647

Claims priority, application France, Oct. 6, 1969, 6934060

Int. Cl. B23k 15/00

U.S. Cl. 219—121 EB

6 Claims



Fluid tight access device for a welding tool comprising a mobile vacuum chamber, a fixed chamber, a tape, the two edges of said tape being applied on each side of the access of the fixed chamber, conical rollers allowing to displace the mobile chamber as regards to the fixed chamber during the

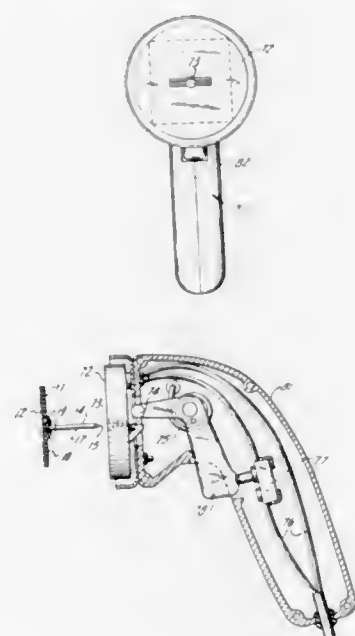


operation of welding without modifying the vacuum of the mobile chamber, the way of the tape being displaced offset the working plane of the tool.

3,719,792

**APPARATUS FOR APPLYING A FASTENING DEVICE**  
Louis M. Cuccaro, 136 Hillcrest Ave., Morristown, N.J.  
Filed Feb. 12, 1970, Ser. No. 10,876  
Int. Cl. H05b 1/00  
U.S. Cl. 219—230

2 Claims

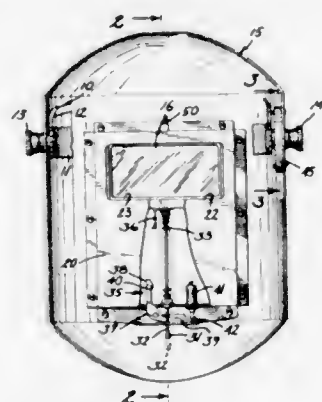


This invention relates to a fastening device which has a plate, a layer of hot melted adhesive adhered to one side of the plate and a mechanical fastening means protruding from the other side of the plate, and to an apparatus for applying the fastening device. The apparatus has an electrically heated element having an aperture therein shaped so that the mechanical fastening means can be passed through the heating element, control means for turning the heating element on and off, and gripping means adapted to clamp onto a portion of the mechanical fastening means which has been inserted through the heating element. The gripping means, which can be selectively moved between non-clamping and clamping positions, is adapted to hold the fastening device so that the side of the plate not covered with adhesive is in direct face-to-face thermal contact with the heating element.

3,719,793

**WELDING HELMET**  
John F. Finger, 308 S. 3rd St., Beresford, S. Dak. 57004  
Filed Mar. 4, 1971, Ser. No. 120,811  
Int. Cl. B23k 9/32  
U.S. Cl. 219—147

4 Claims



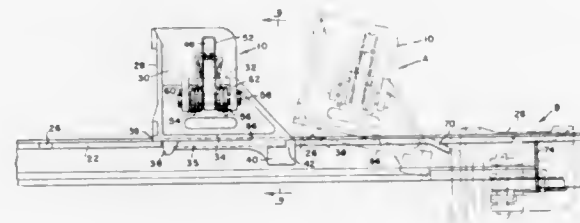
A welding helmet including a head harness and shield with a work viewing opening therethrough and a dark

glass slidable between a position overlying the opening and a position adjacent the opening. The dark glass is biased into the overlying position by a spring and maintained in the adjacent position by a latch operated by a solenoid. A rotary switch is mounted between the shield and the harness and electrically connected in series with the solenoid between a power source and the welding electrode. A push-button switch is mounted on the shield for operation by the dark glass as the glass moves into the overlying position and is electrically connected in series with the coil of a relay between the power source and the welding electrode. Sets of contacts of the relay are connected directly between the power source and the welding electrode.

3,719,794

**CONTAINER SUPPORTING PEDESTAL FOR CARGO-CARRYING VEHICLES**  
Stephen G. Peterson, 6038 Westwood Terrace, Norfolk, Va.  
Filed July 22, 1969, Ser. No. 843,360  
Int. Cl. B61d 3/06, 17/10; B65j 1/22  
U.S. Cl. 105—366 D

2 Claims

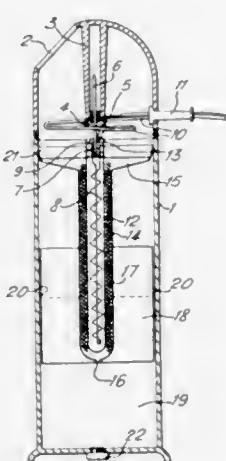


A cargo-carrying vehicle having a plurality of pedestals adjustably arranged on the bed of the vehicle for supporting the corners of a cargo container, the pedestals being constructed and arranged with respect to the bed as to be folded in a retracted position relative thereto so as to be substantially flush with the vehicle bed and thus provide a smooth surface for the loading and unloading of wheeled vehicles.

3,719,795

**ELECTRIC STEAM GENERATOR**  
Jacques Bolomier, 19, rue Saint-Jean, Lyon; Elisabeth Bolomier, and Jean-Pierre Bolomier, both of Marboz, all of France  
Filed Feb. 14, 1972, Ser. No. 226,009  
Claims priority, application France, Feb. 26, 1971, 7106878  
Int. Cl. F22b 1/28  
U.S. Cl. 219—272

4 Claims



An electric steam generator comprises a cylindrical receptacle, containing heating means having a spaced double walled jacket receiving a wick therebetween and open at the top to admit liquid to the wick for vaporization. The heating means comprises a heating wire on the inside of the jacket and is mounted on a float functioning as a piston in the receptacle.

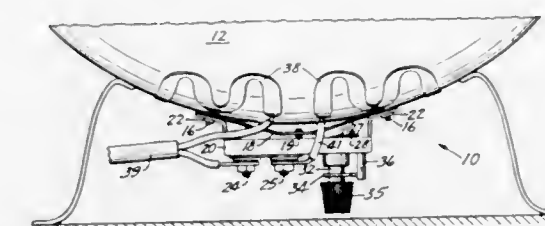
3,719,798

**THERMOSTATICALLY CONTROLLED HEATING IMPLEMENT**

Donald D. Nelson, Bloomington, and Thomas S. Shevlin, White Bear Lake, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.  
Filed Feb. 19, 1971, Ser. No. 116,997  
Int. Cl. H05b 1/02

U.S. Cl. 219—512

3 Claims



A thermostatically controlled heating implement in which one surface of a formed sheet of metal defines the heating surface of the implement and in which the formed sheet forms one element in a bimetal bow-type thermomechanical switch to control the heating temperature of the implement.

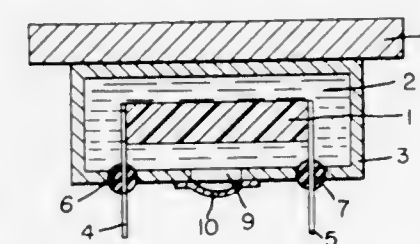
3,719,796

**HEATING UNIT HAVING A PTC HEATING RESISTOR**  
Jorgen Abildtrup, Højbjerg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark  
Filed July 21, 1971, Ser. No. 164,627  
Claims priority, application Germany, Aug. 14, 1970, P 20 40 523.6

Int. Cl. H05b 3/68

U.S. Cl. 219—462

1 Claim



The invention relates to an electrical heating unit for appliance such as coffee makers, hot plates and the like. The heating unit includes a PTC resistor which is mounted so as to be completely surrounded by a liquid medium so that a uniform temperature is maintained for the external surface of the resistor. This uniform temperature prevents cracking of the resistor due to unevenly distributed thermal strains.

3,719,797

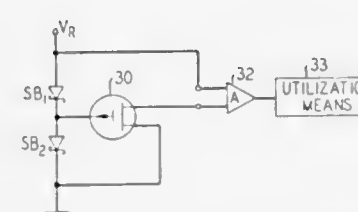
**SOLID STATE TEMPERATURE SENSOR EMPLOYING A PAIR OF DISSIMILAR SCHOTTKY-BARRIER DIODES**  
John Marshall Andrews, Jr., South Whitehall, and Martin Paul Lepselter, Hanover Township, Northampton County, both of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 16, 1971, Ser. No. 208,614

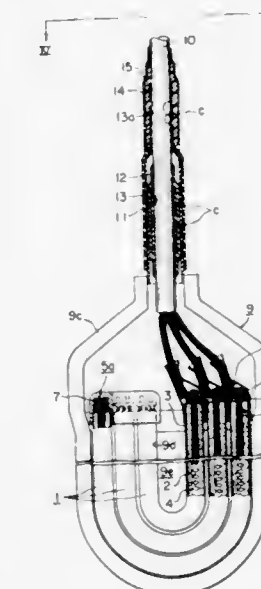
Int. Cl. H011 19/00

U.S. Cl. 219—501

11 Claims



The invention provides a solid state temperature sensor having significantly better sensitivity than conventional thermocouples. Basically, the sensor includes a pair of serially connected Schottky-barrier diodes of unequal barrier height and having geometries adapted such that each diode conducts the same reverse current at a given reverse bias and temperature. Because Schottky-barrier diodes of unequal barrier height have unequal thermal coefficients of reverse-biased resistance, the voltage at the common node between the diodes varies with temperature. Such voltage variation is useful for driving heating and/or cooling apparatus to stabilize the temperature of a semiconductor device and, additionally, for driving temperature indicators as in conventional thermometry.



An electric immersion heater having an improved connection with a multicore electric cord. The cable cord extends through a holding metal tube gastightly welded to the cord inlet opening of a heater casing. A protective metal tube and a heat-shrinkable resin tube are tightly fitted on the heater-side end of the multicore electric cord. At least one annular groove is formed on the holding metal tube so as to depress the heat-shrinkable resin tube and the protective metal tube against the multicore electric cord for gastightly sealing along the annular groove. A second annular groove may be provided on the holding metal tube at the position facing the protective metal tube. If a reduced diameter portion is provided at that location, a second heat-shrinkable resin tube is applied thereto. The entire connection of the cord to the casing may be covered with an outer resin tube.



3,719,800

**INTEGRATOR COMPENSATOR FOR IMPROVING ACCURACY**

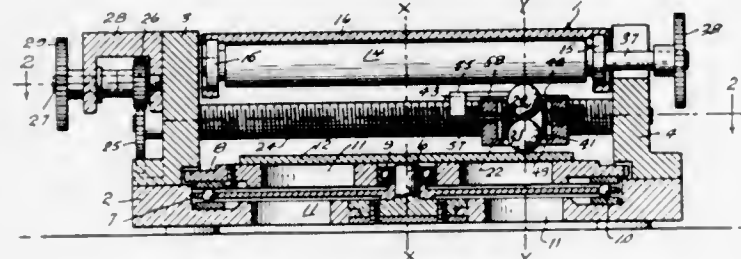
William P. Weaver, New Hyde Park, N.Y., assignor to Sperry Rand Corporation, Ford Instrument Company Division, Long Island City, N.Y.

Filed March 26, 1957, Ser. No. 649,590

Int. Cl. G06g 3/08

U.S. Cl. 235—61 C

20 Claims



1. In a mechanical integrator having a base, a pair of spaced parallel supporting brackets secured to said base and extending outwardly therefrom, a disk rotatably mounted on said base between said brackets, a roller rotatably mounted between said brackets with the axis thereof disposed perpendicular to and intersecting the axis of said disk, lead screw means rotatably supported by and between said brackets with the axis thereof disposed parallel to the axis of said roller, a carriage mounted on said lead screw means for back and forth movement radially of said disk, and a pair of contacting balls carried by said carriage with one of said balls engaging said disk and the other of said balls engaging said roller, that improvement which comprises; a ball cage in which said balls are mounted, said cage being slidably mounted in said carriage for back and forth movement parallel to the axes of said roller and said lead screw means, a bar secured in fixed position parallel to the axes of said roller and said lead screw means, a flexible track disposed substantially parallel to said bar, a plurality of longitudinally spaced adjusting means by which said track is secured to said bar and by which individual sections of said track may be adjusted back and forth with respect to said bar, a lever pivotally secured intermediate the ends thereof to said carriage with one end thereof disposed in engagement with said track, and spring means yieldingly holding said ball cage in engagement with the contacting end of said lever.

3,719,801

**ASSOCIATIVE SELECTION AND CORRELATION APPARATUS**

Jerome Drexler, Los Altos Hills, Calif., assignor to Drexler Technology Corporation, Palo Alto, Calif.

Filed Feb. 10, 1971, Ser. No. 116,711

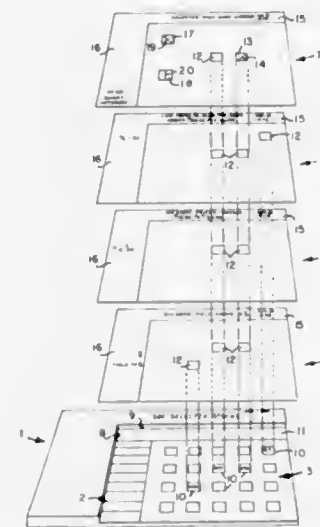
Int. Cl. G06k 21/04; G09b 23/28

U.S. Cl. 235—61.12 N

2 Claims

Associative selection apparatus comprising a thin plastic card containing a plurality of symbols representative of selected items is provided for use with one or more thin plastic overlays, called quality cards. Each quality card contains information respecting a predetermined quality or characteristic of the items listed on the item card. The quality cards are removably held in registration with the item card in a frame. Each quality card contains its information in the form of transparent windows and opaque areas provided to be in registration with the symbols of the items on the item card. The transparent windows and opaque areas permit and prevent respectively visual identification of those items qualifying and failing to qualify with respect to the criterion contained

on the quality card. Certain of the quality cards contain information respecting some but not all the items listed on the item card. In those instances, the transparent windows of the quality card are provided with a thin diagonal line, coloration or other similar partial obscuration in registration with the item which was not considered with



respect to such information in order that such items qualifying with respect to other quality cards, may be readily identified. The quality cards may further be used in pairs apart from the item card for determining the correlation between two qualities for all the items or a sampling of such items.

3,719,802

**HIGH-SPEED BAND READING DEVICE**

Marcel-Louis Boyer, Chatillon, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

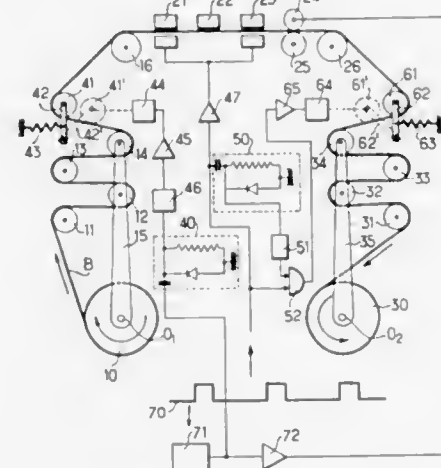
Filed April 22, 1971, Ser. No. 136,496

Claims priority, application France, April 22, 1970, 7014587

Int. Cl. G06k 13/26; B65h 23/08

U.S. Cl. 235—61.11 R

8 Claims



An electromechanical device for a tape winding mechanism which adapts the step-by-step advance at very high speed and at low inertia to the control of the winding and unwinding spools which have a great inertia, in the case where the band must be periodically stopped for an instant, including light-weight pulley arrangements responsive to starting and stopping operations for automatically providing the required slack in the tape to overcome the difficulties created by the high inertia of the spools.

3,719,803

**ELECTRONIC READING IN OF DESIGNS FOR THE PREPARATION OF PERFORATED JACQUARD CARDS**

Pierre Frappe, Lyon, France, assignor to Verdol S.A., Lyon, France

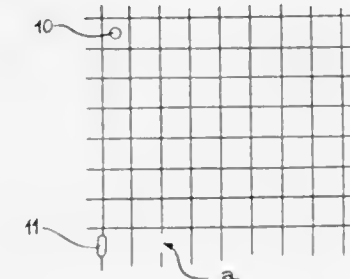
Filed Jan. 18, 1972, Ser. No. 218,733

Claims priority, application France, Feb. 9, 1971, 7105100

Int. Cl. D03c 15/04; G06k 19/02, 7/12

U.S. Cl. 235—61.11 E

4 Claims



The invention refers to the electronic reading in systems for the designs on squared paper provided for the preparation of the perforated cards or paper used in loom jacquards. These systems generally comprise main photo-electric means which follow the successive horizontal rows of squares to detect the colors thereof and to emit corresponding main signals which are applied to the transducer circuits of a perforating machine through a gating circuit, and auxiliary photo-electric means which scan a succession of vertical lines (actually the vertical lines of the squared paper) to generate auxiliary conditioning signals which are applied to the gating circuit to only condition same when the main photo-electric means are just in front of the center of a square. In order to avoid that a defectively printed vertical line may cause a defective perforation, according to the invention the system further includes chronometric means which generate chronometric pulses in substantial synchronism with the auxiliary pulses, and if some of the latter are missing, these chronometric pulses act on the gating circuit to permit passage of the main signals while the main photo-electric means still scan the central portion of the respective squares to which the missing auxiliary pulses should have corresponded.

3,719,804

**PERMANENT INFORMATION STORE**

David Anthony Illing, Stoke-on-Trent, England, assignor to International Computers Limited, London, England

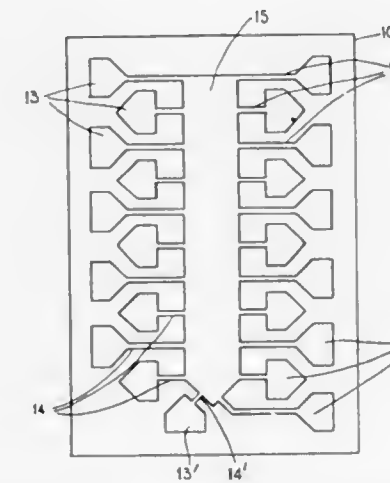
Filed June 15, 1971, Ser. No. 153,301

Claims priority, application Great Britain, March 26, 1971, 8,234/71

Int. Cl. G06k 19/06

U.S. Cl. 235—61.12 N

5 Claims



A permanent information storage device has a hidden conductive pattern of first areas selectively connected to a second

area. Reading is by energizing capacitive couplings to the first areas and detecting for response in the second area.

3,719,805

**PLUG-IN KEY COUNTER**

Takeo Tano, Tokyo, Japan, assignor to Iwatsu Electric Co., Ltd., Tokyo, Japan

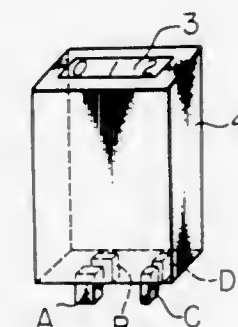
Filed March 19, 1971, Ser. No. 126,132

Claims priority, application Japan, July 17, 1970, 45/62091

Int. Cl. G06m 1/00

U.S. Cl. 235—91 R

6 Claims



A plug-in key counter according to the present invention is composed of a plug-in unit and its receiving unit which is provided in an apparatus. The plug-in unit provides a counter means and a conducting means, or, at times, only the counter means. In the latter case, the conducting means is included in the receiving unit and is controlled by the insertion of the plug-in unit. With a result of this, a very cheap and simplified plug-in key counter can be obtained.

3,719,806

**APPARATUS FOR CALCULATING HALFTONE SCREEN EXPOSURES**

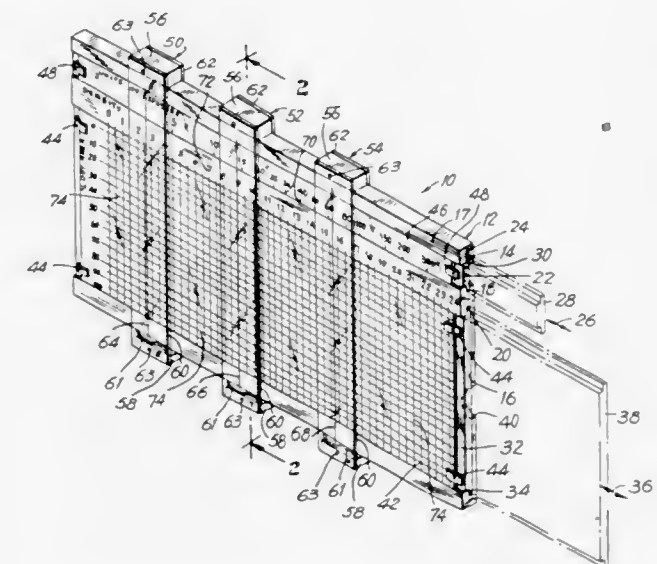
Glenn G. Davidson, Park Forest, Ill., assignor to Platemakers Educational & Research Institute, Park Forest, Ill.

Filed Dec. 3, 1971, Ser. No. 204,576

Int. Cl. G06c 3/00

U.S. Cl. 235—64.7

76 Claims



An improved method and apparatus for calculating halftone screen exposures to produce photographic halftone reproductions useful in printing applications. In one embodiment, a slide-rule type computing apparatus incorporates plots of information including percent dot area versus continuous tone photographic densities, main exposures, percent basic flash exposures (BFE), and percent bump exposures derived empirically from the performance capabilities of the particular halftone reproduction facility used. The method and apparatus



permits the coordinate calculation of main, bump and flash exposures.

3,719,807

## DIGITAL LINEARIZER AND METHOD

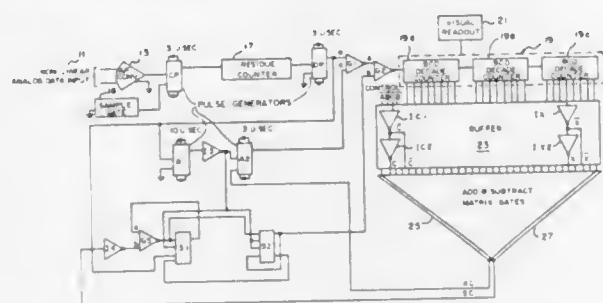
Francis Darnall Daley, Jr., Baltimore, Md., assignor to Electronic Modules Corporation, Cockeysville, Md.

Filed April 15, 1970, Ser. No. 28,646

Int. Cl. H03k 13/02, 21/36

U.S. Cl. 235—92 PL

25 Claims



A digital linearizer is provided, having a binary coded digital counter and a primary bit generating means for generating a bit count which is a direct function of a non-linearly measured variable desired to be linearly digitally indicated by the counter. The primary bit input into the counter is controlled by a gate arrangement which enables the addition of a next succeeding accumulative bit from the primary bit source, the addition of a supplementary bit to the counter between primary bit additions, or the inhibiting or defeating of the entry of a bit from the primary bit source to the counter. This gate arrangement is in turn controlled as a function of the examination of each individual sequential numerical count in the counter, and at selected predetermined individual numerical count values in the counter a supplementary compensating bit is added through the gate to the counter, or is effectively subtracted by inhibiting a next succeeding primary bit, based upon a predetermined calculation of theretofore non-compensated non-linearity error required to be compensated at the individual count value in the counter.

3,719,808

## LINEAR DIGITAL-TO-ANALOG CONVERTER

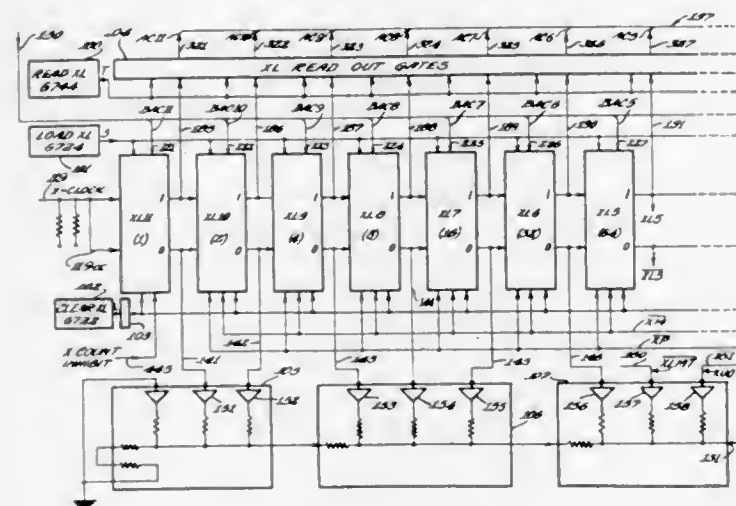
Frederick E. Booth, Jr., Weston, Conn., assignor to Hendaille Industries Inc., Buffalo, N.Y.

Continuation of abandoned application Ser. No. 744,561, July 12, 1968. This application Feb. 22, 1971, Ser. No. 117,835

Int. Cl. H03k 13/02

U.S. Cl. 235—154

3 Claims



A numerical control system having a reversible binary counter and associated digital to analog converter stages wherein command numbers are loaded into the counter

in two's complement binary notation but wherein the sign representing counter stage drives its converter stage to provide an increment of analog output in response to a positive command number to provide a linear analog output in the vicinity of zero count.

3,719,809

## COMPUTER CONTROLLED COORDINATION OF REGULATION AND ECONOMIC DISPATCH IN POWER SYSTEMS

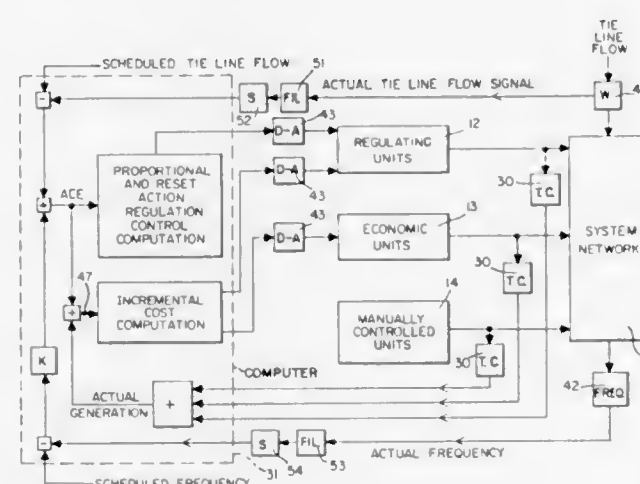
Lester H. Fink, R.F.D. 1, Doylestown, Pa. 18901

Continuation-in-part of abandoned application Ser. No. 6,127, Jan. 27, 1970. This application July 19, 1971, Ser. No. 163,894

Int. Cl. G06f 15/06, 15/56

U.S. Cl. 235—151.21

24 Claims



Computer control of regulation and economic dispatch in a power network is achieved with separation of the dispatch and regulating functions. An independent economic dispatch signal is calculated from a summation of an error signal, representing the difference between system load and system generation, and a total generation signal derived from telemetered actual generation signals. The summation signal is processed to derive the economic dispatch signal which is used to control economic generation units providing the system fixed loading. An independent regulating signal is calculated from the error signal for control of the regulating units which provide the system transient loading.

3,719,810

## ANALOG CIRCUITS FOR CALCULATING RELATIVE HUMIDITY FROM DEW POINT AND DRY BULB TEMPERATURE INFORMATION

Norman C. Ahlquist and Robert J. Charlson, Seattle, Wash., assignors to Battelle Development Corporation, Columbus, Ohio

Filed Dec. 15, 1971, Ser. No. 208,148

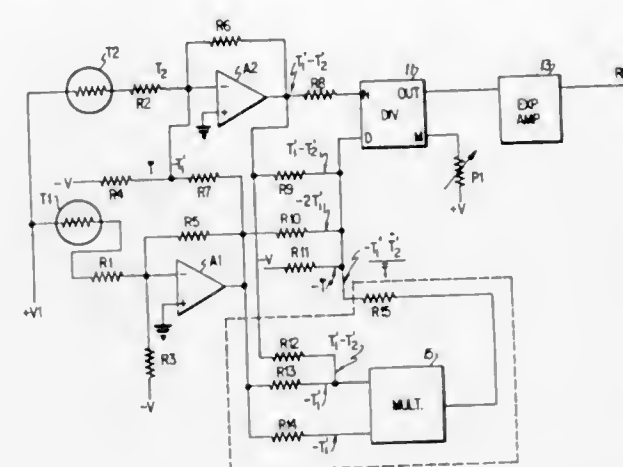
Int. Cl. G06g 7/32; G01w 1/10

U.S. Cl. 235—151.3

24 Claims

Analog circuits for calculating relative humidity from dew point and dry bulb temperature information in accordance with the Clausius-Clapeyron equation are described. Transducers generate two linear current signals—one proportional to the dry bulb temperature and the other proportional to the dew point temperature. An analog computer acts on the two signals in accordance with the Clausius-Clapeyron equation to produce an output

voltage proportional to the relative humidity. The analog computer acts in accordance with either the exact form



of the Clausius-Clapeyron equation or a modified form, depending upon the embodiment of the invention being used.

3,719,811

## BLAST FURNACE COMPUTER CONTROL UTILIZING FEEDBACK CORRECTIVE SIGNALS

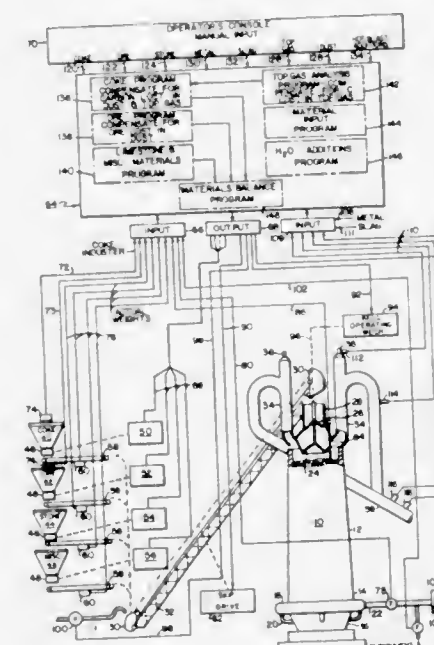
William A. Munson, Williamsville, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 25, 1971, Ser. No. 174,650

Int. Cl. C21b 7/00

U.S. Cl. 235—151.12

7 Claims



A computer control system for blast furnaces designed to maintain a proper material balance within the blast furnace, taking into account outputs including dust losses, top gas analysis, hot metal analysis and slag analysis. These are converted into feedback signals which correct control signals for the blast furnace process based upon theoretical calculations, thereby providing a complete closed loop control system.

3,719,812

## DYNAMIC ELECTROMAGNETIC ENVIRONMENT SIMULATOR

Glick U. Bishop, and Robin B. Knox, both of Littleton, Colo., assignors to Martin Marietta Corporation, New York, N.Y.

Filed Nov. 1, 1971, Ser. No. 194,420

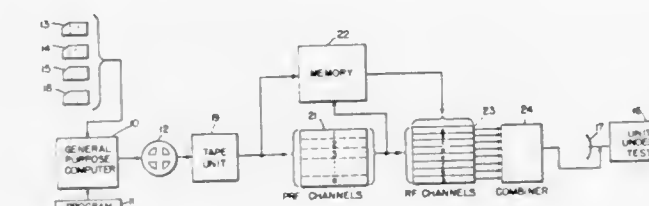
Int. Cl. H03k 1/12; G05b 23/02

U.S. Cl. 235—151.31

6 Claims

This invention is a test system for simulating in real time the electromagnetic signal received by a piece of electronic equip-

ment under test by a plurality of simultaneously operating environmental transmitters having time-varying transmission parameters and having time-varying relative positions with respect to the receiver. The parameters of the dynamic problem are processed by a general purpose computer that provides binary coded digital control data on storage tape. During a test simulation, the tape is run and the tape data is



used to control a plurality of time-shared signal generators that create a plurality of signals simulating in real time the result at the unit under test of the individual signals generated by various emitters in the environment. The outputs of the signal generators are combined and supplied to the unit under test, permitting a realistic appraisal of its performance in real time under the simulated conditions.

3,719,813

## APPARATUS FOR MEASURING UNIFORMITY OF TIRES

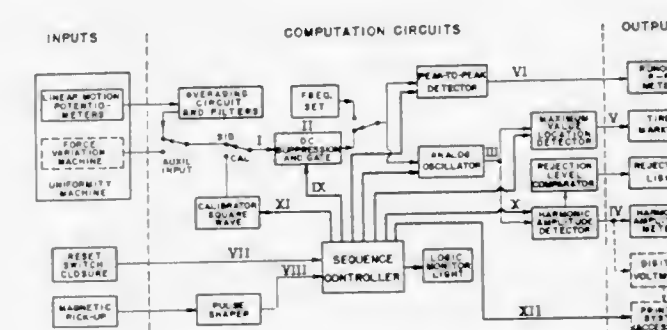
Harry Friedmann, Barrington, R.I., and Haig D. Tarpinian, Grosse Pointe, Mich., assignors to Uniroyal, Inc., New York, N.Y.

Original application Sept. 5, 1968, Ser. No. 757,663, now Patent No. 3,550,442, dated Dec. 29, 1970. Divided and this application July 6, 1970, Ser. No. 52,289

Int. Cl. B60c 19/10; G01m 17/02

U.S. Cl. 235—151.31

7 Claims



Tire uniformity measuring method and apparatus wherein radial runout on the outer tread rows is continuously averaged electrically as the tire rotates to obtain a periodic electrical signal, the period being equal to the time for one revolution of the tire. The periodic signal is electronically analyzed with an analog oscillator circuit to obtain the maximum value of its first harmonic component and to determine and mark the location of this maximum value on the tire itself. Associated circuitry and apparatus is disclosed.

3,719,814

Patent Not Issued For This Number



3,719,815

## MEMORY CODING TECHNIQUE

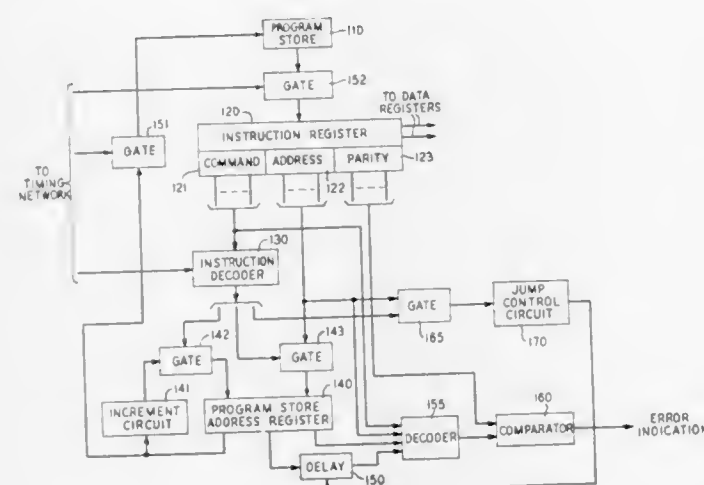
David Michael Rouse, Columbus, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 26, 1971, Ser. No. 166,130

Int. Cl. G06f 11/00; G11c 29/00

U.S. Cl. 235—153 AM

6 Claims



The present invention includes apparatus for generating a first set of check signals encoding not only the address and information bits of a selected word stored in the memory of a stored program machine, but also the address of a preceding word, which may be a transfer word directing a transfer to another word. This first set of check signals is stored in memory with the selected word. Upon retrieval, a second set of check signals is generated for the address and information bits of the selected word and the address of the preceding word. The first and second sets of check signals are compared. Failure of the check sets to match indicates an error in the address, information or order of retrieval of the selected word.

3,719,816

## SYSTEM FOR MONITORING THE DECODING OF AN ADDRESS

Jacques Darmon, Sceaux, and Philippe Coffre, Paris, both of France, assignors to Jeumont-Schneider, Paris, France

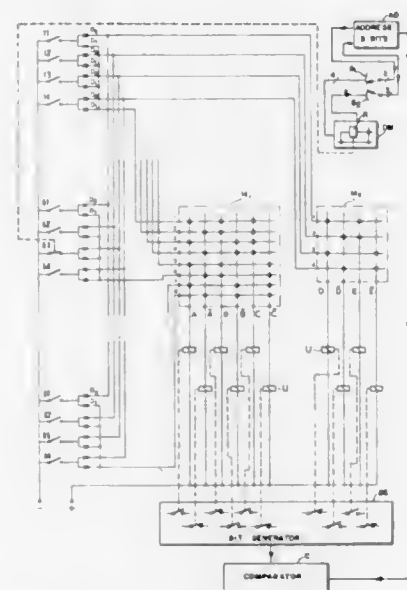
Filed June 25, 1971, Ser. No. 156,834

Claims priority, application France, June 25, 1970, 7023519

Int. Cl. H03k 13/34

U.S. Cl. 235—153 AM

1 Claim



A system for checking the decoding of an address previously encoded in the form of a group of N bits called input

bits. The system performs, on one hand, a re-encoding of such address in the form of N output bits identical to the N input bits, and in the form of their complementary bits N, and, on the other hand, compares the identity and/or complementarity of the input and output bits. The system comprises a first arrangement of  $2^N$  relays each having a single contact, a group of n diodes ( $D_1, D_2$ , etc.) per contact, a group of n re-encoding matrices ( $M_1, M_2$ , etc.), a second arrangement of  $2N$  relays each having a contact, and means for comparing the identity and/or the complementarity of the input and output bits.

3,719,817

## METHOD OF GENERATING A DISPLAY RASTER

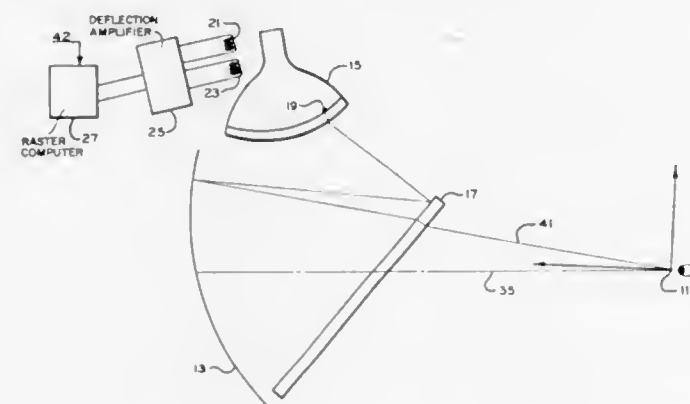
Reginald F. H. McCoy, Highland Park, Ill., and Brian J. Woycechowsky, Binghamton, N.Y., assignors to The Singer Company, New York, N.Y.

Filed April 1, 1971, Ser. No. 130,217

Int. Cl. G06g 7/22; H01j 29/70

U.S. Cl. 235—186

9 Claims



A method of producing a scan on a CRT which will follow a predefined path, as viewed by an observer, by generating two voltages to drive the scanning spot with two polynomials (which are functions of two variables describing the desired spot position as a function of time) representing the path. The coefficients of said polynomials being found by obtaining known values of the voltages and variables for an array of points on the CRT and performing a numerical analysis on said array.

3,719,818

## MOUNTING DEVICE FOR LIGHTING FIXTURES

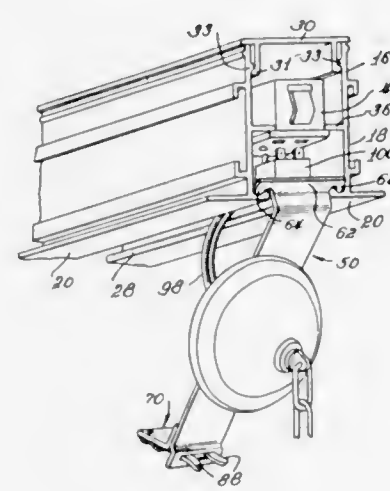
David H. Porter, and Gene R. Raddatz, both of Fort Atkinson, Wis., assignors to Thomas Industries, Inc., Fort Atkinson, Wis.

Filed April 10, 1972, Ser. No. 242,650

Int. Cl. F21v 21/00

U.S. Cl. 240—52 R

6 Claims



This invention is directed to a mounting device for hanging lighting fixtures on a suspended frame member. The

suspended frame member has a conduit portion for carrying electrical wires and has a downwardly facing trackway portion including two parallel spaced-apart shoulder portions. The mounting device of this invention has an elongated mounting bar on which the lighting fixture is fastened. A hanger means provided at one end of the mounting bar is provided with a pair of outwardly extending arm members disposed crosswise to the length of the mounting bar for supporting the one end of the mounting device between the two parallel shoulder portions. At the other end of the mounting bar is a clamping means having a pair of spring-biased latching fingers that snap into engagement with the parallel shoulder portions upon the mounting bar being swung up into the trackway.

3,719,819

## VEHICLE HEADLIGHT WASHING SYSTEM

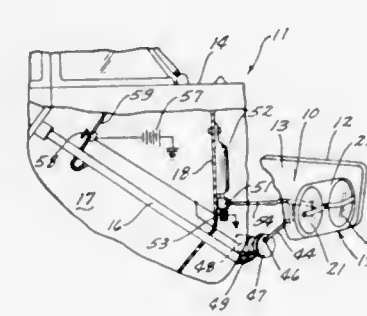
Rudolph L. Lowell, 710 Savings and Loan Building, Des Moines, Iowa

Filed Feb. 25, 1971, Ser. No. 118,623

Int. Cl. B60q 1/00

U.S. Cl. 240—7.1

4 Claims



The headlight lens washer apparatus includes a fluid discharge tube supported for oscillating movement across the lens with one side thereof adjacent to and facing the lens. This facing side of the tube has a plurality of slit-like openings extended longitudinally of the tube and of relative lengths providing for a desired wash pattern on the surface area of the lens. The sheet-like sprays discharged from the tube act to concurrently remove and wash foreign material from the lens.

3,719,820

## SOCKET MOUNTS FOR LIGHTING FIXTURES

Martin J. Yarmark, Huntingdon Valley, Pa., assignor to Triboro Electric Corporation, Doylestown, Pa.

Filed March 29, 1971, Ser. No. 128,785

Int. Cl. F21s 1/12, 3/10

U.S. Cl. 240—81 R

7 Claims



Lighting fixtures provided with structure for mounting a lamp socket on a part of the lighting fixture. A substantially U-

shaped springy member is fixed to the lighting fixture part and has a pair of legs extending from the latter part with each leg having a pair of side flanges forming a guide channel from each leg. A bracket is fixed to the lamp socket and is received between the legs of the springy member in the guide channels thereof. The bracket is in the form of an elongated strip received in the guide channels and the springy U-shaped member may be formed with an opening to receive a projection at the free end of the strip which forms the bracket. A catch structure is provided to retain the bracket and springy member in assembled condition.

3,719,821

## ILLUMINATED ATTACHMENT FOR A LOCK-EQUIPPED DOOR KNOB

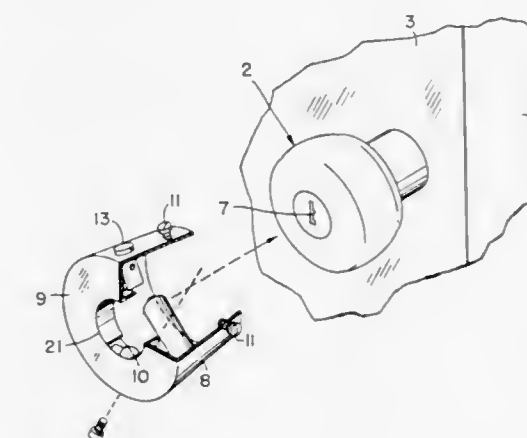
Lester Foreman, 115 Laurel Road, Sharon Hill, Pa.

Filed May 28, 1970, Ser. No. 48,586

Int. Cl. E05b 17/10

U.S. Cl. 240—2.13

7 Claims



An attachment to fit over a door knob provided with a key hole in the center, the attachment including means for selectively holding it to the door knob with security against unauthorized removal. The attachment includes a battery, a switch, and a lamp. It has a central opening to permit access to the key hole and a port to permit light to shine on the key hole when the switch is activated. The attachment superficially resembles a door knob.

3,719,822

METHOD OF GENERATING A SIGNAL WITH A FREQUENCY BETWEEN  $10^{11}$  AND  $10^{15}$  HZ WITH EXTREME FREQUENCY STABILITY

Ali Javan, Boston, and Lon O. Hocker, III, Watertown, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed March 29, 1971, Ser. No. 128,815

Int. Cl. G01t 1/16

U.S. Cl. 250—83.3 H

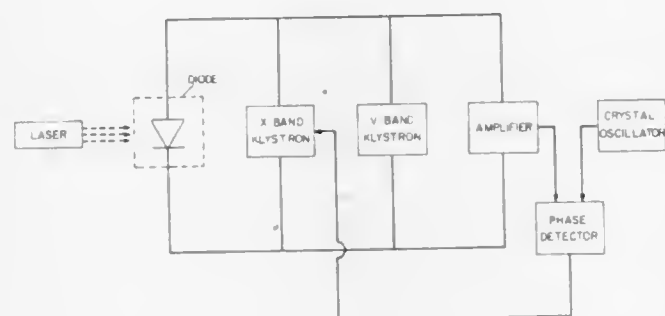
13 Claims

The output signal of a laser at a frequency  $V_f$  is mixed in a metal point contact diode with the output of a klystron having a variable frequency  $V_m$ . Because of the diode's non-linearities, the current flowing through the diode will contain and reradiate sideband components at frequencies  $V_f = V_f \pm V_m$ . Simultaneously, the diode is subjected to a reference signal with a fixed frequency having a harmonic which falls at a frequency close to one of the sideband frequencies  $V_f$ . A beat note is produced which fluctuates in frequency due to the instability of the laser frequency  $V_f$ . The beat note frequency is compared with a stable source and an error signal corresponding to the fluctuations is obtained which in turn is used to adjust  $V_m$  to compensate for the instability in  $V_f$ , whereby the frequency  $V_f$  is stabilized to a degree equal to that of the



reference source. Additionally, the frequency of the sideband is determined to the same degree of precision. This information is extremely important and useful in making frequency measurements in the infrared region where it is difficult to produce a beat note by standard techniques of mixing a high

produce electron avalanches at each center of latent-image response to exposure. The application of the voltage pulse is



harmonic of a known microwave signal with an unknown high frequency due to the low power of such a high harmonic. Here, harmonics of the components of stabilized laser sideband are used as intermediate step frequencies to bridge the gap between the microwave and visible regions.

3,719,823

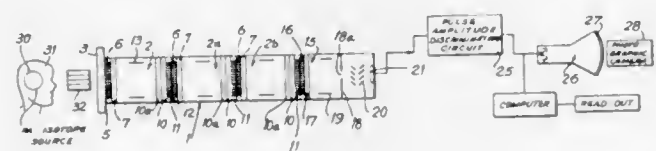
#### RADIO-ISOTOPE CAMERAS USING VACUUM TUBES WITH FIBEROPTIC ENDWALLS AND LUMINESCENT MEANS OF FIBEROPTIC CONSTRUCTION

Edward Emanuel Sheldon, 30 East 40th Street, New York, N.Y.

Filed Aug. 20, 1969, Ser. No. 851,567  
Int. Cl. G01t 1/20

U.S. Cl. 250—71.5 S

13 Claims



This invention relates to cameras for visualization of internal organs and their pathology by means of radio-isotopes. The new devices are characterized by the novel combination of an image intensifying tube with a television pick-up tube and with means for rejecting the scattered gamma radiation. In addition the new cameras are provided with novel luminescent screens which are constructed of light conducting members of a tapered shape and phosphors mounted along the sidewalls of said members.

3,719,824

#### PULSE X-RAY WITH PULSE FIELD ENHANCEMENT OF FILM RESPONSE

Robert C. McMaster, Delaware, Ohio, and Merle L. Rhoten, Columbus, Ohio, assignors to The Ohio State University, Columbus, Ohio

Filed June 8, 1971, Ser. No. 150,956  
Int. Cl. G03b 41/16

U.S. Cl. 250—65 R

9 Claims

Apparatus to enhance the speed of radiographic exposures utilizing pulse X-ray generators of the stacked piezoelectric assembly type. Intense electric fields are applied simultaneously across the thickness of the photographic or X-ray film to

synchronized with the pulse of X-rays for the attainment of film speed and contrast enhancement.

3,719,825

#### METHOD OF MONITORING A NEUTRON FLUX WITH A CERAMIC NEUTRON FLUX MONITOR

Edward A. Snajdr, Urbana, Ill., assignor to The United States of America as represented by the United States Atomic Energy Commission

Continuation of Ser. No. 816,407, April 15, 1969. This application May 24, 1971, Ser. No. 146,431

Int. Cl. G01t 3/00

2 Claims

U.S. Cl. 250—83.1

A method of monitoring the neutron flux of a nuclear reactor at high temperatures employing monitors which are pressed and sintered ceramic pellets containing about 99 percent finely ground, high-purity magnesium oxide as matrix material and about 1 percent finely ground, high-purity nickel monoxide or cobaltous oxide uniformly distributed in the matrix material as activation compound.

3,719,826

#### PERSONNEL IONIZATION DOSIMETERS ESPECIALLY FOR RADIATION OF UNKNOWN COMPOSITION

Mieczyslaw Zielczynski, Nowotki 35 m 99, Warszawa, Poland

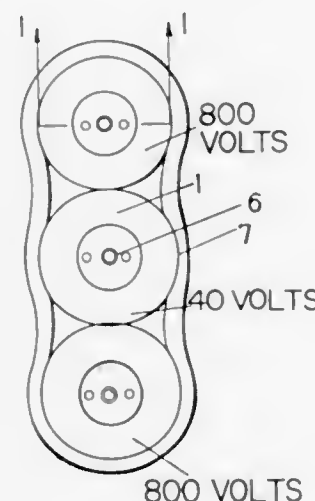
Filed May 14, 1969, Ser. No. 824,509

Claims priority, application Poland, Aug. 27, 1968, P. 128804

Int. Cl. G01t 1/14

U.S. Cl. 250—83.3 PD

7 Claims



A personal ionization dosimeter comprising a group of three individual dosimeters each including an annular voltage elec-

trode defining a housing and a cylindrical test electrode therein, the ratio of the radius of the active surfaces of the electrodes not exceeding 2.5; an auxiliary electrode is provided and a supply capacitor is connected across the auxiliary and voltage electrodes. The dosimeters are filled with a mixture of propane (55 percent), carbon dioxide (41 percent) and nitrogen (4 percent) at a pressure of 28–85 lb/sq. in. One dosimeter has a voltage of 40 volts and the other two a voltage of 800 volts.

3,719,827

#### REGULATING CIRCUIT FOR A PULSED NEUTRON SOURCE

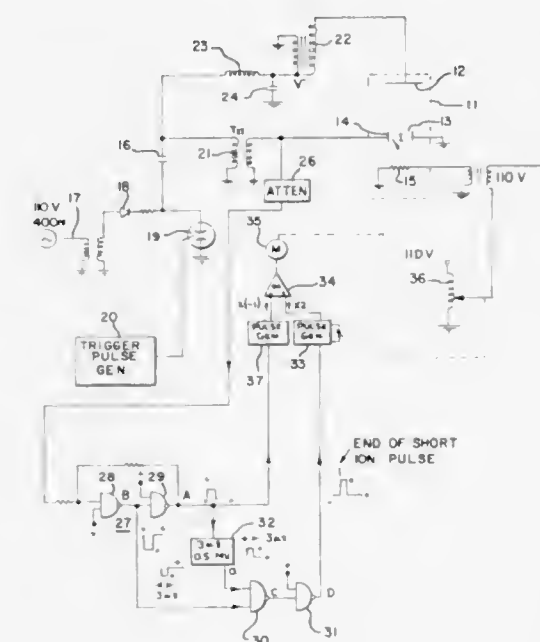
Charles L. Dennis, Desoto, Tex., assignor to Mobil Oil Corporation

Filed Jan. 29, 1971, Ser. No. 110,934

Int. Cl. G21g 3/00

U.S. Cl. 250—84.5

6 Claims



A pulsed neutron system has an accelerator tube having a target, an ionizing section and a replenisher for supplying accelerator gas. The power supplied to the replenisher is controlled to maintain a constant ionizing pulse time duration. A comparator compares the ionization pulse time duration to the time duration of a reference pulse which is produced each time the accelerator tube is pulsed. The comparator produces a pulse output if the ionization pulse is shorter than the reference pulse. This pulse output is applied to an operational amplifier. Also applied to the operational amplifier is a pulse produced each time the accelerator tube is ionized. The operational amplifier produces a control signal which operates a stepping motor in either a forward or reverse direction. The stepping motor positions a variable autotransformer which increments the voltage applied to the replenisher. The voltage (power) applied to the replenisher is continuously adjusted to maintain a constant ionization pulse width.

3,719,828

#### REMOTE CONTROLLED SWITCHING AND INDICATOR DEVICE

Ronald I. Lipskin, 215-15 17th Avenue, Bayside, N.Y.

Filed May 17, 1972, Ser. No. 253,956

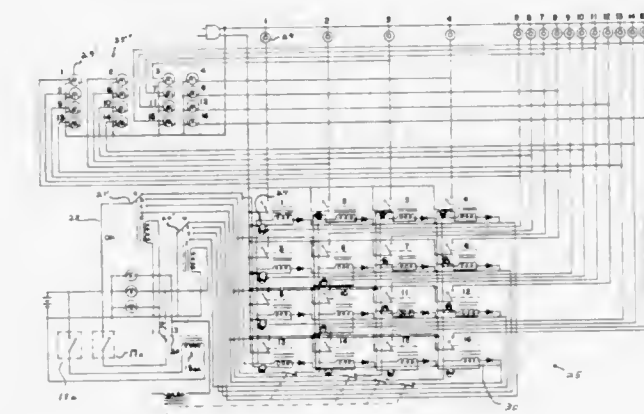
Int. Cl. H01h 67/00

U.S. Cl. 307—115

12 Claims

In a preferred embodiment, a switching device and indicator panel suitable for utilization by incapacitated and/or handicapped persons making use of a suck and/or blow activator tube(s), including a plurality of step switches with two initial

activators, one initial activator being to select which one of three circuits are to be closed at a particular moment, a first circuit being to first and second stepped switches in parallel for closing, in a fourth circuit, one of several possible stepped contacts connected with alternative separate sub-circuits, any one of which is completable of the closed fourth circuit for one of the first and second stepped switches with a corresponding plurality of contacts closable of the fourth circuit for the other of the first and second stepped switches, each of the sub-circuits of the first and second stepped switches being connected and aligned along one of an x and y axes, and third and fourth stepped switches for making and breaking closed circuits for any one of the sub-circuits of the first stepped switch and for any one of the sub-circuits for the second stepped switch as connected with the other of the x and y axes of the lattice of sub-circuits of the first stepped switch and of the second stepped switch, whereby at any one time a series of switches along a row of a plurality of rows along an x axis is completed in its circuit with one of the completed contacts of the second stepped switch for one series of the plurality of switches in one of a plurality of rows of switches along the y axis, thereby making it possible by selectively choosing the particular sub-circuit of each of the first and second stepped switches to select a specific sub-circuit, each sub-circuit including in series therewith at least one stepped switch ac-





3,719,829

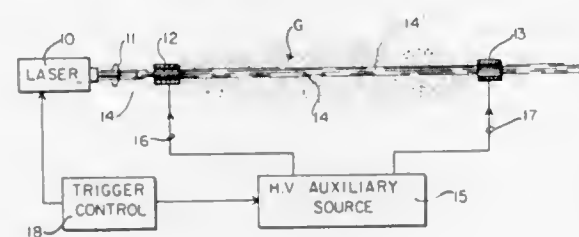
## LASER BEAM TECHNIQUES

Jack Roy Vaill, Alexandria, Va., assignor to Versar, Inc.  
Filed April 10, 1970, Ser. No. 27,369

Int. Cl. H02j 1/00

U.S. Cl. 307-149

12 Claims



Apparatus and methods in which a laser beam or other light source of comparable steradiancy is employed to establish a low-level ionization trail through a gas medium, and then auxiliary means external to the optical source is employed to increase the ionization within that initial trail to a high level, whereby to form a more highly conductive path over which useful amounts of electrical energy can be conducted for the transmission of intelligence or power.

3,719,830

## LOGIC CIRCUIT

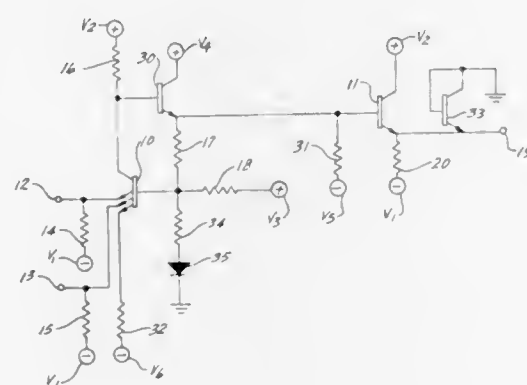
Constantine S. Ananiades, Pasadena, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed April 5, 1971, Ser. No. 131,070

Int. Cl. H03k 19/22

U.S. Cl. 307-218

24 Claims



A logic circuit comprising a signal amplifier, a negative feedback connection from the output to the input of the amplifier, a plurality of input terminals, and a plurality of unilateral conductors coupling the respective input terminals to the amplifier so the amplifier output signal is a logical function of binary signals applied to the input terminals. The amplifier is biased to remain unsaturated in response to the binary signal swing at the input terminals, and the negative feedback connection is designed to introduce negligible delay. In an AND gate, the amplifier is a multi-emitter transistor and the unilateral conductors are the emitter-to-base junctions of the transistor. In an OR gate, the amplifier is a transistor and the unilateral conductors are emitter-follower transistor stages coupling the respective input terminals to the emitter of the transistor amplifier.

3,719,831

## LOGARITHMIC IF AMPLIFIER

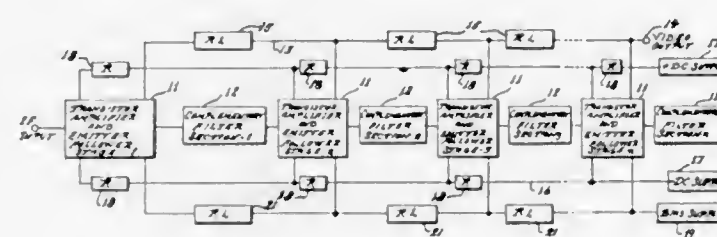
Douglas R. Hamburg, Birmingham, Mich., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 18, 1969, Ser. No. 800,838

Int. Cl. G06g 7/12

U.S. Cl. 307-230

4 Claims



The logarithmic IF amplifier disclosed herein is a synchronously tuned multi-stage cascaded transistor amplifier. Each amplifier stage includes an emitter follower and is loaded with modified complementary filter. This type of loading ensures a substantially purely resistive IF load driving point impedance and prevents change of the logarithmic characteristic at high input signal levels. The present invention also comprehends the use of series resistors in the base bias network to compensate for changes in gain resulting from decreased collector voltage during conditions of high signal level.

3,719,832

## TIME DIVISION MULTIPLEXER USING CHARGE STORAGE DIODE LINE CIRCUITS

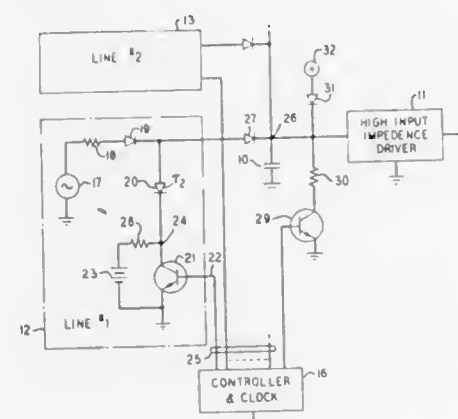
Sigurd Gunther Waaben, Princeton, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed June 16, 1971, Ser. No. 153,493

Int. Cl. H03k 17/56

U.S. Cl. 307-243

14 Claims



A charge storage diode in a line circuit is charged to different levels by a signal current driven therethrough in the forward direction so that diode charge tracks the instantaneous signal amplitude. A reverse drive is applied to the diode, at a time when it is desired to sample the line signal current amplitude, for transferring the diode charge to a precharged capacitor connected in series with the diode in a separate circuit from the signal current circuit. The reverse drive is maintained for a sufficient time to remove substantially all charge from the diode in the presence of a maximum anticipated precharge level on the capacitor. A plurality of such diode signal current circuits, each having individual ground return connection points to a common ground plane, are fanned into a single capacitor connected to a further connection point of the same plane; and the respective diode reverse drives are controlled so that the capacitor receives samples of line signal currents from the diode circuits in a predetermined sequence.

3,719,833

## TECHNIQUE FOR COMPENSATING FOR INPUT BIAS CURRENTS OF TRANSISTORS

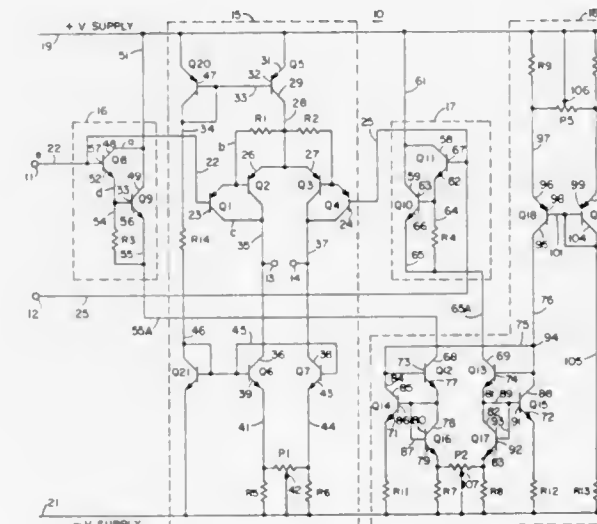
Maurice George Free, Tempe, Ariz., assignor to Motorola Inc., Franklin Park, Ill.

Filed Oct. 12, 1970, Ser. No. 79,853

Int. Cl. H03k 17/00

U.S. Cl. 307-296

10 Claims



Input bias currents, or base currents, of transistors of one conductivity type may be compensated for by connecting the base thereof to the base of a transistor of the opposite conductivity type. The betas of the two transistors should be equal and the other transistor characteristics of the transistors should be matched. The transistors should be placed close together so as to be subject to the same environmental conditions. The transistors may, conveniently, be on the same chip as in an integrated circuit, and the principal transistors, as well as compensating transistors may be connected as Darlington pairs.

3,719,834

## CLOCK PULSE JITTER CORRECTING CIRCUIT

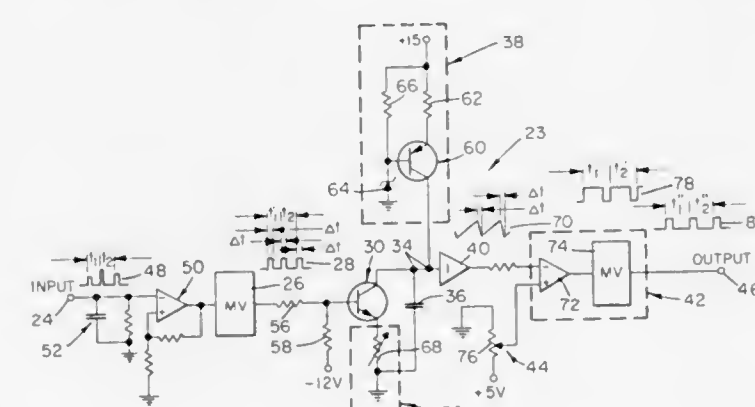
Tieh T. Dao, Cupertino, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed June 1, 1971, Ser. No. 148,350

Int. Cl. H03k 5/13

U.S. Cl. 307-269

6 Claims



A clock jitter corrector includes a timing capacitor charged by a constant current during two clock pulse intervals. The timing capacitor is discharged by the incoming pulse at high current and fixed duration, resulting in a constant voltage discharge decrement. The resulting sawtooth wave is compared to a DC threshold, whereby the crossover points provide an output clock pulse train with constant pulse intervals. The invention may be cascaded to generate regulated clock pulses of higher frequencies.

3,719,835

## VARIABLE DELAY, MOS, MONOSTABLE PULSE GENERATING CIRCUIT

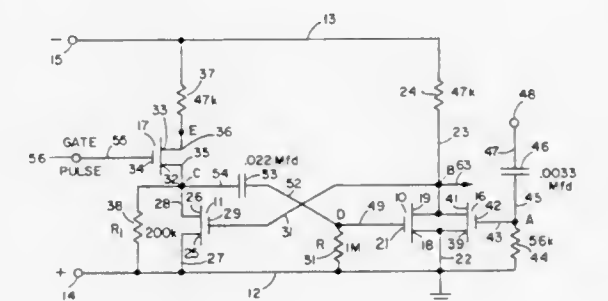
Everett Eberhard, Phoenix, Ariz., assignor to Motorola Inc., Franklin Park, Ill.

Filed Dec. 1, 1971, Ser. No. 203,810

Int. Cl. H03k 3/26

U.S. Cl. 307-273

13 Claims



There is disclosed a voltage controlled pulse width, MOS, monostable circuit which comprises first and second enhancement mode MOS transistors wherein the gate electrode of the second MOS transistor is connected to the drain electrode of the first MOS transistor and the gate electrode of the first MOS transistor is connected to an RC timing circuit of which the resistor is connected between the gate electrode and the source electrode and the capacitor is connected from the gate electrode to the drain electrode of the second MOS transistor. The MOS transistors are adapted to be connected across a source of power and a third enhancement mode MOS transistor is connected as a source follower between the drain of the second MOS transistor and the source of power. A fourth enhancement mode MOS transistor is connected across the first transistor and includes a differentiating circuit connected to its gate electrode for introducing a sharp pulse into the monostable circuit for initiating its operation. The terminal of the differentiating circuit and the gate electrode of the third transistor are adapted to be supplied with the gate pulse which initiates operation of the circuit to generate an output pulse and whose amplitude determines the width, or time duration, of the output pulse.

3,719,836

## PRESSURE SENSITIVE SENSOR AND CONTROL UNIT AND METHOD OF USING SAME

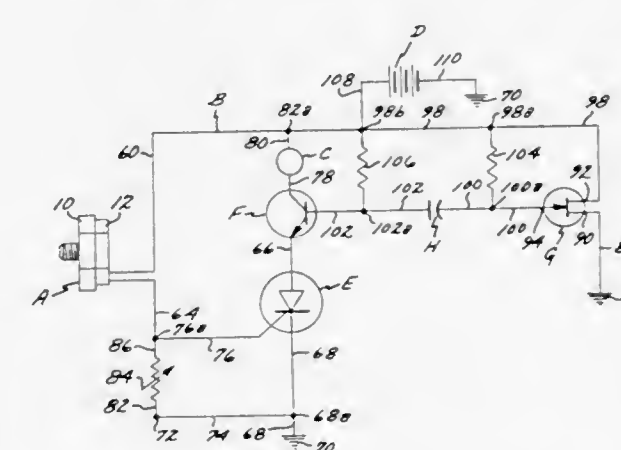
Clarence R. Possell, 4842 Viane Way, San Diego, Calif.

Filed June 23, 1971, Ser. No. 155,878

Int. Cl. H03k 3/335

U.S. Cl. 307-308

5 Claims



An electrical circuit for energizing a load and continuing to supply current to said load so long as a sensor forming a part of said circuit is subjected to a particular physical condition that permits said sensor to impress a voltage of a predeter-

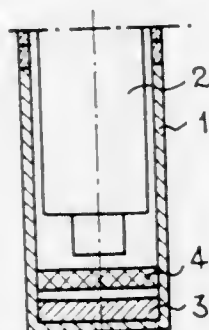


mined magnitude on the gate of a controlled rectifier. The flow of current from said rectifier to said load is further controlled by a transistor, the base of which is subjected to a pulsating current, with said transistor being conductive only during one of said pulses. The current flow to said load is terminated within the time interval between two of said pulses when said impressed voltage of said gate falls below said predetermined magnitude. The switching function of the circuit consequently has a small deadband.

3,719,837

### THERMOIONIC CONVERTER WITH PLURAL SOLID RESERVOIRS

Francis Imbert, and Arvind Shroff, both of Paris, France, assignors to Thomson-CSF, Paris, France  
Filed Feb. 18, 1971, Ser. No. 116,579  
Claims priority, application France, Feb. 24, 1970, 7006596  
Int. Cl. H01j 45/00  
U.S. Cl. 310-4 7 Claims

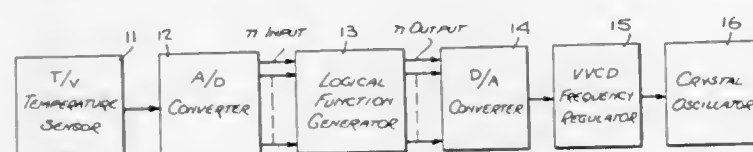


Self-regulating reservoir for ionizable material, incorporated in a thermionic converter, having a two-stage structure, one stage masking the other, in which the masked section, of large capacity but poor regulating ability, constantly feeds the masking section, of small capacity, but good regulating ability.

3,719,838

### TEMPERATURE COMPENSATING DIGITAL SYSTEM FOR ELECTROMECHANICAL RESONATORS

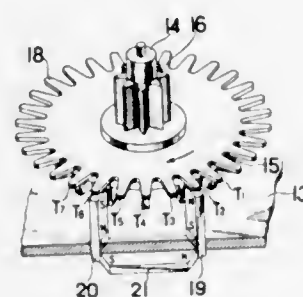
Ralph Peduto, Locust Valley, N.Y., and Jan Willem L. Prak, Hackensack, N.J., assignors to Bulova Watch Company, Inc., New York, N.Y.  
Filed Aug. 2, 1971, Ser. No. 168,136  
Int. Cl. H01v 7/00  
U.S. Cl. 310-8.1 14 Claims



A temperature-compensating system for piezoelectric crystal oscillators and other electromechanical resonators whose operating frequency varies as a function of ambient temperature. The system includes a temperature transducer for producing an analog measuring signal as a function of temperature within the temperature range of interest, which analog signal is converted into a corresponding binary number. The number is applied as an input to a logical function generator programmed to produce for each input number, an output binary number whose value depends on the generated function. The output number is converted to an analog control signal which is applied to a responsive element coupled to the resonator to vary the operating frequency thereof. The arrangement is such that the curve of the frequency shift due to the analog control signal, inversely matches the frequency-temperature curve of the resonator to effect exact frequency compensation therefor.

### 3,719,839 DEVICE FOR MAGNETICALLY REGULATING EACH STOP POSITION OF AN INTERMITTENTLY ROTATING OUTPUT MEMBER

Yukio Endo, 11-9, Yoshii-cho, Matsudo-shi, Chiba, Japan  
Filed March 23, 1971, Ser. No. 127,105  
Claims priority, application Japan, March 25, 1970, 45/27866  
Int. Cl. H02k 37/00  
U.S. Cl. 310-49 5 Claims

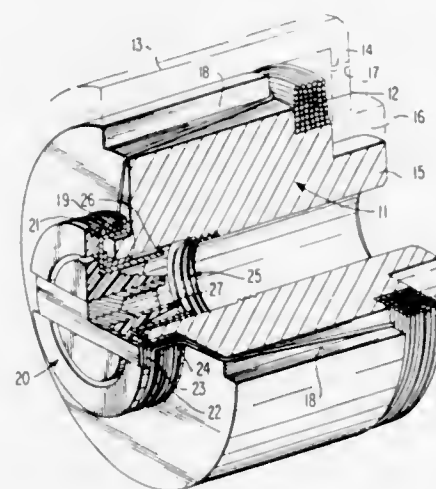


An intermittently rotating indexing wheel is provided with a stop-position regulating device for regulating each successive stop position of the indexing wheel. The stop-position regulating device comprises a toothed wheel composed of magnetic material attached to the indexing wheel and a pair of magnetic members positioned in opposed relationship to the toothed wheel and suitably spaced apart from each other a distance equal to a whole number multiple of the distance between two teeth on the toothed wheel. A permanent magnet is coupled to the pair of magnetic members and a magnetic circuit is established which includes the pair of magnetic members and the toothed wheel whereby each successive stop position of the toothed wheel and therefore that of the indexing wheel is precisely regulated.

3,719,840

### HIGH FREQUENCY TRANSMITTER, ESPECIALLY FOR BRAKE SLIPPAGE CONTROL INSTALLATION OF MOTOR VEHICLES

Manfred H. Burckhardt, Waiblingen; Walter Lutze, Esslingen, and Paul Schwerdt, Esslingen-Hegensberg, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Untertuerkheim, Germany  
Filed July 13, 1971, Ser. No. 162,152  
Claims priority, application Germany, July 14, 1970, P 20 34 811.2  
Int. Cl. H02k 11/00  
U.S. Cl. 310-71 20 Claims



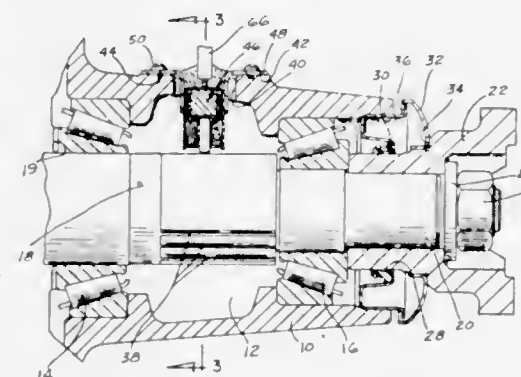
A frequency transmitter producing a large number of pulses for the determination of the rotary condition of wheels, especially for brake slippage control installations of motor vehicles.

cially for brake slippage control installations of motor vehicles, in which a coil for producing a magnetic field is arranged in a non-rotating part and the non-rotating part cooperates with a rotating part by a toothed arrangement; the two ends are lead out of the winding and, bridging a considerable intermediate space, are extended each to an auxiliary winding including only a few turns whereby the ends of the auxiliary windings are directly connected with the electrical connecting parts.

3,719,841

### WHEEL SPEED SENSORS FOR VEHICLE ADAPTIVE BRAKING SYSTEMS

Irving R. Ritsema, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.  
Filed July 2, 1971, Ser. No. 159,310  
Int. Cl. H02k 21/38  
U.S. Cl. 310-155 2 Claims

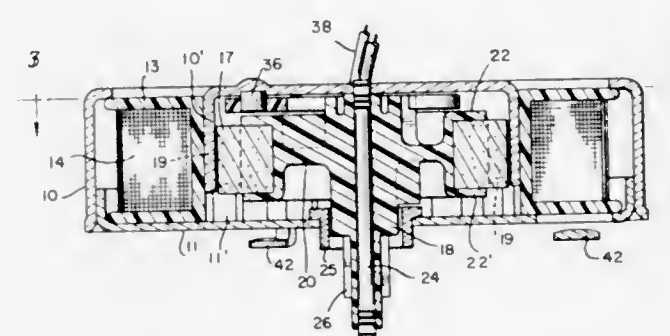


Wheel speed sensing means for adaptive braking systems on vehicles having rotating drive line elements supported by bearings in housings, comprising teeth on one of said rotating elements and mounting an electrical pickup device in an opening in the housing in proximity to said teeth.

3,719,842

### SYNCHRONOUS MOTOR

Kenneth C. Kuntz, Indianapolis, Ind., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.  
Filed May 28, 1971, Ser. No. 148,004  
Int. Cl. H02k 21/08  
U.S. Cl. 310-164 10 Claims

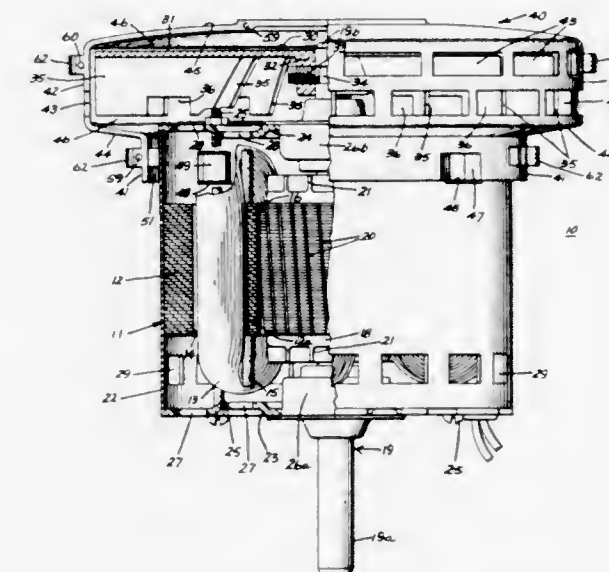


A self-starting synchronous motor includes cooperating shells each providing a plurality of stator poles projecting into an aperture of a field coil providing a stator pole assembly adjacent to poles of a rotor of a synchronous motor, the stator poles being intermeshed to define a circle. The intermeshed stator poles provide a stator arrangement which is asymmetrical for surer starting and alternate flux at individual poles for higher torque. The rotor includes a magnet of a relatively high energy product partial oriented ceramic with individual poles impressed on its periphery. The motor directional system stops the motor from a wrong way directional rotation at a point of high oscillation.

3,719,843

### DYNAMOELECTRIC MACHINE COOLING ARRANGEMENT

Richard W. Dochterman, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.  
Filed May 24, 1971, Ser. No. 146,134  
Int. Cl. H02k 5/00  
U.S. Cl. 310-89 10 Claims



A dynamoelectric machine includes a rotor, a stator and a housing supporting the rotor and stator. There are openings in the housing for flow of air through the housing toward one end. A cover, mounted to the housing, forms a chamber positioned axially beyond the one end of the rotor and stator and extending radially beyond the periphery of the housing. The cover has a plurality of exit openings positioned around the radial edge of the chamber. A centrifugal fan is mounted to the rotor shaft within the chamber and extends radially beyond the periphery of the housing. The fan draws air through the housing into the chamber and discharges it from the chamber in a generally radial direction through the exit openings.

3,719,844

### DYNAMO-ELECTRIC MACHINES

Vivian Easton, Newcastle-upon-Tyne, England, assignor to Reyrolle Parsons Limited, Durham, England  
Filed July 13, 1970, Ser. No. 54,133  
Claims priority, application Great Britain, July 16, 1969, 35881/69  
Int. Cl. H02k 3/12  
U.S. Cl. 310-184 2 Claims

A rotor winding for a cylindrical air-gap dynamo-electric machine which winding is of concentric coil form wound on a rotor core formed of magnetic material, each coil having slot embedded portions disposed in axially extending slots formed in the rotor core and end-connecting portions disposed beyond the ends of the slots, one or more conductors forming a coil being modified in shape where the extension from a slot embedded portion to an end-connecting portion occurs in such a way that the radial depth of at least part of the end-connecting portion is less than the radial depth of the slot embedded portion.

3,719,845

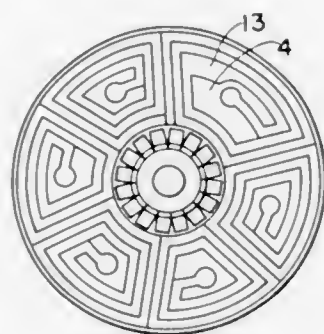
### DISC ROTOR

Naozi Takeda, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan  
Filed Jan. 26, 1972, Ser. No. 220,934  
Claims priority, application Japan, Jan. 27, 1971, 45/2698  
Int. Cl. H02k 1/22  
U.S. Cl. 310-268 2 Claims

A plurality of armature elements having the same coil pattern are stacked one upon another, mounted on a shaft with



each element angularly displaced from the adjacent one by an angle equal to that subtended by one segment of the commutator with respect to the center of the shaft and connected with one another to form a wave winding so that a disc rotor consisting of a plurality of similar armature elements may be provided, each of the armature elements comprising a disc-like thin insulator film and spiral conductor coils formed



through printed circuit technique on both sides of the insulator film disc, the number of the spiral coils on one side of the disc being the same as that on the other side of the disc, the number being also the same as that of magnetic poles of the stator, and the coil pitch of one of the spiral coils disposed on each side of the disc being different from those of the other coils on the side of the disc so as to provide a geometrically asymmetrical coil pattern.

### 3,719,846 X-RAY TUBE

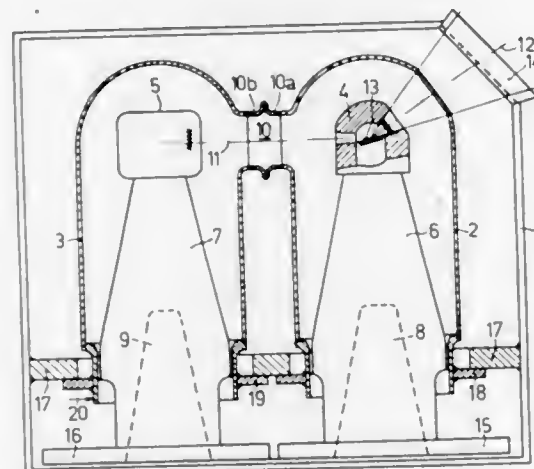
Werner Berends, Hamburg; Heinz-Jürgen Jacob, Hamburg-Glashütte, and Harry Eggelsmann, Hamburg, all of Germany, assignors to U.S. Philips Corporation, New York, N.Y.  
Filed Jan. 8, 1971, Ser. No. 104,968

Claims priority, application Germany, Feb. 25, 1970, P 20 08 782.5

Int. Cl. H01j 35/14

U.S. Cl. 313-57

1 Claim



The invention relates to an X-ray tube in which the anode and the cathode are accommodated in two parallel adjacent envelopes which are interconnected by a tubular member through which the electron beam passes. At high voltage (300 kV and higher) the direction of the electron beam and the direction of the maximum of the X-rays are inclined at an obtuse angle to one another. Thus the electrons impinge on the target nearly at grazing incidence. Even at slight deviation of the relative positions of the anode and cathode envelopes from the prescribed positions the focal spot is greatly shifted. According to the invention the two envelopes are relatively movable, causing substantially a deformation of the coupling-member only which is capable of deformation owing to the use of an appropriate construction and/or a suitable material.

### 3,719,847 LIQUID COOLED X-RAY TUBE ANODE

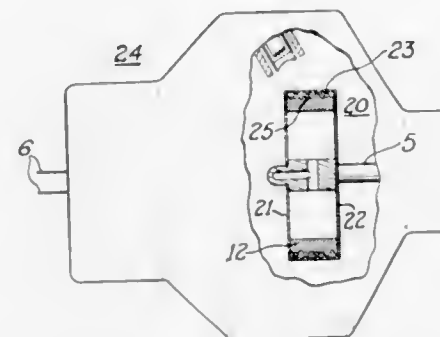
Harold F. Webster, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 3, 1970, Ser. No. 60,299

Int. Cl. H01j 35/04

U.S. Cl. 313-60

12 Claims



The rotating anode of an X-ray tube used for medical examination is formed as a hollow member having a portion of its outer surface formed by an X-ray emitting metal and filled with liquid metal which evaporates to provide rapid cooling of the anode and permits operation with larger electron beam powers. The liquid metal is returned to the hot spot by centrifugal force. In one form of the hollow member a metal mesh is attached to the inner surface of the hollow member to retain liquid metal next to the target metal while the tube is cooling below the melting point of the liquid metal.

### 3,719,848 IMPROVEMENT IN CATHODE RAY TUBES FOR COLOR TV RECEIVERS HAVING A POST-ACCELERATION GRID ELECTRODE

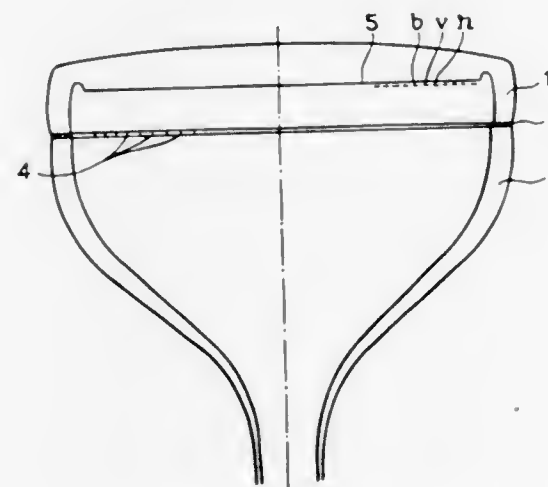
Georges M. Bradu, Nemours, France, assignor to Societe des Uerreries Industrielles Reunies du Loing, Paris, France  
Filed Nov. 12, 1968, Ser. No. 775,070

Claims priority, application France, Nov. 9, 1967, 67127494

Int. Cl. H01j 29/06, 31/20

U.S. Cl. 313-85 S

7 Claims



A two part hermetically sealed glass envelope or ampoule in the form of a cathode ray tube wherein the two portions comprise a vision screen member and a cone member which are sealed along a plane containing a sheet of parallel metal wires acting as a control grid electrode. A network of parallel and equidistance grooves are formed along oppositely disposed portions of the edge of at least one of the two members. The grid wires are placed in respective grooves so as to maintain the wires in parallel equidistance relation to one another. The edges into which the grooves are formed are disposed in a common plane between the cone and vision screen members. The grooves may be arranged in either a chamfered portion of

the edge, or the thicker portion of the edge of at least one of the members of the envelope.

### 3,719,849 SOLID STATE DISPLAYS

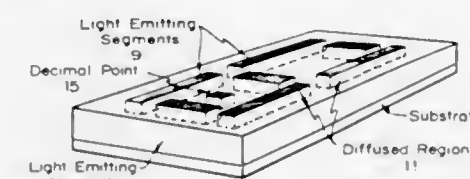
Robert L. Steward, San Jose, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sept. 24, 1971, Ser. No. 183,491

Int. Cl. H01j 7/42

U.S. Cl. 313-109.5

2 Claims



A decimal point element is located within the boundaries of the character element on a monolithic solid state character chip. When a character string is displayed, only the decimal point is energized on one character chip. This results in wide separation between the decimal point and its nearby characters. Hence readability of the decimal point is improved in long character strings.

### 3,719,850 SPARK PLUG ESPECIALLY FOR ROTARY PISTON INTERNAL COMBUSTION ENGINES

Manfred Schafer, Am Sonnenhang, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

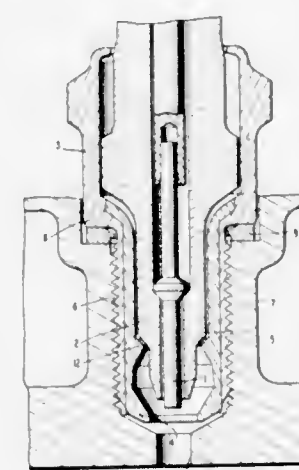
Filed March 17, 1971, Ser. No. 125,253

Claims priority, application Germany, March 17, 1970, P 20 12 516.0

Int. Cl. H01t 13/16

U.S. Cl. 313-118

11 Claims



Spark plug for rotary piston internal combustion engines having a two-part outer conductive housing including an outer threaded portion of high strength and an inner portion having a high heat conductivity so that heat is conducted longitudinally away from the discharge end of the plug to an area where it will be more efficiently conducted to the engine housing.

### 3,719,851 DUAL MODE SPARK PLUG

Harvey A. Burley, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 28, 1971, Ser. No. 157,474

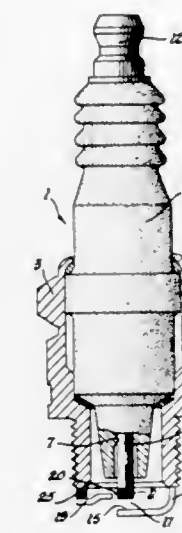
Int. Cl. H01t 13/46

U.S. Cl. 313-123

2 Claims

An improved spark plug comprising an insulator and shell assembly having a center electrode and a shell-connected

ground electrode forming a wide spark gap therebetween, a third electrode having electrical resistance characteristics secured to the shell and forming a narrow spark gap with the center electrode, the ground and third electrodes being so positioned relative to each other as to control the ionization of



gas in the wide gap, the operation being such that under heavy engine loads (low manifold vacuum) the narrow gap only sparks while under light engine loads (high manifold vacuum) the sparking in the narrow gap triggers wide gap sparking and is itself then extinguished.

### 3,719,852 COAXIAL ELECTRIC ARC DISCHARGE DEVICES

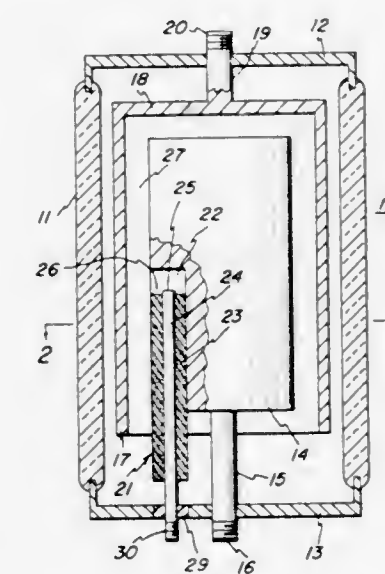
Charles P. Goody, Elnora, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 23, 1970, Ser. No. 91,977

Int. Cl. H01j 17/12

U.S. Cl. 313-178

9 Claims



Triggerable electric arc discharge device includes coaxial cathode and anode electrodes defining therebetween a hollow cylindrical primary arcing gap. A trigger assembly having an elongated longitudinal configuration is inserted into a longitudinal bore formed in and adjacent to the surface of the cathode electrode so as to be partially exposed into the inter-electrode gap. Trigger assembly includes a ceramic hollow cylinder surrounding a metallic trigger electrode. Trigger gap is defined by extension of the trigger electrode past the inboard end of the trigger ceramic insulator and a trigger gap exists between the extended portion of the trigger electrode over the inboard end of the ceramic insulator and to the body of the cathode electrode. A voltage is connected between anode and cathode electrodes and a relatively low voltage pulse is supplied to the trigger electrode, causing breakdown of the



trigger gap. Trigger arc formed thereby causes propulsion of ionized specie into the main gap and breakdown thereof.

3,719,853

# HALOGEN LAMPS CONTAINING METHYL BROMIDE OR METHYLENE CHLORIDE

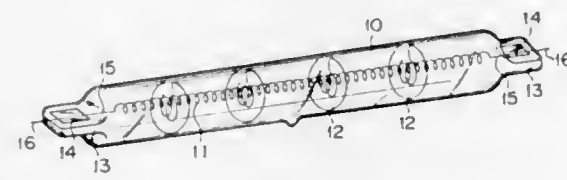
Keiichi Sugano, and Yooji Yuge, both of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Continuation-in-part of Ser. No. 868,881, Oct. 23, 1969, abandoned. This application Aug. 4, 1971, Ser. No. 168,872

Int. Cl. H01k 1/50

U.S. Cl. 313-222

2 Claims



A lamp exhibiting a long life characteristic includes in a bulb a mixture of methyl bromide and methylene chloride, the amount of methyl bromide and methylene chloride being respectively within the range of 0.03 to 0.55  $\mu\text{mol}$  and 0.02 to 0.25  $\mu\text{mol}$  per cc of the volume of the bulb.

3,719,854

# TUNGSTEN ALLOY X-RAY TARGET

Karl Sedlatschek; Rudolf A. Machenschalk, and Bernd Natter, all of Reutte/Tirol, Austria, assignors to Schwarzkopf Development Corporation, New York, N.Y.

Filed July 8, 1970, Ser. No. 53,334

Claims priority, application Austria, July 24, 1969, A/7169/69

Int. Cl. H01j 35/08

U.S. Cl. 313-330

16 Claims

This invention relates to alloys useful in X-ray targets comprising tungsten and one or more of technetium, rhodium, ruthenium and palladium.

3,719,855

# MULTIPLE CATHODE

Alois Staffa, and Erwin Huebner, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

Filed Jan. 27, 1972, Ser. No. 221,163

Claims priority, application Germany, Feb. 12, 1971, P 21 06 745.8

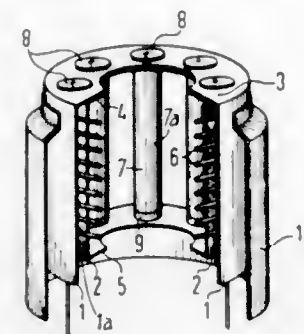
Int. Cl. H01j 1/20, 1/92, 1/14

U.S. Cl. 313-338

6 Claims

A cathode which allows simple and easy variance in the amount of emission and is constructed of a minimum number of different parts comprises first and second generally concentric cylinders of different diameters such that the cylinders have a space therebetween, which space may receive a heating unit therein. Each of the first and second cylinders have radially extending overlapping flanges joined to each other and one of the cylinders has a lower flange generally below and generally parallel to the upper flanges. At least three hollow tubular emission carriers are positioned between the upper and lower flanges and evenly distributed around the cylinders. The method of making the cathode and particularly the emission carriers comprises the steps of applying a thick layer of tungsten suspended in a liquid coating to the outer surface of a form, pre-sintering the coating to rigidify it, removing the rigidified coating from the form and finally sintering the coating to form a shell for the tubular emission carrier. Upper and lower plugs close opposite ends of the shell whereby it serves as a container or carrier for the cathode emission material. Three or more of the emission material carriers are inserted

into aligned holes in flanges of a cylindrically shaped support unit. A cylindrically shaped member of a thin or foil material



is connected to the support unit to the dispenser cathode to the tube envelope.

3,719,856

# IMPREGNANTS FOR DISPENSER CATHODES

Otto G. Koppius, P.O. Box 187, Highways 27 & 50, Clermont, Fla.

Filed May 19, 1971, Ser. No. 144,916

Int. Cl. H01j 1/14, 19/06

U.S. Cl. 313-346 DC

4 Claims

A dispenser cathode suitable for use as an electron emitter for microwave tubes and the like. The dispenser cathode is constituted by a porous body of refractory material such as tungsten, impregnated with a fused mixture of barium oxide, and at least one oxide of a rare earth metal, such as holmium oxide, terbium oxide, thulium oxide or yttrium oxide.

3,719,857

# AUDIO RESPONSIVE INTENSITY MODULATOR FOR FLUORESCENT AND LIKE LAMPS

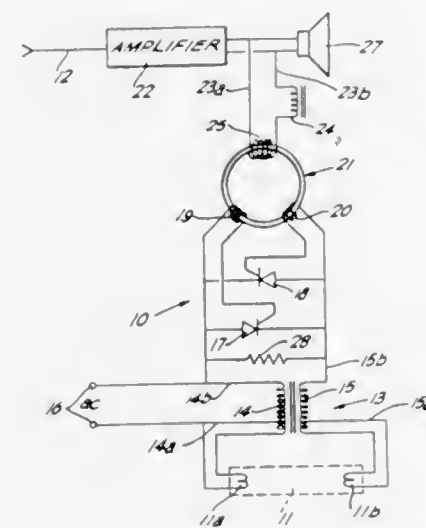
Paul H. Sharp, Sierra Madre, Calif., assignor to Columbia Broadcasting Systems, Inc., New York, N.Y.

Filed June 21, 1971, Ser. No. 154,822

Int. Cl. H05b 41/392, 41/44

U.S. Cl. 315-156

15 Claims



The intensity of a fluorescent, ultraviolet or other gas discharge lamp is modulated in response to the amplitude of an audio signal. A dimmer or blinking ballast transformer is connected to the lamp. Power from an ac source is conducted to the ballast transformer via a controlled rectifier for a portion of each ac half cycle. The phase angle at which the controlled rectifier is fired is established by trigger means responsive to the instantaneous amplitude of the audio signal, thereby producing interesting optical effects directly correlated to that audio signal.

3,719,858

# OVERLOAD PROTECTION SYSTEM FOR A LIGHT DIMMER UNIT

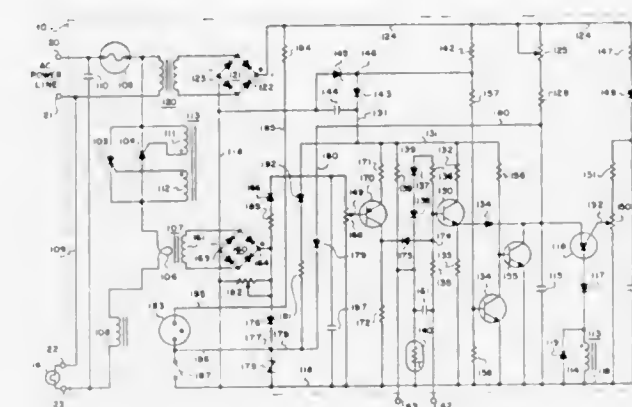
Benjamin F. Gilbreath, Richardson, Tex., assignor to Hunt Electronics Company, Dallas, Tex.

Filed Aug. 2, 1971, Ser. No. 168,005

Int. Cl. H02h 3/08

U.S. Cl. 317-16

8 Claims



In a light dimmer unit having a switching mechanism for controlling the alternating current flow to a lamp load and a controllable timing mechanism for controlling the fraction of each half cycle during which the switching mechanism is conductive, there is provided a current sensing mechanism for sensing the alternating current supplied to the lamp load. An average overload circuit is coupled to the output of the current sensing mechanism for clamping the timing of the dimmer timing mechanism at a predetermined value when the average value of the lamp load current exceeds a desired maximum value. A peak overload circuit is also coupled to the output of the current sensing mechanism for disabling the dimmer timing mechanism for discontinuing the flow of current to the lamp load when the peak value of the lamp load current exceeds a desired maximum.

3,719,859

# VOLTAGE SENSING AND SWITCHING CIRCUIT

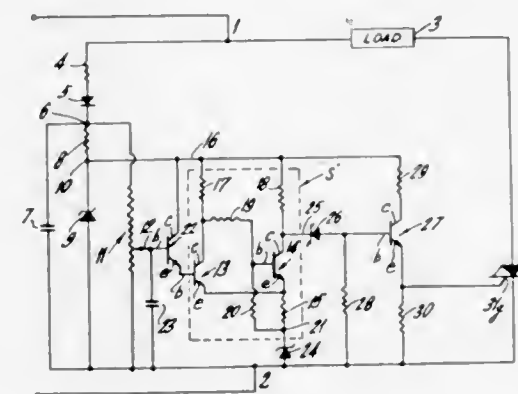
Richard J. Frantz, Cheshire, and Alton R. Morris, Rocky Hill, both of Conn., assignors to Arrow-Hart, Inc., Hartford, Conn.

Filed Aug. 31, 1971, Ser. No. 176,587

Int. Cl. H03k 3/295; H02h 3/08

U.S. Cl. 317-31

7 Claims



A circuit to sense variations in alternating voltage applied to a load and to interrupt power flow to the load on reduction of the applied voltage, including a rectifier to rectify the alternating voltage, a voltage regulator to apply a constant level part of the rectified voltage as the power supply to a Schmitt trigger, part of the rectified voltage controlling conductivity of a transistor that provides the input signal to the Schmitt trigger according to variations in the rectified alternating applied voltage, a Zener diode to reference the Schmitt trigger at a voltage slightly below the voltage applied to the transistor con-

trolling the trigger, a Zener diode at the output of the trigger to control the presence or absence of signals from the Schmitt trigger to a further transistor that controls the gate of a triac connected in the power line to the load, and the triac being gated to a non-conductive state to block power flow to the load upon reduced alternating applied power. Said circuit also can be used to sense variations in direct current voltage applied to a load and to interrupt power flow to the load on reduction of the applied voltage, in which circumstance no rectifier is used and the direct current applied voltage is utilized in the same manner as the rectified voltage when alternating voltage variations are being sensed.

3,719,860

# CIRCUIT COMPONENT MOUNTING WITH COOLING PLATE

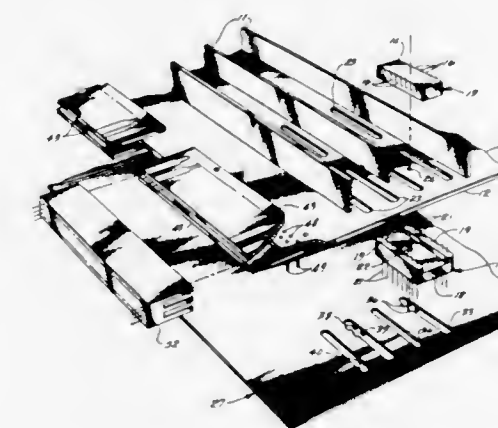
Robert Lawrence, Encino, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sept. 30, 1971, Ser. No. 185,147

Int. Cl. H05k 7/20

U.S. Cl. 317-100

17 Claims



An apparatus is disclosed for controlling the thermal environment of a circuit component mounted to a circuit board. A thermally conductive plate such as an aluminum extrusion serves to mount a plurality of components such as dual-in-line packages (DIPs). Each component has a plurality of leads extending in the same direction therefrom and is mounted to one surface of the plate with the leads extending away from, and aligned with, an elongated opening through the plate. One side of a circuit board is mounted adjacent the other surface of the plate by mounting means coupled between the board and the plate. The mounting means includes a plurality of pins each having one end extending through and insulated from the elongated opening in the plate, into contact with an associated lead on the component, and the other end extending through a hole in the circuit board. A desired circuit may be formed by electrically interconnecting selected pins on the opposite side of the circuit board.

3,719,861

# P-N JUNCTION DEVICE AND A METHOD OF MAKING THE SAME

Tadashi Shiraishi, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Continuation of Ser. No. 832,980, June 13, 1969, abandoned.

This application April 30, 1971, Ser. No. 139,149

Int. Cl. H01l 9/00

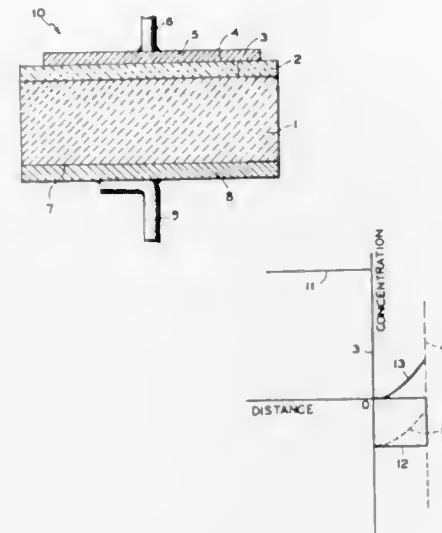
U.S. Cl. 317-234 R

4 Claims

A P-N junction device has a base of one type of semiconductor material and a thin layer of another type of semiconductor material thereon. Each semiconductor material has a semiconductor type determining impurity therein, the semiconductor type determining impurity in said thin layer



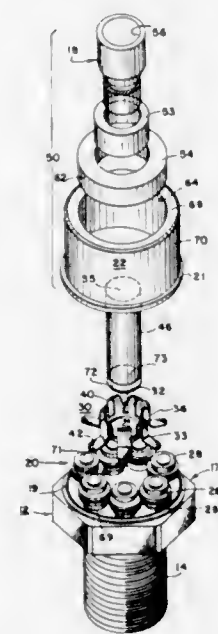
being present in a concentration lower than the concentration of the semiconductor type determining impurity in said base and said thin layer having opposite type impurity material



therein partially compensating the semiconductor type determining impurity and being present in a concentration decreasing from the surface of said thin layer.

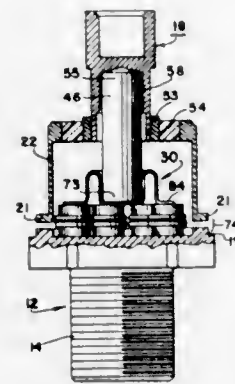
**3,719,862**  
**FLEXIBLE CONTACT MEMBERS FOR USE IN HIGH POWER ELECTRICAL DEVICES INCLUDING A PLURALITY OF SEMICONDUCTOR UNITS**  
Stanley Gaicki, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.  
Filed March 15, 1972, Ser. No. 234,765  
Int. Cl. H0113/00, 5/00  
U.S. Cl. 317-234 R

11 Claims



The invention is embodied in a one-piece connecting and assembly member wherein electrical contact is made by flexible contact portions on the member between one end of each of a plurality of fragile semiconductor units and a separate rigid contact member in a high power rectifier or the like. This contact is accomplished while protecting the semiconductor units from physical stresses which could otherwise be applied to them during manufacture and during thermal expansion and contraction of a high power device employing the

semiconductor units. The flexible connecting and assembly member includes a cup-shaped portion having an opening for mating with one end of a rigid connecting stud in the high power device and a plurality of contacting fingers extending between the cup-shaped portion and each of the semiconductor units. Each of the fingers is comprised of a U-shaped portion, having first and second integral legs which extend generally in opposite directions along the axis of the cup-



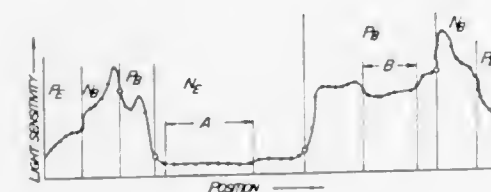
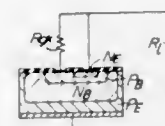
shaped portion and a shaped contacting portion. Furthermore, an additional contacting finger may be formed from the bottom of the cup-shaped portion for making electrical contact to an additional semiconductor unit. The use of the connecting and assembly member facilitates the manufacture of high power heat generating semiconductor devices, and in the ultimate use of such devices accommodates changes in temperature and the expansion and contraction of the devices utilizing such member.

**3,719,863**  
**LIGHT SENSITIVE THYRISTOR**  
Takuzo Ogawa, and Masao Iimura, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan  
Continuation-in-part of Ser. No. 816,527, April 16, 1969, abandoned. This application Nov. 8, 1971, Ser. No. 196,292  
Claims priority, application Japan, April 17, 1968, 43/25207

Int. Cl. H0115/00

U.S. Cl. 317-235 R

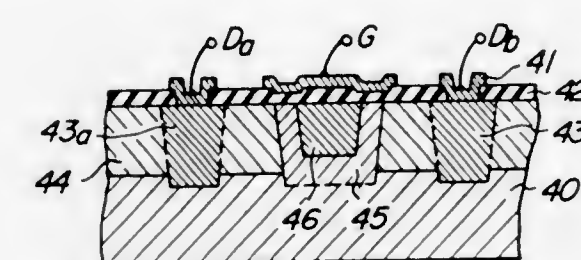
10 Claims



A high light-sensitive thyristor, wherein two external regions and two internal regions have opposite conductivity types and lie adjacently to each other, the edges of the three PN junctions being formed thereby extend to one plane surface, the area of the external emitter region at the plane surface to be illuminated being, 10-25 percent of the total of the areas of the first base region outside said external region and of the second base region outside said first region.

**3,719,864**  
**SEMICONDUCTOR DEVICE WITH TWO MOS TRANSISTORS OF NON-SYMMETRICAL TYPE**  
Kenji Taniguchi, Kodaira, and Ichiro Imaizumi, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan  
Filed June 8, 1971, Ser. No. 151,054  
Claims priority, application Japan, June 10, 1970, 45/49444  
Int. Cl. H0111/14, 19/00  
U.S. Cl. 317-235 R

1 Claim



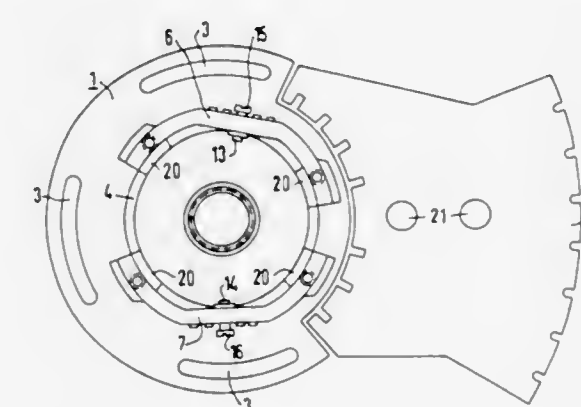
A semiconductor device constituted by two MOS transistors of diffusion-self-alignment type, the source electrode and the gate electrode of one transistor being connected with the source electrode and the gate electrode of the other transistor, respectively. In the device, the mutually connected gate electrodes serve as a new gate electrode, while the drain electrode of said one transistor serves as a new drain electrode and the drain electrode of said other transistor serves as a new source electrode.

**3,719,865**  
**BRUSHLESS DIRECT-CURRENT MOTOR INCLUDING MECHANICALLY ADJUSTABLE GALVANOMAGNETIC MEMBERS**  
Hanns Ott; Jurgen Wenk, both of Nurnberg, and Hans-Peter Latussek, Feucht, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany  
Filed Feb. 18, 1971, Ser. No. 116,571  
Claims priority, application Germany, Feb. 18, 1970, P 20 07 254.2

Int. Cl. H02k 29/00

U.S. Cl. 318-254

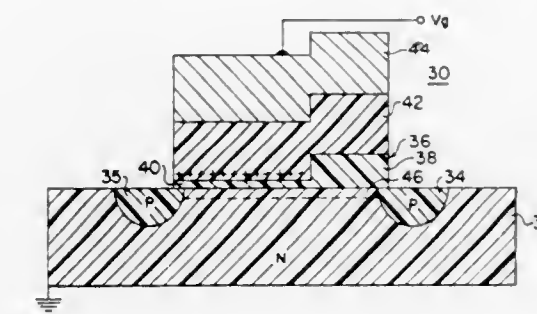
8 Claims



A brushless direct-current motor has a stator having a stator winding, a rotor, a control magnet rotatable in synchronism with the rotor and a plurality of galvanomagnetic members mounted in proximity with the control magnet. Also provided is an adjustment device for displacing the galvanomagnetic members in coaxial relation to the control magnet through an angle corresponding to at least twice the pole pitch of the rotor.

**3,719,866**  
**SEMICONDUCTOR MEMORY DEVICE**  
Charles T. Naber, Centerville, and George C. Lockwood, Kettering, both of Ohio, assignors to The National Cash Register Company, Dayton, Ohio  
Filed Dec. 3, 1970, Ser. No. 94,861  
Int. Cl. H0111/14  
U.S. Cl. 317-235 R

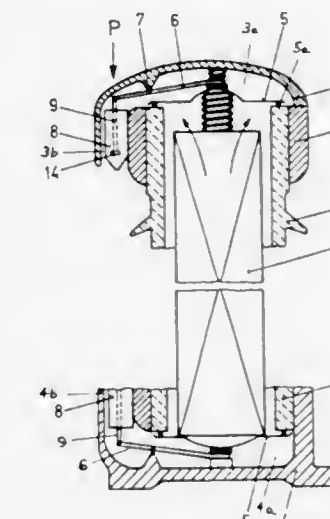
17 Claims



An improved metal-nitride-oxide-semiconductor device is described which has a dual thickness oxide layer. The oxide layer has a thick portion in the vicinity of the drain region and a thin portion elsewhere. The improved device solves the problem of low voltage breakdown of the drain-substrate diode and limits the threshold voltage variations within the same polarity range.

**3,719,867**  
**EXPLOSION-PROOF LIGHTNING ARRESTER INCLUDING CONDUCTIVE LIQUID TO EXPEDITE FORMATION OF EXTERNAL SHUNT PATH**  
Eugen Meier, Wetztingen, Switzerland, assignor to Aktiengesellschaft, Brown, Boveri & Cie, Baden, Switzerland  
Filed May 19, 1972, Ser. No. 254,915  
Int. Cl. H02h 1/04  
U.S. Cl. 317-63

6 Claims



An explosion-proof lightning arrester structure includes active elements contained within an insulating housing which is provided at each end with an electrical fitting including a pressure-relief device and an associated gas-deflection outlet by means of which the discharged gas forms a temporary electrical bridge outside of the housing between the end fittings in shunt with the electrical circuit internally of the housing between these fittings. To expedite formation of the external shunt path, a spray cylinder is located at each gas-deflection outlet from which a jet of a conductive liquid is automatically released when the pressure-relief device responds and gas is discharged from the outlet.



## ERRATUM

For Class 318—254 see:  
Patent No. 3,719,865

3,719,868

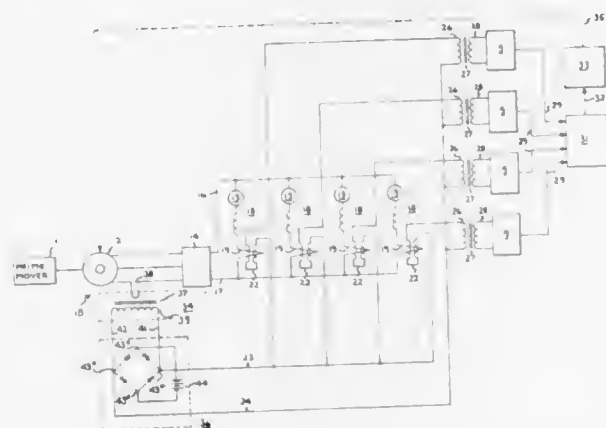
ALTERNATING CURRENT POWER SOURCE OF A  
WHEEL SLIP CONTROL SYSTEM

Lloyd W. McSparran, Erie, Pa., assignor to General Electric  
Company, Erie, Pa.

Filed July 12, 1971, Ser. No. 161,762  
Int. Cl. H02p 5/50; B61c 15/08

U.S. Cl. 318—52

6 Claims



A wheel slip control system for a traction vehicle driven by motors receiving power from a traction alternator through rectifiers, the system having a plurality of current measuring devices each connected to the armature of one of the motors and adapted to provide a signal responsive to the armature current, wherein the signals are employed to control the output of the traction alternator through its excitation system. The current measuring device requires a-c power of a magnitude proportional to armature current which is provided by a current transformer having its primary connected to the traction alternator output and its secondary connected to the current measuring device.

3,719,869

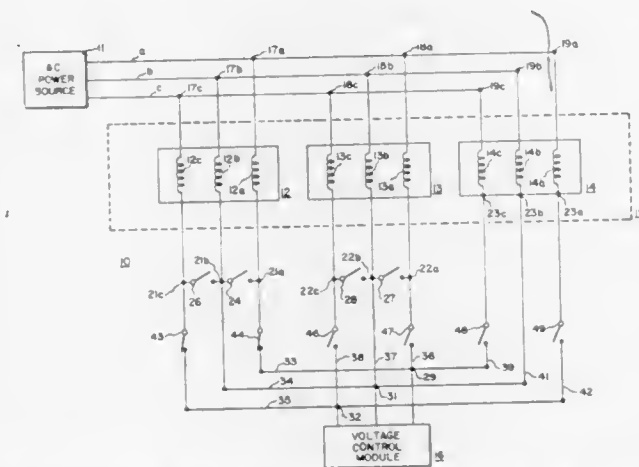
## THRUST CONTROL FOR LINEAR MOTORS

Owen C. Coho, Erie, Pa., assignor to General Electric Company, Erie, Pa.

Filed Jan. 3, 1972, Ser. No. 215,066  
Int. Cl. H02k 41/02

U.S. Cl. 318—135

6 Claims



An apparatus and process for controlling the thrust of a linear induction motor as its speed is increased by sequentially energizing electrically decoupled stator sections and increasing the voltage applied to each by successively modulating each section with a single relatively small phase-controlled rectifier system.

3,719,870

## D.C. MOTOR WITH SERIES CONNECTED WINDINGS

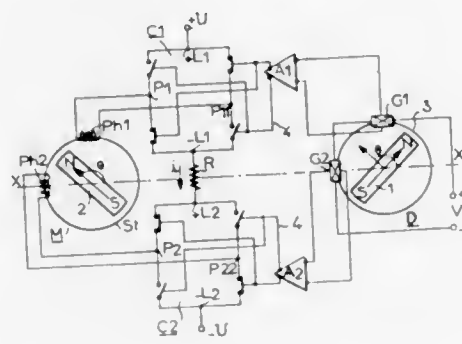
Marc Bregeault, Paris, France, assignor to Thomson-CSF,  
Paris, France

Filed Nov. 23, 1970, Ser. No. 92,048

Claims priority, application France, Nov. 28, 1969, 6941140  
Int. Cl. H02k 29/00

U.S. Cl. 318—138

5 Claims



A d.c. motor, the armature of which comprises at least two windings in two-phase arrangement, and supplied with a direct current whose direction reverses periodically. The armature windings are series-connected through inverter circuits. This arrangement improves the efficiency of the motor and the smoothness of the torque. The motor finds a wide field of applications, in particular in space engineering field.

3,719,871

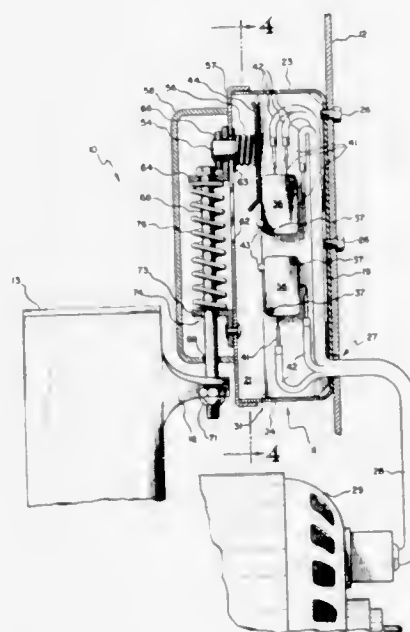
## CAM ACTUATED SWITCHING ASSEMBLY

Douglas R. Houst, Pattersonville, and Kamal Iskandar, Scotia,  
both of N.Y., assignors to General Electric Company, Erie,  
Pa.

Filed Dec. 22, 1971, Ser. No. 211,011  
Int. Cl. B60 13/00

U.S. Cl. 318—139

27 Claims



A throttle switch assembly for electric traction vehicles wherein the pivoting of a foot pedal causes linear movement of a spring biased rod and attached cam having a contact surface canted with respect to plural rows of switches so as to sequentially engage and actuate the switches in one row and subsequently sequentially actuate the switches in successive rows to change the power output from the vehicle motor.

3,719,872

ACCELERATION CONTROLLER FOR A DUAL STATOR  
INDUCTION MOTOR

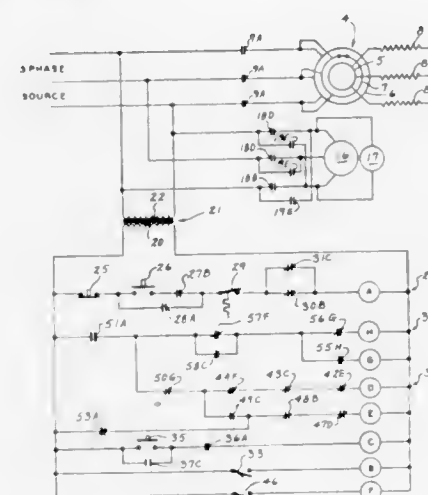
Donald M. Mains, Greendale, Wis., assignor to Bucyrus-Erie  
Company, South Milwaukee, Wis.

Filed Oct. 1, 1971, Ser. No. 185,501

Int. Cl. H02p 1/26

U.S. Cl. 318—214

7 Claims



The rotatable stator segment of a dual stator motor is revolved by an actuator motor in steps between a zero torque orientation and a maximum torque orientation. During start-up the actuator motor is controlled by an acceleration relay to increase the induction motor output torque each time it is activated by a pair of timing relays. During shut-down the actuator motor is controlled by a deceleration relay to decrease the induction motor output torque each time it is actuated by the timing relays. The minimum and maximum torque limits are sensed by switches which are connected to stop rotation of the rotatable stator segment when closed.

3,719,873

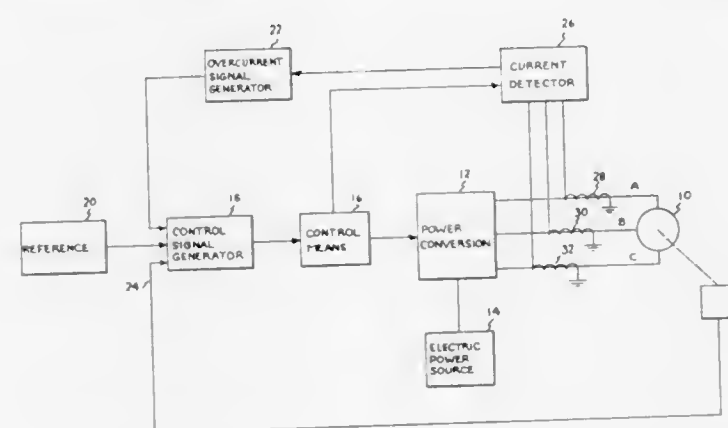
CURRENT LIMITING CONTROL FOR AN ELECTRIC  
POWER SYSTEM

Carlton Eugene Graf, Erie, Pa., assignor to General Electric  
Company, Erie, Pa.

Filed June 15, 1971, Ser. No. 153,246  
Int. Cl. H02p ; H02m

U.S. Cl. 318—227

6 Claims



A power system includes power conversion apparatus for supplying electric power to a load and control apparatus for varying the power output of the power conversion apparatus. A signal representative of an operating parameter such as output current is sensed and utilized to produce a signal only when the operating parameter exceeds a predetermined level, and the signal is utilized in turn by the control apparatus to reduce the level of operating parameter irrespective of independent changes in magnitude and polarity of any and all other input signals to the control apparatus.

3,719,874

## A.C. POWER SUPPLY FOR RATE GYRO

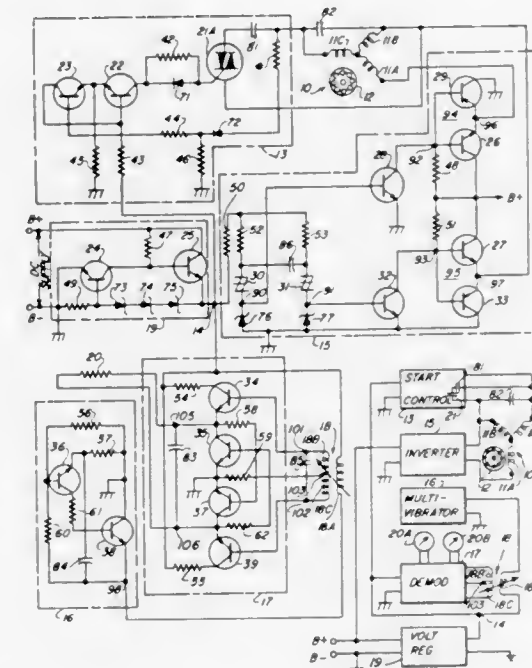
John Van Dyke, Byron Center, and Bernard Lamfers, Jenison,  
both of Mich., assignors to R. C. Inc., Grand Rapids, Mich.

Division of Ser. No. 794,018, Jan. 27, 1969. This application  
Oct. 16, 1970, Ser. No. 81,417

Int. Cl. H02p 5/40

U.S. Cl. 318—227

4 Claims



A full wave transformerless A.C. power supply for the spin motor of a rate gyro, comprising driver amplifiers and bridge switching circuits controlled by a frequency-determining oscillator, inverting a D.C. power signal to generate an A.C. drive signal for the rate gyro spin motor without appreciable loading of the power supply.

3,719,875

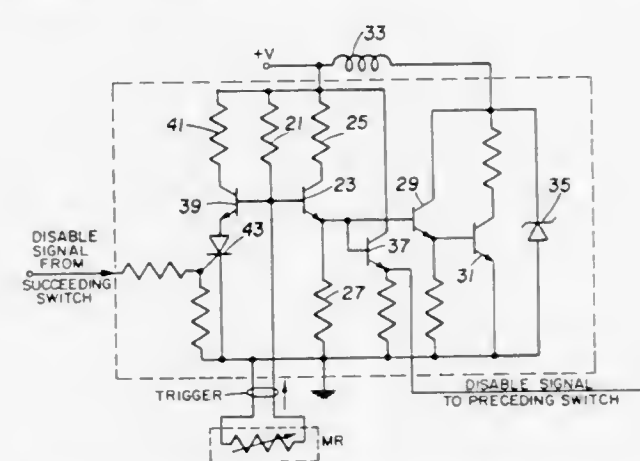
BRUSHLESS D.C. MOTOR USING MAGNETO RESISTOR  
SENSING MEANS

Eugene E. Holland, Charlottesville, and Rex O. Jones, III, Bur-  
gess, both of Va., assignors to Sperry Rand Corporation,  
New York, N.Y.

Filed Jan. 26, 1972, Ser. No. 220,932  
Int. Cl. H02k 29/00

U.S. Cl. 318—254

8 Claims



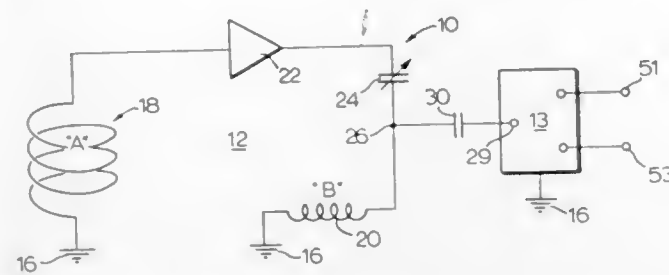
A brushless d.c. motor having a diametrically magnetized permanent magnet rotor and a plurality of stator windings disposed around the inner periphery of the motor frame, employs magneto resistors placed intermediate adjacent windings to trigger commutating switches that control energization of the individual stator windings. All stator windings are wound to attract the same selected magnetic pole of the rotor. The rise in resistance of a magneto resistor when subjected to flux from the selected magnetic pole is used to close the switch







of the coils is self resonant with a natural resonant frequency in the audio range. The circuit is tuned to the natural resonant frequency by the tuning capacitor and inductive coupling



between the coils improves when the circuit is near an electromagnetic conductive body. A capacitor circuit is employed to detect and measure shift in one or more of the tank circuit parameters including output signal level, frequency and phase.

3,719,883

### MAGNETIC CORE CIRCUIT FOR TESTING ELECTRICAL SHORT CIRCUITS BETWEEN LEADS OF A MULTI-LEAD CIRCUIT PACKAGE

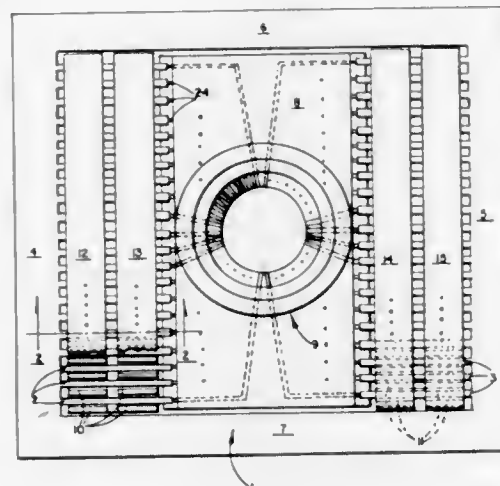
Eugene E. Pentecost, Anaheim, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed Sept. 28, 1970, Ser. No. 76,079

Int. Cl. G01r 31/02

U.S. Cl. 324—51

3 Claims



A voltage is induced in at least one lead of a multi-lead package for an electronic circuit by one or more excitation cores disposed around one or more leads of the package. The leads are connected together at one end by the lead frame. The opposite ends of the leads are secured to a housing for the electronic circuit. One or more detection cores, disposed around one or more leads of the package and suitably spaced from the excitation cores, detect current in the lead circuit encompassed by the excitation and detection cores. A relatively high voltage is induced in the detection cores if a short circuit exists in the encompassed lead circuit while a relatively low voltage is induced in the detection cores if an open circuit is detected.

3,719,884

### PROCESS AND APPARATUS FOR DETERMINING THE POROSITY OF A DIELECTRIC LAYER COATING A METALLIC SURFACE

Rene Laroche, Fribourg, Switzerland, assignor to Aluminum Suisse S.A., Chippis, Switzerland

Filed Feb. 16, 1971, Ser. No. 115,429

Claims priority, application Switzerland, Feb. 17, 1970, 2220/70

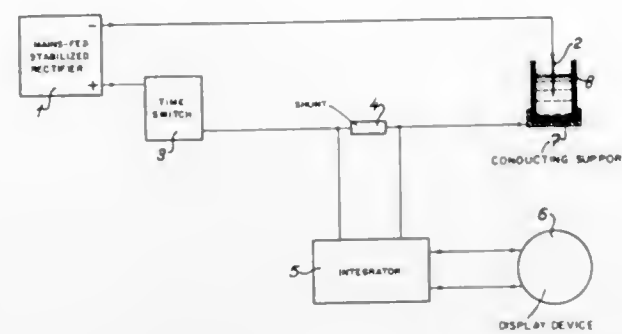
Int. Cl. G01r 31/12

U.S. Cl. 324—54

4 Claims

A process for determining the porosity of a layer of dielectric material coating a metallic surface comprises elec-

trophoretically depositing an insulating component of an electrophoretic varnish on parts of the metallic surface in the to



pores. The quantity of the current consumed is measured and displayed in units of surface area.

3,719,885

### STATISTICAL LOGIC TEST SYSTEM HAVING A WEIGHTED RANDOM TEST PATTERN GENERATOR

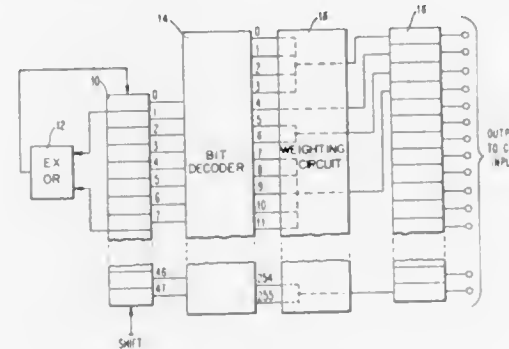
Robert Gordon Carpenter; Eric Lindbloom, both of Poughkeepsie, and Maurice Thomas McMahon, Jr., Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 13, 1971, Ser. No. 207,460

Int. Cl. G01r 15/12

U.S. Cl. 324—73 R

9 Claims



A system for testing complex circuitry primarily in large scale integration where a great number of inputs and outputs must be tested and the internal circuitry is inaccessible. The test system has a weighted random number generator which applies a test signal to some input terminals of the logic under test more frequently than others. A particular input terminal to the logic under test can be accessed in proportion to the circuit switching activity associated with accessing that particular terminal.

3,719,886

### SPEED INDICATING SYSTEM FOR AN AUTOMOTIVE VEHICLE

Lawrence J. Vanderberg, Ann Arbor, and John L. Wenzel, Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 31, 1970, Ser. No. 103,214

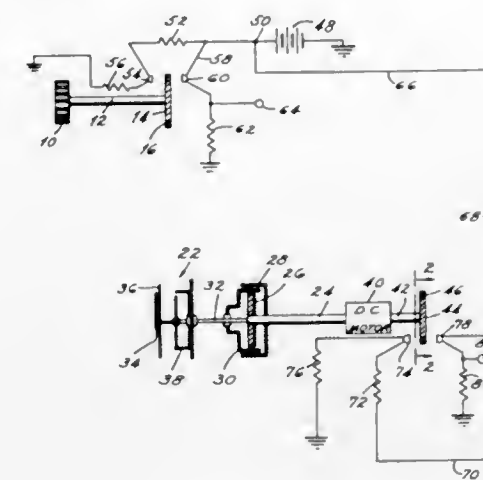
Int. Cl. G01p 3/36, 3/56; G01r 23/02

U.S. Cl. 324—167

3 Claims

A speed indicating system for an automotive vehicle, including a display means for displaying the speed of the vehicle, which is driven by an electrical motor. Means are coupled to a rotatable part of the vehicle and to the electric motor for driving the electric motor at a speed which has a fixed ratio with respect to the speed of the rotatable part of the automotive

vehicle. This last mentioned means includes speed sensing means for sensing the speed of the electric motor and locking



the speed of the electric motor to the fixed ratio with respect to the speed of the rotatable part of the automotive vehicle.

3,719,887

### DEVICE FOR DETECTING THE ROTATION OF WHEELS

Tetsuji Shimizu; Sohei Hibino, both of Nagoya; Haruo Miwa, Minokamo, and Nobukatsu Inagaki, Nagoya, all of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishi, Kasugai-gun, Aichi Pre., Japan

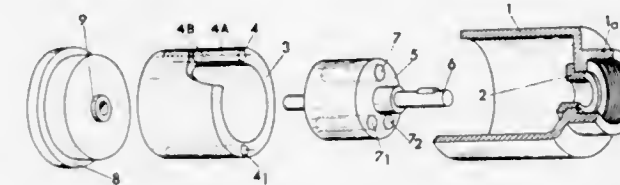
Filed March 10, 1970, Ser. No. 18,041

Claims priority, application Japan, March 13, 1969, 44/21873

Int. Cl. G01p 3/48

U.S. Cl. 324—171

6 Claims



A vehicular driving speed detecting device which comprises a stator having R reed switches connected in parallel, wherein R represents an integer of two or more, at the interval of a central angle of  $(2\pi/n)(1 + KR)$  radians wherein K represents zero or a natural number of  $(n/R - 1)$  or less, and a rotor rotatably inserted in said stator and having  $n/R$  magnets near the periphery thereof at the interval of a central angle of  $(2\pi R)/n$ , one of said magnets being adapted to keep, by an angle of rotation  $\gamma$  defined by the formula  $0 < \gamma < (2\pi/n)$ , one reed switch in operating condition, thereby enabling the number of pulses  $n$  obtained by one rotation of the rotor to be six or more.

3,719,888

### PREDETERMINED SPEED DETECTOR FOR DIGITAL TACHOMETER

Harry R. Sampey, Vanderbilt, Pa., assignor to Pentron Industries, Inc., Cleveland, Ohio

Filed May 26, 1971, Ser. No. 147,148

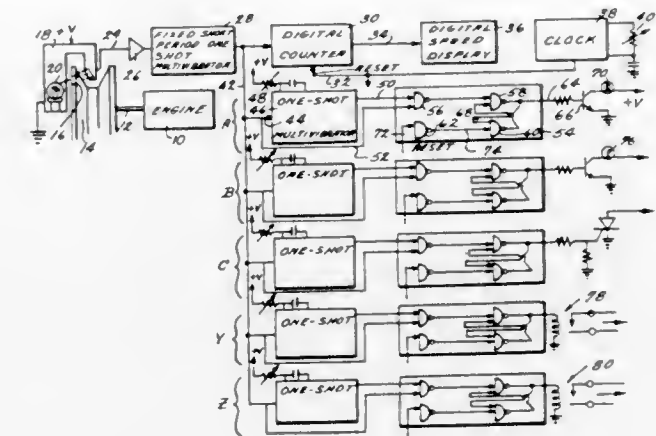
Int. Cl. G01p 3/56, 3/48, 3/54

U.S. Cl. 324—161

12 Claims

An improved predetermined speed detector for use in a digital tachometer where signal pulses proportional in repetition rate to engine speed or RPM are available. The signal pulses are used to trigger a monostable multivibrator such that the duty cycle of the monostable output is a function of the

signal pulse repetition rate (hence RPM) and the characteristic period of the monostable circuit. The time coincidence of the input signal pulses and the monostable output is then detected to obtain an indication of a predetermined duty cycle and hence engine RPM for any given characteristic monosta-



3,719,889

### LASER PULSE TRAIN TOTALIZER AND INTERVAL COUNTER

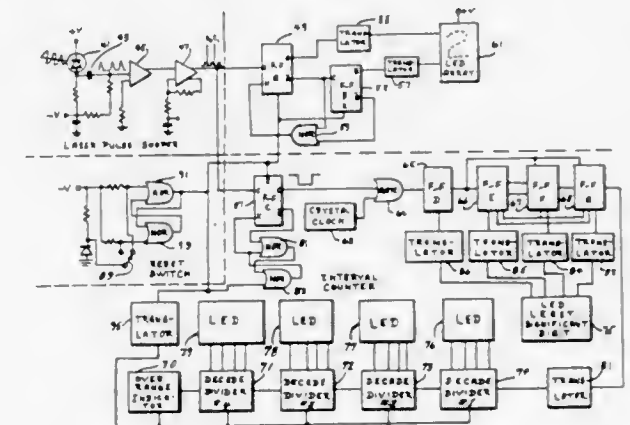
Ronald A. Belz; Henry T. Kalb, both of Manchester, and James D. Trolinger, Tullahoma, all of Tenn., assignors to the United States of America as represented by Secretary of the Air Force, Washington, D.C.

Filed Dec. 14, 1971, Ser. No. 207,754

Int. Cl. G04f 9/00, 11/06; H01j 39/12

U.S. Cl. 324—186

4 Claims



Pulses from a laser pulse train are detected and square wave shaped to trigger a first flip-flop in which one complementary output activating one input of a display comprising an array of light emitting diodes while the other output triggers a NOR gate and a second flip-flop, one complementary output thereof feeding a second input of the display with the other complementary output feeding the NOR gate which then feeds back to inhibit the first flip-flop. The square wave also activates a third flip-flop with one complementary output thereof enabling a NOR gate for passing clock pulses which are decade divided and displayed on light emitting diode arrays. The other output of the third flip-flop feeds a pair of cross coupled NOR gates acting as a flip-flop, the output thereof being fed back to inhibit the third flip-flop.



3,719,890

**TRANSCEIVER FOR PERIPHERAL STATION OF MULTIPLEX TELECOMMUNICATION SYSTEM**  
 Franco Borciani, and Gaetano Musarra, both of Milan, Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.p.A., Milano, Italy

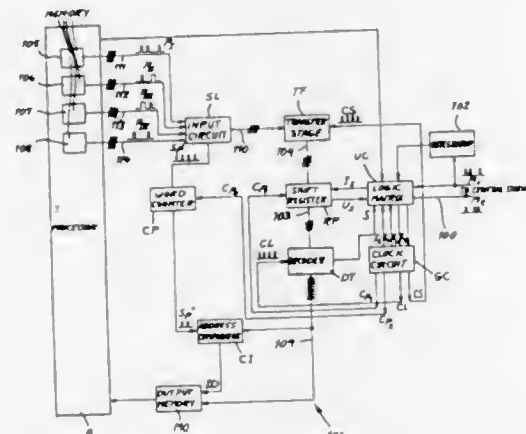
Filed Nov. 22, 1971, Ser. No. 200,802

Claims priority, application Italy, Nov. 20, 1970, 31976 A/70

Int. Cl. H04b 1/10

U.S. Cl. 325-55

10 Claims



A peripheral station of a pulse-code-modulation telemetry system, identified by an address code, has a logic matrix responding to the arrival of an incoming message from an associated central station by commanding a clock circuit to generate a series of pulses for controlling the inscription of the message words in a shift register and the readout thereof to an address comparator and to an output memory. The address comparator, upon ascertaining identity between the station's code and the first part of the stored message, enables the memory to transmit the remainder of the message to a processor which initiates the transmission of an outgoing message to the central office by triggering the logic matrix to call forth another pulse sequence from the clock circuit. The logic matrix comprises a set of AND and OR gates serving to set and reset several flip-flops which mark a quiescent condition, a transitory condition, a transmitting condition or a receiving condition.

3,719,891

**INTRUDER DETECTION SYSTEM**

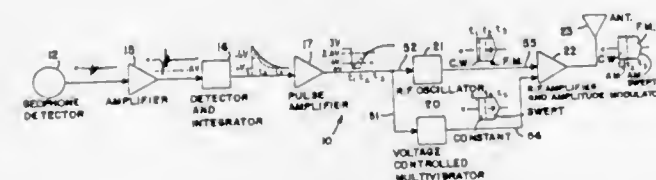
Robert D. Lee, San Mateo, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation of Ser. No. 768,662, Oct. 18, 1966, abandoned. This application Feb. 12, 1971, Ser. No. 115,083

Int. Cl. H03c 5/00

U.S. Cl. 325-61

6 Claims



An intruder detection system in which a transmitter transmits a frequency modulated and amplitude modulated signal to a remote receiver in response to a transducer, such as a geophone detector, picking-up seismic impulse created by one or more intruders. In this manner, an operator listening to the

receiver can identify the number of intruders, and also can identify the movements of the intruder or intruders, such as walking, running and the like.

3,719,892

**TRANSISTOR RADIO RECEIVER EMPLOYING AN IMPROVED SQUELCH CIRCUIT**

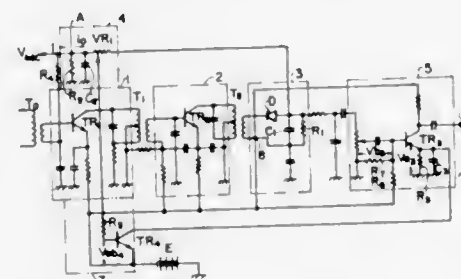
Seishi Yamazaki, and Masao Kaneda, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 4, 1970, Ser. No. 60,843

Int. Cl. H04b 1/10

U.S. Cl. 325-402

11 Claims



In a transistor radio receiver, two time constant resistors, one of which is a variable resistor, are connected in series via a signal detection circuit to a power source and a time constant capacitor is connected to the junction point of the two resistors to form therewith an automatic gain control voltage generating circuit, and a squelch transistor whose base is connected to the movable terminal of a potentiometer, so that the squelch transistor which is normally biased to be conductive is quickly cut-off in response to even a weak signal input to the receiver.

3,719,893

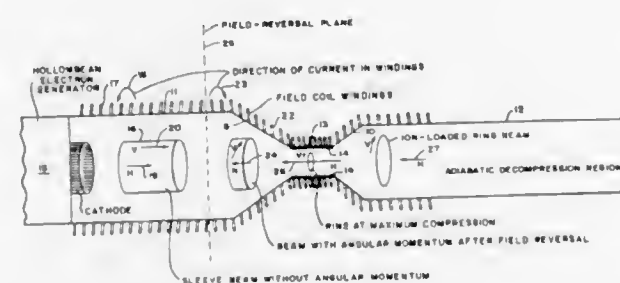
**SYSTEM AND METHOD FOR ACCELERATING CHARGED PARTICLES UTILIZING PULSED HOLLOW BEAM ELECTRONS**

David C. dePackh, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Dec. 23, 1971, Ser. No. 211,402  
 Int. Cl. H01j 1/50; H05h 1/00

U.S. Cl. 328-233

4 Claims



This disclosure is directed to a system for accelerating protons or other positive ions along with acceleration of a hollow beam electron ring. Hollow beam electrons normally have a high tendency to fly apart due to their own space charge; however, the positive charge ions accelerated therewith coupled with organized angular momentum prevents blow-up of the electron rings during acceleration. The magnetic field used for acceleration is particularly shaped so that the ions are not lost and the positive charge ions are accelerated with the electrons.

3,719,894

**SYSTEM FOR FEEDING ELECTROMAGNETIC ENERGY INTO A CYCLOTRON AND A CYCLOTRON INCORPORATING SUCH SYSTEM**

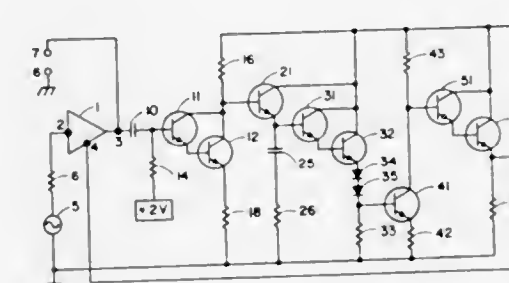
Pierre P. Delphin, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jan. 19, 1971, Ser. No. 107,788

Claims priority, application France, Jan. 28, 1970, 7002973  
 Int. Cl. H05h 7/00, 13/00

U.S. Cl. 328-234

6 Claims



The present invention relates to a system of supporting and electromagnetically connecting the sectoral elements of a cyclotron or D's.

It employs a vertical conducting element rigidly linked to a horizontal metal arm which supports one said sectoral elements; said conducting element passing through the parallel faces of the accelerating enclosure in conical insulators. Said conducting element forms the inner conductor of a transmission line and is equipped at one end with a capacitor means for connection to the high-frequency source, and at the other end with an adaptable short-circuiting stub.

The applications are in the field of circular ion accelerators.

3,719,895

**AUTOMATIC GAIN CONTROL CIRCUIT**

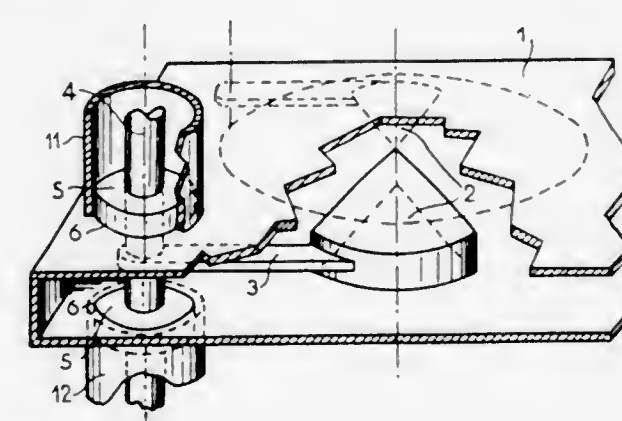
Patrick David Van der Pulje, Ottawa, Ontario, Canada, assignor to Northern Electric Company, Limited, Montreal, Quebec, Canada

Filed March 11, 1971, Ser. No. 123,142

Int. Cl. H03j 3/30

U.S. Cl. 330-29

12 Claims



An automatic gain control circuit is provided with fast attack and slow release by the use of a capacitor of only 0.01 microfarads and a slow discharge path through the base-emitter circuits of Darlington-connected transistors. The capacitor is charged through a peak detector transistor circuit that also sets the d.c. reference (no signal) level for the control voltage. A low-level cut-off control circuit is similarly provided with a fast attack and slow release.

3,719,896

**PHASE LOCK OSCILLATOR WITH PHASE COMPENSATION CIRCUIT FOR USE IN DATA PROCESSING SYSTEM**

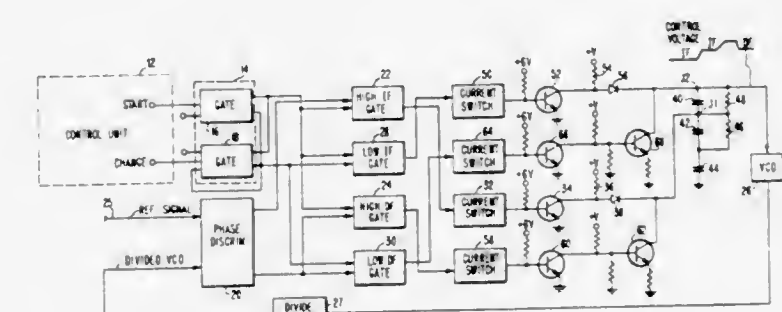
Carl P. Holstein, Jr.; Gerald H. Kiltz, and Frank J. Sordello, all of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 754,883, Aug. 23, 1968, Pat. No. 3,573,640. This application Nov. 13, 1970, Ser. No. 89,533

Int. Cl. H03b 3/04

U.S. Cl. 331-14

4 Claims



A phase compensation circuit incorporates series capacitors shunted by resistance means, with the signal channeled through the circuit so that there is virtually no loss of D.C. gain.

3,719,897

**DIGITAL TONE GENERATOR**

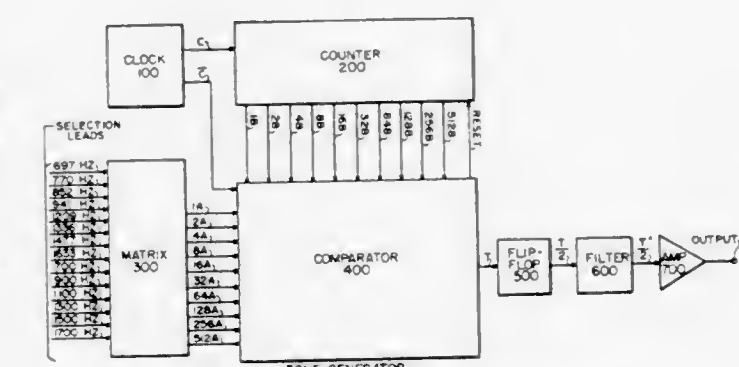
Lloyd A. Tarr, Berkeley, Ill., assignor to GTE Automatic Electric Laboratories, Incorporated, Northlake, Ill.

Filed Nov. 26, 1971, Ser. No. 202,472

Int. Cl. H03b 19/12

U.S. Cl. 331-51

9 Claims



A generator for producing audio tones as used for signaling purposes in telecommunication systems. Selected tones are produced digitally in accordance with preprogrammed digital logic driven by a highly accurate pulse source.

3,719,898

**OSCILLATOR PROXIMITY DETECTOR WITH REMOVABLE INTERCHANGEABLE SENSING HEADS**

Geoffrey Clarke, Blunsdon, near Swindon, England, assignor to Square D Company, Park Ridge, Ill.

Filed Jan. 22, 1971, Ser. No. 108,915

Claims priority, application Great Britain, March 5, 1970, 10,567/70

Int. Cl. G01v 3/10; H03b 5/08

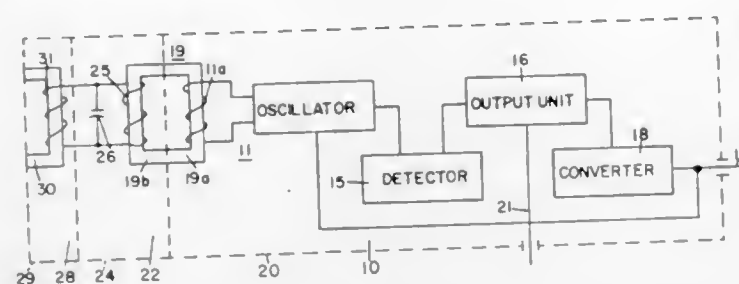
U.S. Cl. 331-65

4 Claims

An electric proximity detector or switch for detecting the presence or absence of electrically conductive objects is provided



vided with interchangeable sensing heads arranged to be



removably mounted on a basic switch unit or to be positioned at a location remote from the basic switch unit as desired.

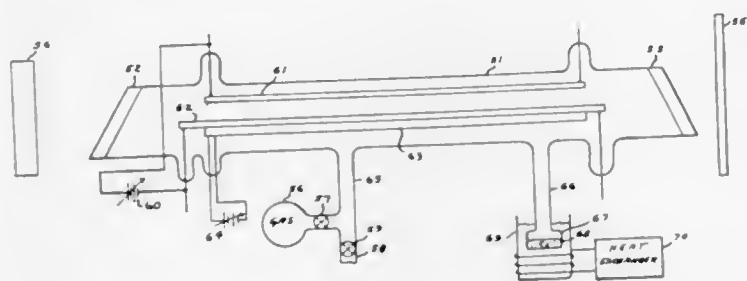
### 3,719,899 STABILIZED, OPTIMIZABLE, GASEOUS ELECTRICAL DISCHARGE

Onezime P. Breaux, 821 Riverview Terrace, Apt. 101, Dayton, Ohio

Filed Nov. 4, 1971, Ser. No. 195,762  
Int. Cl. H01s 3/00

U.S. Cl. 331—94.5

6 Claims



A direct current (DC), transverse discharge, gaseous, slotted hollow cathode laser having an electrically indirectly heated oxidized tungsten, or molybdenum cathode, heated to thermionic emission in the presence of cesium vapor adsorbes cesium atoms and over a defined temperature range thermionic emission occurs in inverse proportion to the temperature of the cathode stabilizing the emission, precluding the formation of "hot spots," and the elative low cathode fall voltage is varied providing an optimized amount of energy to the electrons as they are accelerated through the cathode fall voltage.

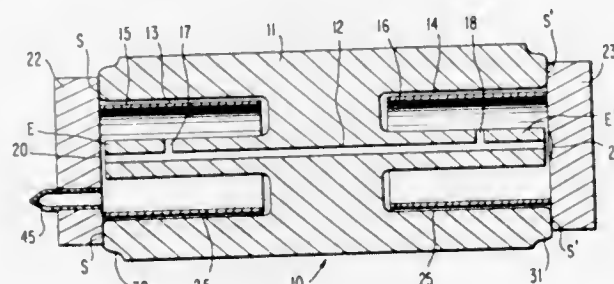
### 3,719,900 ULTRA STABLE SYMMETRICAL LASER STRUCTURES

Urs E. Hochuli, 7011 Southwark Terrace, Hyattsville, Md.

Filed May 19, 1971, Ser. No. 144,972  
Int. Cl. H01s 3/02

U.S. Cl. 331—94.5

6 Claims



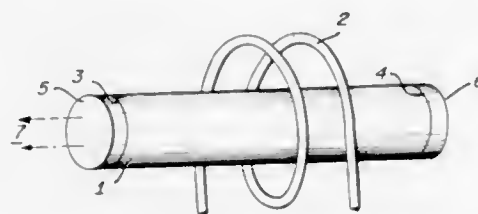
There is disclosed a highly stable symmetrical gas laser structure in which ultra stable materials are used in the fabrication. There is also disclosed a system for minimizing length changes due to temperature variations. A method of adjusting, detuning for example, the frequency is also disclosed.

### 3,719,901 LASER WITH MONOCRYSTALLINE $\text{YAlO}_3:\text{Nd}^{+3}$ ACTIVE MEDIUM

Roch R. Monchamp, Waltham; Marvin J. Weber, Wayland, and Michael Bass, Lexington, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Division of Ser. No. 886,617, Dec. 19, 1969, Pat. No. 3,614,662. This application March 12, 1971, Ser. No. 123,635  
Int. Cl. H01s 3/16; C09k 1/68  
U.S. Cl. 331—94.5

12 Claims



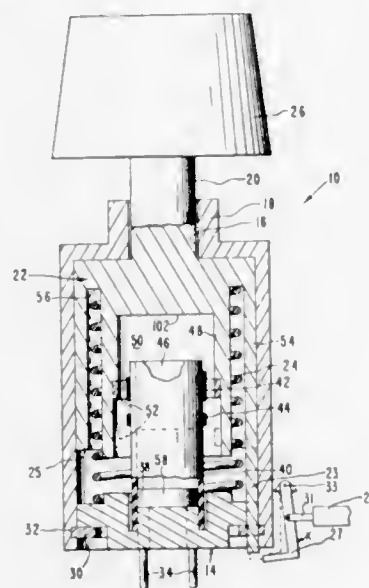
$\text{Nd}^{+3}$  ions serve as a dopant in monocrytalline  $\text{YAlO}_3$  forming an active solid state lasing medium.

### 3,719,902 KEY SWITCH

Henry N. Esterly, 22321 Cupertino Rd., Cupertino, Calif.  
Continuation of Ser. No. 20,351, March 17, 1970, abandoned.  
This application Jan. 12, 1972, Ser. No. 217,250  
Int. Cl. H03b 5/12

U.S. Cl. 331—117 R

12 Claims



An improved key switch of the type suitable for use with a keyboard wherein a pair of axially aligned coils adapted to be inductively coupled with each other are disposed adjacent to an actuator having means for effectively changing the circuit geometry of the coils. The actuator is moved axially of the coils to cause movement of the changing means so as to effectively vary the inductive coupling or mutual inductance between the coils. The actuator is biased in one direction and one of the coils can form a part of a tuned circuit of an oscillator. The changing means can comprise a metallic ring which forms a shorted turn of a coil or can be a shiftable core.

### 3,719,903 DOUBLE SIDEBAND MODEM WITH EITHER SUPPRESSED OR TRANSMITTED CARRIER

William Eugene Goodson, Freehold, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

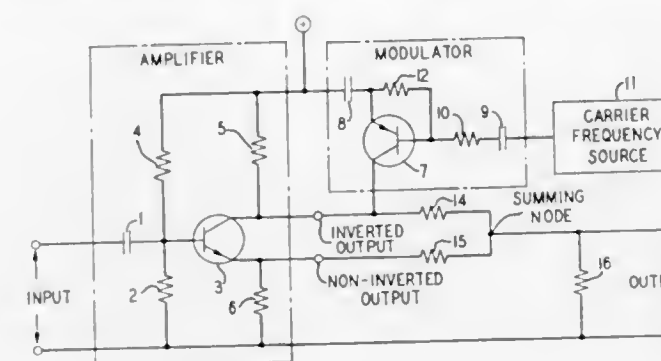
Filed June 25, 1971, Ser. No. 156,843  
Int. Cl. H03c 1/52; H03d 1/24

U.S. Cl. 332—44

8 Claims

An inexpensive, two-transistor modem wherein the first transistor is a high gain amplifier connected to receive the

modulating signal, and the second transistor is connected as a shunt modulator driven by a carrier signal source. Individual resistors are connected with the collector and emitter electrodes of the first transistor and so proportioned that the input



baseband (for modulation) and carrier (for demodulation) signals are cancelled at a common summing node. The circuit is useful for double sideband suppressed or transmitted carrier applications, especially where the desired sidebands are very near, or go down to, the baseband frequencies.

### 3,719,904 CIRCUIT ARRANGEMENT FOR REDUCING SPURIOUS SIGNALS PICKED UP BY TRANSMISSION LINE

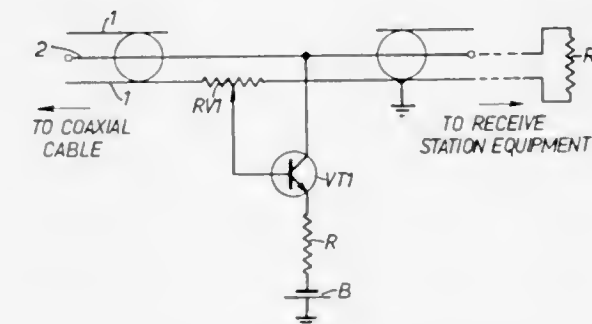
Eric James William Bragg, Harrow, England, assignor to The Post Office, London, England  
Filed Sept. 15, 1970, Ser. No. 72,381

Claims priority, application Great Britain, Sept. 19, 1969, 46227/69

U.S. Cl. 333—12

Int. Cl. H04b 3/28

10 Claims



This Specification describes circuit arrangements for reducing spurious signals picked up by a coaxial transmission line in which a sample of the signals picked up is derived from the outer screen of the line and after inversion in an amplifier is applied as a current to the central conductor of the line. The outer screen is connected to ground through a potentiometer from the wiper of which an adjustable signal is picked off for effecting the compensation. The amplifier, which includes transistors and may have a field effect transistor input stage, is connected to the wiper of the potentiometer through an a.c. coupling circuit having a time constant of several seconds.

### 3,719,905 REVERBERATION DEVICE

Walter Karl Kuhl, and Jens Wiekling, both of Hamburg, Germany, assignors to Elektromerstechnik Wilhelm Franz KG, Labor/Schwarzwald, Germany

Filed April 27, 1971, Ser. No. 137,840

Claims priority, application Germany, April 29, 1970, P 20 897.3

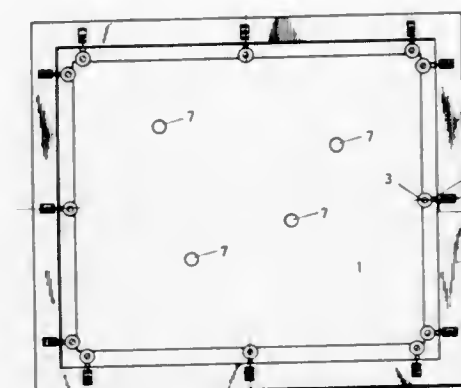
U.S. Cl. 333—30 R

Int. Cl. H03h 9/30

10 Claims

A reverberation device including a frame having a reverberating metal foil of very small thickness. The metal foil com-

prises a nearly pure metal having the characteristics of high thermal conductivity ( $\lambda \geq 69 \text{ W/m}^\circ$ ), a low coefficient of thermal expansion ( $\alpha \leq 19.0 \times 10^{-6}^\circ$ ), a low sound velocity



$c = (E/\rho)^{1/2} \leq 5,700 \text{ m/s}$  wherein the square of the coefficient of thermal expansion ( $\alpha$ ) of the foil, when multiplied by the square of the velocity of sound  $c$  and divided by the thermal conductivity ( $\lambda$ ) is less than  $1.3 \times 10^{-3} \text{ m}^3/\text{SW}^\circ$ .

### 3,719,906 DISPERSIVE DELAY LINES OPERATING IN THE SHEAR MODE

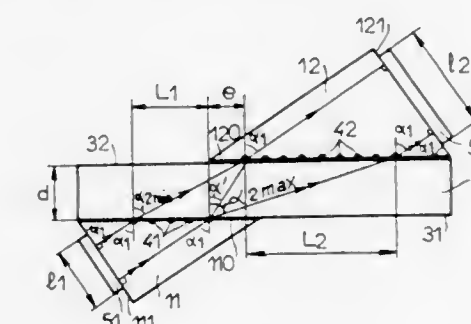
Pierre Tournois, Cagnes-sur-Mer, France, assignor to Thomson-CSF, Paris, France

Filed Nov. 12, 1970, Ser. No. 88,674

Claims priority, application France, Nov. 25, 1969, 6940587  
Int. Cl. H03h 7/30

U.S. Cl. 333—30

20 Claims



A wave transmission medium has a pair of wave coupling arrays (41, 42) coupled thereto, each including a plurality of rectilinear, co-planar parallel excitation elements, spaced from each other by a predetermined distance  $a$ ; the wave reception array being located on the transmission medium with respect to the wave transmission array to receive waves at an angle  $\alpha$  transmitted into said medium, when a transversely polarized wave is applied to the transmission array, with a direction of oscillations parallel to the co-planar excitation elements; the angle  $\alpha$  having a predetermined relation to the wavelength and propagation velocity of waves within the medium.

### 3,719,907 TORSIONAL WAVE TRANSDUCER

Robert Adler, Northfield, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

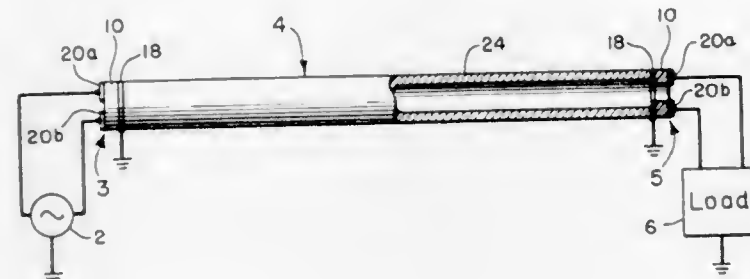
Filed Dec. 3, 1971, Ser. No. 204,484

U.S. Cl. 333—30 R

A torsional-wave transducer is particularly suitable for use with torsional-mode delay lines. The transducer preferably takes the form of a washer-like annular disc of ferro-electric



material which is electrically poled concentrically of the disc in two opposing directions. A unitary electrode is bonded to and overlies one end face of the disc. A pair of spaced driving electrodes are bonded to the opposite end face of the disc. In combination, a torsional-mode delay line in the form of an elongate hollow cylindrical tube has a pair of the transducers



individually bonded to its respective opposite ends by the corresponding single electrodes. To make each transducer, a pair of narrow poling electrodes are first affixed to diametrically opposed locations on the disc, and a DC voltage then is applied across those poling electrodes. The latter are subsequently removed following which the unitary and driving electrodes are bonded in place.

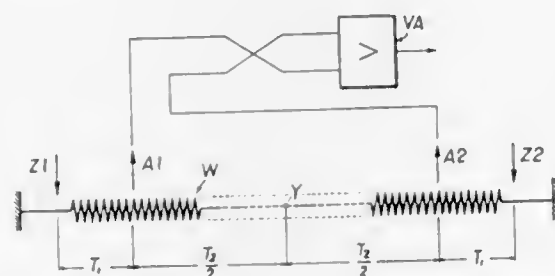
### 3,719,908 DEVICE FOR CREATING ARTIFICIAL REVERBERATION

Werner Fidl, Baden near Vienna, Austria, assignor to AKG Akustische Geräte, Nobilegasse, Austria  
Filed April 16, 1971, Ser. No. 141,056  
Claims priority, application Austria, April 20, 1970, 3582/70

Int. Cl. H03h 7/30

U.S. Cl. 333—30

13 Claims

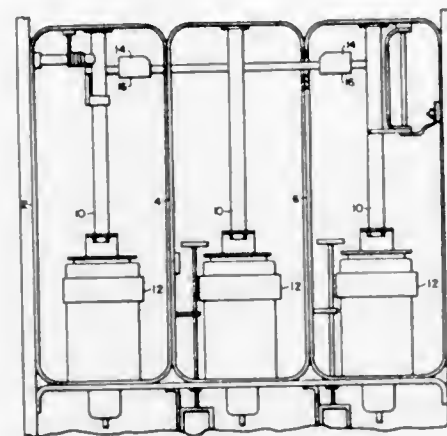


In a device for the creation of artificial reverberation using single or multi-dimensional wave guides with  $2n$  input systems and  $2m$  pick-up systems, of equal sensitivity, where  $n$  and  $m$  are any positive integers, the input and pick-up systems are located on an axis of symmetry of the wave guide in symmetrical relation to the other axis of symmetry thereof. The input and pick-up systems may all be located on the same axis of symmetry or they may be located on different axes of symmetry. The signal to be reverberated either is supplied to all the input systems in-phase, with the pick-up systems being connected in pairs in phase operation, or the signal to be reverberated is supplied to the input systems in pairs in phase opposition and all the pick-up systems are connected in-phase. The reverberated signals are supplied, from the pick-up systems, to at least one pick-up amplifier. The wave guide may be a helical spring, constituting a single-dimensional wave guide, or may be a thin plate, constituting a multi-dimensional wave guide.

### 3,719,909 INTER-RESONATOR COUPLING Herbert Hanft, 1412 Ivanhoe Street, Alexandria, Va. Filed June 3, 1971, Ser. No. 149,620 Int. Cl. H01p 1/20, 7/04

U.S. Cl. 333—73 C

7 Claims

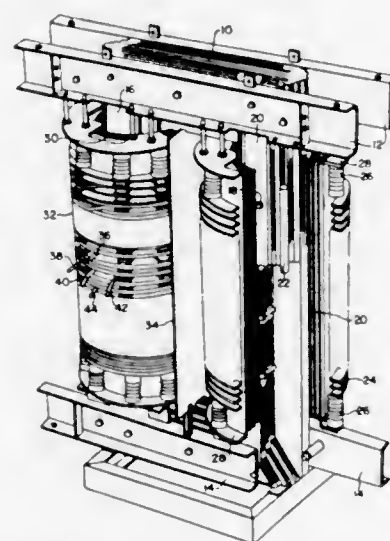


In a multi-pole filter the coupling between adjacent cavity resonators is varied in accordance with the distance between the back wall of each cavity and the interconnecting conductor. A section of the interconnecting conductor is so shaped and mounted to assume different spacings from the wall of the cavity according to its rotary position. Means may be provided for locking the connecting conductor in position to set the desired spacing.

### 3,719,910 ELECTRICAL INDUCTIVE APPARATUS Frank W. Golaski, Youngstown, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa. Filed Oct. 26, 1971, Ser. No. 192,523 Int. Cl. H01f 29/02

U.S. Cl. 336—146

1 Claim

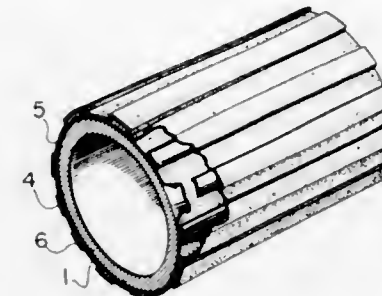


Power transformer having a three section primary winding adaptable to various connection arrangements for providing different voltage ratings. A middle section is axially positioned between two end sections. The middle section has a voltage rating equal to one half of the desired voltage rating range and includes a center-tap terminal. Jumper connections are connected between taps on the winding sections to change the overall voltage rating of the winding. One pattern of connections places all or part of the middle winding section in series and in phase with the other winding sections to increase the voltage rating. Another pattern of connections places all or part of the middle winding section in series and antiphase with the other winding sections to decrease the voltage rating. The middle winding section may be bypassed completely to provide the nominal voltage rating of the transformer winding.

### 3,719,911 LAMINATED MAGNETIC COIL MATERIALS Sadami Tomita, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan Filed Oct. 23, 1970, Ser. No. 83,532 Claims priority, application Japan, Oct. 24, 1969, 44/84717 Int. Cl. C04b 35/00; H01f 27/30

U.S. Cl. 336—196

2 Claims U.S. Cl. 338—2

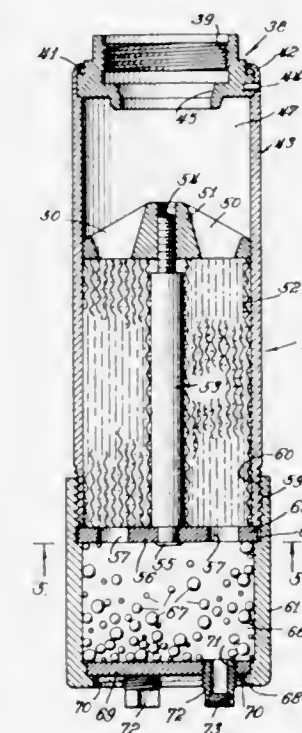


A laminated magnetic material composed of thin rolled sheet of magnetic alloy having a thickness of less than 25 microns and a glassy material formed on at least one surface of the thin rolled sheet of magnetic alloy, wherein the sheet of magnetic alloy and the glassy material are wound and laminated alternately and each of the layers of magnetic alloy is secured to the adjacent layer interposed by an electric insulator.

### 3,719,912 EXHAUST CONTROL DEVICE FOR CIRCUIT INTERRUPTING DEVICES Robert H. Harner, Park Ridge; Otto Meister, Glenview, and Robert E. Owen, Chicago, all of Ill., assignors to S. C. Electric Company, Chicago, Ill. Filed Oct. 26, 1971, Ser. No. 192,238 Int. Cl. H01h 85/38

U.S. Cl. 337—280

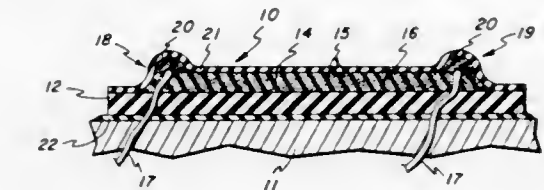
3 Claims



A mass of small diameter ceramic pellets, for example of activated alumina, is located in a cylindrical metallic housing between its closed end and metallic heat absorbent material in the housing through the open end of which flow arc products incident to blowing of a fuse or similar circuit interrupting device. An apertured deflector disc overlies the pellets and prevents bypassing thereof along the inner surface of the housing. One or more metallic filter elements in the closed end of the housing place the interior thereof in limited communication with the atmosphere.

### 3,719,913 VISCOUS STRAIN GAGE Charles R. DuBose, and Harvey A. Jessup, both of Waco, Tex., assignors to North American Rockwell Corporation, El Segundo, Calif. Filed May 2, 1969, Ser. No. 821,208 Int. Cl. G01b 7/18

4 Claims

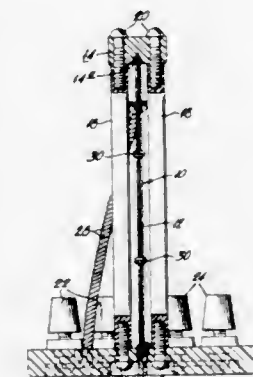


Metal particles are suspended in an elastomeric compound to produce a conductive strain gage element capable of high elongation which responds with electric signals proportionate to the strain being measured, which strain element is mounted on an elastomeric carrier and encapsulated in a rubbery mass for protection.

### 3,719,914 RESISTANCE STANDARD Carl R. Scharle, Glenside, Pa., assignor to James G. Biddle Company, Plymouth Meeting, Pa. Filed Dec. 30, 1971, Ser. No. 213,940 Int. Cl. H01c 3/02

U.S. Cl. 338—61

14 Claims



A zig-zag pattern is formed from a sheet of resistance material, such as manganin or a nickel chrome alloy, preferably by providing parallel slots alternately extending from opposite edges of the sheet and evenly spaced from one another and the patterned sheet is folded back upon itself and separated by sheets of insulating material so that the patterned areas of the opposed folded portions are superimposed upon one another and current flowing through the resistance pattern will be flowing in opposite directions on opposite sides of the insulating material, thus cancelling out inductive effects and providing a resistance standard with an essentially pure resistance characteristic.

### 3,719,915 COARSE AND FINE ADJUSTMENT POTENTIOMETER Mogens W. Bang, Bakkedraget, Denmark, assignor to Stackpole Carbon Company, St. Marys, Pa. Filed May 22, 1972, Ser. No. 255,588 Int. Cl. H01c 9/02

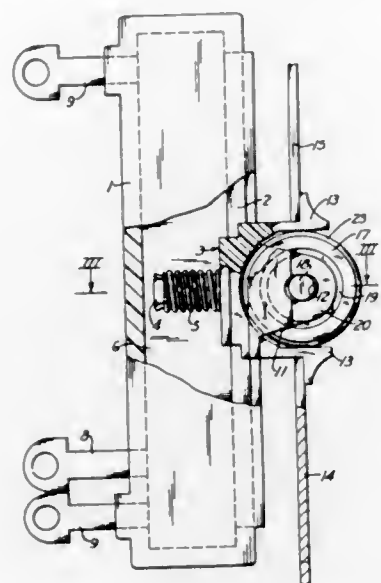
U.S. Cl. 338—183

6 Claims

The front wall of a linear motion potentiometer case has a longitudinal slot in it, in which is disposed a slide that carries a bridging contact in sliding engagement with resistance and collector elements inside the case. The slide has laterally



spaced side walls projecting forward from the slot and provided with a pair of opposed transverse openings elongated forward and receiving the hubs of a wheel fitting between the walls. The wheel is encircled by a friction ring and the hubs



are movable rearwardly in the wall openings by finger pressure applied to the front portion of the ring to press it against the case at the opposite edges of the slot so that the ring will roll along the case when the ring is rotated and carry the slide with it.

3,719,916

#### SLIP-RING ARRANGEMENT ESPECIALLY FOR BRAKE SLIPPAGE CONTROL INSTALLATIONS OF MOTOR VEHICLES

Otto Worner, Reutlingen; Franz Brugger, and Erwin Weller, both of Stuttgart, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterrukheim, Germany

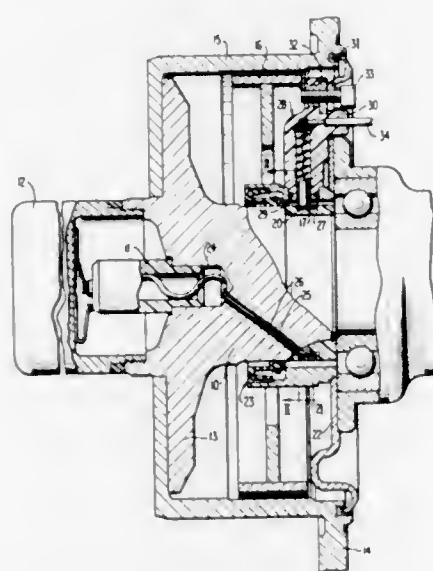
Filed Sept. 3, 1971, Ser. No. 177,649

Claims priority, application Germany, Sept. 4, 1970, P 20 43 841.9

Int. Cl. H01r 39/00

U.S. Cl. 339-3 R

19 Claims



A slip-ring arrangement, intended especially for brake force control systems in motor vehicles, for the transmission of electrical signals from a rotating part to a stationary part whereby a signal transmitter is arranged at the rotating part and is connected by way of a line with a slip-ring disposed on the wheel hub on the inside of the brake; one of several stationary brushes slide on the slip-ring whereby the slip-ring itself is arranged on the wheel hub exclusively on the inside of a sealed-off space and is connected with the signal transmitter by way of a cable on the inside of the wheel hub while the brush or

brushes are secured at the brake carrier with the aid of a one-piece plastic part which simultaneously contains means for guiding the cable.

3,719,917

#### CLAMPING DEVICE FOR PRINTED CIRCUITS

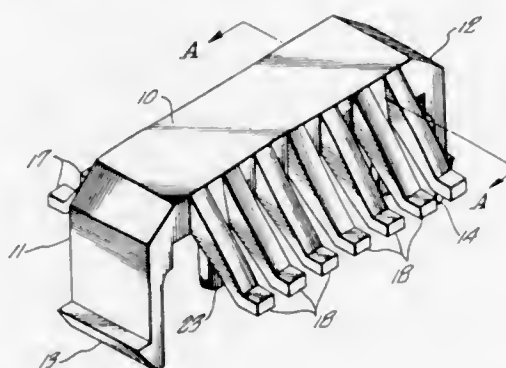
Christopher L. Fischer, Sunnyvale, and Richard F. Otte, Los Altos, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Feb. 25, 1971, Ser. No. 118,894

Int. Cl. H01r 13/42, 13/54; H05k 1/12

U.S. Cl. 339-17 CF

7 Claims



Described herein are clamping devices for releasably securing lead-bearing integrated circuit modules to printed circuit boards. The devices of the invention are characterized by oppositely disposed pluralities of resilient legs pendent from a body portion provided with circuit board latching means. The plural legs of the device individually engage the individual leads of the module and, acting against the said latching means, urge the module leads into electrical contact with conductors carried by the board.

3,719,918

#### ELECTRICAL CONNECTOR

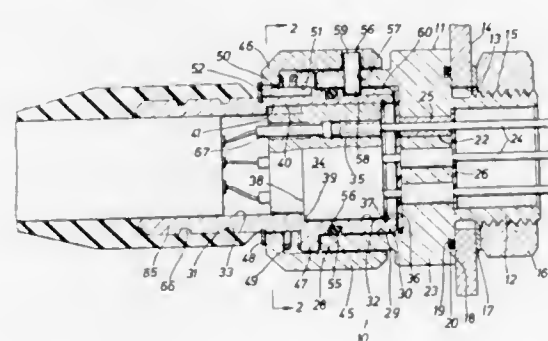
Wayne L. Kerr, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Nov. 4, 1971, Ser. No. 195,546

Int. Cl. H01r 13/54

U.S. Cl. 339-90 R

13 Claims



In accordance with an illustrative embodiment of this invention, an electrical connector of the bulkhead type includes a receptacle body adapted to be fixed to a bulkhead and carrying pin contacts with glass seal insulation, a connector body carrying the pin sockets and having an annular end section that sealingly fits within a companion end section of the receptacle body, a locator pin extending radially through the wall of the receptacle body end section so that an inward portion thereof fits within an external groove of the connector body end section to rotationally align the pins and sockets, and a locking sleeve rotatably mounted on the connector body and having a bayonet slot that engages the outward portion of the locator pin to couple the receptacle and connector bodies together.

3,719,919

#### CONNECTOR FOR USE WITH OXIDE COATED CONDUCTORS

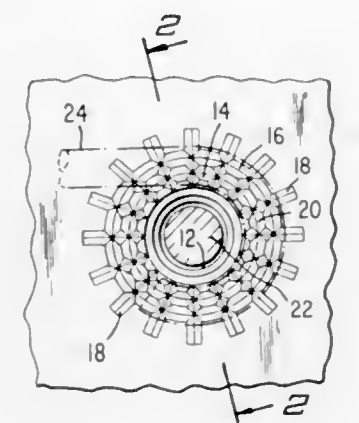
Julius F. Tibolla, Yardley, Pa., assignor to Circle F. Industries, Inc., Trenton, N.J.

Filed June 4, 1971, Ser. No. 149,921

Int. Cl. H01n 9/08

U.S. Cl. 339-95 A

10 Claims



A method and apparatus are herein provided for making electrical connections using oxide coated conductors. A binding plate may be provided having an array of ridges formed thereon which ridges define at least one pocket. A binding device, e.g., a screw or the like, cooperates with the binding plate to urge a conductor against the binding plate until the ridges on the binding plate fracture the oxide coating on the conductor and penetrate the virgin metal thereof. The array of ridges is sized so that the ridges defining and completely surrounding at least one pocket will penetrate the virgin metal so as to form a gas-tight space between the binding plate and the conductor. The ridges may be formed as sharp cutting projections for fracturing the oxide and for facilitating the penetration of the virgin metal. Alternatively, the ridges may merely comprise the edges defining each pocket, which edges need not extend above the surface of the binding plate.

In one form of the invention, the array of ridges may define concentric circles disposed about a binding post and intersected by radially extending ridges. In another form of the invention, the array may comprise one or a plurality of indentations machined into the surface of the binding plate by a punch or the like.

In still another form of the invention, a washer may be provided having at least one pocket formed in a radial face thereof. The washer is disposed between the binding plate and a binding device which is then operable to urge the washer against the conductor to perform the functions of fracturing the oxide coating and of establishing an electrical connection with the virgin metal of the conductor.

In any form, however, each pocket is defined by a ridge which completely surrounds that pocket, and which is sized to define an opening which is completely covered by a conductor when urged thereagainst.

3,719,920

#### METHOD AND APPARATUS FOR DISPLAYING AND/OR RECORDING MEASURED VALUES

Walter Grada; Heinz Purnhagen, both of Bremen, Germany; Gunter Schnell, Struer, Denmark, and Wolfgang Stedtnitz, Neukrug, Germany, assignors to Fried Krupp Gesellschaft mit beschränkter Haftung, Essen, Germany

Filed May 18, 1971, Ser. No. 144,539

Claims priority, application Germany, May 25, 1970, P 20 25 405.1

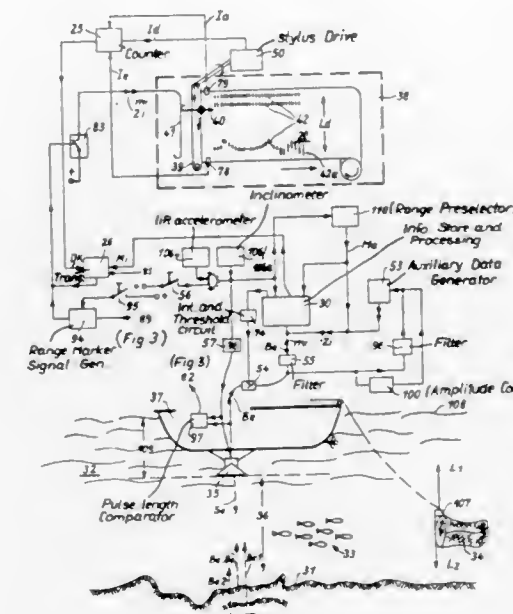
Int. Cl. G01s 9/68

U.S. Cl. 340-3 R

82 Claims

A method and apparatus for compiling, evaluating and displaying measured values which are dependent on a given independent variable obtained during a measuring period within a

sequence of measuring periods whereby the display may take place at a time and location other than when the measured values are obtained and at a speed independent of the measuring speed. The measured values are, preferably after quantizing, stored in a memory with an identifying or address indicating



tion for each value and the information is read out for display, starting at any point in time with respect to the measuring period, by correlating the identifying or address indication with a location indication for the display mechanism so as to synchronize the timing read out of a particular measurement with the display location associated with such measurement.

3,719,921

#### METHOD BASED ON THE DOPPLER EFFECT FOR DETERMINING THE DISTANCES TRAVELLED OVER BY A VEHICLE AND DEVICE FOR PRACTISING SAID METHOD

Jean Pierre Barret, Chambourcy; Max Monnot, Chatou, and Jacques Trognec, Rueil Malmaison, all of France, assignors to Institut Français du Pétrole des Carburants et Lubrifiants, Rueil Malmaison, France

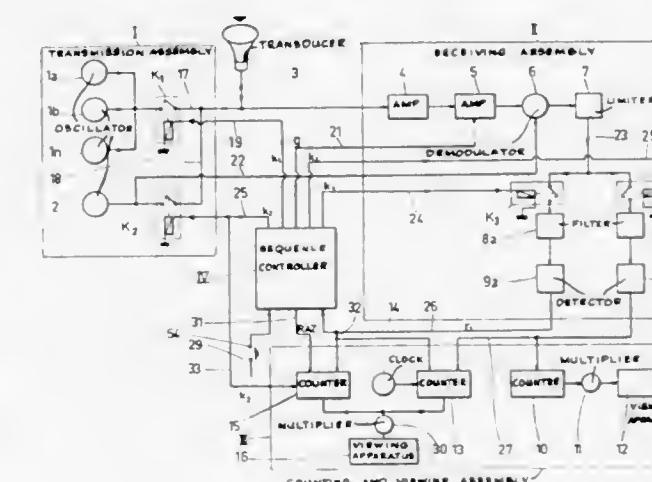
Filed Jan. 28, 1971, Ser. No. 110,554

Claims priority, application France, Feb. 2, 1970, 7003645

Int. Cl. G01s 9/66

U.S. Cl. 340-3 D

18 Claims



Method for determining the distance travelled over by a vehicle with respect to a reference surface, comprising transmitting towards said surface, in an inclined direction with respect to a vertical line, sequences of  $n$  wave trains of a con-



stant length and with a recurrence period of two successive transmission sequences in a constant ratio with the transmission time of a sequence, irrespective of the value of  $n$ , receiving the waves diffused back from said surface during a reception stage at which the transmission is interrupted, the length of said reception stage depending on the value of  $n$ , and determining the distance travelled over on the basis of the difference between the frequency of the transmitted waves and that of the received waves.

3,719,922

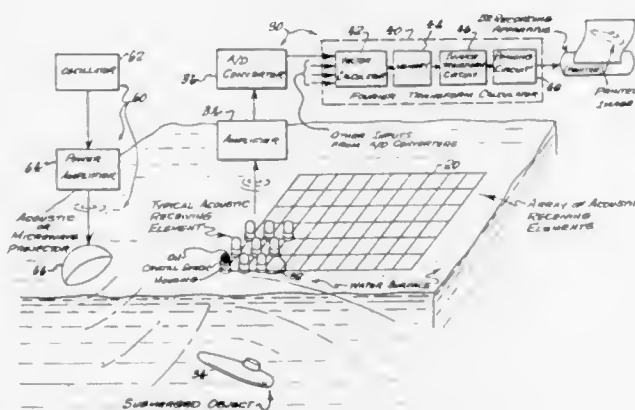
## DIGITAL CAMERA

Louis A. Lopes, Jr., 342 South Craig Avenue, Pasadena, Calif., and Owen F. Thomas, 475 Sturdevant Drive, Sierra Madre, Calif.

Filed June 24, 1971, Ser. No. 156,256  
Int. Cl. G01s 9/66

U.S. Cl. 340—5 MP

14 Claims



A digital camera capable of forming a picture of pattern of objects either radiating or reflecting energy, which includes an oscillator which can generate a ping-type or continuous-wave signal, which may be amplified and if the target is not self-illuminant, transmitted to a stationary illuminator, which "illuminates" the target. The target reflects or radiates energy to a rectangular array or matrix of transducer elements, each of which corresponds to an element of the object observed, and each of which is connected to an analog-to-digital converter and then to a digital computer, or to logical circuitry arranged to form a digital computation. The computer determines the phase and amplitude from each element at a frequency of interest, stores the values in an ordered array corresponding to the transducer array, and performs the mathematical operation known as a two-dimensional finite Fourier transform on the values to produce a new array of values in complex notation. A similar array of absolute values derived from the complex values, when fed into a printer, forms a pictorial representation of the target which corresponds to the intensities of the signal sources of the various parts of the target.

3,719,923

## PULSE DOPPLER AND NAVIGATION SYSTEM

Glenn Noble Waterman, Salt Lake City, Utah, assignor to Edo Western Corporation, Salt Lake City, Utah  
Continuation-in-part of Ser. No. 818,893, April 24, 1969, Pat. No. 3,594,716. This application Sept. 11, 1969, Ser. No. 857,170

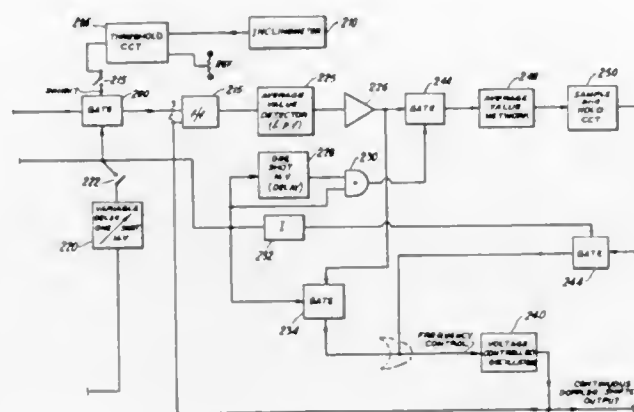
Int. Cl. G01s 9/66

U.S. Cl. 340—3 D

35 Claims

A vessel navigation system employs gated transmitting and receiving transducers for developing pulsed Doppler frequency shifted signals indicative of velocity components along selected orthogonal axes. Gated feedback arrangements are

employed to produce continuous oscillations having the same frequency as the Doppler shifted signals. The signals are converted to digital form, and processed to yield, inter alia, velocity, drift angle, and distance information.



The information is corrected to compensate for variations in the acoustical propagating characteristic of the ocean medium, and provision is made for obtaining reliable data under severe rolling conditions.

3,719,924

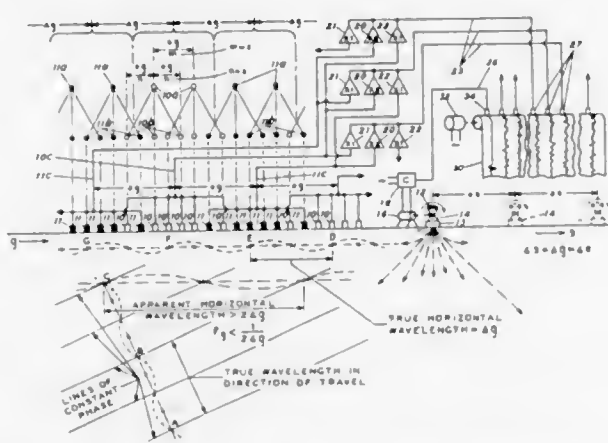
## ANTI-ALIASING OF SPATIAL FREQUENCIES BY GEOPHONE AND SOURCE PLACEMENT

Francis Muir, Huntington Beach, and Jerry L. Morrison, Hacienda Heights, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Sept. 3, 1971, Ser. No. 177,723  
Int. Cl. G01v 1/16, 1/28

U.S. Cl. 340—15.5 AF

16 Claims



In the generation, recording, and processing of seismic wave data, coherent noise waves of higher spatial frequencies (shorter wave lengths) than those in the desired and useful spatial frequency pass band tend to "alias" down into the desired pass band and to produce interfering effects. This disclosure tells how improved arrays of sources and receivers may be designed and used that, instead of attempting to suppress all spatial frequencies higher than those in the desired pass band, suppress preferentially only those particular, higher spatial frequencies that would alias back into the desired pass band.

3,719,925

## ELECTRONIC CONTROL FOR MACHINE TOOLS AND THE LIKE

Angelo N. Vinch, Warren, Mich., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

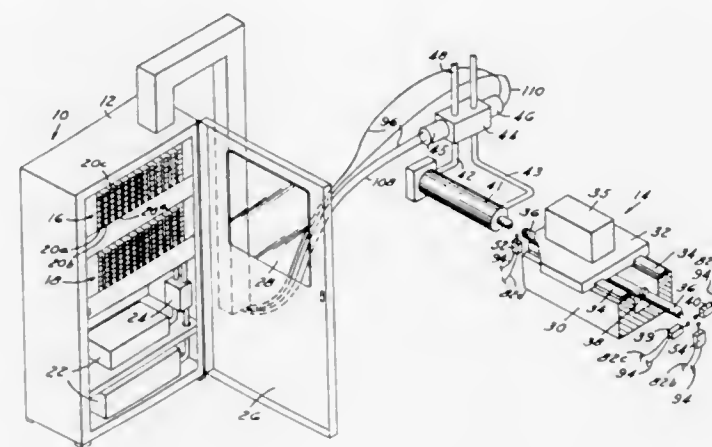
Filed Feb. 11, 1971, Ser. No. 114,504  
Int. Cl. H04q 9/00

U.S. Cl. 340—147 P

5 Claims

An electronic control having a plurality of electronic circuit cards for controlling the operation of various elements of a

machine in accordance with commands received from transducers such as limit switches on the machine. One or more interface circuit cards receive AC signals from the transducers on the machine and convert these signals to DC output signals which are in turn supplied to a control card. The control card comprises a DC logic circuit which is responsive to the DC signals supplied by the interface cards to provide a DC control signal. The control card further includes a DC-AC converter which is responsive exclusively to the DC control signal for



supplying an AC control signal to an electromechanical control device for controlling the particular operation of a particular machine element with which that control card is associated. Because this electromechanical control device is responsive only to this particular AC control signal, the entire logic circuitry for controlling that particular operation of that particular machine element is contained on a single circuit card. The circuit cards are also provided with indicating lamps which display the electrical status of the control to facilitate trouble shooting whenever there is a malfunction.

3,719,926

## TAPE PROGRAM CONTROL

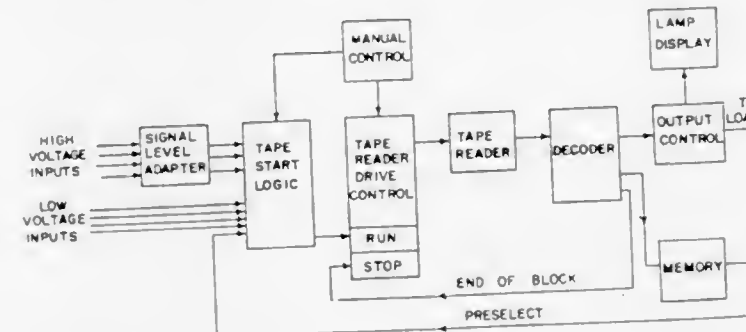
Arlon G. Sangster; Charles B. Pickering, both of Sterling, and Thomas J. McNamara, Auburn, all of Mass., assignors to Jamesbury Corp., Worcester, Mass.

Continuation of Ser. No. 783,866, Dec. 16, 1968, abandoned.  
This application March 1, 1971, Ser. No. 119,888

Int. Cl. H04q 3/04

U.S. Cl. 340—147 P

3 Claims



A control device for sequential control of a process or machine which includes a means for reading perforated tape having thereon codes representative of alphabetic, numerical or any other symbols. The control includes means to interpret these codes and means to respond to these codes to either energize or de-energize a plurality of outputs, means to further condition the control to accept only selected input signals appearing on a plurality of input terminals, and means to operate the reading means only in response to a preselected input signal.

3,719,927

## CREDIT CONTROL SYSTEM

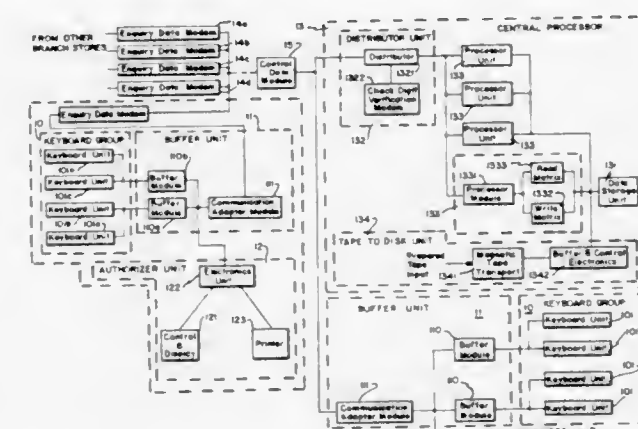
Lawrence S. Michels, Palos Verdes Peninsula; George F. Minka, Torrance; Donald G. Kovar, Palos Verdes Peninsula, and Robert V. Harper, Harbor City, all of Calif., assignors to TRW Data Systems, Inc., Torrance, Calif.

Filed Dec. 28, 1970, Ser. No. 101,712

Int. Cl. G06k 5/00; H04q 5/00

U.S. Cl. 340—149 R

11 Claims



A credit control system which positively authorizes every credit purchase, furnishes account balance status and accumulates the dollar amount of every credit purchase. Customer account numbers, status, credit limit and account balance are stored in a magnetic memory. Remote keyboard units interrogate the memory as to account number and amount of purchase for each purchaser. If the status of the account is valid and there is a positive credit balance, a credit authorization signal is received at the remote keyboard unit. If the status of the account is invalid, or if the status of the account is valid and the credit balance is negative, a credit denial signal is received at the remote keyboard unit, and a credit authorizer unit is activated. The credit authorizer unit permits manual electronic inspection of the credit file of interest to determine if credit should be authorized for the current transaction. If credit is to be authorized, or denied, a credit authorization, or denial signal is received at the remote keyboard unit.

3,719,928

## SWEEP SIGNAL METER READING SYSTEM

Hiroshi Oishi; Fumio Aoki, both of Yokohama, Kohoku-ku; Shigeru Kawanno, Mito-shi; Yasushi Kudo, Karakura-shi; Hideo Kobayashi, Yokohama, Totsuka-ku, and Takeo Hyodo, Kamakura-shi, all of Japan, assignors to Hitachi, Ltd. and The Tokyo Electric Power Co., Tokyo, Japan

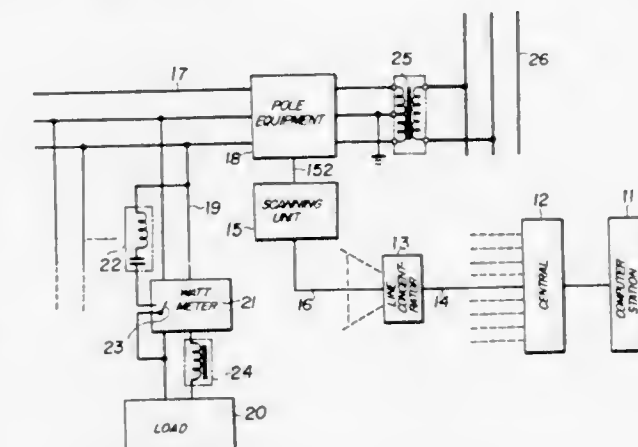
Filed Feb. 10, 1971, Ser. No. 114,211

Claims priority, application Japan, April 3, 1970, 45/28451

Int. Cl. H04q 9/00

U.S. Cl. 340—151 R

5 Claims



An information detection method and system for carrying out the automatic reading of meters disposed in domestic



users houses. A series resonance circuit having a peculiar resonance frequency is connected in parallel to each meter and on-off controlled by the meter at certain quantity of consumption. A sweep oscillator generates a sweep signal and supplied it through hybrid circuits to the resonance circuit, the hybrid circuits mixing the sweep signal and the reflected signal to provide a detection signal with no noise. Such a detection signal is allowed to pass through a gate which is controlled by the sweep signal and reference resonance circuits.

3,719,929

## MEMORY ANALYZERS

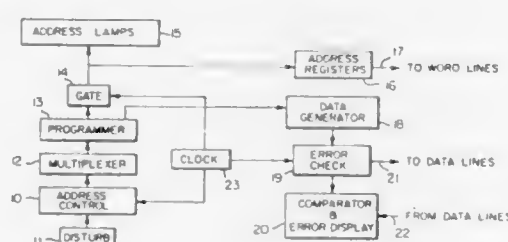
Robert L. Fay, Newbury Park, and Guido F. Simonetti, Canoga Park, both of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed Aug. 11, 1971, Ser. No. 170,819

Int. Cl. G06f 7/06

U.S. Cl. 340—172.5

23 Claims



A memory analyzer is provided with a disturb mode for selectively writing complemented test data into a computer memory. The writing operation is repeated a number of times, for example, 5,000 write cycles, and the data is thereafter read out and compared to the original data to detect errors. Hence, the effect of repeated write operations in selected locations on data in non-selected locations can be determined. One feature resides in the provision of a "B increments A" mode whereby access to an A address register is incremented upon each cycle of access to a B address register.

3,719,930

## ONE-BIT DATA TRANSMISSION SYSTEM

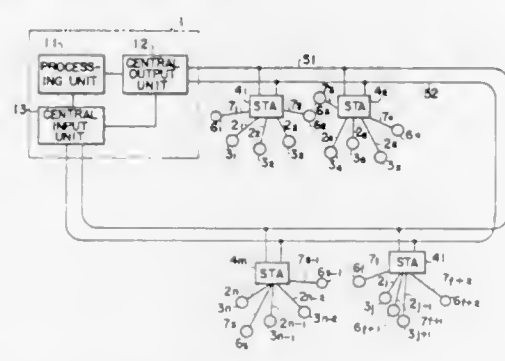
Minoru Horoshima, Kokubunji-shi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed March 25, 1971, Ser. No. 127,939

Int. Cl. G06f 9/18

U.S. Cl. 340—172.5

22 Claims



A signal transmission system for use in a data processing system employs a plurality of groups of one-bit data sources which are grouped according to priority levels. An address signal is transmitted from a central processing unit to independent groups of controlled signal sources which transmit and receive control signals governing the operation of the system. At individual group stations the address signal is decoded and one-bit sources are accessed. The signals include separate segments or portions made up of pluralities of bits which are employed to identify desired interrupts. bit position of signal portions unnecessary for information transmission are employed to identify the respective one-bit sources requesting interrupt.

3,719,931  
APPARATUS FOR CONTROLLING MACHINE  
FUNCTIONS

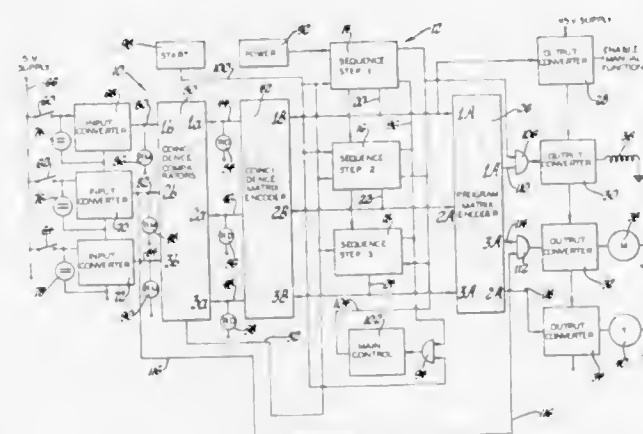
Roger L. Schroeder, Springfield, Vt., assignor to Bryant Grinder Corporation, Springfield, Vt.

Filed April 29, 1971, Ser. No. 138,512

Int. Cl. G06f 15/46

U.S. Cl. 340—172.5

28 Claims



A sequence controller for industrial machinery including a solid state sequencer operating as a logical stepping switch, a pair of programmable matrices for creating output signal combinations of selected permutations in response to sequencer outputs, one matrix being arranged to effect machine functions and the other being arranged to effect inputs to a comparator indicating machine requirements which are due. The comparator is connected to receive corresponding signals from the machine when the conditions are met and then to advance the sequencer. Paired lights on a control-display panel indicate the machine status during a sequence. Logical interlocks are provided to inhibit certain functions in the programmed sequence until certain other functions have been accomplished.

3,719,932

BIT ORGANIZED INTEGRATED MNOS MEMORY  
CIRCUIT WITH DYNAMIC DECODING AND STORE-  
RESTORE CIRCUITRY

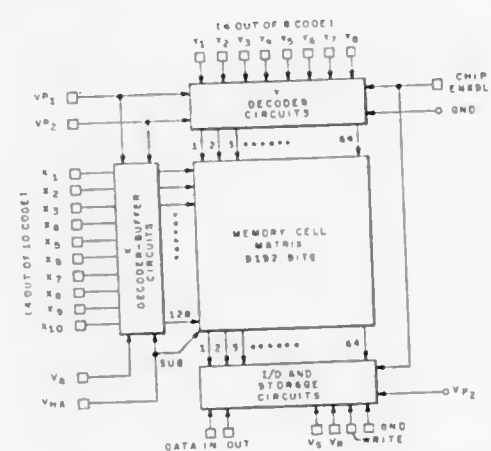
Arthur M. Cappon, Boston, Mass., assignor to Sperry Rand Corporation, Great Neck, N.Y.

Filed April 27, 1972, Ser. No. 247,977

Int. Cl. G11c 11/40

U.S. Cl. 340—173 R

7 Claims



A digital memory employing a matrix of known variable threshold transistor memory cells arranged in rows and columns. A first address decoder includes a push-pull output which applies an addressed voltage to the gates of transistors in the addressed row of memory cells and a not-addressed voltage to the remaining rows. A second address decoder operates through I/O and storage circuits to permit a single bit of information to be read into or out of the addressed memory cell in a selected column. The memory operates in a five-

phase operating cycle. During the first and second phases, appropriate voltages are applied to the gate electrodes of the addressed and non-addressed rows of memory cells and all source and drain lines in the matrix are charged through the I/O and storage circuits. During the third phase, information in each memory cell in the addressed row is read into a temporary storage transistor in the I/O and storage circuits. During the fourth phase, all memory cells in the addressed row are cleared. During the fifth phase, information is re-written into each memory cell from the corresponding temporary storage transistor in the I/O and storage circuits unless new information is to be written into the memory cell selected by the second decoder, in which case the new information is introduced at this time.

3,719,933

MEMORY DEVICE HAVING LEAD DIOXIDE PARTICLES  
THEREIN

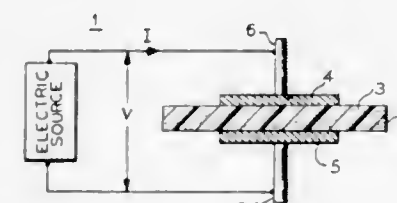
Takashi Wakabayashi; Terukazu Kinugasa; Shiro Hozumi, and Kanji Sugihara, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed March 29, 1971, Ser. No. 128,671

Int. Cl. G11c 11/46; H01l 3/00, 9/00

U.S. Cl. 340—173 TP

11 Claims



A memory device for memorizing an electric signal. Said memory device has an organic resin film having lead dioxide particles dispersed therein, a positive electrode, and a negative electrode. The memory device has a high electrical resistance state and a low electrical resistance state. An applied electric signal at a critical voltage and with forward polarity can transform the memory device from the high electrical resistance state to the low electrical resistance state. An applied electric erasing signal at a pre-determined voltage with reverse polarity can return the memory device from the low electrical resistance state to the high electrical resistance state.

3,719,934

SYSTEM FOR PROCESSING SIGNALS HAVING PEAKS  
INDICATING BINARY DATA

Michael I. Behr, South Pasadena, Lewis B. Coon, Jr., and Charles E. Bickel, both of Thousand Oaks, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 668,529, Sept. 8, 1967, Pat. No.

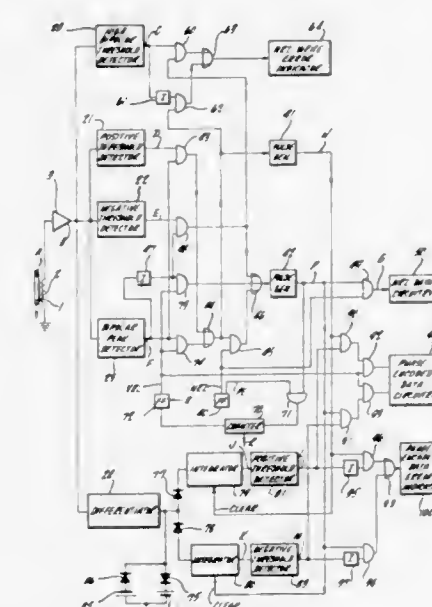
3,581,297. This application Sept. 28, 1970, Ser. No. 75,835

Int. Cl. G11b 5/04

U.S. Cl. 340—174.1 H

9 Claims

A system for reading binary data recorded on a storage medium as magnetic tape in either of several coding techniques. Specifically, the system is capable of reading either phase encoded data or data recorded in the form of nonreturn-to-zero pulses in which one binary value is represented by a flux reversal in a bit cell and the other binary value is represented by the absence of a flux reversal in a bit cell (hereafter called modified NRZ). A positive threshold detector, a negative threshold detector, and a bipolar peak detector are utilized for recovering the NRZ data and part of the preamble of the phase encoded data. The bipolar peak detector is also employed in the recovery of the phase encoded data itself. To recover the NRZ data and the preamble of the phase encoded data, the output of the positive threshold detector



signals are applied to a positive threshold detector and a negative threshold detector, respectively. The output of the positive threshold detector is combined with the output of the bipolar peak detector in one AND circuit and the output of the negative threshold detector is combined with the inverse of the output of the bipolar peak detector in another AND circuit to recover the phase encoded data. To check for errors in the phase encoded data, these outputs are switched and applied to two other AND circuits.

3,719,935

## TELEMETERING SYSTEM FOR ROTATING BODY

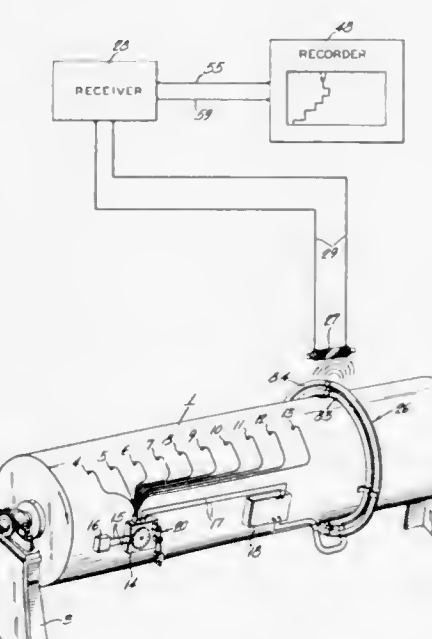
Preston E. Chaney, Dallas, and Charles F. Rhodes, Jr., Richardson, both of Tex., assignors to Sun Oil Company, Philadelphia, Pa.

Filed Oct. 22, 1969, Ser. No. 868,398

Int. Cl. G08c 19/22

U.S. Cl. 340—206

4 Claims



In order to telemeter data from a moving body to a fixed recorder, a unidirectional voltage representing the data is con-







separate audio signal generator, which generator produces audio signals corresponding to the identity signals of the tracked ground station.

3,719,944

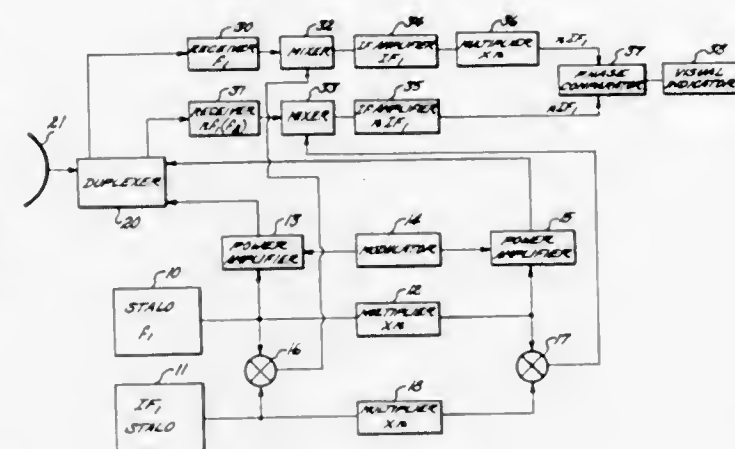
# ABSOLUTE RANGE FUZE SYSTEM USING LIMITING OR AGC

Donald J. Adrian, Arlington, Calif., assignor to The United States Government represented by the Secretary of the Navy  
Filed March 11, 1957, Ser. No. 645,385  
Int. Cl. G01s 9/04

U.S. Cl. 343—7 PF

3 Claims

1. An FM doppler fuze system comprising means for transmitting a signal having a carrier frequency modulated by a band of random noise, means for mixing the transmitted signal with a return echo signal modified by the doppler effect of the relative movement between the fuze and a target, low pass filter means for deriving an output adapted to actuate the fuze from the low frequency doppler portion of the output from said mixing means, and means coupled between said mixing means and said low pass filter to maintain said output proportional to the distance from said fuze to said target and independent of the size of said target.



provide a resultant signal having characteristics distinguishing the object from its background.

3,719,945

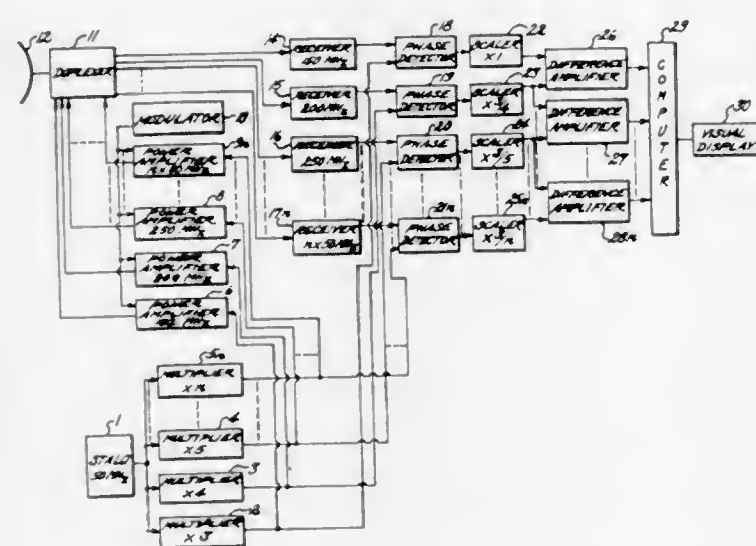
# NON-INTEGRAL RADAR PHASE COMPARISON SYSTEM FOR OBJECT RECOGNITION

Carlyle J. Sletten, Acton; William B. Goggins, Jr., Winchester, and Philipp Blacksmith, Concord, all of Mass., assignors to The United States of America as represented by the Secretary of the Air Force

Ser. No. 795,776  
Filed Oct. 1, 1957, Int. Cl. G01s 9/02

U.S. Cl. 343—5 SA

4 Claims



A radar system of object recognition wherein non-integral coherent-harmonic frequency signals are transmitted towards the object of interest and the return signals therefrom are phase compared to provide a resultant signal having characteristics distinguishing the object from its background.

3,719,946

# RADAR PHASE COMPARISON SYSTEM INCLUDING A SUPERHETRODYNE RECEIVER

Carlyle J. Sletten, Acton; William B. Goggins, Jr., Winchester, and Philipp Blacksmith, Concord, all of Mass., assignors to The United States of America as represented by the Secretary of the Air Force

Filed Jan. 27, 1969, Ser. No. 795,777

Int. Cl. G01s 9/02

U.S. Cl. 343—5 SA

3 Claims

A radar system of object recognition wherein multiple coherent harmonic frequency signals are directed towards an

# METHOD OF AND DEVICE FOR DETECTING SUBMERGED BODIES BY MEANS OF MEGAMETER RADIO WAVES

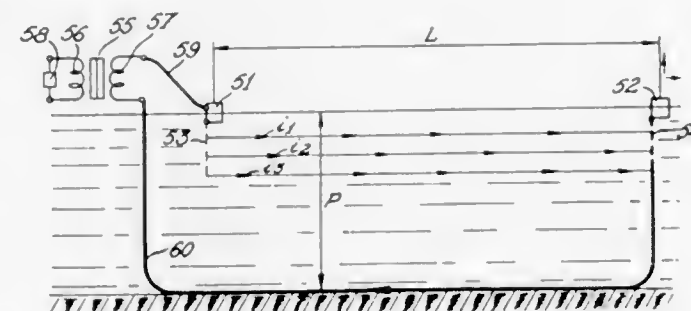
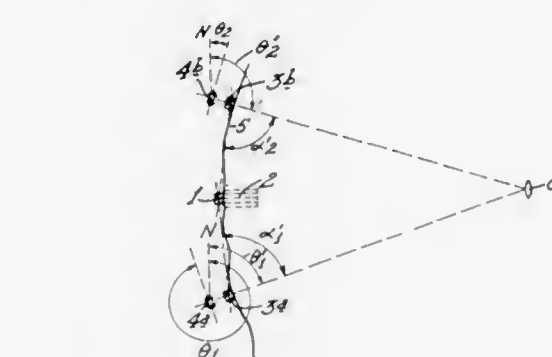
Henri Gutton, 134, rue Perronet, Seine, France; Jean Jacques Hugon, deceased, late of 21, rue de Belfort, Asnieres, Seine, France (by Simone Jeanne Georgette Hugon, heir); Marie Jeanne Augarde, 16, rue du Poste, Sainte-Barnabe-Marseille, Bouches-du-Rhone, France, and Emile Hugon, 22, rue de Dinkergue, Casablanca, Morocco (heirs)

Filed June 21, 1961, Ser. No. 119,253

Claims priority, application France, July 7, 1960, 60832275  
Int. Cl. G01s 3/02

U.S. Cl. 343—112 R

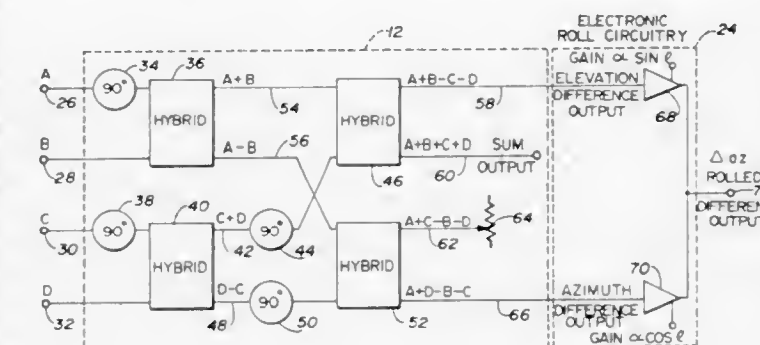
16 Claims



A method of detecting bodies which are submerged into a liquid mass, by means of megameter radio waves generating on the surface of said liquid mass a plurality of electric fields slightly inclined in their propagation direction and the horizontal component of which vertically propagates inwardly of said liquid mass, which consists in transmitting at the sur-

face of the liquid mass megameter radio waves of the aforementioned character, simultaneously receiving in a plurality of receiving stations spaced from each other said emitted waves and the waves obtained by reflection, on a submerged obstacle to be detected, of the vertically propagated horizontal component of the electric field existing in vertical alignment with said obstacle, determining at each receiving station the included angle formed by the lines joining said station to the wave emission and to the obstacle, measuring at the receiving stations for which said included angle is comprised between 60° and 120°, on the one hand, the phase-shift between the emitted and reflected waves and, on the other hand, the bearing angle formed by the direction for which the reception of the reflected waves is maximum and a stationary direction which is similar for all the receiving stations determining by the crossbearing method the geographical position of said obstacle by utilizing the thus measured bearing angles, and computing the depth of said obstacle from said measured phase-shift.

azimuth difference signal passes through a circuit having a control input equal to the sine of the roll angle. The outputs of



3,719,948

# INCREASED FIELD OF VIEW OF DETECTOR ARRAY

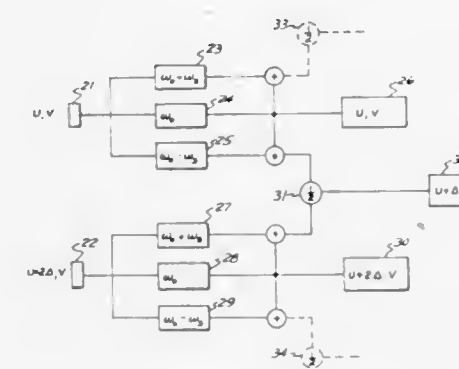
Rolf K. Mueller, Brighton, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Oct. 8, 1970, Ser. No. 79,156

Int. Cl. G01s 3/06

U.S. Cl. 343—113 R

10 Claims



A system for increasing the field of view of an array of detectors is described. The system also unambiguously positions the target with respect to the normal to the array. These advantages are obtained by periodically linearly moving, or vibrating, the array along an axis within the plane of the array. The frequency of vibration is constant and is selected for convenient detection and measurement. The amplitude of vibration is related to the spacing of the detectors within the array so that expanding the equation describing the field of view of a single detector as a Taylor series along the axis of vibration yields an expression containing frequency components which are readily detected and separated to thereby effectively double the density of detectors within the array.

3,719,949

# ANTENNA PATTERN ROLL STABILIZATION

Christian O. Hemmi, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 31, 1969, Ser. No. 889,568

Int. Cl. G01s 5/02

U.S. Cl. 343—117

10 Claims

Elements of a phased array antenna are grouped and signals from the various groups are combined to produce an elevation difference signal and an azimuth difference signal. The elevation difference signal passes through circuitry having a control signal that varies with the cosine of the antenna roll angle and the

each of these circuits are combined to produce a roll stabilization signal.

3,719,950

# ANTENNA SYSTEM FOR VHF AND UHF RADIO DIRECTION FINDERS

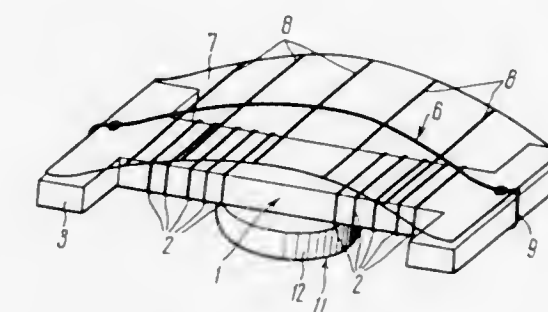
Aron Borukhovich Bukhman, Khersonskaya ulitsa, 18, kv. 90; Evgeny Alexandrovich Drovenkov, Sevastopolsky prospekt, 34, kv. 9; Felix Alexandrovich Ivaschenko, Rochdelskaya ulitsa, 11/5, kv. 54; Aron Meerovich Aizenshtein, Ovchinnikovskaya naberezhnaya, 22/24, kv. 24, and Igor Lvovich Yanushkevich, Angarskaya ulitsa, 49, korpus 2, kv. 93, all of Moscow, U.S.S.R.

Filed Nov. 3, 1971, Ser. No. 195,301

Int. Cl. G01s 5/04

U.S. Cl. 343—788

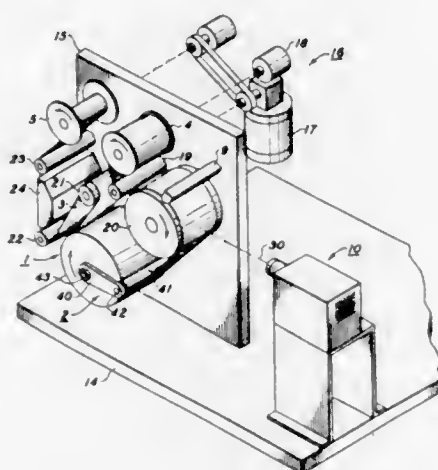
2 Claims



An antenna system for a VHF and UHF radio direction finder comprises a loop antenna formed by turns which are arranged on an elongated magnetodielectric core. The antenna system has also an omnidirectional antenna member and a switch means which shapes the resultant directivity pattern by adding up signals from the loop and omnidirectional antennas and changing the position of this pattern discretely by 180° in the horizontal plane to obtain its mirror image. The omnidirectional antenna is made in the form of a closed turn arranged on the core of the loop antenna so that it is substantially perpendicular to the turns of the loop antenna. A portion of the closed turn is disposed in the direction of the longitudinal axis of the core is elevated above the core surface through a known distance whereby the magnitude of the signal from the omnidirectional antenna is such that the two resultant directivity patterns of the antenna system intersect only at two points in a horizontal plane.



**3,719,951**  
**WRAP ADJUST DEVICE FOR CONTROLLING**  
**ENGAGEMENT BETWEEN A WEB AND ROLLER IN AN**  
**IMAGING SYSTEM**  
 William Kingsley, and Robert F. Allis, both of Rochester, N.Y.,  
 assignors to Xerox Corporation, Stamford, Conn.  
 Filed Aug. 16, 1971, Ser. No. 171,819  
 Int. Cl. H04n 5/82  
 U.S. Cl. 346—74 TP

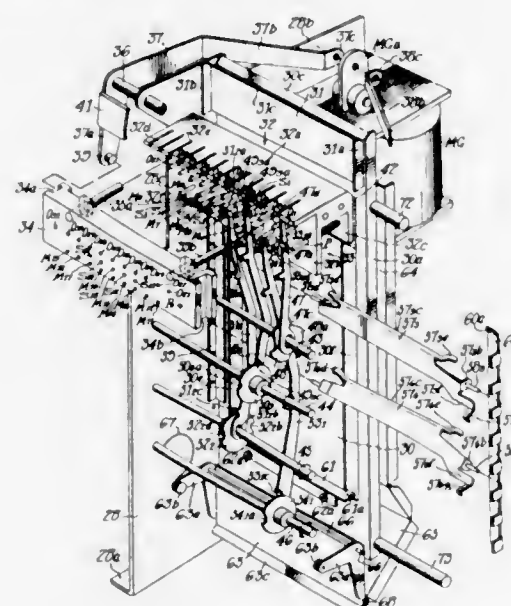


7 Claims

medium is accomplished by extending a passage from a supply of marking medium into at least one output channel of the amplifier at such an angle that the marking medium is drawn into the output channel and deposited on the moving recorder. In a second embodiment, the marking medium is supplied directly to the power nozzle of a secondary fluid amplifier and the action of the primary fluid amplifier causes the marking medium in the secondary fluid amplifier to switch from one or the other of two output channels. One of the output channels extends onto the recorder while the other output channel returns unused marking medium to its reservoir. In a third embodiment, both output channels of the secondary amplifier direct the marking medium onto the recorder so as to obtain simultaneous comparison of both channels.

**3,719,953**  
**CARD PUNCH**  
 Sakae Fujimoto, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan  
 Filed Oct. 22, 1970, Ser. No. 83,108  
 Claims priority, application Japan, Oct. 31, 1969, 44/87784  
 Int. Cl. G07c 1/06  
 U.S. Cl. 346—83

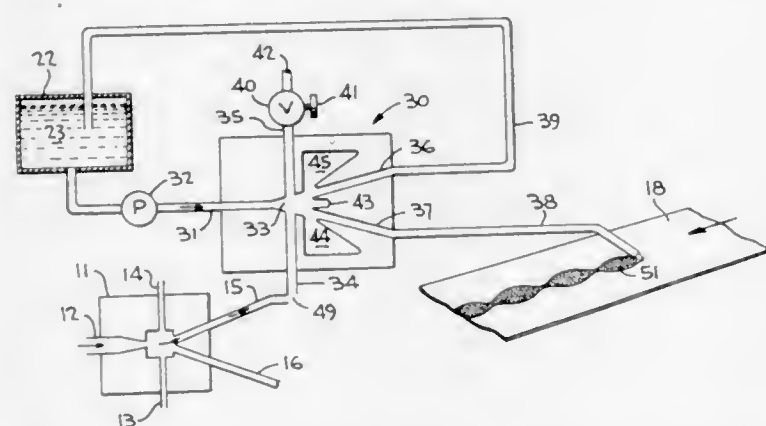
10 Claims



A card punch has a card insertion slot communicating with a card receiving passage, and receiving members are mounted for movement into and out of the passage. An operating device controls such movement to control the depth of insertion of a card through the slot into the passage. A plurality of punch pins are mounted for reciprocation across the passage to punch holes in a card, and a striking member is movable toward the passage and formed with a number of holes each aligned with a respective punch pin. A plurality of shield members are selectively interposable, in an operative position, between an end of a respective punch pin and the associated opening in the striking member, and cam means control movement of the shield members to the operative positions. A timing device operates the cam means to move the shield members to the operative position only at respective indicated times whereby, at any selected instant, only those shield members corresponding to the indicated time are in the operative position. A push button is selectively actuatable at any selected instant to energize a solenoid to move the striking member to cause only those punch pins then having the associated shield member in the operative position to move across the passage to punch holes in a card in the passage.

**3,719,952**  
**FLUERIC READOUT SYSTEM**  
 Saul Elbaum, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army  
 Filed March 4, 1971, Ser. No. 121,082  
 Int. Cl. G01d 5/42, 15/16  
 U.S. Cl. 346—75

7 Claims

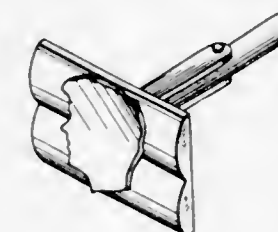


A flueric readout system is disclosed in which a visual permanent record, as a function of time, is obtained of the output of a fluid amplifier without the use of moving parts or electromechanical transducers. A supply of marking medium capable of imparting impressions upon a recording surface is combined with a fluid amplifier of the proportional or digital type such that the flow of fluid in at least one output channel of the fluid amplifier causes the flow of the marking medium onto the recording surface. The recording surface is typically in the form of a paper chart recorder which travels at a predetermined rate. In one embodiment the flow of marking

## DESIGNS

MARCH 6, 1973

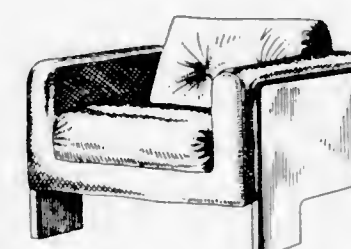
**226,411**  
**CUFF LINK**  
 Lucy T. Schramm, 65 Shetland Lane,  
 Willingboro, N.J. 08046  
 Filed Feb. 16, 1971, Ser. No. 115,932  
 Term of patent 14 years  
 Int. Cl. D2—07  
 U.S. Cl. D2—422



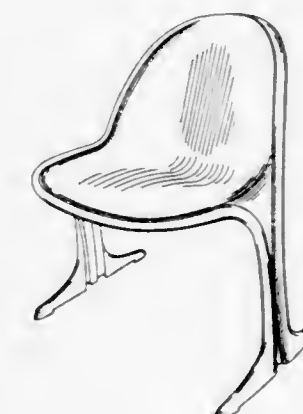
**226,412**  
**CHAIR**  
 Gordon L. Duern and Donald S. Griffin, Kitchener,  
 Ontario, Canada, assignors to Electrohome Limited,  
 Kitchener, Ontario, Canada  
 Filed May 19, 1971, Ser. No. 145,094  
 Term of patent 14 years  
 Int. Cl. D6—02  
 U.S. Cl. D6—69



**226,413**  
**CHAIR**  
 Jacques Guillon, Montreal, Quebec, Canada, assignor to  
 Jacques Guillon Designers Inc., Montreal, Quebec,  
 Canada  
 Filed May 21, 1971, Ser. No. 145,994  
 Term of patent 14 years  
 Int. Cl. D6—02  
 U.S. Cl. D6—55



**226,414**  
**STACKABLE CHAIR**  
 Everett Stacy Dukes, 247 Loma,  
 Long Beach, Calif. 90803  
 Filed Apr. 9, 1971, Ser. No. 132,929  
 Term of patent 14 years  
 Int. Cl. D6—02  
 U.S. Cl. D6—65



**226,415**  
**CHAIR**  
 Gordon L. Duern and Donald S. Griffin, Kitchener,  
 Ontario, Canada, assignors to Electrohome Limited,  
 Kitchener, Ontario, Canada  
 Filed May 19, 1971, Ser. No. 145,113  
 Term of patent 14 years  
 Int. Cl. D6—02  
 U.S. Cl. D6—69





**226,416**  
**FOLDABLE CHAIR**

Suekiti Utida, 9-7 Hioki-dori, Nakamura-ku,  
Nagoya, Japan  
Filed Nov. 18, 1970, Ser. No. 26,071  
Claims priority, application Japan May 23, 1970  
Term of patent 14 years  
Int. Cl. D6—02

U.S. Cl. D6—73



**226,417**  
**COFFEE TABLE**

Gordon L. Duern and Donald S. Griffin, Kitchener,  
Ontario, Canada, assignors to Electrohome Limited,  
Kitchener, Ontario, Canada  
Filed Apr. 9, 1971, Ser. No. 132,934  
Term of patent 14 years  
Int. Cl. D6—03

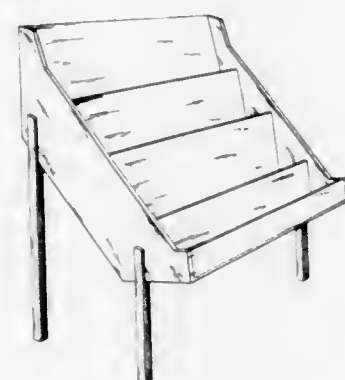
U.S. Cl. D6—146



**226,418**  
**CASCADE TYPE MERCHANDISING RACK**

John F. Gray, N. Old Barrington Road,  
Barrington, Ill. 60010  
Filed Aug. 12, 1971, Ser. No. 171,404  
Term of patent 14 years  
Int. Cl. D6—04

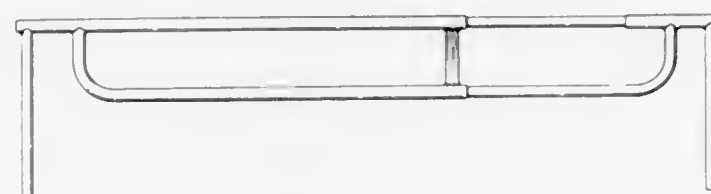
U.S. Cl. D6—190



**226,419**  
**BEDSIDE RAIL**

Morton I. Thomas, 125 South St., Monroe, N.Y.  
Filed Aug. 5, 1971, Ser. No. 169,595  
Term of patent 14 years  
Int. Cl. D6—06

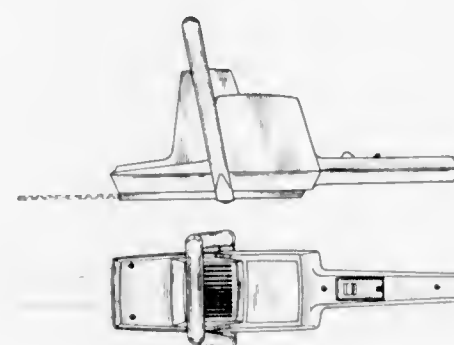
U.S. Cl. D6—198



**226,420**  
**HEDGE TRIMMER**

William E. Bartasevich, Jr., Glenshaw, and James E.  
Edgell, Bradford Woods, Pa., assignors to Disston, Inc.,  
Pittsburgh, Pa.  
Filed Mar. 4, 1971, Ser. No. 121,237  
Term of patent 14 years  
Int. Cl. D8—03

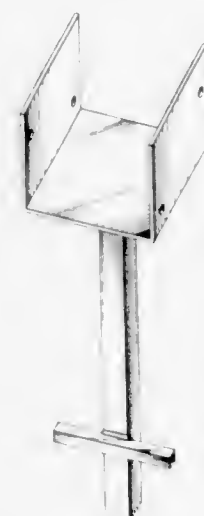
U.S. Cl. D8—8



**226,421**  
**POST AND BEAM SUPPORT**

Marvin L. Rich, 1018 Opal, Boise, Idaho 83705  
Filed Apr. 9, 1971, Ser. No. 132,927  
Term of patent 14 years  
Int. Cl. D8—08

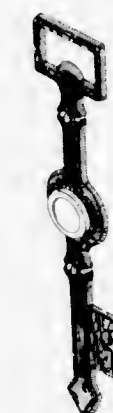
U.S. Cl. D8—235



**226,422**  
**ESCUTCHEON PLATE WITH PUSH BUTTON  
FOR DOOR BELLS**

Lawrence P. Mellyn, Gloucester, R.I., assignor to  
General Electric Company  
Filed Mar. 27, 1972, Ser. No. 238,730  
Term of patent 14 years  
Int. Cl. D8—09

U.S. Cl. D8—182



**226,423**  
**ESCUTCHEON PLATE WITH PUSH BUTTON  
FOR DOOR BELLS**

Lawrence P. Mellyn, Gloucester, R.I., assignor to  
General Electric Company  
Filed Mar. 27, 1972, Ser. No. 238,745  
Term of patent 14 years  
Int. Cl. D8—09

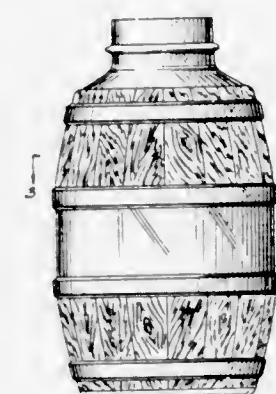
U.S. Cl. D8—183



**226,424**  
**BOTTLE**

Howard Cooper, 175 E. Delaware, Chicago, Ill. 60611  
Filed Nov. 18, 1971, Ser. No. 200,281  
Term of patent 14 years  
Int. Cl. D9—01

U.S. Cl. D9—28

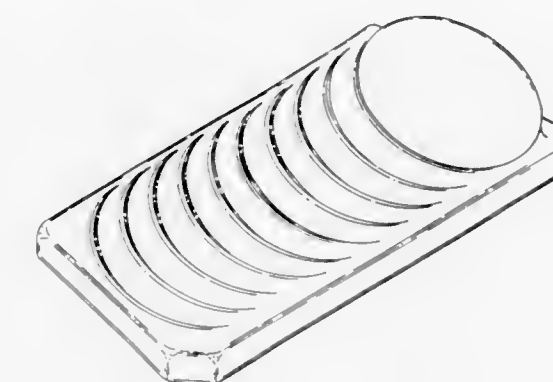


**226,425**

**TRAY FOR MEAT PATTIES**

Harold L. Orlich, Greenville, and Philip A. Sanborn, Jr.,  
Spartanburg, S.C., assignors to W. R. Grace & Co.,  
Duncan, S.C.  
Filed Jan. 4, 1972, Ser. No. 215,450  
Term of patent 14 years  
Int. Cl. D9—03

U.S. Cl. D9—189



**226,426**  
**COMBINED DISPLAY AND PACKAGING TRAY  
FOR MEAT OR THE LIKE**

Paul Joonase, Taylors, and Richard R. Perdue, Greer,  
S.C., assignors to W. R. Grace & Co., Duncan, S.C.  
Filed May 22, 1972, Ser. No. 255,955  
Term of patent 14 years  
Int. Cl. D9—03

U.S. Cl. D9—242

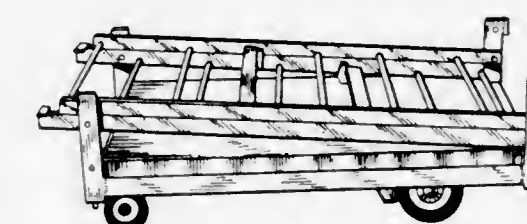


**226,427**

**FOLDED CART**

Harold Isaacs, 2583 Fenwick Road,  
University Heights, Ohio 44118  
Filed Mar. 19, 1971, Ser. No. 126,382  
Term of patent 14 years  
Int. Cl. D12—14

U.S. Cl. D14—3 M

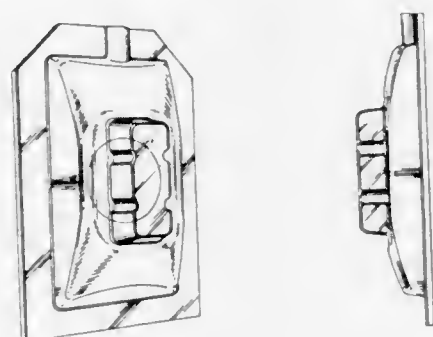




226,428

**COLOR INDICATOR DEVICE**

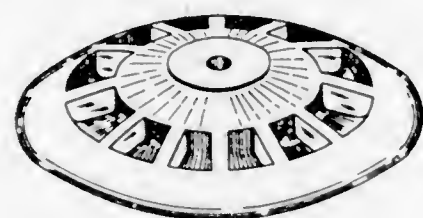
Ward B. Davis, Glendale, Calif., assignor to Sterilizer Control Royalties, North Hollywood, Calif.  
 Filed Feb. 3, 1971, Ser. No. 112,509  
 Term of patent 14 years  
 Int. Cl. D24—02; D9—04  
 U.S. Cl. D16—2



226,429

**BOW STRING SILENCER**

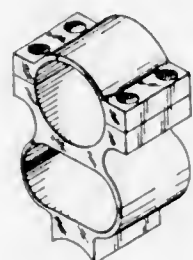
Jack P. Christen, Onalaska, Wis., assignor to Outers Laboratories, Inc., Onalaska, Wis.  
 Filed Jan. 19, 1972, Ser. No. 219,208  
 Term of patent 14 years  
 Int. Cl. D22—01  
 U.S. Cl. D22—5



226,430

**MOUNTING FOR A RIFLE TELESCOPIC SIGHT**

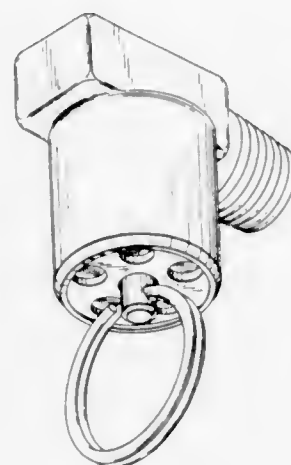
Donald R. Johannsen, Inkster, Mich., assignor to Wide-view Scope Mount Corporation, Inkster, Mich.  
 Filed May 26, 1972, Ser. No. 257,487  
 Term of patent 14 years  
 Int. Cl. D22—01  
 U.S. Cl. D22—7



226,431

**PRESSURE RELIEF VALVE**

Philip W. Embury, Jr., Fairport, N.Y., assignor to Qualitrol Corporation, Fairport, N.Y.  
 Filed Feb. 8, 1971, Ser. No. 113,803  
 Term of patent 14 years  
 Int. Cl. D23—01  
 U.S. Cl. D23—19



226,432

**TOILET TANK**

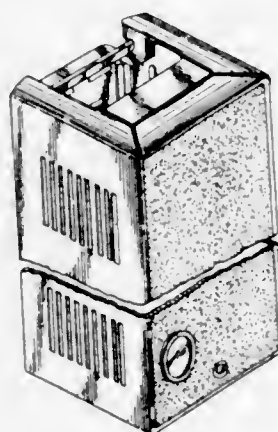
Warren Gregory Anderson, Morganton, N.C., assignor to American Standard Inc., New York, N.Y.  
 Original design application Jan. 16, 1970, Ser. No. 20,960.  
 Divided and this application Aug. 20, 1971, Ser. No. 173,716  
 Term of patent 14 years  
 Int. Cl. D23—02  
 U.S. Cl. D23—66



226,433

**ROOM DEODORANT VAPORIZING CASING**

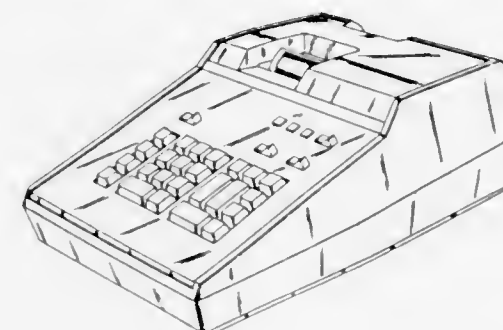
Joseph A. Hill, Glen Ellyn, Ill., assignor to Lien Chemical Company, Franklin Park, Ill.  
 Filed June 10, 1971, Ser. No. 152,024  
 Term of patent 14 years  
 Int. Cl. D23—99  
 U.S. Cl. D23—148



226,434

**DESK TOP ELECTRONIC CALCULATOR**

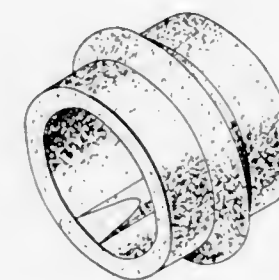
Manfred Link, Nuremberg, Germany, assignor to Triumph Werke Nuernberg A.G., Nuernberg, Germany  
 Filed June 18, 1970, Ser. No. 154,715  
 Claims priority, application Germany Feb. 12, 1971  
 Term of patent 14 years  
 Int. Cl. D14—02  
 U.S. Cl. D26—5 C



226,435

**INSULATOR FOR AN ELECTRIC HEATING ELEMENT**

Amos W. Hackman, Kirkland, Ill., assignor to Emerson Electric Co., St. Louis, Mo.  
 Filed Oct. 5, 1970, Ser. No. 25,326  
 Term of patent 14 years  
 Int. Cl. D13—99  
 U.S. Cl. D26—10



226,436

**CHRISTMAS ORNAMENT**

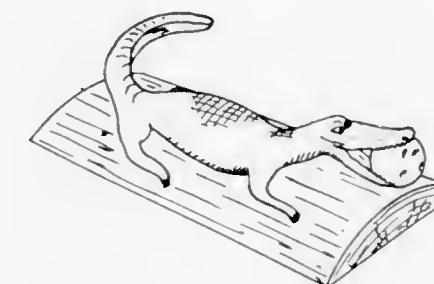
Katherine B. Vandewater, P.O. Box 184, Sherwood, Oreg. 97140  
 Original design application May 6, 1970, Ser. No. 22,845.  
 Divided and this application Oct. 20, 1970, Ser. No. 25,574  
 Term of patent 14 years  
 Int. Cl. D11—05  
 U.S. Cl. D29—1 B



226,437

**GOLF TROPHY**

Milton E. Jordan, Adelphi, and Harold W. Rohrbach, College Park, Md., assignors to Gator Creations, Inc.  
 Filed Aug. 26, 1971, Ser. No. 175,417  
 Term of patent 14 years  
 Int. Cl. D11—02  
 U.S. Cl. D29—23 D



226,438

**TOY FINGER PUPPET**

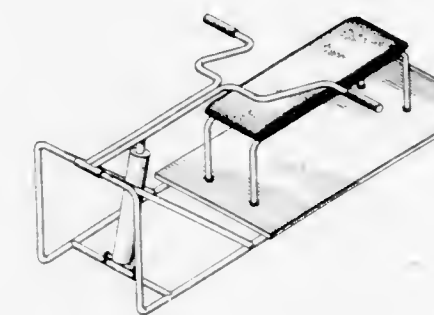
David S. Matteson, Fort Lauderdale, Fla., assignor to The Broward County School Board, Fort Lauderdale, Fla.  
 Filed Aug. 6, 1971, Ser. No. 122,650  
 Term of patent 14 years  
 Int. Cl. D21—01  
 U.S. Cl. D34—2 R



226,439

**EXERCISER**

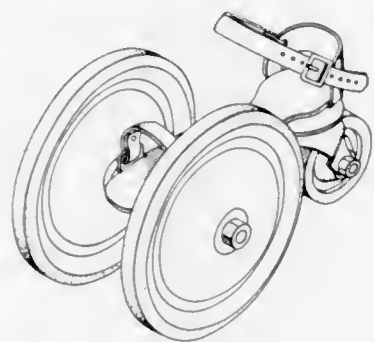
Cliff J. Coker, Laguna Niguel, Calif., assignor to Norma J. Coker, Huntington Beach, Calif.  
 Filed Dec. 8, 1971, Ser. No. 206,236  
 Term of patent 14 years  
 Int. Cl. D21—02  
 U.S. Cl. D34—5 K





226,440  
**WHEELED SKATE**  
 Arthur G. Bentley, 18655 Clark St.,  
 Tarzana, Calif. 91356  
 Filed Oct. 26, 1971, Ser. No. 192,699  
 Term of patent 14 years  
 Int. Cl. D21—01

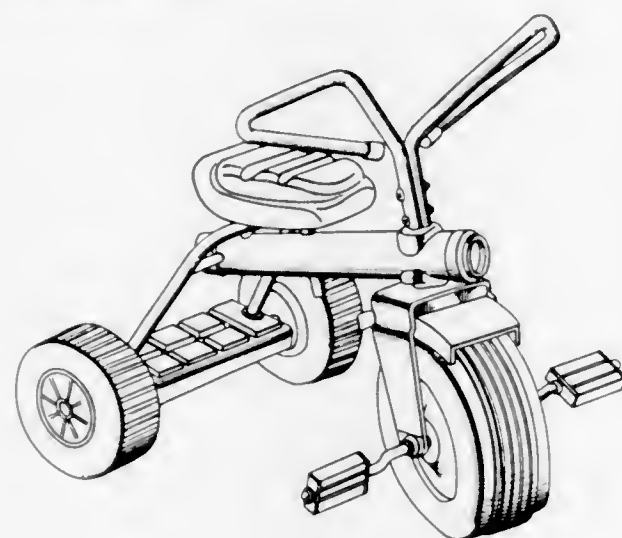
U.S. Cl. D34—14 C



226,441  
**VELOCIPEDE**  
 Viktor Schreckengost, Cleveland Heights, Ohio, assignor  
 to The Murray Ohio Manufacturing Co., Nashville,  
 Tenn.

Filed June 25, 1971, Ser. No. 157,067  
 Term of patent 14 years  
 Int. Cl. D12—11

U.S. Cl. D34—15 AL



226,442  
**PEDAL DRIVEN WHEELED VEHICLE**  
 Howard K. Rees, Torrance, Raymond J. Douglas, Lomita,  
 and Leonard R. Moquin and Elliot Handler, Los Ange-  
 les, Calif., assignors to Mattel, Inc., Hawthorne, Calif.  
 Filed Feb. 9, 1972, Ser. No. 225,014  
 Term of patent 14 years  
 Int. Cl. D12—11

U.S. Cl. D34—15 AL



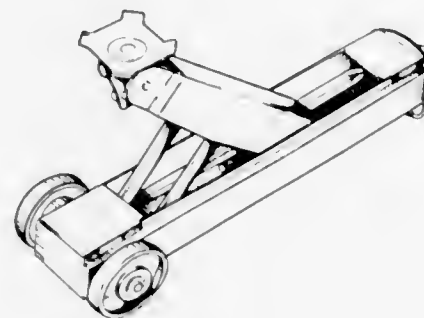
226,443  
**BEVERAGE GLASS OR SIMILAR ARTICLE**  
 Walter B. Achenbach, Toledo, Ohio, assignor to  
 Owens-Illinois, Inc., Toledo, Ohio  
 Filed Apr. 21, 1971, Ser. No. 136,290  
 Term of patent 14 years  
 Int. Cl. D7—01

U.S. Cl. D36—8 G



226,444  
**TROLLEY JACK**  
 Bertram Donald Granger, Wollaton, Nottingham, Eng-  
 land, assignor to Newman Granger Industries Limited  
 Filed Sept. 29, 1971, Ser. No. 184,977  
 Term of patent 3½ years  
 Int. Cl. D15—99; D12—05

U.S. Cl. D41—1 D



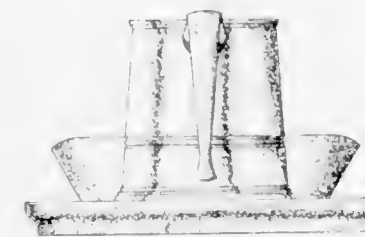
226,445  
**TRAY**  
 Thomas H. Eckdahl, Brooklyn Center, Minn., assignor to  
 Plastics, Inc., St. Paul, Minn.  
 Filed Aug. 12, 1970, Ser. No. 24,461  
 Term of patent 7 years  
 Int. Cl. D7—99

U.S. Cl. D44—10 E



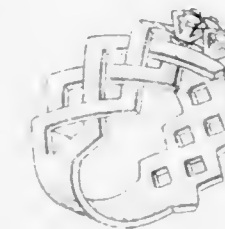
226,446  
**FOOD AND BEVERAGE SERVING SET**  
 Ralph P. Wilton, Wrightsville, and John J. Fitzpatrick,  
 Hellam, Pa., assignors to Wilton Brass Company,  
 Columbia, Pa.  
 Filed Apr. 27, 1971, Ser. No. 138,010  
 Term of patent 14 years  
 Int. Cl. D7—01

U.S. Cl. D44—10 E



226,447  
**FINGER RING**  
 Daniel Shiman, Maplewood, N.J., assignor to Shiman  
 Industries Inc., Newark, N.J.  
 Filed Apr. 30, 1971, Ser. No. 139,301  
 Term of patent 14 years  
 Int. Cl. D11—01

U.S. Cl. D45—10 C



226,448  
**ELECTRIC LANTERN**  
 Randal L. May, Andover, and Benjamin C. Baugh and  
 Robert R. Deines, Wichita, Kans., assignors to The  
 Coleman Company, Inc., Wichita, Kans.  
 Filed Oct. 29, 1971, Ser. No. 194,094  
 Term of patent 14 years  
 Int. Cl. D26—02

U.S. Cl. D48—24 R



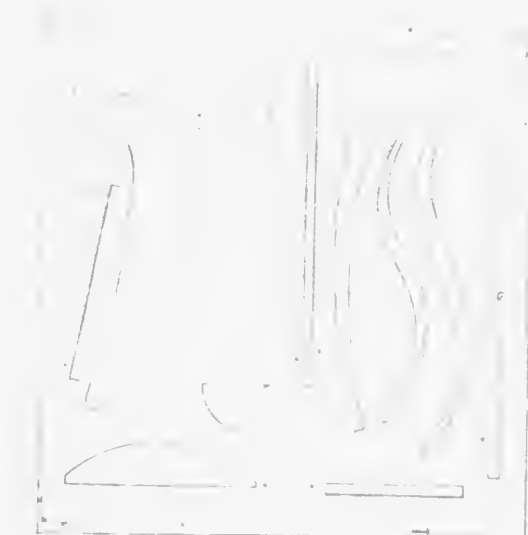
226,449  
**LIGHTER**  
 Johan Willem Van Heuvel, Voorburg, Netherlands, as-  
 signor to Gebrs. Van Poppel N.V., Assen, Netherlands  
 Filed Sept. 9, 1971, Ser. No. 179,250  
 Term of patent 14 years  
 Int. Cl. D27—05

U.S. Cl. D48—27



226,450  
**GARMENT PATTERN DRAFTING STENCIL**  
 Camille Albert Ajus and Marguerite Nicholas Ajus, both  
 of 910 Lamer, Apt. 5, St. Laurent, Quebec, Canada  
 Filed May 13, 1971, Ser. No. 143,277  
 Term of patent 14 years  
 Int. Cl. D19—06

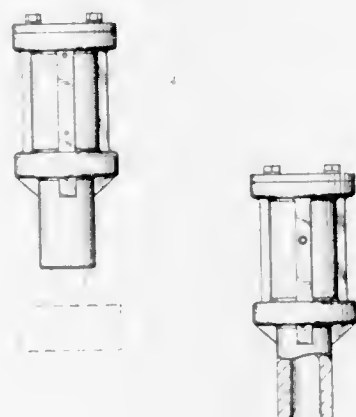
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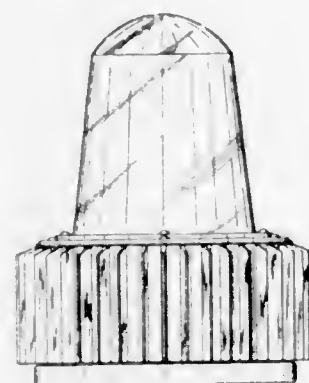
**226,451**  
**VIBRATOR FOR MATERIAL HANDLING**  
**OR THE LIKE**  
 Don B. Lash, Houston, Tex., assignor to National Air  
 Vibrator Company, Houston, Tex.  
 Filed Jan. 4, 1971, Ser. No. 103,934  
 Term of patent 14 years  
 Int. Cl. D15—99

U.S. Cl. D55—1



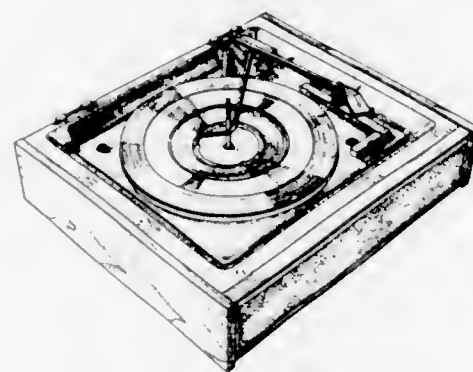
**226,454**  
**FLASHER**  
 George L. Davidson and Renaldo M. Beltramo, Cincin-  
 natl, Ohio, assignors to Tuttle, Incorporated, Cincin-  
 natl, Ohio  
 Filed Aug. 3, 1970, Ser. No. 24,260  
 Term of patent 14 years  
 Int. Cl. D29—02; D26—02

U.S. Cl. D72—1



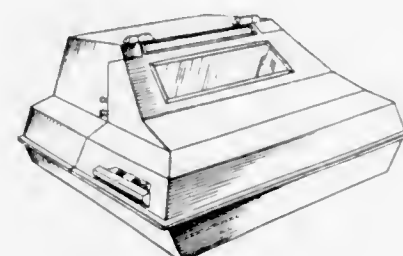
**226,452**  
**RECORD PLAYER**  
 Hiroaki Yazawa, Yamatokoriyama-shi, Japan, assignor to  
 Matsushita Electric Industrial Co., Ltd., Osaka, Japan  
 Filed Apr. 6, 1971, Ser. No. 131,841  
 Term of patent 14 years  
 Int. Cl. D14—01

U.S. Cl. D56—4 R



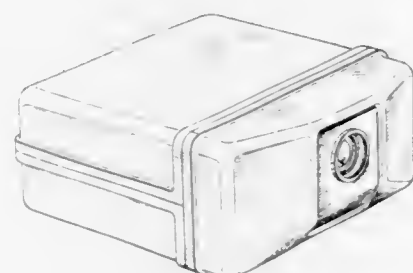
**226,455**  
**BARBECUE GRILL AND OVEN COMBINATION**  
 Charles D. Dushek, Lisle, Ill., assignor to Sears,  
 Roebuck and Co., Chicago, Ill.  
 Filed May 17, 1971, Ser. No. 144,366  
 Term of patent 14 years  
 Int. Cl. D7—02

U.S. Cl. D81—10 E



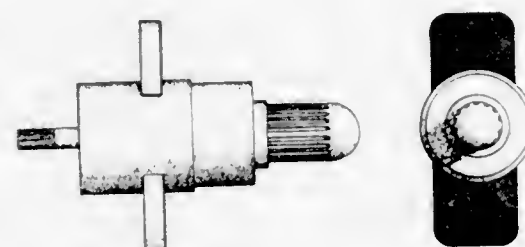
**226,453**  
**SURVEILLANCE CAMERA**  
 Maurice Glenn Bundy, Kansas City, Kans., assignor to  
 Optics, Inc., Kansas City, Kans.  
 Filed Feb. 23, 1971, Ser. No. 118,205  
 Term of patent 14 years  
 Int. Cl. D16—01

U.S. Cl. D61—1 C



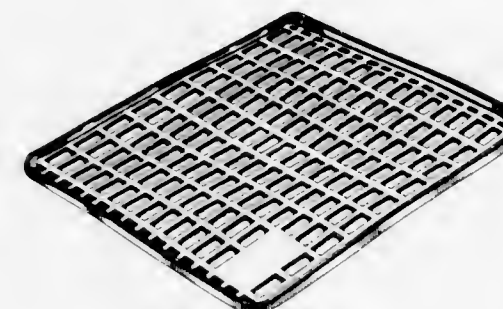
**226,456**  
**SYRINGE UNIT**  
 Anthony E. Bolyn, Mount Pocono, and Lloyd G. Colio,  
 Stroudsburg, Pa., assignors to Richardson-Merrell Inc.,  
 New York, N.Y.  
 Filed Mar. 23, 1971, Ser. No. 127,432  
 Term of patent 14 years  
 Int. Cl. D24—04

U.S. Cl. D83—12 A



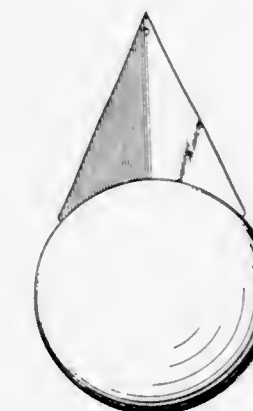
**226,457**  
**BREAD TRAY**  
 James D. Wilson, Orange County, Calif., assignor to  
 Banner Metals, Inc., Compton, Calif.  
 Filed July 29, 1971, Ser. No. 167,560  
 Term of patent 14 years  
 Int. Cl. D3—02

U.S. Cl. D87—1 R



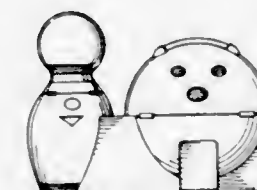
**226,459**  
**AUTOMOBILE STOP INDICATOR FOR**  
**GARAGE USE**  
 Raymond S. Holtz, 16 Mountain Road,  
 West Hartford, Conn. 06104  
 Filed Jan. 6, 1972, Ser. No. 215,984  
 Term of patent 14 years  
 Int. Cl. D20—03; D29—02

U.S. Cl. D96—12 R



**226,458**  
**BOWLING EQUIPMENT BAG**  
 Julian A. Carreiro, Santa Susanna, Calif., assignor to  
 Angelo N. Giordano and Joseph R. Raio, Canoga Park,  
 Calif., fractional part interest to each  
 Filed July 20, 1971, Ser. No. 164,488  
 Term of patent 14 years  
 Int. Cl. D3—02

U.S. Cl. D87—5 D



**226,460**  
**SPOON OR SIMILAR ARTICLE**  
 Burr Sebring, Barrington, R.I., assignor to Gorham, a  
 Division of Textron Inc., Providence, R.I.  
 Filed June 10, 1971, Ser. No. 152,006  
 Term of patent 14 years  
 Int. Cl. D7—03

U.S. Cl. D54—12 A





# LIST OF PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 6TH DAY OF MARCH, 1973

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- Abe, Iwao, to Chisso Corporation. Packing vessel for thin sheet materials. 3,719,273, Cl. 206-65.000.
- Abe, Takeshi, to Kabushiki Kaisha Ricoh. Automatic plate clamping and discharging device for use in offset printing press. 3,719,142, Cl. 101-216.000.
- Abildtrup, Jorgen, to Danfoss A/S. Heating unit having a PTC heating resistor. 3,719,796, Cl. 219-462.000.
- Accountius, Oliver E., to North American Rockwell Corporation. Carbonaceous material and method of preparation. 3,719,452, Cl. 423-449.000.
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- Ackerman, Myron. *See—*  
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- Adahan, Carmeli. Skid control module. 3,719,399, Cl. 303-21.000.
- Adams, John A., Jr., to Stromberg-Carlson Corporation. Attendant to trunk coupler. 3,719,784, Cl. 179-27.000.
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- Addor, Roger Williams, and Ailman, David Edgar, to American Cyanamid Company. Method for utilizing bisphosphorylated imidodithiocarbonates as insecticides or arachnicides. 3,719,757, Cl. 424-204.000.
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- Adrian, Donald J., to United States Government, Navy. Absolute range fuze system using limiting or AGC. 3,719,944, Cl. 343-7.000.
- Advance Products Corporation. *See—*  
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- Ahlquist, Norman C., and Charlson, Robert J., to Battelle Development Corporation. Analog circuits for calculating relative humidity from dew point and dry bulb temperature information. 3,719,810, Cl. 235-151.300.
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- Wegerhoff, Arno; Schmitz, Franz-Josef; and Macura, Carl, 3,719,597.
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- Anderson, Daniel J.; and Jimeron, James C., to Mallory, P. R., & Co., Inc. Capacitor electrolyte. 3,719,602, Cl. 252-62.200.
- Anderson, Dean M., and Burbick, Ross E., to Wiggins, E. B., Inc. Breakaway coupling. 3,719,194, Cl. 137-68.000.
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- Andrews, John Marshall, Jr.; and Lepselter, Martin Paul, to Bell Telephone Laboratories, Incorporated. Solid state temperature sensor employing a pair of dissimilar Schottky-barrier diodes. 3,719,797, Cl. 219-501.000.
- Ankerwerk Nurnberg GmbH: See—  
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- Antonen, Robert C., to Dow Corning Corporation. Solvent-free liquid organosiloxane resins. 3,719,630, Cl. 260-37.05b.
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- Aoki, Fumio: See—  
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- Arai, Tohru: See—  
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- Archer, John C. Doll house for city children. 3,719,001, Cl. 46-12.000.
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- Ark-Les Switch Corporation: See—  
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- Arn, Kiekert Sohne: See—  
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- Arne, Christian; and Brogren, Erik E., to Chicago Bridge & Iron Company. Offshore structure with static and dynamic stabilization shell. 3,719,048, Cl. 61-46.500.
- Arons, Jakob de Swaan: See—  
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- Arrow-Hart, Inc.: See—  
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- Arthur, Jett C., Jr.; Singh, Sujun; and Wade, Ricardo H., to United States of America, Agriculture. Crosslinked heterocyclic cellulose products. 3,719,449, Cl. 8-120.000.
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- Benjamin, George N., III; and Pence, Clarence M., to Anaconda Wire and Cable Company. Extrusion guider. 3,719,444, Cl. 425-114.000.
- Benner, Robert L., to Sun Oil Company of Pennsylvania. Naphtha conversion process including hydrocracking and hydrotreating. 3,719,586, Cl. 208-66.000.
- Berends, Werner; Jacob, Heinz-Jurgen; and Eggelsmann, Harry, to U.S. Philips Corporation. X-ray tube. 3,719,846, Cl. 313-57.000.
- Berg Manufacturing Company, The: See—  
Cannella, Joseph L., 3,719,125.
- Berger, Julius, to Hoffmann-La Roche Inc. Coccidiostats. 3,719,753, Cl. 424-122.000.
- Bergomi, Joseph G., Jr.; and Graham, Paul R., to Monsanto Company. Ethylene/vinyl chloride/acrylamide interpolymer and styrene/butadiene/unsaturated acid terpolymer polyblend. 3,719,628, Cl. 260-29.70w.
- Berlin, Milton: See—  
Rheingold, Lawrence M.; Berlin, Milton; De Lallo, Louis; and Schierwagen, Alfred, 3,719,536.
- Berner, Kurt: See—  
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- Berthou, Jean; Hostein, Charles; and Mugnier, Robert, to Progil. Electrolysis cell with anode support means. 3,719,578, Cl. 204-252.000.
- Bertini, Franco: See—  
Minisci, Francesco; Bertini, Franco; Galli, Remo; Pizzo, Torricella Del; and Quilico, Adolfo, 3,719,685.
- Bethlehem Steel Corporation: See—  
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- Betts, Gary W.: See—  
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- Beuerman, Donald R.: See—  
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- Bevard, Marion Wallace; Bevard, Samuel Street, Jr.; and Groom, Frederick, III. Non-hardenable, high-density fill composition and process for making same. 3,719,511, Cl. 106-90.000.
- BeVard, Ralph E., to Eraser Company, Inc. The Wire stripper wheel for tough plastic. 3,719,007, Cl. 51-207.000.
- Bevard, Samuel Street, Jr.: See—  
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- Bhatt, Pradip: See—  
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- Bickel, Charles E.: See—  
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- Bickel, Hans; Bosshardt, Rolf; and Mueller, Johannes, to Ciba-Geigy Corporation. Derivatives of 7-aminocephalosporanic acid. 3,719,673, Cl. 260-243.00c.
- Biddle, James G., Company: See—  
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- Bieber, Clarence George; and Mihalisin, John Raymond, to International Nickel Company, Inc. The. Ultra hard iron-cobalt-molybdenum-nickel alloys. 3,719,474, Cl. 75-123.000.
- Biegert, Johannes P.: See—  
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- Biermann, Peter, to Marker, Hannes. Toe iron for safety ski bindings. 3,719,368, Cl. 280-11.35t.
- Bigelow-Sanford, Inc.: See—  
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- Billingsley, Raymond L.; Howard, Ralph L., and Noreen, Donald H., to Westinghouse Electric Corporation. Method of and apparatus for material storage and retrieval in a warehouse system. 3,719,287, Cl. 214-16.40a.
- Bio-Response, Inc.: See—  
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- Bio-Science Laboratories: See—  
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- Bir, Wallace G.; and Tsang, Louis C., to Monsanto Company. Removing oligomers from styrene vapor. 3,719,720, Cl. 260-669.00a.
- Bishop, Glick U.; and Knox, Robin B., to Martin-Marietta Corporation. Dynamic electromagnetic environment simulator. 3,719,812, Cl. 235-151.310.
- Black, William B.: See—  
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- Blackburn, William E.: See—  
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- Sletten, Carlyle J.; Goggins, William B.; and Blacksmith, Philipp, 3,719,946.
- Blaetz, Philip H.; and Corbige, Orin K., to Kraftco Corporation. Frozen sandwich and process for preparing same. 3,719,138, Cl. 99-192.000.
- Blahak, Johannes; and Meckel, Walter, to Farbenfabriken Bayer Aktiengesellschaft. Process for the production of aromatic dinitrohalogen compounds. 3,719,717, Cl. 260-646.000.
- Blair, Lawrence William; and Bryans, Alexander Connor, to General Electric Company. Diffuser. 3,719,430, Cl. 415-207.000.
- Blanchard, Jack D. Golf practice device. 3,719,362, Cl. 273-182.00r.
- Blanchard, Robert R.: See—  
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- Blank, Werner Josef: See—  
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- Blank, Werner Josef, to American Cyanamid Company. Rubbery polymeric mixtures comprising a maleinized type oil. 3,719,623, Cl. 260-23.00r.
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- Blankmeyer, James C.; Blankmeyer, Daniel E.; and Blankmeyer, Robert L., to Metokote Precision, Inc. Plastic powder spraying recovery method and apparatus. 3,719,030, Cl. 55-97.000.
- Blankmeyer, Robert L.: See—  
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- Blatter, Herbert Morton: See—  
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- Blattmann & Co.: See—  
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- Blick, Owe H. Moulding for suspension mounting and decoration purposes. 3,719,013, Cl. 52-222.000.
- Blough, William M., Jr.: See—  
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- Blume, Mike C. Combined sharpeners for knives and fish hooks and hook disgorgers. 3,718,938, Cl. 7-1.00h.
- Bode, Gerd B. Heated wiper blade. 3,718,940, Cl. 15-250.060.
- Bode, James D., to Bendix Corporation. The. Reaction chamber heated device for oxygen generation. 3,719,456, Cl. 23-281.000.
- Bodine, Norman R.; and Noetzelmann, David C., Sr., to Midwec Corporation. Interlocking case for electronic components. 3,719,272, Cl. 206-65.00f.
- Bohannon, James P.; and McAfee, Loyd O., said Bohannon assor. to said McAfee, Loyd O. Automotive suspension ball joint checking method. 3,719,346, Cl. 254-1.000.
- Bohner, Thomas H.: See—  
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- Boise Cascade Corporation, mesne: See—  
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- Boissier, Jacques Robert, and Ratous, Roger, to Societe Anonyme dite, Societe Industrielle Pour la Fabrication des Antibiotiques (S.I.F.A.), 9-(1-Piperazymyl)-9,10-dihydro-9,10-et hanoanthracenes and their salts. 3,719,679, Cl. 260-268.0pc.
- Boler, Leonard J.: *See—*  
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- Bolomier, Elisabeth: *See—*  
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- Bolomier, Jacques, Bolomier, Elisabeth; and Bolomier, Jean-Pierre, Electric steam generator. 3,719,795, Cl. 219-272.000.
- Bolomier, Jean-Pierre: *See—*  
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- Bonjour, Georges: *See—*  
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- Bookwalter, George N.: *See—*  
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- Booth, Frederick E., Jr., to Houdaille Industries Inc. Linear digital-to-analog converter. 3,719,808, Cl. 235-154.
- Boppart, Eugene A., to Velsicol Chemical Corporation. Greenhouse planting box. 3,719,301, Cl. 217-5.00r.
- Borechamer, Stuart, to National Waterpure Corporation. Water-softening unit. 3,719,594, Cl. 210-190.000.
- Borsutski, Eberhard, and Eichmann, Gerhard. Vibration generator. 3,719,094, Cl. 74-87.000.
- Bosch, Robert, G.m.b.H.: *See—*  
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Hofmann, Eberhard, and Staudt, Heinrich, 3,719,208.
- Boschen, John A., and Stanecki, Patrick J., to Ford Motor Company. Seatback latch and recliner mechanism. 3,719,387, Cl. 297-355.000.
- Bose, Georg Wilhelm, to Moeller & Neumann G.m.b.H. Device for cross feeding individual curved rolled rods or bars. 3,719,285, Cl. 214-1.00p.
- Bosniak, David S., and Shaub, Harold, to Esso Research and Engineering Company. Lubricant composition containing polycarboxylic acid. 3,719,600, Cl. 252-56.00s.
- Bosshardt, Rolf: *See—*  
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- Boston, Thomas R.: *See—*  
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- Bott, Helmuth, to Porsche, Dr.-Ing. H.E.F., K.G., Firma. Device in vehicles, particularly automotive vehicles, for skid prevention. 3,719,246, Cl. 180-103.000.
- Bottoms, William A., to Eaton Yale & Towne Canada Limited. Method and apparatus for delimbing a tree. 3,719,217, Cl. 144-2.00z.
- Boyer, Marcel-Louis, to Compagnie Industrielle des Telecommunications CII-ALCATEL. High-speed band reading device. 3,719,802, Cl. 235-61.11r.
- Boynton, Richard P., and Ellis, Robert C., Jr., to Sperry Rand Corporation. Servo compensation including a non-linear synchro transmitter. 3,719,880, Cl. 318-633.000.
- Bozeman, Paul Preston: *See—*  
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- Bracey, Kenneth Edward George: *See—*  
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- Brad, Georges M., to Societe des Verreries Industrielles Reunies du Long. Cathode ray tubes for color TV receivers having a post-acceleration grid electrode. 3,719,848, Cl. 313-855.000.
- Brady, John Gary: *See—*  
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- Bragg, Eric William, to Post Office, The. Circuit arrangement for reducing spurious signals picked up by transmission line. 3,719,904, Cl. 333-12.000.
- Bragg, Ralph J., and Rothfelder, Raymond E., to Grace, W. R., & Co. Sprayable gypsum plaster composition. 3,719,513, Cl. 106-114.000.
- Brantly, Thomas II., to Eastman Kodak Company. Electrophotographic compositions and elements. 3,719,480, Cl. 96-1.0pc.
- Brasher, James Alan, Bozeman, Paul Preston, and Odell, Norman Raymond, to Texaco Inc. Solvent dewaxing with separation of solvent by liquid-liquid extraction. 3,719,585, Cl. 208-33.000.
- Brastad, William A., to General Mills, Inc. Easily openable carton with elongated adherence areas near the side edges of the overlapped flap. 3,719,317, Cl. 229-51.0wb.
- Breaux, Onezime P. Stabilized, optimizable, gaseous electrical discharge. 3,719,899, Cl. 331-94.500.
- Breene, James D.: *See—*  
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- Bregeault, Marc, to Thomson-CSF. D.C. motor with series connected windings. 3,719,870, Cl. 318-138.000.
- Breitschmidt, Werner, Gemeiner, Gunter, Grabner, Christian, and Sigmund, Gerhard, to Daimler-Benz Aktiengesellschaft. Door lock, especially for motor vehicles. 3,719,248, Cl. 180-112.000.
- Breitschmidt, Werner, Gemeiner, Gunter, and Stolz, Albert, to Daimler-Benz Aktiengesellschaft. Installation for controlling the temperature of vehicle interior spaces. 3,719,135, Cl. 98-2.070.
- Brethauer, Jurgen: *See—*  
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- Breuning, Ernst. Method and apparatus for cooling foods contained in portion containers. 3,718,981, Cl. 34-33.000.
- Bridgeum, James Earl. Drain fitting. 3,719,345, Cl. 251-351.000.
- Brindejone de Treglode, Pierre. Slings, tow-ropes and the like. 3,718,945, Cl. 24-73.000.
- Briotet, Jean Paul Francois Gilbert, and Ravagli, Armand, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Control devices for gas turbine power plants. 3,719,047, Cl. 60-239.000.
- Britain, J. W.: *See—*  
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- British Nuclear Design & Construction Limited: *See—*  
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- Brockman, Edwin. Paint touch-up capsule. 3,719,460, Cl. 51-181.000.
- Brogren, Erik E.: *See—*  
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- Broling, Keith W., to Portec, Inc. Turntable tie-down winch. 3,719,156, Cl. 105-369.00a.
- Brooks, Frederick J., to Astrotronic Research, Ltd. Burner for combustible material. 3,719,171, Cl. 122-2.000.
- Brooks, Ralph J. Mobile air pollution reduction system and method. 3,719,028, Cl. 55-85.000.
- Brown, Boveri & Company Limited: *See—*  
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- Brown, Lawrence W., and Piester, Leroy E., to Centuri Engineering Company, Inc. Recovery device ejection baffle system for miniature rockets. 3,719,145, Cl. 102-34.400.
- Brown, Thelma Burnice. Dumping rate controlling tailgate for a dump vehicle. 3,719,298, Cl. 214-509.000.
- Browning Industries, Inc.: *See—*  
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- Brucker, William S. Rotary cutting tool. 3,718,958, Cl. 29-103.00r.
- Brugger, Franz: *See—*  
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- Bruner, James D.: *See—*  
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- Brunie, Jean Claude; Costantini, Michel; Crenne, Noel; and Jouffret, Michel, to Rhone-Poulenc S.A. Process for obtaining 6-hexanoic acid. 3,719,706, Cl. 260-533.00c.
- Bryan, Roland J., Jr.: *See—*  
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- Bryant Grinder Corporation: *See—*  
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- Buchel, Karl Heinz; Grewe, Ferdinand; Scheinplugg, Hans; Kaspers, Helmut, and Regel, Erik, to Farbentfabriken Bayer Aktiengesellschaft. N-trityl-imidazolium salts as a fungicide. 3,719,760, Cl. 424-273.000.
- Buchtel, Dean H.; Lappin, Kenneth R., and Maurer, John A., to Weber Dental Company, The. Dental handpiece drip control system. 3,718,974, Cl. 32-22.000.
- Buchtel, Dean H.; Lappin, Kenneth R.; and Maurer, John A., to Weber Dental Manufacturing Company, The. Dental drinking cup filling apparatus. 3,719,308, Cl. 222-70.000.
- Buckeye Steel Castings Company: *See—*  
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- Buckman Laboratories, Inc.: *See—*  
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- Buckman, Stanley J.; and Pera, John D., to Buckman Laboratories, Inc. Method of stabilizing polymeric organic compositions with 3,5-dibromo-2'-hydroxyacetophenone. 3,719,509, Cl. 106-15.0fp.
- Bucourt, Robert; Nedelec, Lucien, and Gase, Jean-Claude, to Roussel UCLAF. 7 $\alpha$ -Methyl-13 $\beta$ -alkyl-17 $\alpha$ -hydrocarbyl-17 $\beta$ -oxy- $\Delta^5$  9,11-gonatrene-3-ones. 3,719,691, Cl. 260-397.450.
- Bucyrus-Erie Company: *See—*  
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- Budris, Albert P.; and Carrieri, Louis F., to U.S. Industries, Inc. Work-piece transfer device. 3,719,270, Cl. 198-219.000.
- Buisson, Claude; and Delaunay, Jean-Pierre, to Service d'Exploitation Industrielle des Tabacs et des Allumettes. Method and device for forming a stream of material consisting of tangled shreds such as tobacco. 3,719,289, Cl. 214-17.0ca.
- Buisson, Michel; and Durand, Daniel. Polyurethanes prepared from polyhydroxy condensates of isocyanuric acid. 3,719,615, Cl. 260-2.5aw.
- Bukhman, Aron Borukhovich; Drovenkov, Evgeny Alexandrovich; Ivashchenko, Felix Alexandrovich; Aizenshtein, Aron Meerovich; and Yanushkevich, Igor Lvovich. Antenna system for VHF and UHF radio direction finders. 3,719,950, Cl. 343-788.000.
- Bulova Watch Company, Inc.: *See—*  
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- Bulow, Manfred: *See—*  
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- Bunnell, Fred H.: *See—*  
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- Burbick, Ross E.: *See—*  
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- Burckhardt, Manfred H.; Lutze, Walter; and Schwerdt, Paul, to Daimler-Benz Aktiengesellschaft. High frequency transmitter, especially for brake slippage control installation of motor vehicles. 3,719,840, Cl. 310-71.000.

- Burez, Lawrence D.; and Lemieux, George E., to Ford Motor Company. Clutch with torque responsive valve. 3,719,259, Cl. 192-54.000.
- Burgess, Charles David, to Simon-Carves, Limited. Traveling grate machines. 3,719,354, Cl. 266-21.000.
- Burgess, Thomas H., to Fischer & Porter Co. Sensor probe and shield assembly for swirl-type flowmeter. 3,719,080, Cl. 73-194.00b.
- Burke, Oliver W., Jr. Aqueous latices of high polymer compositions and processes and means for the production thereof. 3,719,572, Cl. 204-159.150.
- Burke, Oliver W., Jr. Silica pigments and preparation thereof. 3,719,741, Cl. 423-339.000.
- Burke, Zane L. Production of copper oxides and zinc oxide. 3,719,451, Cl. 423-604.000.
- Burley, Harvey A., to General Motors Corporation. Dual mode spark plug. 3,719,851, Cl. 313-123.000.
- Burley, John Charles, to Ackerman, Myron. Stabilising woven fabrics. 3,719,450, Cl. 8-149.200.
- Burrage, Lawrence M.; and McStrack, Darrel D., to McGraw-Edison Company. Apparatus for producing wet process ceramic bodies. 3,719,581, Cl. 204-299.000.
- Burroughs Corporation: *See—*  
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- Behr, Michael I.; Coon, Lewis B., Jr.; and Bickel, Charles E., 3,719,934.
- Lawrence, Robert, 3,719,860.
- Burroughs, J. P., & Son, Inc.: *See—*  
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- Burton, Cyril, and Steeves, Douglas. Underwater saw for tree and stump removal. 3,719,116, Cl. 83-483.000.
- Burton, Douglas G.; and Kiger, Norman L. Thermo plastic tubing furniture. 3,719,389, Cl. 297-440.000.
- Bustin, Leopold. Pinless hinge. 3,718,943, Cl. 16-178.000.
- Buzzell, Harold O., to Polaroid Corporation. Novel adhesive and optical devices laminated therewith. 3,719,544, Cl. 161-1.000.
- Cade, Ronald L., and Knapp, John F., to Xerox Corporation. Plural electrode development apparatus. 3,719,169, Cl. 118-636.000.
- Cadorette, Raymond, and Eckert, George, to Texaco Inc. Fuel composition. 3,719,458, Cl. 44-72.000.
- Cahn, Robert P.: *See—*  
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- Callahan, James L.: *See—*  
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- Calzaturificio Tecnica dei F.L.L. Zanatta S.N.C.: *See—*  
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- Campbell, John David; and McCann, Robert E., to Dykema, Charles M., trustee and United States of America, Small Business Administration. Compact rotary well drilling rig with hydraulic swivel pull down mechanism. 3,719,238, Cl. 173-147.000.
- Campbell, Norman Bernard, and Wells, Ross Nelson Frederick, to Union Carbide Canada Limited. Polycarbonamide having improved basic dye receptivity. 3,719,641, Cl. 92-133.00a.
- Canadian General Electric Company Limited: *See—*  
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- Cannella, Joseph L., to Berg Manufacturing Company, The. Force adjustable actuator. 3,719,125, Cl. 92-133.000.
- Cantz, Rolf J., to Kennametal Inc. Tire stud having porous impregnated body. 3,719,478, Cl. 75-208.00r.
- Capic-Etablissements Caillaree: *See—*  
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- Capossela, Anthony C., Jr.: *See—*  
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- Cappon, Arthur M., to Sperry Rand Corporation. Bit organized integrated MNOS memory circuit with dynamic decoding and store-restore circuitry. 3,719,932, Cl. 340-173.00r.
- Carborundum Company, The: *See—*  
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- Carcia, Calisto Fortunato, to Jackson, Byron, Inc. Method of selectively stimulating oil wells, compositions thereof, and methods of making such compositions. 3,719,228, Cl. 166-281.000.
- Carco, Inc.: *See—*  
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- Cardell, Olof: *See—*  
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- Carding Specialists (Canada) Limited: *See—*  
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- Carli, Alvin J., to Alliance Manufacturing Company, Inc., The. Door operator reversing control. 3,719,005, Cl. 49-28.000.
- Carlson, Lloyd: *See—*  
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- Carlson, Robert G.; and Steinhagen, Carl A., to General Electric Company. Method of forming a composite metallic preform tape. 3,719,538, Cl. 156-179.000.
- Carlsten, Ronald W.; and Nissen, Donald A., to United States of America, Atomic Energy Commission. Thermal battery. 3,719,527, Cl. 136-85.00t.
- Carpenter, Robert Gordon; Lindbloom, Eric; and McMahon, Maurice Thomas, Jr., to International Business Machines Corporation. Statistical logic test system having a weighted random test pattern generator. 3,719,885, Cl. 324-73.00r.
- Carr, George W., to Pullman Incorporated. Chassis-to-container locking means. 3,719,385, Cl. 296-35.00a.
- Carrier Corporation: *See—*  
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- Carrieri, Louis F.: *See—*  
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- Carteels, Florent: *See—*  
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- Carver, Fred F., to Singer Company, The, mesne. Aircraft sound simulation system. 3,718,987, Cl. 35-12.00q.
- Cash, George H. Induction condenser. 3,719,032, Cl. 55-264.000.
- Cason, George A.: *See—*  
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- Caterpillar Tractor Company: *See—*  
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- Cavis, Thomas C., to Trane Company, The. Cooling apparatus. 3,719,059, Cl. 62-285.000.
- Cebalo, Tony, to Air Products and Chemicals, Inc. Thiophosphate derivatives of triazoline thiones. 3,719,686, Cl. 260-308.00c.
- Cement Enamel Development, Inc.: *See—*  
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- Centre d'Etude de l'Energie Nucleaire: *See—*  
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- Centre National de Recherches Metallurgiques: *See—*  
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- Centuri Engineering Company, Inc.: *See—*  
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- Cerva, Alexander; and Tomasovic, Milan, to Vyskumny ustav Mechanizacie a Automatizacie Nove. Nozzle for a pneumatic-hydraulic head for cleaning of molds for pressure casting of metal. 3,719,325, Cl. 239-405.000.
- Chamberlain, John, to United Aircraft Corporation. Fuel injection means. 3,719,042, Cl. 60-39.74r.
- Chamberlin, Roger S.: *See—*  
Kemp, Ray F.; Blanchard, Robert R.; and Chamberlin, Roger S., 3,719,230.
- Chance, Leon H.; and Moreau, Jerry P., to United States of America, Agriculture. Organo-phosphorus compounds containing perfluoralkyl radicals and their application to cellulosic textiles. 3,719,448, Cl. 8-116.00p.
- Chaney, Preston E.; and Rhodes, Charles E., Jr., to Sun Oil Company. Telemetering system for rotating body. 3,719,935, Cl. 340-206.000.
- Charcharos, Anthreas Nicholas; and Williamson, Clifford, to British Nuclear Design & Construction Limited. Boiler systems of the water tube type. 3,719,172, Cl. 122-7.00r.
- Charlson, Robert J.: *See—*  
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- Charron, Louis Donald: *See—*  
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- Chem-Therm Mfg. Co.: *See—*  
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- Chemische Fabrik Aubing Dr. Kurt Bloch Nachf.: *See—*  
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- Chen, David T. Y.; and Shih, Ten Fuh. Articles of white food for feeding aquatic animals and method of manufacture. 3,719,496, Cl. 99-2.00r.
- Cherio, Vittoria; and Mignone, Giuseppe. Device for filling foodstuff into netted containers. 3,719,022, Cl. 53-255.000.
- Cherne Industrial, Inc.: *See—*  
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- Cherne, Lloyd G.; Boler, Leonard J., and Matthews, Ernest E., to Cherne Industrial, Inc. Liquid cooling system, apparatus and method. 3,719,353, Cl. 261-90.000.
- Cheshire, Alan Gillingham: *See—*  
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- Chevron Research Company: *See—*  
Larimore, David B.; and Christensen, Robert L., 3,719,740.
- Marquis, David M., 3,719,704.
- Muir, Francis; and Morrison, Jerry L., 3,719,924.
- Salka, Arnold I., 3,719,027.
- Smith, Calvin S.; and McLeod, William J., 3,719,749.
- Chicago Bridge & Iron Company: *See—*  
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- Chihoro, Hayashi: *See—*  
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- Chisso Corporation: *See—*  
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- Christensen, Robert L.: *See—*  
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- Christianson, Raymond A., to Under-Sea Industries, Inc. Audio reserve alarm mechanism for self-contained breathing apparatus. 3,719,160, Cl. 116-70.000.
- Christoffel, Cla.: *See—*  
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- Ciba-Geigy Corporation: *See—*  
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- Hoff, Luther A. R.; Gurney, John A.; and Rentroe, Harris B., 3,719,709.
- Heusler, Karl; Robert Burns, and Ernest, Ivan, 3,719,672.
- Lucas, Robert Armistead; and Blatter, Herbert Morton, 3,719,678.



- Robison, Michael Mullen; and Finch, Neville, 3,719,683.  
Ciecuch, Ronald F. W.; Lohow, Roberta R.; Meneghini, Frank A.; and Rogers, Howard G., to Polaroid Corporation. Novel photographic processes and products. 3,719,489, Cl. 96-29.000.  
Circle F Industries, Inc.: See—  
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Clark, Carl C. Retro-rocket braking system for land vehicles. 3,719,256, Cl. 188-2.000.  
Clark, Edward Watson. Textile fibre combing machines. 3,718,944, Cl. 19-123.000.  
Clark, William H.; Greenlee, Thomas W.; and Toporcer, Louis H., to Dow Corning Corporation. Room temperature vulcanizable silicone elastomers containing metal hydrocarbonoxides. 3,719,634, Cl. 260-46.50g.  
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Clarke, Geoffrey, to Square D Company. Oscillator proximity detector with removable interchangeable sensing heads. 3,719,898, Cl. 1-22-71.  
Claus, Richard J.: See—  
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Cleevly, Bruce T., to Wheeling Stamping Company. Mold assembly for producing threaded articles with unscrewing means integral with the assembly. 3,719,446, Cl. 425-249.000.  
Cline, Richard F.; and Wilton, Donald P., to United States of America, Health, Education and Welfare. Binary amino ovidical composition. 3,719,763, Cl. 424-325.000.  
Coal Industry (Patents) Limited: See—  
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Coho, Owen C., to General Electric Company. Thrust control for linear motors. 3,719,869, Cl. 318-135.000.  
Colburn, John P. Piano instruction device. 3,719,118, Cl. 84-478.000.  
Cole, Herbert Charles, to United Kingdom Atomic Energy Authority. Hall current accelerator adapted for injection of ions into plasma confinement system. 3,719,554, Cl. 176-3.000.  
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Cox, Ernest P. Apparatus for breaking wood waste into short pieces. 3,719,314, Cl. 225-97.000.  
Cox, Percy T.: See—  
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Crane Co.: See—  
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- Crenne, Noel: See—  
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Criddle, Ernest E., to Minister of National Defence, of Canada as represented by the, Her Majesty the Queen in right of. Method and means for providing a clean area. 3,719,136, Cl. 98-36.000.  
Cripe, Maxwell L., to Bendix Corporation. The. Vacuum powered spring brake. 3,719,043, Cl. 60-54.50p.  
Cripe, Maxwell L., to Bendix Corporation. The. Frictional lock for dual ratio pedal device. 3,719,123, Cl. 91-391.000.  
Cris, George J., to Crane Co. Method for condensate filtration and demineralization. 3,719,591, Cl. 210-33.000.  
Crivellaro, Gianbattista; and Oldani, Francesco, to Gruppo Lepetit S.p.A. Solid lubricant composition and method of preparation. 3,719,599, Cl. 252-46.400.  
Cross, Donald E.; and Blackburn, William E., to Owens-Corning Fiberglass Corporation. Tool holder. 3,719,579, Cl. 204-286.000.  
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Cuccaro, Louis M. Apparatus for applying a fastening device. 3,719,792, Cl. 219-230.000.  
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Danielis, Joseph U. Brick composition. 3,719,512, Cl. 106-106.000.  
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Dartois, Clement Rahmin. Safety harnesses. 3,718,948, Cl. 24-75.000.  
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Davidson, Glenn G., to Platemakers Educational & Research Institute. Apparatus for calculating halftone screen exposures. 3,719,806, Cl. 235-64.700.  
Davis, Grover L., to General Electric Company. Irradiation test facility. 3,719,555, Cl. 176-17.000.  
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- Dawans, Francois, to Institut Francais du Petrole des Carburants et Lubrifiants. Nickel  $\pi$ -allyl halogenoacetates, their use as catalysts for the stereospecific polymerization of unsaturated organic compound. 3,719,653, Cl. 260-94.300.  
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Day, Lawrence E.; and Ellis, Lee F., to Lilly, Eli, and Company. Process for producing interferon-inducing particles and composition containing said particles. 3,719,754, Cl. 424-177.000.  
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De Packh, David C., to United States of America, Navy. System and method for accelerating charged particles utilizing pulsed hollow beam electrons. 3,719,893, Cl. 328-233.000.  
De Staat der Nederlanden, Ten Deze Vertegenwoordigd door de Directeur-Generaal der Posten, Telegrafie en Telefonie: See—  
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Deggine, Edward R., to Allied Chemical Corporation. Fire fighting method employing solutions of PVA and alkali metal borate. 3,719,515, Cl. 117-3.000.  
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- Dochterman, Richard W., to General Electric Company. Dynamoelectric machine cooling arrangement. 3,719,843, Cl. 310-89.000.  
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- Durham Associates, Inc.: *See—*  
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- Dutkewych, Oleh Borys: *See—*  
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- Dyer & Miller Bros. Ltd.: *See—*  
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- Dzieciuch, Matthew A.; and Weber, Neill, to Ford Motor Company. Cationically-conductive ceramics, their preparation and use. 3,719,531, Cl. 136-153.000.
- Eastcott, Peter de Hertel; and Welch, James Ernest, to Canadian General Electric Company Limited. Drive wheel for friction mine hoist. 3,719,099, Cl. 74-230.300.
- Eastern Company, The, mesne: *See—*  
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- Eastman Kodak Company: *See—*  
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- Easton, Vivian, to Reynolds Parsons Limited. Dynamo-electric machines. 3,719,844, Cl. 310-184.000.
- Easy-Back, Inc.: *See—*  
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- Eaton Yale & Towne Canada Limited: *See—*  
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- Eberhard, Everett, to Motorola, Inc. Variable delay, MOS, monostable pulse generating circuit. 3,719,835, Cl. 307-273.000.
- Eccles, George Oswald: *See—*  
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- Eckert, George: *See—*  
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- Eclair International: *See—*  
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- Edanbob Corporation: *See—*  
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- Edmunds, John O., to General Motors Corporation. Lock up clutch control. 3,719,093, Cl. 74-645.000.
- Edo Western Corporation: *See—*  
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- Edwards, Lowell N.: *See—*  
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- Efssell, Dietrich; Hiersign Heinz; Kinzler, Fritz; Russmann, Werner; and Schulz, Helmut, to Lohmann & Stolterfoht Aktiengesellschaft. Highly elastic annular coupler element. 3,719,060, Cl. 64-11.000.
- Eggelsmann, Harry: *See—*  
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- Egnaczak, Raymond K., to Xerox Corporation. Photoelectrophoretic imaging method. 3,719,484, Cl. 96-1.200.
- Eheim, Franz, to Bosch, Robert, G.m.b.H. Safety means for a differential pressure valve associated with a fuel injection apparatus. 3,719,435, Cl. 417-307.000.
- Ehrgott, Charles Warren, to General Foods Corporation. Coffee extract slush extrusion apparatus. 3,719,506, Cl. 99-275.000.
- Eidt, Scott Hubert, to Texas Alkyls, Inc. Novel process for the preparation of alkyl-aluminum halides or alcoholates and trialkylboranes. 3,719,695, Cl. 260-448.000.
- Eisai Co. Ltd.: *See—*  
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- Elbaum, Saul, to United States of America, Army. Fluoride readout system. 3,719,952, Cl. 346-75.000.
- Elder, Alton P.; and Taylor, Vincent J., to United States of America, Navy. Rocket launching system. 3,719,120, Cl. 89-1.814.
- Electronic Modules Corporation: *See—*  
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- Elektromesstechnik Wilhelm Franz KG: *See—*  
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- Ellis, Lee F.: *See—*  
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- Ellis, Robert C., Jr.: *See—*  
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- Emerson, Paul D.; Davis, S. Jack; Oatfield, John C.; Engelman, Fred H.; and Bartee, Charles E., said Emerson, said Oatfield, said Engelman and said Bartee assors. to Monsanto Company. Circular weaving apparatus product and process. 3,719,210, Cl. 139-13.000.
- Emerson, Paul D.; Davis, S. Jack; Oatfield, John C.; Engelman, Fred H.; and Bartee, Charles E., said Emerson, Oatfield, Engelman and said Bartee assors. to Monsanto Company. Circular weaving apparatus product and process. 3,719,212, Cl. 139-387.000.
- Emmerson, Calvin E.; Griffin, Robert A.; and Meginnis, George B., to General Motors Corporation. Seal structure. 3,719,365, Cl. 277-53.000.
- Emmons, Donald L.: *See—*  
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- Endo, Kunio: *See—*  
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- Endo, Seiji: *See—*  
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- Endo, Yukio. Device for magnetically regulating each stop position of an intermittently rotating output member. 3,719,839, Cl. 310-49.000.
- Engelman, Fred H.: *See—*  
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- Engelsmann, Dieter; and Schroder, Rolf, to Agfa-Gevaert Aktiengesellschaft. Photographic apparatus for use with percussive multilamp photoflash units. 3,719,126, Cl. 95-110.500.
- English, Barry E.: *See—*  
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- Engstrom, John Bertil, to Praestmark, T. Fastening device for detachably securing two members together. 3,718,950, Cl. 24-217.000.
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- Envirotech Corporation: *See—*  
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- Epolosives Corporation of America: *See—*  
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- Eraser Company, Inc.: *See—*  
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- Erbara Infleco Kabushiki Kaisha: *See—*  
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- Erdman, John G., to Phillips Petroleum Company. Detection of reducing conditions in a formation as in oil prospecting. 3,719,453, Cl. 23-230.000.
- Erndt, Edmund E., to Precision Metalsmiths, Inc. Investing apparatus. 3,719,214, Cl. 141-51.000.
- Ernest, Ivan: *See—*  
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- Esanu, Andre: *See—*  
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- Eskeli, Michael. Rotary ejector compressor. 3,719,434, Cl. 417-78.000.
- Esso Research and Engineering Company: *See—*  
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- Esterly, Henry N. Key switch. 3,719,902, Cl. 331-117.000.
- Ethyl Corporation: *See—*  
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- Eto, Yoshizumi; and Hibi, Masao, to Hitachi, Ltd. Striped filters for color video signal generators. 3,719,771, Cl. 178-5.4st.
- European Atomic Energy Community: *See—*  
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- Evans, Dorothy D.: *See—*  
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- Evans, Frank E.; and Evans, Dorothy D. Sand wedge golf club. 3,719,359, Cl. 273-167.000.
- Excel, Inc.: *See—*  
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- Falkenberg, Dieter; and Winkler, Josef, to Siemens Aktiengesellschaft. Thermogenerator with thermoelectric elements in exhaust ducts. 3,719,532, Cl. 136-208.000.
- Farbenfabriken Bayer Aktiengesellschaft: *See—*  
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- Farley, Charles Edward; and Grayson, Martin, to American Cyanamid Company. Bleaching of lignocellulosic materials with oxygen in the presence of a peroxide. 3,719,552, Cl. 162-65.000.
- Farmhand, Inc.: *See—*  
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- Farrand Optical Co., Inc.: *See—*  
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- Farrissey, William J., Jr.: *See—*  
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- Fay, Robert L.; and Simonetti, Guido F., to Litton Systems, Inc. Memory analyzers. 3,719,929, Cl. 340-172.500.
- Feiler, William A.; and Shen, Chung Yu, to Monsanto Company. Solid nitrilotriacetate-iron and zinc metal complexes. 3,719,694, Cl. 260-429.900.

- Felciai, Laurent. Tower-construction with overhangs to support lightweight dwellings. 3,719,012, Cl. 52-73.000.
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- Ferguson, Donald C.; Lynch, Frederick W.; and Simons, Gerald F., to Sperry Rand Corporation. Digital automatic control system with pseudo position feedback and monitor. 3,719,878, Cl. 318-565.000.
- Ferro, Anthony, to Uniroyal, Inc. Photoconductive elements including barrier layer of conductive oligomers. 3,719,485, Cl. 96-1.500.
- Ferro, Michael. Removable camper unit. 3,719,383, Cl. 296-23.000.
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- Fichtel, Dieter, to American Store Equipment Corporation. Wall easel. 3,719,766, Cl. 35-63.000.
- Fidi, Werner, to AKG Akustische u. Kino-Gerate. Device for creating artificial reverberation. 3,719,908, Cl. 333-30.000.
- Finch, Neville: *See—*  
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- Finger, John F. Welding helmet. 3,719,793, Cl. 219-147.000.
- Finger, Otto R., to Display Corporation International. Placard holding display assembly. 3,719,000, Cl. 40-125.000.
- Fink, Lester H. Computer controlled coordination of regulation and economic dispatch in power systems. 3,719,809, Cl. 235-151.210.
- Firestone Tire & Rubber Company, The: *See—*  
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- Fischer & Porter Co.: *See—*  
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- Fischer, Christopher L.; and Otte, Richard F., to Raychem Corporation. Clamping device for printed circuits. 3,719,917, Cl. 339-17.000.
- Fisher, Frank E.; and Fisher, Joseph N. Cough filter. 3,719,188, Cl. 128-275.000.
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- Fitzpatrick, James, to Dyer & Miller Bros. Ltd. Angle valve. 3,719,202, Cl. 137-360.000.
- Flanagan, C. Erman, to Du Pont de Nemours, E. I., and Company. Method of fabricating ring shapes by hat pressing. 3,719,479, Cl. 75-226.000.
- Fleig, Adolf: *See—*  
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- Fleissner, Heinz, to Vepa AG. Apparatus for the continuous treatment of especially thick, voluminous textile materials with large widths. 3,719,062, Cl. 68-5.000.
- Flick, Howard S., to Jackson, Byron, Inc. Tubing tong hydraulic drive system. 3,719,237, Cl. 173-12.000.
- Florjancic, Dusan, to Sulzer Brothers Limited. Circulating system for a nuclear reactor. 3,719,557, Cl. 176-56.000.
- FMC Corporation: *See—*  
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- Focke, Heinz; and Brethauer, Jurgen. Method and apparatus for packing articles with longitudinal and cross-members. 3,719,018, Cl. 53-26.000.
- Foley, Richard G.: *See—*  
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- Fontaine, Bernard E.: *See—*  
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- Fontein, Freerk J.; Ploeg, Martinus; and Van Linden, Jacques, to Stamicarbon N.V. Device for pulsating a liquid in a column. 3,719,204, Cl. 137-568.000.
- Ford Motor Company: *See—*  
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- Forst, Donald J., to Itek Corporation. Rapid color processing. 3,719,493, Cl. 96-55.000.
- Fortnam, George A., to Den-Tal-EZ Mfg. Co. Adjustable head rest assembly for a dental chair. 3,719,388, Cl. 297-405.000.
- Fouces, Juan M.: *See—*  
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- Fouces, Manuel; and Fouces, Juan M. Device for prevention of automobile theft. 3,719,063, Cl. 70-202.000.
- Fowler, Donald W.; and Heiney, Harold G., Jr., to United Aircraft Corporation. Fault detector for helicopter fuel augmentation system. 3,719,336, Cl. 244-77.000.
- Fox, Shirl S.; and Hershkovitz, David M., said Fox assor. to Dental Designs. Dental console. 3,718,972, Cl. 32-22.000.
- Francis, Marion D., to Proctor & Gamble Company. The. Compositions for inhibiting anomalous deposit and mobilization of calcium phosphate in animal tissue. 3,719,756, Cl. 424-204.000.
- Franco, Boriani; and Musarra, Gaetano, to Societa Italiana Telecomunicazioni Siemens S.p.A. Transceiver for peripheral station of multiplex telecommunication system. 3,719,890, Cl. 325-55.000.
- Franklin Mint Corporation: *See—*  
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- Frantz, Richard J.; and Morris, Alton R., to Arrow-Hart, Inc. Voltage sensing and switching circuit. 3,719,859, Cl. 317-31.000.
- Frappe, Pierre, to Verdol S.A. Electronic reading in of designs for the preparation of perforated jacquard cards. 3,719,803, Cl. 235-61.11c.
- Frederiksen, Erling Knud; and Godfredsen, Wagn Ole, to Lovens Kemiske Fabrik Produktion-saktieselskab. Semi-synthetic penicillin esters. 3,719,668, Cl. 260-239.100.
- Free, Maurice George, to Motorola, Inc. Technique for compensating for input bias currents of transistors. 3,719,833, Cl. 307-296.000.
- Freeman, Harlan G., to Weyerhaeuser Company. Rapid curing resin compositions comprising a modified aldehyde condensation polymer coreacted with an epoxide-aldehyde mixture. 3,719,724, Cl. 260-828.000.
- Friberg, Jean-Marie Eugene; and Merigoux, Jean-Marie, to Societe Alsacienne de Constructions Atomiques de Telecommunications et d'Electronique "Alcatel". Supersonic compressors with conical flow. 3,719,426, Cl. 415-116.000.
- Frick Company: *See—*  
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- Friedmann, Harry; and Tarpinian, Haig D., to Uniroyal, Inc. Apparatus for measuring uniformity of tires. 3,719,813, Cl. 235-151.310.
- Frielink, Johannes M., to Stamicarbon N.V. Process for the preparation of powdery homo- or copolymers of ethylene. 3,719,648, Cl. 260-85.500.
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- Fritz, James S.; Gillette, Robert K.; and Beuerman, Donald R., to United States of America, Atomic Energy Commission. Separation of sulfonic acids from sulfuric acid. 3,719,703, Cl. 260-505.000.
- Froning, H. R.; and Askew, Warren S., to Pan American Petroleum Corporation. Micro-emulsion of increased viscosity for improved oil recovery. 3,719,606, Cl. 252-306.000.
- Frye, Kenneth G., to Beloit Corporation. Web spreader element. 3,719,316, Cl. 226-199.000.
- Fuchs, Francis Joseph, Jr., to Western Electric Company, Incorporated. Variable orifice die and control therefor. 3,719,065, Cl. 72-9.000.
- Fuji Photo Film Co., Ltd.: *See—*  
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- Fujii, Makoto, to Ash Kasei Kogyo Kabushiki Kaisha. Method for producing composite fibers of acrylonitrile type. 3,719,738, Cl. 264-171.000.
- Fujimoto, Sakae, to Kabushiki Kaisha Ricoh. Card punch. 3,719,953, Cl. 346-83.000.
- Fujimoto, Yasuo; Nagaoka, Koichi; Tatsukawa, Keizo; and Koiwa, Yoichi, to Kyowa Hakko Kogyo Co., Ltd. Synthetic leather. 3,719,520, Cl. 117-76.000.
- Fujioka, Shuji: *See—*  
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- Fujiyasu, Tatsuo; and Ohnuma, Yoshio, to Hitachi, Ltd. Apparatus for photographing an image of a specimen. 3,719,776, Cl. 178-6.700.
- Fukuda, Takeo: *See—*  
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- Fullington, William H.; and Maisak, Melvin O., to Pet Incorporated. Mobile merchandiser cart and refrigerated showcase therefor. 3,719,408, Cl. 312-236.000.
- Fulton, John R.; and Zenner, Walter J., to Extel Corporation. Control system for high speed printer. 3,719,781, Cl. 178-30.000.
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Galanter, Eugene E.; and Habeck, Dietmar A., to Sandoz-Wander, Inc. Substituted carbinol derivatives. 3,719,670, Cl. 260-239.55v.

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Gilchrist, Reginald Selby. Textile apparatus. 3,719,035, Cl. 57-77.300.

Gillette, Robert K.: See—  
Fritz, James S.; Gillette, Robert K.; and Beuerman, Donald R., 3,719,703.

Gintic, Michael Norman: See—  
Gintick, Richard Conway; and Gintic, Michael Norman, 3,719,370.

Gintick, Richard Conway; and Gintic, Michael Norman. Anti-theft shopping cart. 3,719,370, Cl. 280-33.99c.

Girault, Pierre; and Hagemann, Guy, to Roussel-UCLAF. Drugs derived from pyrazolone. 3,719,764, Cl. 424-273.000.

Girling Limited: See—  
Margetts, Hugh Grenville, 3,719,258.

Gladstone, James E.; Wilcox, James E.; and Hawthorn, John. Decorative finish. 3,719,517, Cl. 117-37.00r.

Glen, William: See—  
Coats, Robert Reid; Greenway, John Michael; and Glen, William, 3,718,953.

Glomski, Ronald L.: See—  
Greminger, George K., Jr.; and Glomski, Ronald L., 3,719,651.

Gmeiner, Gunter: See—  
Breitschmidt, Werner; Gmeiner, Gunter; Grabner, Christian; and Sigmund, Gerhard, 3,719,248.

Breitschmidt, Werner; Gmeiner, Gunter; and Stolz, Albert, 3,719,135.

Godtfredsen, Wagn Ole: See—  
Frederiksen, Erling Knud; and Godtfredsen, Wagn Ole, 3,719,668.

Goffe, William L., to Xerox Corporation. Imaging system. 3,719,482, Cl. 96-1.00r.

Goggins, William B.: See—  
Sletten, Carlyle J.; Goggins, William B.; and Blacksmith, Philipp, 3,719,946.

Goggins, William B., Jr.: See—  
Sletten, Carlyle J.; Goggins, William B., Jr.; and Blacksmith, Philipp, 3,719,945.

Golaski, Frank W., to Westinghouse Electric Corporation. Electrical inductive apparatus. 3,719,910, Cl. 336-146.000.

Goldman, Martin; and Johnson, Arthur L., to Eastman Kodak Company. Photoconductive elements containing organo-metallic photoconductors. 3,719,486, Cl. 96-1.600.

Gooding, William T., Jr.: See—  
Temple, Ralph E.; and Gooding, William T., Jr., 3,719,510.

Goodson, William Eugene, to Bell Telephone Laboratories, Incorporated. Double sideband modem with either suppressed or transmitted carrier. 3,719,903, Cl. 332-44.000.

Goody, Charles P., to General Electric Company. Coaxial electric arc discharge devices. 3,719,852, Cl. 313-178.000.

Goodyear Tire & Rubber Company, The: See—  
Mowdood, Syed K.; and Gebhart, Charles J., 3,719,624.

Gorman-Rupp Company, The: See—  
McFarlin, Stanley B., 3,719,436.

Gosger, Peter, to AEC-Elotherm G.m.b.H. Method and apparatus for countersinking cavities in a workpiece. 3,719,569, Cl. 204-129.550.

Gould, Ira L., to General Motors Corporation. Range ventilating system. 3,719,137, Cl. 98-115.00j.

Grabel, Ulrich: See—  
Hessland, Gerd; and Grabel, Ulrich, 3,719,364.

Grabner, Christian: See—  
Breitschmidt, Werner; Gmeiner, Gunter; Grabner, Christian; and Sigmund, Gerhard, 3,719,248.

Grace, Robert W., to Webb, Jervis B., Company. Controlled mechanical storage device. 3,719,295, Cl. 214-674.000.

Grace, W. R., & Co.: See—  
Bragg, Ralph J.; and Rothfelder, Raymond E., 3,719,513.

Diffenbach, Richard A.; and Heavens, Thomas H., 3,719,732.

Mittman, Emmanuel, 3,719,549.

Grada, Walter; Purnhagen, Heinz; Schnell, Gunter; and Stednitz, Wolfgang, to Fried. Krupp Gesellschaft mit beschränkter Haftung. Method and apparatus for displaying and/or recording measured values. 3,719,920, Cl. 340-3.00r.

Graf, Carlton Eugene, to General Electric Company. Current limiting control for an electric power system. 3,719,873, Cl. 318-227.000.

Graham, Paul R.: See—  
Bergomi, Joseph G., Jr.; and Graham, Paul R., 3,719,628.

Grant, Whitney L., to Vilter Manufacturing Corporation. Two-stage refrigeration system having crankcase pressure regulation in high stage compressor. 3,719,057, Cl. 62-193.000.

Grasselli, Robert K.: See—  
03/06/73; Grasselli, Robert K.; and Callahan, James L., 3,719,528.

Graup, Josef. Hinge boot. 3,718,995, Cl. 36-2.5ac.

Graves, Howard K., to Olin Corporation, mesne. Pulley belt assembly. 3,719,098, Cl. 74-216.500.

Grayson, Martin: See—  
Farley, Charles Edward; and Grayson, Martin, 3,719,552.

Green, Martin, to Westinghouse Electric Corporation. Multielectrode signal plate storage tube for standards conversion of electrical signals. 3,719,778, Cl. 178-6.800.

Greenberg, Harry: See—  
Hansley, Virgil L.; Greenberg, Harry; Morgan, Fred Keith; and Grinninger, Lowell D., 3,719,730.

Greenfield, Harold: See—  
Amidon, Roger W.; and Greenfield, Harold, 3,719,719.

Greenfield, Stephen J.: See—  
Korn, Homer; Greenfield, Stephen J.; and Stemmlie, Denis J., 3,719,266.

Greenlee, Thomas W.: See—  
Clark, William H.; Greenlee, Thomas W.; and Toporcer, Louis H., 3,719,634.

Clark, William H.; Greenlee, Thomas W.; and Toporcer, Louis H., 3,719,635.

Greenspan, Joseph; and Hawkins, Clay E., to Frigidmeats, Inc. Meat tenderizer. 3,719,504, Cl. 99-353.00r.

Greenway, John Michael: See—  
Coats, Robert Reid; Greenway, John Michael; and Glen, William, 3,718,953.

Greminger, George K., Jr.; and Glomski, Ronald L., to Dow Chemical Company, The. Hydroxybutylmethylcellulose as a protective colloid in vinyl monomer polymerization. 3,719,651, Cl. 260-92.80w.

Grew, Ferdinand: See—  
Buchel, Karl Heinz; Grew, Ferdinand; Scheinpfug, Hans; Kaspers, Helmut; and Regel, Erik, 3,719,760.

Griffin, Robert A.: See—  
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Griner, Arthur J.: See—  
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Grinninger, Lowell D.: See—  
Hansley, Virgil L.; Greenberg, Harry; Morgan, Fred Keith; and Grinninger, Lowell D., 3,719,730.

Groom, Frederick, III: See—  
Bevard, Marion Wallace; Bevard, Samuel Street, Jr.; and Groom, Frederick, III, 3,719,511.

Grosche, Edward H.: See—  
Hayes, Lester P.; Drury, Raymond L., Jr.; and Grosche, Edward H., 3,719,664.

Grude, Fritz; Halcour, Kurt; Schwerdtel, Wulf; Swodenk, Wolfgang; and Woernle, Peter, to Farbenfabriken Bayer Aktiengesellschaft. Process for the production of cyclopentadiene from dicyclopentadiene. 3,719,718, Cl. 260-666.00a.

Grundig-Elektro-Mechanische Versuchsanstalt: See—  
Hessland, Gerd; and Grabel, Ulrich, 3,719,364.

Gruppo Lepetit S.p.A.: See—  
Crivellaro, Gianbattista; and Oldani, Francesco, 3,719,599.

GTE Automatic Electric Laboratories Incorporated: See—  
Tarr, Lloyd A., 3,719,897.

Gubela, Gunter. Fire extinguisher. 3,719,232, Cl. 169-31.00p.

Guenther, Ralph W.: See—  
Snyder, Harold J., Jr.; and Guenther, Ralph W., 3,719,556.

Gulf General Atomic Incorporated: See—  
Bass, John C., 3,719,559.

Gulf Research & Development Company: See—  
Ahle, James L., 3,719,466.

Gulla, Michael; and Dutkewych, Oleh Borys, to Shipley Company Inc. Electroless nickel solution. 3,719,508, Cl. 106-1.000.

Gundisch, Gusztav: See—  
Horvath, Laszlo; Gundisch, Gusztav; Antal, Mandor; and Arvai, Mihaly, 3,719,219.

Gunther, Peter: See—  
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Guptill, Frank E., Jr.: See—  
Herbstman, Sheldon; Peck, Reese A.; Guptill, Frank E., Jr.; and Wilson, Raymond F., 3,719,589.

Gurney, John A.: See—  
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Gusaras, Vlasos: See—  
Jedynak, Leo; and Gusaras, Vlasos, 3,719,163.

Gutowski, Gerald E., to Lilly, Eli, and Company. Epimerization of 6-acylamido and 6-imido penicillin sulfoxide esters. 3,719,667, Cl. 260-239.100.

Gutton, Henri; and Hugon, Jean Jacques, deceased (by Hugon, Simone Jeanne Georgette; Augarde, Marie Jeanne; and Hugon, Emile, heirs). Method of and device for detecting submerged bodies by means of megameter radio waves. 3,719,947, Cl. 343-112.00r.

Gysling, Henry J.: See—  
Yudelson, Joseph S.; and Gysling, Henry J., 3,719,490.

Habeck, Dietmar A.: See—  
Galantay, Eugene E.; and Habeck, Dietmar A., 3,719,670.

Habraken, Louis; Leroy, Vincent; Meulemans, Marcel; and Cartels, Florent, to Centre National de Recherches Metallurgiques and Centre d'Etude de l'Energie Nucleaire. Low carbon ferrous alloy containing chromium. 3,719,475, Cl. 75-126.00d.

Hadam, Wilhelm; and Ploppa, Jurgen, to Stoll, H., and Company. Safety device for flat knitting machine. 3,719,061, Cl. 66-157.000.

Hagemann, Guy: See—  
Girault, Pierre; and Hagemann, Guy, 3,719,764.

Haggard, Kenneth S. Attachment for automatic override of manually operated compressed gas fire extinguishers and alarms. 3,719,231, Cl. 169-26.000.

Hai, Atta Mohammed; Kerrigan, Charles M.; and Leidy, Harold T., to General Foods Corporation. Meat analogs. 3,719,499, Cl. 99-17.000.

Halcour, Kurt: See—  
Grude, Fritz; Halcour, Kurt; Schwerdtel, Wulf; Swodenk, Wolfgang; and Woernle, Peter, 3,719,718.

Hall, Bertie Forrest, Jr.: See—  
Wolcast, Raymond P.; and Hall, Bertie Forrest, Jr., 3,719,347.

Hall, Harold E., to Stalwart Rubber Company. Apparatus for manufacturing rubber washer elements. 3,719,443, Cl. 425-352.000.

Hall International Inc.: See—  
Hedrick, John R., 3,719,251.

Hall, John N., to Hercules Incorporated. Preparation of transversely fibrillated film. 3,719,540, Cl. 156-267.000.

Hall, Luther A. R.; Gurney, John A.; and Renfro, Harris B., to Ciba-Geigy Corporation. Certain 2-isotonitrosalkyl-15,16-dihydropyrenes. 3,719,709, Cl. 260-556.00a.

Hall Ski-Lift Company, Inc.: See—  
Savage, Phillip D., 3,719,369.

Hama, Kinjiro; Mishima, Nobuo; and Miyamoto, Kazuo, to Sumitomo Chemical Co., Ltd. Monoazo dyestuffs containing a carboxamido-4(3H)-quinazolinone group. 3,719,657, Cl. 260-154.000.

Hamburg, Douglas R., to United States of America, Air Force. Logarithmic IF amplifier. 3,719,831, Cl. 307-230.000.

Hamill, Robert L.; Higgins, Calvin E.; and Hoehn, Marvin M., to Lilly, Eli, and Company. Process for producing 7-(5-amino-5-carboxyvaleramide-7-methoxycephalosporanic acid. 3,719,563, Cl. 195-80.00r.

Hamilton, William. Storage containers for liquids. 3,719,302, Cl. 220-9.0lg.

Hammel, Larry F., to Diagraph-Bradley Industries, Inc. Stencil hand stamp with fluid-containing handle and torsion-spring supports. 3,719,140, Cl. 101-125.900.

Hampl, Edward F., Jr., to Minnesota Mining and Manufacturing Company. Thermoelectric composition. 3,719,533, Cl. 136-238.

Hanes, Clifford D. Orthopedic bolster pillow. 3,719,185, Cl. 128-69.000.

Hanes, James W. E., to Vetco-Offshore Industries, Inc. Double sealed tubular connector apparatus. 3,719,070, Cl. 73-37.000.

Haney, Martha L. Wheel chair. 3,719,390, Cl. 297-6.000.

Hanft, Herbert, to Westinghouse Electric Corporation. Inter-resonator coupling. 3,719,909, Cl. 333-73.00c.

Hansford, Rowland C., to Union Oil Company of California. Dehydrogenative process and catalyst. 3,719,721, Cl. 260-673.50r.

Hansley, Virgil L.; Greenberg, Harry; Morgan, Fred Keith; and Grinninger, Lowell D., to National Distillers and Chemical Corporation. Modification of alfin polymers and product. 3,719,730, Cl. 260-877.000.

Hanson, Raymond W. Venetian blind window assembly. 3,719,221, Cl. 160-168.000.

Hara, Kazuo; and Yoshitake, Toshihiko, to Kuraray Co., Ltd. Urethane elastomer combined with copolymer of unsaturated carboxylic acid ester and ionically crosslinked unsaturated carboxylic acid. 3,719,726, Cl. 260-859.000.

Haracz, Edward F. Lithographic plate developing apparatus. 3,719,133, Cl. 95-89.00r.

Harding, Dale L.; and Kuhnash, Arthur R., to Textron, Inc. Framed screen panel. 3,719,222, Cl. 160-371.000.

Hardwig, Ernest B. System for sorting mail bags. 3,719,269, Cl. 198-179.000.

Hardy, Frederick Edward; Robson, Peter; and Speakman, Peter Roscoe Hartley, to Procter & Gamble Company, The. Polymers and detergent compositions containing them. 3,719,647, Cl. 260-86.10r.

Harlam, Gerald F.; and Okolowicz, Marian A., to Pilling Chain Co. Inc. Slider construction for separable fasteners. 3,718,949, Cl. 24-205.15r.

Harnden, John D., Jr., to General Electric Company. Induction cooking appliance including temperature sensing of inductively heated cooking vessel by "modulated" light. 3,719,789, Cl. 219-10.490.

Harner, Robert H.; Meister, Otto; and Owen, Robert E., to S.C. Electric Company. Exhaust control device for circuit interrupting devices. 3,719,912, Cl. 337-280.000.

Harper, Ann K.: See—  
Harper, John L., 3,718,961.

Harper, Ernest A.: See—  
De Marco, Salvador S.; and Harper, Ernest A., 3,719,053.

Harper, John L.; deceased (by Harper, Ann K.; executrix). Electrical connection between dissimilar metals. 3,718,961, Cl. 29-191.000.

Harper, Robert V.: See—  
Michels, Lawrence S.; Minka, George F.; Kovar, Donald G.; and Harper, Robert V., 3,719,927.

Harrington, Horral, 50% to Himmel, Ivan. Inflatable form for concrete building shell. 3,719,341, Cl. 249-65.000.



- Harris, Arthur M. Electroacoustic means for separation of glued joints. 3,719,543, Cl. 156-584.000.
- Harris, Harold Ronald. Quick disconnect pressurization apparatus. 3,719,205, Cl. 137-583.000.
- Harris-Intertype Corporation. *See—*  
Mebus, Henry R., 3,718,939.
- Murray, James E.; and Foley, Richard G., 3,719,877.
- Harrison, John Garton. Golf club swing training device. 3,719,363, Cl. 273-186.00a.
- Harrison, Robert S.; and Johnson, Thomas R., to Ford Motor Company. Inertia responsive carburetor fuel flow control means. 3,719,352, Cl. 261-23.00a.
- Harsch, Gerald J., to Harsch Precision Engineering. Downrigger. 3,719,331, Cl. 242-106.000.
- Harsch Precision Engineering. *See—*  
Harsch, Gerald J., 3,719,331.
- Harter, Lynn J., to Thrall Car Manufacturing Company. Railroad car with fluid-side bearing antisway means. 3,719,152, Cl. 105-164.000.
- Hartley, Dennis, to Coal Industry (Patents) Limited. Apparatus for steering a longwall mineral mining machine. 3,719,394, Cl. 299-1.000.
- Hartog, Thomas J., to Browning Industries, Inc. Sear lever for eliminating doubling. 3,718,998, Cl. 42-42.00r.
- Hashimoto, Seiya; Takahashi, Soji; Hattori, Yasuhiro; and Imai, Kuninori, to Hitachi, Ltd. Method of manufacturing an article having a cylindrical peripheral wall and integral thin-walled portions inwardly thereof. 3,719,068, Cl. 72-254.000.
- Hatcher, Odle Glenn, to United States of America, Air Force. Refillable cooling package. 3,719,206, Cl. 137-596.000.
- Hathaway, Robert E., to Autometrics Co. Method and apparatus for measurement of particle size and percent solids in multiple process flowstreams. 3,719,090, Cl. 73-432.0ps.
- Hattori, Kenichi; Ueda, Yuichi; and Tanino, Yukio, to Kao Soap Co., Ltd. Ethylene oxide polymer composition. 3,719,631, Cl. 260-45.8sn.
- Hattori, Yasuhiro. *See—*  
Hashimoto, Seiya; Takahashi, Soji; Hattori, Yasuhiro; and Imai, Kuninori, 3,719,068.
- Haupt, David C., and Smith, Walter F., to United States of America, Navy. Apparatus for testing infrared sensitive fuzes. 3,719,077, Cl. 73-167.000.
- Hauschild, Ulrich; Holst, Rudolf; Kaspers, Hans-Heinz; and Dahme, Wolfgang, to Kali-Chemie Aktiengesellschaft. Preparation of alkali containing calcined phosphate fertilizers. 3,719,464, Cl. 71-45.000.
- Hauser, Kenneth L. *See—*  
Molloy, Bryan B.; Fuller, Ray W.; and Hauser, Kenneth L., 3,719,713.
- Hayinga, Reginaldus, and Swaters, Pieter D., to Koninklijke Industriële Maatschappij Noury & Van Der Lande N.V. Novel amino-substituted benzotates. 3,719,692, Cl. 260-404.500.
- Hawkins, George C., and Cutts, James H. Method and apparatus for removing screen wire members from multi-level screen deck assemblies. 3,718,963, Cl. 29-200.00d.
- Hawthorn, John. *See—*  
Gladstone, James E.; Wilcox, James E.; and Hawthorn, John, 3,719,517.
- Hayashi, Yoshio; and Ohara, Ayatoshi, to Erbara Infileo Kabushiki Kaisha. Filtration process for clarification. 3,719,592, Cl. 210-53.000.
- Hayes, Lester P.; Drury, Raymond L., Jr.; and Grosse, Edward H., to Staley, A. E., Manufacturing Company. Wrap sizing agent. 3,719,664, Cl. 260-233.500.
- Hayford, John S., to Stauffer Chemical Company. Hydrothermal process for making hydrogen fluoride. 3,719,747, Cl. 423-485.000.
- Heavens, Thomas H. *See—*  
Diftenbach, Richard A.; and Heavens, Thomas H., 3,719,732.
- Hedrick, John R., to Hall International Inc., mesne. Diffuser apparatus for pneumatic tools. 3,719,251, Cl. 181-36.00a.
- Hehr, Herbert. Stone gatherer. 3,719,233, Cl. 171-65.000.
- Heidorn, John H., to General Motors Corporation. Electromagnetic clutch. 3,719,260, Cl. 192-84.00c.
- Heiney, Harold G., Jr. *See—*  
Fowler, Donald W.; and Heiney, Harold G., Jr., 3,719,336.
- Heinze, Gerhard; and Sarnes, Reiner, to Bayer Aktiengesellschaft and Mphler, J. F., Apparate- und Ofenbau Kommandite-Gesellschaft. Resolving gas mixtures. 3,719,025, Cl. 55-31.000.
- Heinzer, Paul, and Schweizer, Alfred, to Battelle Memorial Institute. Printing method and apparatus using conductive fusible ink. 3,719,261, Cl. 197-1.00r.
- Hemmi, Christian O., to Texas Instruments, Incorporated. Antenna pattern roll stabilization. 3,719,949, Cl. 343-117.000.
- Hendrickson, Kenneth L. *See—*  
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- Hennings, Klaus. *See—*  
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- Henrick, Clive A.; Siddall, John B.; and Anderson, Richard J., to Zeecon Corporation. Imino substituted  $\alpha,\beta$ -unsaturated aliphatic esters. 3,719,666, Cl. 260-239.00c.
- Henry, David W. *See—*  
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- Hensen, Friedhelm. *See—*  
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- Herbstman, Sheldon; Peck, Reese A.; Guptill, Frank E., Jr.; and Wilson, Raymond F., to Texaco Inc. Asphalt separation in desulfurization with an oxidation step. 3,719,589, Cl. 208-208.00r.
- Hercules Incorporated. *See—*  
Conley, Joseph W., 3,719,658.
- Hall, John N., 3,719,540.
- Klug, Eugene D., 3,719,663.
- Podlas, Thomas J., 3,719,503.
- Herman, Elvin E.; and O'Sullivan, Michael R., to Hughes Aircraft Company. Adaptive automatic gain control for radar systems. 3,719,942, Cl. 343-7.00a.
- Herod, Donald M.; and English, Barry E., to General Motors Corporation. Shift indicator mechanism. 3,719,162, Cl. 116-124.000.
- Herrmann, Gunther, to Photocircuits Division of Kollmorgen Corporation. Method and means for measuring the deposition rate in metallic plating baths. 3,719,565, Cl. 204-1.00t.
- Hershkowitz, David M. *See—*  
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- Heseltine, Donald W. *See—*  
Kurtz, Donald W.; and Heseltine, Donald W., 3,719,494.
- Hessland, Gerd; and Grabel, Ulrich, to Grundig-Elektro-Mechanische Versuchsanstalt. Sound recording and reproducing apparatus. 3,719,364, Cl. 274-4.00d.
- Heusler, Karl; Robert Burns; and Ernest, Ivan, to Ciba-Geigy Corporation. 4-Substituted methylene-7-amino-8-oxo-5-thia-1-aza-riocyclo [4,2,0] oct-2-ene-2-carboxylic acids. 3,719,672, Cl. 260-343.00c.
- Hewitt, Terry L., to General Electric Company. Free-standing audio-visual-response teaching system. 3,718,984, Cl. 35-9.00a.
- Hewitt, Terry L., to General Electric Company. Group instruction audio-visual teaching system. 3,718,985, Cl. 35-9.00a.
- Hewitt, Terry L., to General Electric Company. Scanned audio-visual-response teaching system. 3,718,986, Cl. 35-9.00a.
- Hewlett-Packard Company. *See—*  
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- Hiatt, Norman A., to Uniroyal, Inc. Polyarylene tetrasulfide polymers. 3,719,645, Cl. 260-79.000.
- Hibi, Masao. *See—*  
Eto, Yoshizumi; and Hibi, Masao, 3,719,771.
- Hibino, Sohei. *See—*  
Shimizu, Tetsuji; Hibino, Sohei; Miwa, Haruo; and Inagaki, Nobukatsu, 3,719,887.
- Hickman, John B., to Hickman, W. P., Company, Inc. Coping and support therefor. 3,719,010, Cl. 52-60.000.
- Hickman, W. P., Company, Inc. *See—*  
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- Hiersign Heinz. *See—*  
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- Higgins, Calvin E. *See—*  
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- Hihara, Takeshi. *See—*  
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- Himmel, Ivan. *See—*  
Harrington, Horrall, 3,719,341.
- Hindman, Clyde V. Adjustable spray head. 3,719,328, Cl. 239-546.000.
- Hirano, Mikio. *See—*  
Ono, Kazumasa; Tani, Takuya; Kamoshita, Gen-Ichi; Hirano, Mikio; and Motouchi, Masafumi, 3,719,567.
- Hiroshima, Minoru, to Hitachi, Ltd. One-bit data transmission system. 3,719,930, Cl. 340-172.500.
- Hirsch, Stephen S. *See—*  
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- Hitachi, Ltd. *See—*  
Eto, Yoshizumi; and Hibi, Masao, 3,719,771.
- Fujiyasu, Tatsuo; and Ohnuma, Yoshio, 3,719,776.
- Hashimoto, Seiya; Takahashi, Soji; Hattori, Yasuhiro; and Imai, Kuninori, 3,719,068.
- Hiroshima, Minoru, 3,719,930.
- Izumi, Hideki; Ichikawa, Ryoichi; Koike, Hiroshi; and Tanaka, Katsuyuki, 3,719,405.
- Matsuda, Yasumasa, 3,719,195.
- Ogawa, Takuzo; and Imura, Masao, 3,719,863.
- Oishi, Hiroshi; Aoki, Fumio; Kawano, Shigeru; Kudo, Yasushi; Kobayashi, Hideo; and Hyodo, Takeo, 3,719,928.
- Ono, Kazumasa; Tani, Takuya; Kamoshita, Gen-Ichi; Hirano, Mikio; and Motouchi, Masafumi, 3,719,567.
- Shibata, Takanori; Kasama, Ryoji; Naito, Shotaro; and Maki, Shin, 3,719,881.
- Taniguchi, Kenji; and Imaizumi, Ichiro, 3,719,864.
- Tomita, Sadami, 3,719,911.
- Yamazaki, Seishi; and Kaneda, Masao, 3,719,892.
- Hitachi Metals, Ltd. *See—*  
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- Hoagland, Frank V. N. *See—*  
Albrecht, Robert J.; Griner, Arthur J.; and Hoagland, Frank V. N., 3,719,019.
- Hoehuli, Urs E. Ultra stable symmetrical laser structures. 3,719,900, Cl. 331-94.500.
- Hock, Walter L.; and Simon, Abraham, to Kraftco Corporation. Method and apparatus for controlling freezers. 3,719,056, Cl. 62-70.000.

- Hocker, Lon O., III. *See—*  
Javan, Ali; and Hocker, Lon O., III, 3,719,822.
- Hoehn, Marvin M. *See—*  
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- Hofbauer, Werner. *See—*  
Authier, Bernhard; Deckert, Helmut; Hofbauer, Werner; and Bauer, Rudolf, 3,719,271.
- Hoff, Dale R. *See—*  
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- Hoffman, George E.; and Tench, John D., to Sun Oil Company of Pennsylvania. Dip coating apparatus including fluid doctor means. 3,719,164, Cl. 118-6.000.
- Hoffman, Herbert N., to General Electric Company. Turbine-generator and condenser base for shipboard installation. 3,719,045, Cl. 60-95.00a.
- Hoffmann La Roche Inc. *See—*  
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- Hofmann, Eberhard; and Staudt, Heinrich, to Bosch, Robert, G.m.b.H. Fuel shutoff device for multicylinder fuel injection pumps. 3,719,208, Cl. 137-625.410.
- Hofmann, Heinrich, to Messerschmitt-Bolkow GmbH. Gas generator and tubular solid charge construction therefore. 3,719,040, Cl. 60-39.470.
- Hohenberg, Rudolph, to Avco Corporation. Measurement of gas temperature variations in a gas turbine engine. 3,719,071, Cl. 73-341.000.
- Hollstein, Carl P., Jr.; Kiltz, Gerald H.; and Sordello, Frank J., to International Business Machines Corporation. Phase lock oscillator with phase compensation circuit for use in data processing system. 3,719,896, Cl. 331-14.000.
- Holker, Kenneth U. *See—*  
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- Holland, Eugene E.; and Jones, Rex O., III., to Sperry Rand Corporation. Brushless D.C. motor using magneto resistor sensing means. 3,719,875, Cl. 318-254.000.
- Holland, Kenneth C.; and Sprando, Anthony E., to Tektronix, Inc. Switch having ganged contacts mounted on opposite sides of circuit board. 3,719,788, Cl. 200-153.0lp.
- Hollis, Roger M. Golf cart. 3,719,247, Cl. 180-19.00h.
- Holmer, Donald A. *See—*  
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- Holst, Rudolf. *See—*  
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- Holtzman, Tobias G. Cover for maintaining freshness of coffee. 3,719,306, Cl. 220-93.000.
- Holzinger, Robert D., to Sherwin-Williams Company, The. Rapid drying alkyl coating modified with amino aromatic carboxylic acid. 3,719,622, Cl. 260-22.00a.
- Honeywell Information Systems Italia S.p.A. *See—*  
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- Hoogendonk, Johan W., to Stamicarbon N.V. Diphenylolpropane pills. 3,719,715, Cl. 260-619.00a.
- Hooker Chemical Corporation. *See—*  
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- Hori, Teruhisa. *See—*  
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- Horn, Willi. *See—*  
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- Horvath, Laszlo; Gundisch, Gusztav; Antal, Mandor; and Arvai, Mihaly, to Orazagos Gumiipiri Vallalat. Pneumatic tire. 3,719,219, Cl. 152-379.000.
- Horvitt, Laurence G.; and Mattis, Donald J., to Nelmer Incorporated, mesne. Remote swivel movement control. 3,719,105, Cl. 74-501.00m.
- Hostein, Charles. *See—*  
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- Houdaille Industries, Inc. *See—*  
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- Booth, Frederick E., Jr., 3,719,808.
- Houlihan, William J.; and Nadelson, Jeffrey, to Sandoz-Wander, Inc. 1,2,3,12a-Tirahydro-7 (2h) plodomenones. 3,719,280, Cl. 260-590.000.
- Houst, Douglas R., and Iskandar, Kamal, to General Electric Company. Cam actuated switching assembly. 3,719,871, Cl. 318-139.000.
- Howard, Ralph L. *See—*  
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- Howard, William C. Rotating piston engine. 3,719,438, Cl. 418-36.000.
- Howe, Blair E. *See—*  
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- Howell, Wallace E. Air momentum anemometer. 3,719,079, Cl. 73-194.00r.
- Howland, George R., to Bendix Corporation, The. Fluid analog control apparatus. 3,719,039, Cl. 60-39.28r.
- Hozumi, Shiro. *See—*  
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- Huber, Paul W. Tie down rope. 3,718,947, Cl. 24-73.00h.
- Huebner, Erwin. *See—*  
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- Huemmer, Thomas F.; and Miranda, Thomas J. Radiation curable acrylic urethane monomers. 3,719,638, Cl. 260-77.5cr.
- Huffman, Theron M. *See—*  
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- Hunt Electronics Company. *See—*  
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- Hunten, Werner, to Ankerwerk Numberg GmbH. Closure nozzle for injection molding machines. 3,719,310, Cl. 222-497.000.
- Huther, Edmund. *See—*  
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- Hydromotion Systems, Inc. *See—*  
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- Imura, Masao. *See—*  
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- Illing, David Anthony, to International Computers Limited. Permanent information store. 3,719,804, Cl. 235-61.12n.
- Imai, Kin-ichi; Yoshioka, Yoshio; Toda, Jun; and Aoki, Hisashi, to Takeda Chemical Industries, Ltd. 2-Furfurylthioinosine 5-phosphate compounds. 3,719,660, Cl. 260-211.50r.
- Imai, Kuninori. *See—*  
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- Imaizumi, Ichiro. *See—*  
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- Imbert, Francis, to Thomson-CSF. Thermionic converter with plural solid reservoirs. 3,719,837, Cl. 310-4.000.
- Imperial Chemical Industries Limited. *See—*  
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- Leslie, Victor Jeffrey; and Rose, John Brewster, 3,719,714.
- Inagaki, Nobukatsu. *See—*  
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- Industrial Science & Technology, Agency of. *See—*  
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- Ingram, Woodrow Hayes, II, to Monsanto Company. Anti-migratory additive for emulsified phenolic resin systems said additive being a water soluble polyacrylate. 3,719,616, Cl. 260-7.000.
- Ino, Takamitsu. *See—*  
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- Institut Francais du Pétrole des Carburants et Lubrifiants. *See—*  
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- Dawans, Francois, 3,719,653.
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- International Business Machines Corporation. *See—*  
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- International Lead Zinc Research Organization, Inc. *See—*  
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- International Nickel Company, Inc., The. *See—*  
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- Iskandar, Kamal. *See—*  
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- Itek Corporation. *See—*  
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- Ito, Akihiko. *See—*  
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- Ivaschenko, Felix Alexandrovich: See—  
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- Iwatani, Junichi: See—  
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- Iwatsu Electric Co., Ltd.: See—  
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- Izumi, Hideki; Ichikawa, Ryoichi; Koike, Hiroshi; and Tanaka, Katsuyuki, to Hitachi, Ltd. Gas bearing, 3,719,405, Cl. 308-9.000.
- Jackson, Byron, Inc.: See—  
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- Jackson, Richard Lee, to Lilly, Eli, and Company. Process for the crystallization of the ammonium and alkali metal salts in insulin, 3,719,655, Cl. 260-112.700.
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- Jacocks, Claud L., to Continental Oil Company. Magnesium silicate thickened hydrocarbon insulating fluids, 3,719,601, Cl. 252-62.000.
- Jaffa, David; and Miller, James D., to Precision Screen Machines Inc. Method and apparatus for screen printing tiles, 3,719,141, Cl. 101-126.000.
- Jagdmann, Edwin F.; and Lemieux, George E., to Ford Motor Company. Two-stage throttle valve for an automatic transmission, 3,719,107, Cl. 74-843.000.
- Jamesbury Corporation: See—  
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- Japan Atomic Energy Research Institute: See—  
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- Jarema, Chester P.; and Niebylski, Leonard M., to Ethyl Corporation. Method for quietly casting foamed metal, 3,719,223, Cl. 164-79.000.
- Javan, Ali; and Hocker, Lon O., III, to Massachusetts Institute of Technology. Method of generating a signal with a frequency between  $10^4$  and  $10^5$  Hz with extreme frequency stability, 3,719,822, Cl. 250-83.30h.
- Jedynak, Leo; and Gusaras, Vlasdas, to Oak Electro/Netics Corporation. Control knob for multiturn rotary switch, 3,719,163, Cl. 116-133.000.
- Jennes, Gert; Huther, Edmund; and Wolff, Willi, to Bayer Aktiengesellschaft. Crosslinked chloroprene/diester polymer, 3,719,649, Cl. 260-86.300.
- Jensen, Sverre Knut, to Thermovatic Sverre K. Jenssen AB. Plate heat exchanger, 3,719,227, Cl. 165-166.000.
- Jernstrom, Hans, to Tarrson, Sidney A., Company. Musical toy, 3,719,002, Cl. 46-1.00r.
- Jessup, Harvey A.: See—  
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- Johnson, Arthur O. Fuel flow restricting and filter assembly, 3,719,595, Cl. 210-445.000.
- Johnson, Forrest H.: See—  
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- Johnson, Jacob L. Expansion device for mounting an upright column to a base structure, 3,719,376, Cl. 287-20.300.
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- Johnson, Olin B.; and Labana, Santokh S., to Ford Motor Company. Polyester and graded acrylic rubber-urethane-acrylate paint and painting process, 3,719,521, Cl. 117-93.310.
- Johnson, Olin B.; and Labana, Santokh S., to Ford Motor Company. Vinyl resin and acrylic rubber-urethane-acrylate paint and painting process, 3,719,522, Cl. 117-93.310.
- Johnson, Olin B.; and Labana, Santokh S., to Ford Motor Company. Hydroxy-vinyl copolymer and graded-rubber paint and process, 3,719,523, Cl. 117-93.310.
- Johnson, Thomas Albert, to Du Pont de Nemours, E. I., and Company. Intermediates for p-benzamide polymers, 3,719,642, Cl. 260-78.00a.
- Johnson, Thomas C., to Easy-Back, Inc. Castered trailer for a vehicle, 3,719,373, Cl. 280-474.000.
- Johnson, Thomas R.: See—  
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- Johnston, Robert F.; and Hendrickson, Kenneth L., to Bell & Howell Company. Reset control particularly for optical compensators, 3,719,418, Cl. 352-109.000.
- Johnston, William V., to North American Rockwell Corporation. Synthesis of ionically conductive compositions of matter, 3,719,612, Cl. 252-518.000.
- Johnston, William V., to North American Rockwell Corporation. Aqueous synthesis of ionically conductive compositions of matter, 3,719,746, Cl. 423-463.000.
- Jolles, Georges, to Rhone-Poulenc S.A. Cyclopeptides, 3,719,656, Cl. 260-112.500.
- Jonas, David Andrew; and Owen, William John, to Dow Corning Limited. Organosilicon polymers containing silacyclobutane structures, 3,719,696, Cl. 260-448.20d.
- Jones, Gerald Cedric; and Leek, Herbert Bentley, to Saunders Valve Company Limited. Ball valve seating assemblies, 3,719,344, Cl. 251-174.000.
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- Jones, William D., to American Metal Climax, Inc. Anti-pollution burner system, 3,719,471, Cl. 75-65.000.
- Jonsson, Nils G., to American Modular Systems Designs, Inc. Construction panel, 3,719,768, Cl. 174-49.000.
- Jordan, Charles E., to Lilly, Eli, and Company. Method of promoting growth and improving feed efficiency in poultry and swine via oral administration of cephalosporin C, 3,719,758, Cl. 424-246.000.
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- Jouffret, Michel: See—  
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- Joy, John Richard, to Union Carbide Corporation. Hydrolyzable functional silyl alkyl alkyl peroxides, 3,719,650, Cl. 260-89.50a.
- Jungermann, Eric; and Reich, Henry E., to Armour and Company. Germicidal compound and soap compositions incorporating the same, 3,719,605, Cl. 252-107.000.
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- Kabushiki Kaisha Ricoh: See—  
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- Kabushiki Kaisha Toyota Chuo Kenkyusho: See—  
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- Kadale Equipment Company: See—  
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- Kaelon, Kenneth C., to Lockheed Aircraft Corporation. Device for turning an element, 3,719,112, Cl. 81-57.390.
- Kafafian, Haig. Tactually interpretable cell and slate for forming the same, 3,718,991, Cl. 35-38.000.
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- Paucksch, Heinrich; and Massonne, Joachim, 3,719,716.
- Kallet, Eli A., to Farrand Optical Co., Inc. Mixing and measuring apparatus, 3,719,410, Cl. 356-36.000.
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- Kansen, Norbert Ernst Fritz; and Littmann, Walter Fritz Konrad, to U.S. Philips Corporation. Ion source for slow-ion sputtering, 3,719,582, Cl. 204-298.000.
- Kantor International S.A.: See—  
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- Kao Soap Co., Ltd.: See—  
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- Karchmer, Jean H.; and Pennington, Robert E., to Esso Research and Engineering Company. Purging and washing coal naphtha to remove H<sub>2</sub>S and basic nitrogen, 3,719,587, Cl. 208-208.00r.
- Karlson, Eskil L.: See—  
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- Karmas, George, to Ortho Pharmaceutical Corporation. Alkenyl esters of 2(lower alkyl)-3-(lower alkyl-4-aryl 3- or 4-cyclohexencarbinols), 3,719,693, Cl. 260-410.500.
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- Kasama, Ryoji: See—  
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- Katz, Klaus; and Bulow, Manfred, to Daimler-Benz Aktiengesellschaft. Servo-steering system for vehicles, 3,719,124, Cl. 91-434.000.
- Kawahata, Masayuki, to Environment/One Corporation. Periodically reversed gas flow ozone production method and apparatus, 3,719,573, Cl. 204-176.000.
- Kawakami, Yukichika: See—  
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- Kazee, Robert B., to Kadale Equipment Company. System for applying uniform layer of a flowable material to a substrate, 3,719,168, Cl. 118-306.000.
- Kazuba, Robert J., to Pettibone Corporation. Billet manipulating unit, 3,719,286, Cl. 214-1.00q.
- Keck, Jerry L.; and Rowley, James Robert, to Ludlow Corporation. Fracturable adhesive backing, 3,719,548, Cl. 161-117.000.
- Keely, Richard Thomas, to Burroughs, J. P., & Son, Inc. Apparatus and method for hydrokinetically cooking legumes, 3,719,502, Cl. 99-98.000.
- Kelsall, Denis Fletcher; and Restarick, Clifford John, to Commonwealth Scientific and Industrial Research Organization. Determination of particle size distribution, 3,719,089, Cl. 73-432.0ps.
- Kemp, Ray F.; Blanchard, Robert R.; and Chamberlin, Roger S., to Dow Chemical Company. The Casing pipe and method of casing a borehole, 3,719,230, Cl. 166-315.000.
- Kendall, Thomas L.; and Lincoln, Thomas C., to Becton, Dickinson Electronics Company. Thumbwheel switch assembly with improved gang housing interlocking means, 3,719,785, Cl. 200-11.0tw.
- Kennametal Inc.: See—  
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- Kennedy, John P. Acoustic coupler, 3,719,783, Cl. 179-1.00c.
- Kerr, Wayne L., to Schlumberger Technology Corporation. Electrical connector, 3,719,918, Cl. 339-90.00r.
- Kerrigan, Charles M.: See—  
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- Leidy, Harold T.; Kerrigan, Charles M.; Tewey, Robert T.; and Bartenbach, Louis, 3,719,498.
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- Kijima, Shizumasa; and Minami, Norio, to Eisai Co. Ltd. Basic amino acid salts of tocopheryl succinate, 3,719,690, Cl. 260-345.500.
- Kiltz, Gerald H.: See—  
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- King, John Edward, to Master Chemical Corporation. Aqueous cutting fluid which protects ferrous metals against corrosion, 3,719,598, Cl. 252-33.400.
- King, John Frederick; and Packer, Robert Kenneth, to Magnesium Elektron Limited. Electric batteries and alloys therefor, 3,719,530, Cl. 136-100.00m.
- King, Robert E.; and Thompson, David F., to Sylvania Electric Products, Inc. Process for making integrated circuit packages, 3,719,566, Cl. 204-15.000.
- Kingsley, William; and Allis, Robert F., to Xerox Corporation. Wrap adjust device for controlling engagement between a web and roller in an imaging system, 3,719,951, Cl. 346-74.0tp.
- Kinugasa, Terukazu: See—  
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- Kirkham, Kathleen E.: See—  
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- Klein, Roy W.; Tremmel, Robert A.; and Claus, Richard J., to Oxy Metal Finishing Corporation. mesne. Nickel electroplating composition and process, 3,719,568, Cl. 204-49.000.
- Klingenberg, Hans Ulrich. Watchcase, 3,719,038, Cl. 58-88.00r.
- Klug, Eugene D., to Hercules Incorporated. Preparation of cellulose ethers, 3,719,663, Cl. 260-231.00r.
- Kmonk, Stanley: See—  
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- Knapp, John F.: See—  
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- Knight, Ralph M., to Dart Industries, Inc. High pressure process for polyethylene production, 3,719,643, Cl. 260-87.300.
- Knollmueller, Karl O.; and Sieckhaus, John F., to Olin Corporation. Method for preparing poly-carboranylenesiloxane, 3,719,633, Cl. 260-46.50e.
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- Kobayashi, Hideo: See—  
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- Kobayashi, Tadashi. Machine for relieving the fatigue of fingers, 3,719,184, Cl. 128-26.000.
- Koehnert, Earl A., to Farmhand, Inc. Folding auger for portable feed mill and mixer, 3,719,268, Cl. 198-115.000.
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- Koiwa, Yoichi: See—  
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- Kolfert, Erwin. External filters for aquaria, 3,719,278, Cl. 210-169.000.
- Kolosky, Joseph Francis: See—  
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- Korn, Homer; Greenfield, Stephen J.; and Stemmler, Denis J., to Xerox Corporation. Sheet stacking apparatus, 3,719,266, Cl. 198-55.000.
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- Kraftco Corporation: See—  
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- Hock, Walter L.; and Simon, Abraham, 3,719,056.
- Kraklau, David M.; and Taylor, John H., to Advance Products Corporation. Surface indicator, 3,718,977, Cl. 33-172.00d.
- Kronenberg, Paul E., to General Motors Corporation. Refrigerator cabinet construction for releasing foam insulation, 3,719,303, Cl. 220-9.000.
- Krulikowski, Stanley J., Jr.; and Dawson, Juan C. Method and apparatus for measuring parallax between points on stereo images using a fourier transform hologram of one of the images, 3,719,420, Cl. 356-2.000.
- Krut, Charles F. Collapsible garment hanger, 3,719,312, Cl. 223-94.000.
- Kubo, Iwao. Feed mechanism for coil winders, 3,719,333, Cl. 242-158.400.
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- Kupersmit, Julius B. Clip for rigid foam pallet, 3,719,342, Cl. 248-216.000.
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- Laney, LeRoy E., to Resource Control, Inc. Electrolytic process. 3,719,570, Cl. 204-151,000.
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- Land, Edwin H., and Norris, Philip R., to Polaroid Corporation. Binocular rangefinder-viewfinder with Fresnel optics. 3,719,422, Cl. 356-8,000.
- Lange, Roger J. Harvester sweeper. 3,719,034, Cl. 56-119,000.
- Lanigan, Donald E.; and Biegert, Johannes P., to Lilly, Eli, and Company. Apparatus for conveying and filling capsules. 3,719,275, Cl. 209-79,000.
- Lanoue, Gerard, to Societe Nouvelle Spidem. Cooling device for a continuous casting wheel. 3,719,224, Cl. 164-278,000.
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- Larson, Arthur G., to McQuay, Inc. Ice dispensing device. 3,719,307, Cl. 222-236,000.
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- Lay, Frank M.; and McDowell, Allen W., to International Business Machines Corporation. Gas display panel dynamic honeycomb. 3,719,940, Cl. 340-324,000.
- Layman, Ralph Earl, to American Cyanamid Company. Nonlinear polyester resin compositions. 3,719,620, Cl. 260-22,000.
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- Lechner, Hadrian B., to Bausch & Lomb Incorporated. Inverted telephoto projection lenses. 3,719,413, Cl. 350-214,000.
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- Mayers, Joseph B.; and Kmonk, Stanley, to Westinghouse Electric Corporation. Fuel assembly for a nuclear reactor using zirconium alloy clad fuel rods. 3,719,560, Cl. 176-78,000.
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- Niedrach, Leonard W.; and Stoddard, William H., Jr., to General Electric Company. Sensor with ion exchange resin electrolyte. 3,719,575, Cl. 204-195.00p.
- Nippert, Charles R., Sr., to Bethlehem Steel Corporation. Apparatus for measuring strand. 3,718,976, Cl. 33-129.000.
- Nippon Paint Co., Ltd.: *See—*  
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- Nippon Telegraph and Telephone Public Corporation: *See—*  
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- Nippondenso Co. Ltd.: *See—*  
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- Nissan Motor Co., Ltd.: *See—*  
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- Noble, Euan, to Schlumberger Technology Corporation. Well survey instrument housing. 3,719,088, Cl. 73-431.000.
- Noetzelmann, David C., Sr.: *See—*  
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- Noma Lites Canada Limited: *See—*  
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- Nordin, Karl Olof, to Forshedas Gummufabrik AB. Reinforced pipe joint. 3,719,375, Cl. 285-339.000.
- Nordstrom, John D., to Ford Motor Company. Epoxy resin-siloxane paint. 3,719,723, Cl. 260-827.000.
- Noreen, Donald H.: *See—*  
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- Norton, Ian F., to Noma Lites Canada Limited. Tree stand. 3,719,340, Cl. 248-48.000.
- Nowicki, Ronald J., to General Motors Corporation. Vehicle roof ski rack. 3,719,297, Cl. 214-450.000.
- Nuclear Power Group Limited, The: *See—*  
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- Oberkirch, Wolfgang; Pampus, Gottfried; and Gunther, Peter, to Bayer Aktiengesellschaft. Polymerization of cyclopentene. 3,719,652, Cl. 260-93.100.
- Obermaier, Alfred A.; and Pierman, Martin J., to Alnor Instrument Company; division of Illinois Testing Laboratories, Inc. Air velocity measuring system. 3,719,082, Cl. 73-202.000.
- O'Brien Corporation, The: *See—*  
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- Odell, Norman Raymond: *See—*  
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- Oehler, Carl W. Pallet type load transport apparatus. 3,719,299, Cl. 214-515.000.
- Oertel, Harald: *See—*  
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- Ogawa, Takuzo; and Jimura, Masao, to Hitachi, Ltd. Light sensitive thyristor. 3,719,863, Cl. 317-235.00r.
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- Ohono, Tadao; Shimizu, Chiaki; and Iwatani, Junichi, to Shionogi & Co., Ltd. Mixer-settler extractor. 3,719,455, Cl. 23-270.500.

- Oishi, Hiroshi; Aoki, Fumio; Kawano, Shigeru; Kudo, Yasushi; Kobayashi, Hideo; and Hyodo, Takeo, to Hitachi, Ltd. and Tokyo Electric Power Co., The. Sweep signal meter reading system. 3,719,928, Cl. 340-151.00r.
- Oishi, Kazuo; Yoshida, Hiroshi; Ando, Noriyoshi; and Kurebayashi, Tokuhiko, to Nippondenso Co. Ltd. Signal generating system for internal combustion engines. 3,719,177, Cl. 123-148.00c.
- Okamoto, Toyohiko; Chihiro, Hayashi; and Nishiguchi, Masaru, to Sumitomo Metal Industries, Ltd. Piercing rolling apparatus for producing rolled material free from surface torsion. 3,719,066, Cl. 72-97.000.
- Okell, Roy E.; Kirkham, Harold; and Kirkham, Kathleen E., to Franklin Mint Corporation. Reducing apparatus and method. 3,719,121, Cl. 90-13.700.
- Okolowicz, Marian A.: *See—*  
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- Oldani, Francesco: *See—*  
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- Olin Corporation: *See—*  
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- Wojtowicz, John A.; and Lapkin, Milton, 3,719,636.
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- Olivetti, Ing. C., & C., S.p.A.: *See—*  
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- Olstowski, Franciszek, to Dow Chemical Company, The. Oxidation resistant graphite compositions. 3,719,608, Cl. 252-506.000.
- Omak Industries, Inc.: *See—*  
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- Ott, Karl-Heinz: *See—*  
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- Owen, Robert E.: *See—*  
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- Owen, William John: *See—*  
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- Ozretich, Thomas M., to Dow Chemical Company, The. Composition and method for controlling undesirable plant growth. 3,719,465, Cl. 71-88.000.
- Packer, Robert Kenneth: *See—*  
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- Pahlitzsch, Bruno. Device for applying adhesive to envelopes, bags or the like. 3,719,167, Cl. 118-211.000.
- Palfreyman, Jack; Middleton, Henry Edward; and Baker, Alan Anthony, to Secretary of State for Defence, mesne. Epicyclic weaving of fibre discs. 3,718,952, Cl. 28-15.000.
- Palm, John Stanley. Camper hold-down bracket. 3,719,382, Cl. 296-23.0mc.
- Pampus, Gottfried: *See—*  
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- Pan American Petroleum Corporation: *See—*  
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- Pannier, Karl A., Jr.; Reynolds, Gordon S.; and Sorenson, James L., to Le Voy's, Inc. Aseptic suction drainage system and valve therefor. 3,719,197, Cl. 137-205.000.
- Parekh, Girish Girdhar; and Blank, Werner Josef, to American Cyanamid Company. Compositions containing cyclic trisulfones. 3,719,627, Cl. 260-29.4ua.
- Parker Mfg. Company: *See—*  
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- Parker, Vernon D., to Union Oil Company of California. High-melting wax compositions. 3,719,625, Cl. 260-28.5av.
- Parlin, David B., to Bigelow-Sanford, Inc. Lubricated non-woven fabric. 3,719,546, Cl. 161-55.000.
- Pasbrig, Max. Rope clamp. 3,718,951, Cl. 24-126.000.
- Pastan, Harvey L., to Eastern Company, The, mesne. Linear output boat speedometer. 3,719,078, Cl. 73-181.000.
- Patel, Pravin K.; and Liu, Joo H., to Control Data Corporation, mesne. Magnetic record members having a protective recording surface and method of making. 3,719,525, Cl. 117-237.000.
- Paukisch, Heinrich; and Massonne, Joachim, to Kali-Chemie Aktiengesellschaft. Process of making difluorochlorobromomethane. 3,719,716, Cl. 260-653.000.
- Pearl, David Raymond: *See—*  
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- Peck & Hale, Inc.: *See—*  
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- Peduto, Ralph; and Prak, Jan Willem L., to Bulova Watch Company, Inc. Temperature compensating digital system for electromechanical resonators. 3,719,838, Cl. 310-8.100.
- Pence, Clarence M.: *See—*  
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- Pennington, Robert E.: *See—*  
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- Pennwalt Corporation: *See—*  
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- Pentecost, Eugene E., to North American Rockwell Corporation. Magnetic core circuit for testing electrical short circuits between leads of a multi-lead circuit package. 3,719,883, Cl. 324-51.000.
- Pentron Industries, Inc.: *See—*  
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- Penwalt Corporation: *See—*  
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- Pera, John D.: *See—*  
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- Pere, Francois Caillarec, to Capic-Etablissements Caillarec. Device for heat treatment by way of forced gas convection, forming a bakery, pastry, pork-butcher oven or the like. 3,719,180, Cl. 126-21.00a.
- Perkins Engines Limited: *See—*  
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- Perlman, David E. Photoelectric intruder detection device. 3,719,938, Cl. 340-258.00b.
- Perugini, Giancarlo. Process of forming protective coatings on metallic surfaces by spraying a combination of powders of a metal alloy, chromium and a ceramic oxide. 3,719,519, Cl. 117-71.00m.
- Peruglia, Marco, to Fiat Societa per Azioni. Solenoid-operated hydraulic switching valve. 3,719,401, Cl. 303-21.00f.
- Pet Incorporated: *See—*  
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- Peters, Joseph C.: *See—*  
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- Peters Machinery Company: *See—*  
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- Peters, Yolanda A.: *See—*  
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- Peterson, Maurice L. Movable feed bunk. 3,719,170, Cl. 119-52.0af.
- Peterson, Stephen G. Container supporting pedestal for cargo-carrying vehicles. 3,719,794, Cl. 105-366.00d.
- Petrie, James Alexander: *See—*  
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- Petro-Tex Chemical Corporation: *See—*  
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- Petrolite Corporation: *See—*  
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- Pettibone Corporation: *See—*  
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- Petzetakis, Nicholas G., to Unifoam A.G., mesne. Method for producing polyurethane foam blocks which have flat upper surfaces. 3,719,734, Cl. 264-51.000.
- Peyrot, Jean-Pierre. Mobile fluid-tight sealing device. 3,719,791, Cl. 219-121.0eb.
- Pfaff, Maurice: *See—*  
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- Phillips, Thomas E., to Owens-Corning Fiberglas Corporation. Method for producing a nonwoven reinforcement structure. 3,718,954, Cl. 28-77.000.
- Phillips Petroleum Company: *See—*  
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- Photocircuits Division of Kollmorgen Corporation: *See—*  
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- Pickering, Charles B.: *See—*  
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- Pierman, Martin J.: *See—*  
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- Piester, Leroy E.: *See—*  
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- Pilling Chain Co. Inc.: *See—*  
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- Pillsbury Company, The: *See—*  
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- Pineus, Anthony Godfrey. Resonant circuit apparatus for detecting electromagnetic conductive bodies. 3,719,882, Cl. 324-3.000.
- Pioneer Electronic Corporation: *See—*  
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- Pippert, Aaron J., to Utex Industries, Inc. Heterogeneous lip-type packings. 3,719,366, Cl. 277-205.000.
- Pitney-Bowes, Inc.: *See—*  
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- Pizzo, Torricella Del: *See—*  
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- Place, Harold; and Cheshire, Alan Gillingham, to Lucas, Joseph, (Industries) Limited. Liquid atomizing devices. 3,719,326, Cl. 239-406.000.
- Plasser, Franz, Bahnbaumaschinen-Industriegesellschaft m.b.H.: *See—*  
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- Platemakers Educational & Research Institute: *See—*  
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- Plockinger, Erwin; Ornnig, Hermann; and Schmidt, Alfred, to Gebrüder Bohler & Co. Aktiengesellschaft. Composition and method for forming a weld-surfaced alloyed steel layer on steel. 3,719,790, Cl. 219-73.000.
- Ploeg, Martinus: *See—*  
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- Ploppa, Jurgen: *See—*  
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- Plotnikoff, Nicholas Peter, to Abbott Laboratories. Method of enhancing memory and learning. 3,719,761, Cl. 424-274.000.
- Podlas, Thomas J., to Hercules Incorporated. Process of preparing CMC gels. 3,719,503, Cl. 99-129.000.
- Poilleux, Jean-Loup; and Tourret, Jean, to Compagnie des Compteurs. Optical device for determining the position of a point on a surface. 3,719,421, Cl. 356-4.000.
- Polaroid Corporation: *See—*  
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- Cieciuch, Ronald F. W.; Lohowy, Roberta R.; Meneghini, Frank A.; and Rogers, Howard G., 3,719,489.
- Downey, Rogers B., 3,719,309.
- Land, Edwin H., 3,719,416.
- Land, Edwin H.; and Norris, Philip R., 3,719,422.
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- Pollution Control Industries Inc.: *See—*  
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- Portec, Inc.: *See—*  
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- Porter, Allan W. H. Yarn holding device for a picking element of a loom. 3,719,211, Cl. 139-122.00n.
- Porter, David H.; and Raddatz, Gene R., to Thomas Industries, Inc. Mounting device for lighting fixtures. 3,719,818, Cl. 240-52.00r.
- Porter, James E., Jr. Adjustable and folding outdoor grill and crane. 3,719,181, Cl. 166-30.000.
- Possell, Clarence R. Pressure sensitive sensor and control unit and method of using same. 3,719,836, Cl. 307-308.000.
- Post Office, The: *See—*  
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- Potzick, Anthony J., to Mosler Safe Company, The. Combination lock with lineally movable cam followers and nonsequentially acting tumbler holders. 3,719,064, Cl. 70-299.000.
- Poulos, George. Measuring construction. 3,718,980, Cl. 33-174.00g.
- PPG Industries, Inc.: *See—*  
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- Reich, Donald A.; and Stevens, Henry C., 3,719,689.
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- Precision Metalsmiths, Inc.: *See—*  
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- Precision Screen Machines Inc.: *See—*  
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- Preisser, Gunther. Device for use in connection with spinning and twisting machines for guiding the thread from the drafting mechanism to the spindle. 3,719,036, Cl. 57-106.000.
- Prentice, Winslow W., to United States of America, Navy. Low loss electrical conductive coating and bonding materials including magnetic particles for mixing. 3,719,610, Cl. 252-513.000.
- Pressnell, Douglas C. Container holder. 3,719,305, Cl. 220-85.00h.
- Prevorsek, Dusan Ciril: *See—*  
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- Prior, Josef; and Siegelin, Werner, to Dynamit Nobel Aktiengesellschaft. Pressurizing-gas-producing charges containing an aminoguanidine tetrazole and an oxygen-leberating or gas-evolving additive. 3,719,604, Cl. 252-186.000.
- Procter & Gamble Company, The: *See—*  
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- Temple, Robert D., 3,719,711.
- Proctor & Gamble Company, The: *See—*  
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- Puckett, Ray: *See—*  
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- Puckett, Ray; and Lambert, Sidney K., said Lambert assor. to said Puckett, Ray. Expandable trailers. 3,719,386, Cl. 296-26.000.
- Pullman Incorporated: *See—*  
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- Purdy, Henry C. Golf course. 3,719,360, Cl. 273-176.00a.
- Purnhagen, Heinz: *See—*  
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- Quadrini, David A.: *See—*  
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- Quick, John L., to Baxter Laboratories, Inc. Method for adding medicaments to a sealed expandable parenteral fluid container. 3,719,212, Cl. 141-5.000.
- Quilico, Adolfo: *See—*  
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- Quinby, Charles E., to Lear Siegler, Inc. End plate for gyroscope rotor. 3,719,092, Cl. 74-5.000.
- Rabusin, Elio, to S.A.E.S. Getters S.p.A. Getter device. 3,719,433, Cl. 417-48.000.
- Raddatz, Gene R.: *See—*  
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- Radtke, Sherade F.; Miron, Jerry; Bhatt, Pradip; Shah, Bharat C.; and Skeist, Irving, to International Lead Zinc Research Organization, Inc. Process for producing a lead-plastic laminate and a laminate produced by the process. 3,719,551, Cl. 161-213.000.
- Raiser, Walter. Automatic dish washing machine. 3,719,323, Cl. 239-264.000.
- Rakestraw, Lawrence F.; and Mottern, John W., to Monsanto Company. Method for producing spherical particles having a narrow size distribution. 3,719,733, Cl. 264-9.000.
- Randolph, Russell H. Building panels and channels. 3,719,016, Cl. 52-236.000.
- Rasmusson, Stig Arne Rasmus; Dahlstrom, Leif Key Tommy; and Thelander, Ernst Georg, to AB Emmaboda Glasverk. Equipment for handling glass sheets and the like. 3,719,284, Cl. 211-50.000.
- Ratouis, Roger: *See—*  
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- Rauscher, Herbert; and Schoom, Werner. Pesticide and a process for its manufacture. 3,719,751, Cl. 424-27.000.
- Ravagli, Armand: *See—*  
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- Rawlings, Charles S., 20% to Lee, Raymond, Organization, Inc., The. Automatic tractor-trailer coupling device. 3,719,372, Cl. 280-421.000.
- Rawson, Eric Gordon, to Bell Telephone Laboratories, Incorporated. Optical transmission apparatus including radial and tangential polarizers. 3,719,415, Cl. 350-157.000.
- Raychem Corporation: *See—*  
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- Raytheon Company: *See—*  
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- Redan, Joseph, to Simmonds Precision Products, Inc. Diffusion furnace loader. 3,719,291, Cl. 214-34.000.
- Redding, Robert Barry; and Thirlby, David Aspin. Conveyor handrails. 3,719,265, Cl. 198-16.00r.
- Redington, Rowland W.; and van Heerden, Pieter J., to General Electric Company. Method of manufacturing semiconductor camera tube targets. 3,718,955, Cl. 29-25.110.
- Reetz, Theodor; and Britain, J. W., to Baychem Corporation. Flame resistant polyurethane polymers. 3,719,639, Cl. 260-75.00q.
- Regel, Erik: *See—*

- Buchel, Karl Heinz; Grewe, Ferdinand; Scheinpflug, Hans; Kaspers, Helmut; and Regel, Erik, 3,719,760.
- Reiback, Earl M. Backlighted projection screen. 3,719,412, Cl. 350-117.000.
- Reich, Donald A.; and Stevens, Henry C., to PPG Industries, Inc. Alpha, alpha-dihalo-beta-lactones. 3,719,689, Cl. 260-343.900.
- Reich, Henry E.: *See—*  
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- Reist, Walter; and Meili, Heinz, to Ferrag, Fehr & Reist AG. Apparatus for adjusting the speed of a transport band equipped with grippers to the speed of a conveyor band arranged ahead of such transport band. 3,719,267, Cl. 198-76.000.
- Remiarz, Dan B., to Unipress Company, Inc., The. Pressing apparatus and method. 3,719,311, Cl. 223-73.000.
- Remy, David C., to Merck & Co., Inc. 2-Phenylethynyl-benzyl-amines. 3,719,712, Cl. 260-570.900.
- Renfro, Harris B.: *See—*  
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- Resource Control, Inc.: *See—*  
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- Restarick, Clifford John: *See—*  
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- Reynolds, David J., to Buckeye Steel Castings Company. Resilient side bearing assembly. 3,719,154, Cl. 105-199.00b.
- Reynolds, Gordon S.: *See—*  
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- Reynolds, Gordon S.: *See—*  
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- Rheingold, Lawrence M.; Berlin, Milton; De Lallo, Louis; and Schierwagen, Alfred, to Alumet Corporation, The, mesne. Mechanochemical sheet metal blanking system. 3,719,536, Cl. 156-6.000.
- Rhodes, Charles F., Jr.: *See—*  
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- Rhone-Poulenc S.A.: *See—*  
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- Jolles, Georges, 3,719,656.
- Rhoten, Merle L.: *See—*  
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- Richardson, Albert S., Jr., to Interpace Corporation. Line post insulator with self-restoring hinge means. 3,719,770, Cl. 174-161.00r.
- Richardson Company, The: *See—*  
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- Richardson, Daniel E. Apparatus for aseptically filling initially covered containers. 3,719,023, Cl. 53-381.00a.
- Richardson, Frederick Denys, 1/3 to Metallurgie Hoboken-Overpelt and 1/3 to RST International Metals Limited. Apparatus for measuring in a continuous manner the oxygen in a molten metal. 3,719,574, Cl. 204-195.00s.
- Richter, Albert P., Jr.; Bruner, James D.; and Cox, Percy T., to Texaco Inc. Up-hole signaling device. 3,719,239, Cl. 175-50.000.
- Riegert, Rupert: *See—*  
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- Riegler, Adolf: *See—*  
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- Riker Laboratories, Inc., mesne: *See—*  
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- Ring, Richard: *See—*  
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- Rinke, Heinrich: *See—*  
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- Ripley, Charles C.; and O'Neill, Gerald L., to General Electric Company. Variable flow steam circulator. 3,719,524, Cl. 417-180.000.
- Rispoli, Joseph M.; and Caposella, Anthony C., Jr., to General Foods Corporation. Process for preparing a snack food product. 3,719,501, Cl. 99-83.000.
- Ritsem, Riving R., to Bendix Corporation, The. Wheel speed sensors for vehicle adaptive braking systems. 3,719,841, Cl. 310-155.000.
- Robert Burns: *See—*  
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- Roberts, Richard M.; and Jones, John Stephen. Electrophoretic apparatus. 3,719,580, Cl. 204-299.000.
- Robertshaw Controls Company: *See—*  
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- Sliger, Boyd P., 3,719,085.
- Robinson, Fred: *See—*  
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- Robinson, John W.; Bookwalter, George N.; and Tuschhoff, John V., to Staley, A. E., Manufacturing Company. Starch thickener. 3,719,661, Cl. 260-233.30r.
- Robison, Michael Mullen; and Finch, Neville, to Ciba-Geigy Corporation. Imidazo(4,5-b)pyridines. 3,719,683, Cl. 260-294.80f.
- Robl, Robert F.; and Walker, Wayne J., to Aluminum Company of America. Magnetic field control in electrolysis cells using plates and/or bars. 3,719,577, Cl. 204-243.00m.
- Robson, Peter: *See—*  
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- Rocket Research Corporation: *See—*
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- Roessing, Keith W., to Allegheny Ludlum Industries, Inc. Control for basic oxygen steelmaking furnace. 3,719,469, Cl. 75-000.
- Rogers, Howard G.: *See—*  
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- Rose, Samuel, to Bio-Response, Inc. Augmentation of the production of antibodies in animals and humans and the collection thereof. 3,719,182, Cl. 128-1.00r.
- Rosenberg, Harry, to New Jersey Machine Corporation. Packaging machine. 3,719,021, Cl. 53-180.000.
- Ross, Charles S. Perspective drafting machine. 3,718,975, Cl. 33-77.000.
- Roth, Hobert A.: *See—*  
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- Roth, Stephen A., to Tektronix Inc. Color television matrixing circuit. 3,719,772, Cl. 178-5.4ma.
- Rothfelder, Raymond E.: *See—*  
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- Rothrock, John W.; and Michelson, Stuart R., to Merck & Co., Inc. Production of polynucleotide phosphorylase. 3,719,562, Cl. 195-66.00r.
- Roths, Herbert C. O. Transplanting machine. 3,719,158, Cl. 111-2.000.
- Rotolo, Frank J. Golf course. 3,719,361, Cl. 273-176.00ab.
- Rouse, David Michael, to Bell Telephone Laboratories, Incorporated. Memory coding technique. 3,719,815, Cl. 235-153.00am.
- Roussel UCLAF: *See—*  
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- Ruggeri, Joseph P., to United States of America, Navy. Bombload handling apparatus. 3,719,338, Cl. 244-137.00r.
- Rule, Clinton. Pump apparatus and housing therefor. 3,719,429, Cl. 415-201.000.
- Rupp, Hans-Dieter; Siggel, Erhard; Meyer, Gerhard; Worbs, Ernst-Georg; Wallraabenstein, Michael; and Schopf, Albert, to Akzona Incorporated. Polyacyloxamidrazone solutions. 3,719,681, Cl. 260-292.00n.
- Rush, Clifford W.; and Schurman, Peter T., to Beaton & Corbin Manufacturing Company, The. Arcuate tubular articles of rigid plastic. 3,719,209, Cl. 138-177.000.
- Russell, Arvin E. Dump body vehicle. 3,719,392, Cl. 298-5.000.
- Russmann, Werner: *See—*  
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- Ruzicka, Josef. Ultradisintegration and agglomeration of minerals such as mica, products therefrom and apparatus therefor. 3,719,329, Cl. 241-4.000.
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- Saeman, Walter C., to Olin Corporation. Coarse, light sodium carbonate. 3,719,745, Cl. 423-421.000.
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- Sailas, Vaino. Roll for dewatering presses of paper making machines. 3,718,959, Cl. 29-121.00h.
- Saito, Muneki: *See—*  
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- Sakai, Ichio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Hydraulic control system for an automatic transmission. 3,719,108, Cl. 74-869.000.
- Salka, Arnold I., to Chevron Research Company. Hydrocarbon stripping process. 3,719,027, Cl. 55-51.000.
- Salton, Robert B.: *See—*  
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- Sampey, Harry R., to Pentron Industries, Inc. Predetermined speed detector for digital tachometer. 3,719,888, Cl. 324-161.000.
- Sand, Leonard B., to Zeechem Corporation. Selective sorption of non-polar molecules. 3,719,026, Cl. 55-33.000.
- Sandoz-Wander, Inc.: *See—*
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- Houlihan, William J.; and Nadelson, Jeffrey, 3,719,280.
- Sangster, Arlon G.; Pickering, Charles B.; and McNamara, Thomas J., to Jamesbury Corporation. Tape program control. 3,719,926, Cl. 340-147.00p.
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- Sarett, Lewis H.; Hoff, Dale R.; and Henry, David W., to Merck & Co., Inc. Antiprotazoal compositions containing nitroimidazoles. 3,719,759, Cl. 424-273.000.
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- S.C. Electric Company: *See—*
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- Schafer, Manfred, to Daimler-Benz Aktiengesellschaft. Spark plug especially for rotary piston internal combustion engines. 3,719,850, Cl. 313-118.000.
- Scharle, Carl R., to Biddle, James G., Company. Resistance standard. 3,719,914, Cl. 338-61.000.
- Scheffer, William J.: *See—*
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- Schenk, Donald Edward, to General Motors Corporation. Wheel lock control modulator. 3,719,400, Cl. 303-21.00f.
- Schierwagen, Alfred: *See—*
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- Schippers, Heinz; Hensen, Friedrich; and Lenk, Erich, to Barnag Barmer Maschinenfabrik Aktiengesellschaft. Simultaneous production of plurality of filament winding packages. 3,719,442, Cl. 425-66.000.
- Schleutermann, Carl W.; and Lewis, Herman L., Jr., to Arvey Corporation. Envelope-like container. 3,719,319, Cl. 229-72.000.
- Schlumberger Technology Corporation: *See—*
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- Schmitz, Gunther; Weber, Hans, and Vogt, Christian, to Demag Aktiengesellschaft. Apparatus for connecting the trailing end of one metal strip to the leading end of a succeeding metal strip. 3,719,542, Cl. 156-502.000.
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- Schobinger, Ulrich; Christoffel, Cla, and Berner, Kurt, to Blattmann & Co. Textile sizing composition containing highly water soluble dextrin phosphate. 3,719,617, Cl. 260-17.4st.
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- Schroter, Hans O. Variable ratio operating lever. 3,719,106, Cl. 74-518.000.
- Schuhmann, Siegfried; and Alix, Hans, to Roland Offsetmaschinenfabrik Faber & Schleicher AG. Piston pump for delivering viscous pastes. 3,719,437, Cl. 417-360.000.
- Schuler, L., Messrs., GmbH: *See—*
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- Schuster, Herbert; Nutz, Karl; Dinges, Karl, and Ott, Karl-Heinz, to Bayer Aktiengesellschaft. High-impact moulding compositions and process for preparing same. 3,719,731, Cl. 260-878.00r.
- Schutze, Hans Jürgen; and Hennings, Klaus, to Telefunken Patentverwertungsgesellschaft m.b.H. Method for producing microstructures. 3,719,487, Cl. 96-27.00r.
- Schwartz, Harlan A., to Schwartz Manufacturing Company. Universal coffee filter. 3,719,282, Cl. 210-477.000.
- Schwartz, Howard S. Method for detecting blockage or insufficiency of pancreatic exocrine function. 3,719,183, Cl. 128-2.00r.
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- Sedlatschek, Karl; Machenschalk, Rudolf A.; and Natter, Bernd, to Schwarzkopf Development Corporation. Tungsten alloy X-ray target. 3,719,854, Cl. 313-330.000.
- Segawa, Masahiro, and Kawakami, Yukichika, to Kureha Kagaku Kogyo Kabushiki Kaisha. Method for improving crystallinity of vinylidene fluoride polymers. 3,719,644, Cl. 260-87.700.
- Segerson, Eugene E., to Motorola, Inc. Plastic encapsulated semiconductor assemblies. 3,718,969, Cl. 29-588.000.
- Seitz-Asbest-Werke Theo & Geo Seitz: *See—*
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- Seitz-Leigel, Gunther, to Seitz-Asbest-Werke Theo & Geo Seitz. Mounting for prefabricated, large surface, individual filtering layers in horizontal layer filters, having large dimensioned filter elements. 3,719,279, Cl. 210-231.000.
- Skimoto, Yasuhiro, and Korneaga, Itsuo, to Hitachi Metals, Ltd. Built-up sleeve roll for rolling and method of making the same. 3,718,956, Cl. 29-132.000.
- Serebryakov, Nikolai Gennadievich; Dedenkov, Anatoly Nikolaevich; and Kiryakov, Mikhail Akimovich, to Institut Meditsinskoi Radiologii Amn SSSR. Radioactive preparation absorbable in organism and method of obtaining same. 3,719,750, Cl. 424-1.000.
- Serrano, Francisco M., to Compagnie Francaise des Petroles. Sealing construction between two juxtaposed elements. 3,719,374, Cl. 285-97.000.
- Servasier, Alfred, to Societe Nationale des Petroles d'Aquitaine. Manufacture of sulfur. 3,719,744, Cl. 423-574.000.
- Service d'Exploitation Industrielle des Tabacs et des Allumettes: *See—*
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- Shang, Jer-Yu, to Sun Oil Company. Laser controlled chemical reactor. 3,719,454, Cl. 23-252.00r.
- Shank, Wayne C., to Avco Corporation. Method of securing a threaded element in a high centrifugal force field. 3,718,957, Cl. 29-156.80c.
- Shapiro, Jonathan S.; Verses, Christ J.; and Karlson, Eskil L., to Pollution Control Industries Inc. Sterilizing and packaging device. 3,719,017, Cl. 53-21.0fe.
- Shapley, Gail C.; Wakatsuki, J.; and Scheffer, William J., to Frick Company. Continuous belt freezer having removable compartments. 3,719,055, Cl. 62-63.000.
- Sharp Corporation: *See—*
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- Sharp, Paul H., to Columbia Broadcasting Systems, Inc. Audio responsive intensity modulator fluorescent and like lamps. 3,719,857, Cl. 315-156.000.
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- Shaw, Clarence W., and Smith, George R., said Smith assor. to Durant, Donald W. Corrosion preventing apparatus and method. 3,719,049, Cl. 61-54.000.
- Sheldon, Edward Emanuel. Radio-isotope cameras using vacuum tubes with fiberoptic endwalls and luminiscent means of fiberoptic construction. 3,719,823, Cl. 250-71.50s.
- Shell Oil Company: *See—*
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- Sherman, Paul L. Re-useable diaper. 3,719,189, Cl. 128-287.000.
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- Shetty, Bola Vithal, to Penwalt Corporation. Amino (or amido)-phenyl-alkyl-benzazepine analgesics and narcotic antagonists. 3,719,669, Cl. 260-239.00b.
- Shevlin, Thomas S.: *See—*
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- Shibata, Takanori; Kasama, Ryoji; Naito, Shotaro; and Maki, Shin, to Nissan Motor Co., Ltd. and Hitachi, Ltd. Device for charging storage battery. 3,719,881, Cl. 320-62.000.
- Shields, Albert F., to S & S Corrugated Paper Machinery Co., Inc. Automatic power feeder. 3,719,357, Cl. 271-12.000.
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- Shimizu, Tetsuji; Hibino, Sohei; Miwa, Haruo; and Inagaki, Nobukatsu, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Device for detecting the rotation of wheels. 3,719,887, Cl. 324-171.000.
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 Thiele, Kurt, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Use of acetoacetylaminodiphenyl amines as anti-inflammatory agents. 3,719,762, Cl. 424-324.000.  
 Thiers, Ralph E., to Bio-Science Laboratories. Pipetting apparatus and method. 3,719,087, Cl. 73-425.600.  
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- Tomita, Sadami, to Hitachi, Ltd. Laminated magnetic coil materials. 3,719,911, Cl. 336-196.000.
- Topol, Leo E., to North American Rockwell Corporation. Synthesis of ionically conductive compositions of matter. 3,719,609, Cl. 252-518.000.
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- Toporcer, Louis H.: *See—*  
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- Clark, William H.; Greenlee, Thomas W.; and Toporcer, Louis H., 3,719,635.
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- Topping, Robert L., to Norton Company. Sharpener for cutting blades. 3,719,461, Cl. 51-204.000.
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- Trachienberg, William; and Morse, Theodore H., to Eastman Kodak Company. Tuner concentration control apparatus. 3,719,165, Cl. 118-7.000.
- Tracy, Manville W. Automatic stake sharpening apparatus. 3,719,216, Cl. 83-471.200.
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- Ulansey, Judson T. Adjustable splint. 3,719,187, Cl. 128-90.000.
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- Upmeyer, Hartmut, to Windmoller & Holscher. Extruder for thermoplastic or non-cross-linked elastomeric material, a mixing zone defined by a feed screw. 3,719,351, Cl. 259-191.000.
- Urano, Fumio, to Asahi Kogaku Kogyo Kaisha, Ltd. Adaptor for adjustment of visibility in viewfinder of a photographic camera. 3,719,132, Cl. 95-11.00v.
- Urda, John A. Comb case. 3,719,283, Cl. 211-13.000.
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- Vail, Thomas W., to Warwick Electronics Inc. Tape drive capstan. 3,719,334, Cl. 242-181.000.
- Vaill, Jack Roy, to Versar, Inc. Laser beam techniques. 3,719,829, Cl. 307-149.000.
- Vaillancourt, Vincent L.; and Bohner, Thomas H., to Bard, C. R., Inc. Method of making a preformed curved epioal catheter. 3,719,737, Cl. 264-162.000.
- Vallance, James K., to Ford Motor Company. Seal assembly for a gas turbine regenerator. 3,719,226, Cl. 165-9.000.
- Valyi, Emery I. Method for molding plastic containers. 3,719,735, Cl. 264-89.000.
- Van de Walker, Roger D.; and Howe, Blair E., to California Injection Molding Co., Inc. Method and apparatus for molding articles containing inserts. 3,719,396, Cl. 302-2.00c.
- Van Der Puije, Patrick David, to Northern Electric Company, Limited. Automatic gain control circuit. 3,719,895, Cl. 330-29.000.
- Van der Schueren, Emile, to European Atomic Energy Community. Process and device for the fabrication of alloy. 3,719,470, Cl. 75-65.000.
- Van Dyke, John; and Lamfers, Bernard, to Allen, R. C., Inc. A.C. power supply for rate gyro. 3,719,874, Cl. 318-227.000.
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- Van Koeveing, Barry D.; Blough, William M., Jr.; Bunnell, Fred H.; McDowell, William B.; and McDowell, George E. Pipeline survey vehicle. 3,718,978, Cl. 33-174.001.
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- Varga, John Maximilian Jules, to Carding Specialists (Canada) Limited. Control means and a method of controlling thereby. 3,719,122, Cl. 91-37.000.
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- Venter, Tjaart Petrus. Relating to adjustable stays. 3,719,381, Cl. 292-275.000.
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- Vibronics Research Co.: *See—*  
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- Viessmann, Hans. Heat exchanging apparatus. 3,719,173, Cl. 122-149.000.
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- Vinch, Angelo N., to Westinghouse Electric Corporation. Electronic control for machine tools and the like. 3,719,925, Cl. 340-147.00p.
- Visehulis, George. Web trimmer control. 3,719,114, Cl. 83-74.000.
- Viviano, Thomas. Adjustable spreader and leveler for dump trailer. 3,719,393, Cl. 298-35.00m.
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- Vogt, Herwart C.; and Lajiness, Wayne G., to BASF Wyandotte Corporation. Process for preparing polyurethanes in an isocyanate-reactive solvent solution. 3,719,621, Cl. 260-30.40n.
- Voigtlaender, Herbert, to Schenck, Carl, Maschinenfabrik GmbH. Discharge head for a bin, especially a bulk metering bin. 3,719,290, Cl. 214-17.00d.
- Von Reichenbach, Fernando, to Instituto Torcuato di Tella. Process and apparatus for converting image elements to electric impulses. 3,719,777, Cl. 178-6.800.
- Voyce, Guy. Identification devices. 3,718,999, Cl. 40-309.000.
- Vyskumny ustav Mechanizacie a Automatizacie Novos: *See—*  
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- Wade, Ricardo H.: *See—*  
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- Waiss, Anthony C., Jr.; Kuhnle, Judith A.; and Wiley, Mabry Eileen, to United States of America, Agriculture. Removal of mercury from water using nut wastes. 3,719,473, Cl. 75-121.000.
- Wakabayashi, Takashi; Kinugasa, Terukazu; Hozumi, Shiro; and Sugihara, Kanji, to Matsushita Electric Industrial Co., Ltd. Memory device having lead dioxide particles therein. 3,719,933, Cl. 340-173.0tp.
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- Walmsley, Martin Francis; and Cross, John Valentene, to Labatt, John, Limited. Preparation of a brewers' wort. 3,719,500, Cl. 99-52.000.
- Warezak, Ronald J. Universal tool for holding the eyes of leaf springs. 3,718,964, Cl. 29-200.00p.
- Warwick Electronics Inc.: *See—*  
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- Watermann, Hans Dieter, to Arm. Kickert Sohne, Motor-vehicle door latch with pivotal latching fork. 3,719,380, Cl. 292-216.000.
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- Weaver, William P., to Sperry Rand Corporation. Integrator compensator for improving accuracy. 3,719,800, Cl. 235-61.00c.
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- Webster, Harold F., to General Electric Company. Liquid cooled X-ray tube anode. 3,719,847, Cl. 313-60.000.
- Wegerhoff, Arno; Schmitz, Franz-Josef; and Macura, Carl, to Akzona Incorporated. Acyl-amino-propyl-dialkylammonium dialkyl phosphates as textile finishing agents. 3,719,597, Cl. 252-8.800.
- Wegner, John, to Edanbob Corporation. Line guide device. 3,719,161, Cl. 116-119.000.
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- Weischedel, Richard C., to General Electric Company. Radiant energy sensor. 3,719,424, Cl. 356-141.000.
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- Wellman-Lord, Inc.: *See—*  
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- Wells, Herbert Arthur, to Bell Telephone Laboratories, Incorporated. Cable-handling machine. 3,719,348, Cl. 254-134.3sc.
- Wells, Ross Nelson Frederick: *See—*  
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- Wentz, John L., to Westinghouse Electric Corporation. Polarization independent light modulation means using birefringent crystals. 3,719,414, Cl. 350-150.000.



- Wenzel, John L.: *See—*  
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- Westinghouse Air Brake Company: *See—*  
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- White, Gerald W. Vacuum system cold trap. 3,719,052, Cl. 62-3.000.
- Whitney, W. A., Corporation: *See—*  
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- Wicking, Jens: *See—*  
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- Wiggins, E. B., Inc.: *See—*  
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- Wilcox, James E.: *See—*  
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- Wilcox, Roger L. Process of making pile fabric floor covering. 3,719,537, Cl. 156-72.000.
- Wiley, Mabry Eileen: *See—*  
Waiss, Anthony C., Jr.; Kuhnle, Judith A.; and Wiley, Mabry Eileen, 3,719,473.
- Wilfert, Karl, to Daimler-Benz Aktiengesellschaft. Vehicle structure. 3,719,245, Cl. 180-90.000.
- Wilhelm, Arthur L.; Wilhelm, Leonard M.; and Wilhelm, Lawrence L. Pressure indicator for pneumatic tire. 3,719,198, Cl. 137-228.000.
- Wilhelm, Lawrence L.: *See—*  
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- Wilhelm, Leonard M.: *See—*  
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- Wilkes, Donald F., to Rolamite, Incorporated. Mechanical apparatus. 3,719,097, Cl. 74-100.000.
- Williams, David R., 20% to Lee, Raymond, Organization, Inc., The. Workwatch. 3,719,037, Cl. 58-74.000.
- Williamson, Clifford: *See—*  
Charachos, Anthreas Nicholas; and Williamson, Clifford, 3,719,172.
- Williamson, Douglas Herbert: *See—*  
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- Wilson, Kenneth A., to American Chain & Cable Company, Inc. High speed frequency shift keyed transmission system. 3,719,779, Cl. 178-66.000.
- Wilson, Raymond F.: *See—*  
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- Wilton, Donald P.: *See—*  
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- Windmoller & Holscher: *See—*  
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- Windsor, George C. P., to Warwick Electronics Inc. Pull-proof control knob. 3,719,378, Cl. 287-53.00h.
- Winkler, Josef: *See—*  
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- Winstead, Jordan D.; and Barnes, Robert B. Engine block stand. 3,719,356, Cl. 269-48.000.
- Woernle, Peter: *See—*  
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- Wojtowicz, John A.; and Lapkin, Milton, to Olin Corporation. Method for the preparation of biodegradable glycidol surfactants. 3,719,636, Cl. 260-6.50b.
- Wolff, Willi: *See—*  
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- Wolgastr, Raymond P.: *See—*  
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- Wolgastr, Raymond P.; and Hall, Bertie Forrest, Jr., said Hall assor. to said Wolgastr, Raymond P. Vacuum anchored pulling device. 3,719,347, Cl. 254-124.000.
- Woodruff, George M., to General Foods Corporation. Method of producing perforated plastic film. 3,719,736, Cl. 264-156.000.
- Woods, David, to J.G. Furniture Company, Inc. Desk configuration having stationery organizer. 3,719,407, Cl. 312-197.000.
- Worbs, Ernst-Georg: *See—*  
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- Worner, Otto; Brugger, Franz; and Weller, Erwin, to Daimler-Benz Aktiengesellschaft. Slip-ring arrangement especially for brake slippage control installations of motor vehicles. 3,719,916, Cl. 339-3.00r.
- Woycechowsky, Brian J.: *See—*  
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- Wright, Sam W., to Firestone Tire & Rubber Company, The. Process of making foam rubber, and the foam rubber thus produced. 3,719,614, Cl. 260-2.501.
- Wu, Yao Hua; and Lobeck, Walter G., Jr., to Johnson, Mead & Company. 10-Imidoylphenothiazines. 3,719,671, Cl. 260-243.00a.
- Xerox Corporation: *See—*  
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- Cade, Ronald L.; and Knapp, John F., 3,719,169.
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- Kingsley, William; and Allis, Robert F., 3,719,951.
- Korn, Homer; Greenfield, Stephen J.; and Stemmler, Denis J., 3,719,266.
- Makino, Katsuo; Oshikawa, Akira; and Nagashima, Toshio, 3,719,481.
- Yamamoto, Masahiro; and Iida, Takeo, to Minolta Camera Kabushiki Kaisha. Mechanism for delivering recorded sheet film selected in indexing device to reproduction position. 3,719,274, Cl. 209-80.500.
- Yamazaki, Hayao: *See—*  
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- Yamazaki, Seishi; and Kaneda, Masao, to Hitachi, Ltd. Transistor radio receiver employing an improved squelch circuit. 3,719,892, Cl. 325-402.000.
- Yanushkevich, Igor Lvovich: *See—*  
Bukhman, Aron Borukhovich; Drovenkov, Evgeny Alexandrovich; Ivaschenko, Felix Alexandrovich; Aizenshtein, Aron Meerovich; and Yanushkevich, Igor Lvovich, 3,719,950.
- Yarmark, Martin J., to Triboro Electric Corporation. Socket mounts for lighting fixtures. 3,719,820, Cl. 240-81.00r.
- Yoshida, Hiroshi: *See—*  
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- Yoshida, Masaru; Nakase, Yoshiaki; and Ito, Akihiko, to Japan Atomic Energy Research Institute. Process for polymerizing tetraoxane. 3,719,637, Cl. 260-67.0fp.
- Yoshioka, Yoshio: *See—*  
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- Yoshitake, Toshihiko: *See—*  
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- Young, James W.; Cason, George A.; and Kunkel, Ernest O., to Dresser Industries, Inc. Earth boring machine. 3,719,240, Cl. 175-207.000.
- Youngblood, John B.: *See—*  
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- Yudelson, Joseph S.; and Gysling, Henry J., to Eastman Kodak Company. Photosensitive element containing a photoreducible palladium compound and the use thereof in physical development. 3,719,490, Cl. 96-48.000.
- Yuge, Yooji: *See—*  
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- Zenner, Walter J.: *See—*  
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- Zenses, Carl. Rasp and method for its manufacture. 3,719,109, Cl. 76-101.00a.
- Zeochem Corporation: *See—*  
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- Zielczynski, Mieczyslaw. Personnel ionization dosimeters especially for radiation of unknown composition. 3,719,826, Cl. 250-83.3pd.
- Zimmerly, Robert D., to Ladish Co. Cleaning system. 3,719,191, Cl. 134-102.000.
- Zito Company Inc., The: *See—*  
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- Zito, Ralph, Jr., to Zito Company Inc., The. Rechargeable metal halide battery. 3,719,526, Cl. 136-6.000.
- Zoecon Corporation: *See—*  
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- Zoroglu, Demir S., to Motorola, Inc. Hyperfine geometry devices and method for their fabrication. 3,719,535, Cl. 148-187.000.
- Zuber, Bretislav Paul, to Northern Electric Company Limited. Tape aligning device. 3,719,315, Cl. 226-19.000.
- Zweig, Arnold, to American Cyanamid Company. Photodecomposition of dihydro-aromatic and similar anhydrides. 3,719,571, Cl. 204-158.00r.
- 03/06/73; Grasselli, Robert K.; and Callahan, James L., to Standard Oil Company, The. Fuel cell containing an electrolyte consisting of an aqueous solution of arsenic acid. 3,719,528, Cl. 136-86.00r.

## LIST OF REISSUE PATENTEEES

TO WHOM

## PATENTS WERE ISSUED ON THE 6TH DAY OF MARCH, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Clark Equipment Co.: *See—*  
Gondeck, Frederick V., Hickox, Kennedy, Perez, and Thompson. Re. 27,593.
- Gondeck, Frederick V., L. E. Hickox, T. E. Kennedy, A. Perez, and J. F. Thompson, to Clark Equipment Co. Foamed core laminated structure and method. Re. 27,593, 3-6-73, Cl. 161-44.
- Hickox, Lester E.: *See—*  
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- Honeywell Inc.: *See—*  
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- Hurd, Edward T. E., III, to Honeywell Inc. Two-wire MV/V transmitter. Re. 27,596, 3-6-73, Cl. 340-210.
- Huynh, Chanb: *See—*  
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- Insto-Gas Corp.: *See—*  
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- Kennedy, Thomas E.: *See—*  
Gondeck, Frederick V., Hickox, Kennedy, Perez, and Thompson. Re. 27,593.
- Martel, Jacques, C. Huynh, E. Toromanoff, and G. Nomine, to Roussell, UCLAF. Process for the preparation of trans-chrysanthemum acid. Re. 27,592, 3-6-73, Cl. 260-404.
- Microdot Inc.: *See—*  
Munse, Robert A. Re. 27,591.
- Miklarz, Manfred, to Stubbe Maschinenfabrik GmbH. Control device for initiating the injecting process of injection molding machines. Re. 27,590, 3-6-73, Cl. 425-149.
- Munse, Robert A., to Microdot Inc. Tool for assembling spring metal C-clips to panels. Re. 27,591, 3-6-73, Cl. 29-225.
- Nomine, Gerard: *See—*  
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- Perez, Arthur: *See—*  
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- Power, Gerard, to Insto-Gas Corp. Tip-over shut-off for gas heaters. Re. 27,594, 3-6-73, Cl. 126-8.
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- Thompson, James F.: *See—*  
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- Weltbrecht, R. H., Co.: *See—*  
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- Weltbrecht, Robert H., to R. H. Weltbrecht Co. Frequency-shift teletypewriter. Re. 27,595, 3-6-73, Cl. 178-66.

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- Armstrong, David L., to Armstrong Nurseries, Inc. Rose plant. 3,314, 3-6-73, Cl. 20.
- Armstrong, David L., to Armstrong Nurseries, Inc. Rose plant. 3,315, 3-6-73, Cl. 22.
- Armstrong Nurseries, Inc.: *See—*  
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- Armstrong, David L. 3,315.
- Yukawa, Teruo. Carnation plant. 3,316, 3-6-73, Cl. 73.

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- Achenbach, Walter B., to Owens-Illinois, Inc. Beverage glass or similar article. 226,413, 3-6-73, Cl. D36-8.
- Ajus, Camille A. and M. N. Garment pattern drafting stencil. 226,450, 3-6-73, Cl. D52-6.
- Ajus, Camille A. and M. N. 226,450.
- American Standard Inc.: *See—*  
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- Anderson, Warren G., to American Standard Inc. Toilet tank. 226,432, 3-6-73, Cl. D23-66.
- Banner Metals, Inc.: *See—*  
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- Bartasevich, William E., Jr., and J. E. Edgell, to Disston, Inc. Hedge trimmer. 226,420, 3-6-73, Cl. D8-8.
- Baugh, Benjamin C.: *See—*  
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- Beltramo, Renaldo M.: *See—*  
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- Bentley, Arthur G. Wheeled skate. 226,440, 3-6-73, Cl. D34-14.
- Bolyn, Anthony E., and L. G. Collo, to Richardson-Merrell Inc. Syringe unit. 226,456, 3-6-73, Cl. D83-12.
- Broward County School Board, The: *See—*  
Matteson, David S. 226,438.
- Bundy, Maurice G., to Optics, Inc. Surveillance camera. 226,453, 3-6-73, Cl. D61-1.
- Carreiro, Julian A.; assignor to Angelo N. Giordano, and Joseph R. Raio, fractional part interest to each. Bowling equipment bag. 226,458, 3-6-73, D87-5.
- Coker, Cliff J., to Norma J. Coker. Exerciser. 226,439, 3-6-73, Cl. D34-5.
- Coker, Norma J.: *See—*  
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- Coleman Co., Inc., The: *See—*  
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- Collo, Lloyd G.: *See—*  
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- Cooper, Howard. Bottle. 226,424, 3-6-73, Cl. D9-28.
- Christen, Jack P., to Outers Laboratories, Inc. Bow string silencer. 226,429, 3-6-73, Cl. D22-5.
- Davidson, George L., and R. M. Beltramo, to Tuttle, Inc. Flasher. 226,454, 3-6-73, Cl. D72-1.
- Davis, Ward B., to Sterilizer Control Royalties. Color indicator device. 226,428, 3-6-73, Cl. D16-2.
- Delves, Robert R.: *See—*  
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- Disston, Inc.: *See—*  
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- Douglas, Raymond J.: *See—*  
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- Duern, Gordon L., and D. S. Griffin, to Electrohome Ltd. Coffee table. 226,417, 3-6-73, Cl. D6-146.
- Duern, Gordon L., and D. S. Griffin, to Electrohome Ltd. Chair. 226,415, 3-6-73, Cl. D6-69.
- Duern, Gordon L., and D. S. Griffin, to Electrohome Ltd. Chair. 226,412, 3-6-73, Cl. D6-69.
- Dukes, Everett S. Stackable chair. 226,414, 3-6-73, Cl. D6-65.
- Dushek, Charles D., to Sears, Roebuck and Co. Barbecue grill and oven combination. 226,455, 3-6-73, Cl. D81-10.
- Eckdahl, Thomas H., to Plastics, Inc. Tray. 226,445, 3-6-73, Cl. D44-10.
- Edgell, James E.: *See—*  
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- Embury, Philip W., Jr., to Qualitrol Corp. Pressure relief valve. 226,431, 3-6-73, Cl. D23-19.
- Emerson Electric Co.: *See—*  
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- Grace, W. R. & Co.: *See—*  
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- Granger, Bertram D., to Newman Granger Industries Ltd. Trolley jack. 226,444, 3-6-73, Cl. D41-1.
- Granger, Newman, Industries Ltd.: *See—*  
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- Gray, John F. Cascade type merchandising rack. 226,418, 3-6-73, Cl. D6-190.
- Griffin, Donald S.: *See—*  
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- Duern, Gordon L., and Griffin. 226,415.
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- Guillon, Jacques, Designers Inc.: *See—*  
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 Hill, Joseph A., to Lien Chemical Co. Room deodorant vaporizing casing. 226,433, 3-6-73, Cl. D23—148.  
 Holtz, Raymond S. Automobile stop indicator for garage use. 226,459, 3-6-73, Cl. D96—12.  
 Isancs, Harold, Folded cart. 226,427, 3-6-73, Cl. D14—3.  
 Johannsen, Donald R., to Wideview Scope Mount Corp. Mounting for a rifle telescopic sight. 226,430, 3-6-73, Cl. D22—7.  
 Joonase, Paul, and R. R. Perdue, to W. R. Grace & Co. Combined display and packaging tray for meat or the like. 226,426, 3-6-73, Cl. D9—242.  
 Jordan, Milton E., and H. W. Rohrback, to Gator Creations, Inc. Golf trophy. 226,437, 3-6-73, Cl. D29—23.  
 Lash, Don B., to National Air Vibrator Co. Vibrator. 226,451, 3-6-73, Cl. D55—1.  
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 Matteson, David S., to The Broward County School Board. Toy finger puppet. 226,438, 3-6-73, Cl. D34—2.  
 May, Randall L. B. C. Baugh, and R. R. Delnes, to The Coleman Co., Inc. Electric lantern. 226,448, 3-6-73, Cl. D48—24.  
 Mellyn, Lawrence P., to General Electric Co. Escutcheon plate with push button for door bells. 226,422, 3-6-73, Cl. D5—182.  
 Mellyn, Lawrence P., to General Electric Co. Escutcheon plate with push button for door bells. 226,423, 3-6-73, Cl. D5—183.  
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 Rees, Howard K., R. J. Douglas, L. R. Moquin, and E. Handler, to Mattel, Inc. Pedal driven wheeled vehicle. 226,442, 3-6-73, Cl. D34—15.  
 Rich, Marvin L. Post and beam support. 226,421, 3-6-73, Cl. D8—235.  
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 Schreckengost, Viktor, to The Murray Ohio Mfg. Co. Velocipede. 226,441, 3-6-73, Cl. D34—15.  
 Sobring, Burr, to Gorham, a Division of Textron Inc. Spoon. 226,460, 3-6-73, Cl. D54—12.  
 Shiman, Daniel, to Shlman Industries Inc. Finger ring. 226,447, 3-6-73, Cl. D45—10.  
 Shlman Industries Inc.: See—  
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 Thomas, Morton I. Bedside rail. 226,419, 3-6-73, Cl. D6—198.  
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 Vandewater, Katherine B. Christmas ornament. 226,436, 3-6-73, Cl. D29—1.  
 Van Heuvel, Johan W., to Gebrs. Van Poppel N.V. Lighter. 226,449, 3-6-73, Cl. D48—27.  
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 Wilton, Ralph P., and Fitzpatrick. 226,446.  
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 Yazawa, Hiroaki, to Matsushita Electric Industrial Co., Ltd. Record player. 226,452, 3-6-73, Cl. D56—4.

## CLASSIFICATION OF PATENTS

ISSUED MARCH 6, 1973

NOTE.—First number, class; second number, subclass; third number, patent number

	CLASS 2		3,718,995	193	3,719,057	56	CLASS 83	182R	3,719,153	205	3,719,197	
14N	3,718,937	2.5Y	3,718,993	200	3,719,058	74	3,719,113	199CB	3,719,154	228	3,719,198	
	CLASS 7	67B	3,718,996	285	3,719,059	56	3,719,114	366D	3,719,155	269	3,719,199	
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	CLASS 19	28	CLASS 49	3,719,005	45	3,719,464	CLASS 90	13.7	3,719,121	2	CLASS 139	
123	3,718,944	131	CLASS 51	3,719,004	88	3,719,465	CLASS 91	37	3,719,122	34	3,719,158	
230EP	3,719,453				120	3,719,466	391	3,719,123	70	3,719,159	13	3,719,210
252R	3,719,454	34A	3,719,006		9	3,719,065	434	3,719,124	119	3,719,160	5	3,719,211
270.5	3,719,455	96	3,719,459		97	3,719,066	CLASS 92	133	3,719,125	124	3,719,212	
281	3,719,456	181	3,719,460		164	3,719,067	CLASS 95	11V	3,719,132	133	3,719,163	
288F	3,719,457	204	3,719,461		254	3,719,068	3	3,719,132	3	3,719,515	22	3,719,217
	CLASS 24	207	3,719,007		427	3,719,069	11.5	3,719,126	16	3,719,516		CLASS 148
73HH	3,718,946	228	3,719,008		23.1	3,719,084	12.2	3,719,127	37R	3,719,517	6.2	3,719,534
	3,718,947	319	3,719,009		37	3,719,070	36	3,719,128	49	3,719,518	187	3,719,535
73	3,718,945		CLASS 52	3,719,010	37	3,719,071	44R	3,719,130	71M	3,719,519		CLASS 152
75	3,718,948	60	3,719,011		37.5	3,719,072	53E	3,719,131	76T	3,719,520	361	3,719,218
126	3,718,951	73	3,719,012		54	3,719,073	53R	3,719,129	93.31	3,719,521	379	3,719,219
205.15R	3,718,949	222	3,719,013		71.3	3,719,076	89R	3,719,133		3,719,522		CLASS 156
217	3,718,950	235	3,719,015		167	3,719,077	CLASS 96	IPC	3,719,480	237	3,719,525	
	CLASS 28	236	3,719,016		181	3,719,078	1R	3,719,481	1R	3,719,482	6	3,719,537
15	3,718,952		CLASS 53	3,719,017	194R	3,719,079	1.1	3,719,483	1.1	3,719,484	7	3,719,538
72.1	3,718,953	21FC	3,719,018		198	3,719,081	1.2	3,719,484	1.2	3,719,485	48	3,719,539
77	3,718,954	26	3,719,019		202	3,719,082	1.5	3,719,486	1.5	3,719,487	211	3,719,540
	CLASS 29	159	3,719,020		204	3,719,083	1.6	3,719,488	1.6	3,719,489	306	3,719,541
25.11	3,718,955		3,719,021		341	3,719,071	27R	3,719,487	27R	3,719,488	636	3,719,542
103R	3,718,958	180	3,719,021		368.3	3,719,085	29D	3,719,488	29D	3,719,489		CLASS 160
121H	3,718,959	255	3,719,022		423A	3,719,086	48PD	3,719,490	48PD	3,719,491	52AF	3,719,220
132	3,718,956	381A	3,719,023		425.6	3,719,087	49	3,719,491	49	3,719,492	371	3,719,222
156C	3,718,957		CLASS 54	3,719,024	431	3,719,088	55	3,719,492	55	3,719,493	2	3,719,171
157.3AH	3,718,960	44	3,719,024		432PS	3,719,089	107	3,719,493	107	3,719,494	7R	3,719,172
191	3,718,961		CLASS 55	3,719,025	505	3,719,090	114.1	3,719,495	114.1	3,719,496	149	3,719,173
195	3,718,962	31	3,719,025		5	3,719,092	2	3,719,134	2	3,719,135	803	3,719,235
200D	3,718,963	33	3,719,026		44	3,719,091	2.07	3,719,135	2.07	3,719,136		CLASS 123
200P	3,718,964	51	3,719,027		87	3,719,094	36	3,719,136	36	3,719,137	8.09	3,719,174
211D	3,718,965	85	3,719,028		100	3,719,097	115K	3,719,137	115K	3,719,138	32EA	3,719,176
225	Re:27.951	91	3,719,029		216.5	3,719,098					41.14	3,719,175
234	3,718,966	97	3,719,030		230.3	3,719,099					148E	3,719,177
458	3,718,967	136	3,719,031		246	3,719,100					195A	3,719,178
482	3,718,968	264	3,719,032		337.5	3,719,101	2R	3,719,496	2R	3,719,497		CLASS 125
588	3,718,969	387	3,719,033		364	3,719,102	14	3,719,497	14	3,719,498	36	3,719,179
593	3,718,970		CLASS 56	3,719,034	445	3,719,103	17	3,719,498	17	3,719,499	21A	3,719,180
241	3,718,971	119	3,719,034		489	3,719,104	52	3,719,500	52	3,719,501	85R	Re:27.594
	CLASS 32	77.3	3,719,035		501M	3,719,105	98	3,719,502	98	3,719,503		CLASS 126
22	3,718,972	106	3,719,036		518	3,719,106	129	3,719,503	129	3,719,504	1R	3,719,182
	3,718,973		CLASS 57	3,719,035	558	3,719,095	192	3,719,138	192	3,719,139	2R	3,719,183
	3,718,974		CLASS 58	3,719,036	645	3,719,093	275	3,719,505	275	3,719,506	1R	3,719,184
77	3,718,975	74	3,719,037		752D	3,719,096					26	3,719,185
129	3,718,976	88R	3,719,038		843	3,719,107					69	3,719,186
172D	3,718,977		CLASS 60	3,719,041	869	3,719,108	353	3,719,507	353	3,719,508	90	3,719,187
174G	3,718,980	39.25	3,719,041		1	3,719,468	375	3,719,507	375	3,719,508	92EB	3,719,188
174L	3,718,978	39.28R	3,719,039		60	3,719,469					275	3,719,188
265	3,718,979	39.47	3,719,040		65	3,719,470	CLASS 101	3,719,139	287	3,719,189	418	3,719,190
	CLASS 34	39.74R	3,719,042		60	3,719,471	93C	3,719,140	93C	3,719,141		CLASS 127
33	3,718,981	54.5P	3,719,043		65	3,719,472	125	3,719,141	125	3,719,142	102	3,719,191
82	3,718,982	95A	3,719,045		121	3,719,473	126	3,719,141	126	3,719,142		CLASS 134
156	3,718,983	206	3,719,046		123	3,719,474	216	3,719,142	216	3,719,143	6	3,719,526
	CLASS 35	239	3,719,047		125	3,719,475	335	3,719,143	335	3,719,144	85T	3,719,527
9A	3,718,984	404	3,719,047		126S	3,719,476					86R	3,719,528
	3,718,985		CLASS 61	3,719,050	126D	3,719,477	28R	3,719,144	28R	3,719,145	100M	3,719,529
10.4	3,718,986	36R	3,719,050		208R	3,719,478	34.4	3,719,145	34.4	3,719,146	153	3,719,530
12N	3,718,988	46.5	3,719,048		226	3,719,479	37.8	3,719,147	37.8	3,719,148	208	3,719,531
12Q	3,718,989	54	3,719,049				46	3,719,148	46	3,719,149	238	3,719,532
35D	3,718,990		CLASS 62	3,719,052		CLASS 75	70.2R	3,719,149	70.2R	3,719,150		CLASS 102
38	3,718,991	3	3,719,051		101A	3,719,109						CLASS 104
42.5	3,718,992	38	3,719,053		52.5	3,719,111	12	3,719,150	12	3,719,151	1	3,719,192
63	3,719,766	50	3,719,054		57.39	3,719,112	172B	3,719,151	172B	3,719,152	38	3,719,193
	CLASS 36	63	3,719,055		116	3,719,110	164	3,719,152	164	3,719,153	68	3,719,194
2.5AL	3,718,994	70	3,719,056								110	3,719,196
												CLASS 105
												161R



## CLASSIFICATION OF PATENTS

50	CLASS 175	3,719,239	33	CLASS 208	3,719,585	102	3,719,322	80.72	3,719,646	CLASS 271	178	3,719,852			
207	3,719,240	66	3,719,586	208R	3,719,587	264	3,719,323	85.5R	3,719,648	12	3,719,357	222	3,719,853		
228	3,719,241	208R	3,719,589	265.19	3,719,324	86.1R	3,719,647	3,719,649	CLASS 272	60	3,719,358	330	3,719,854		
3	CLASS 176	209R	3,719,588	405	3,719,325	87.3	3,719,643	3,719,644	CLASS 273	167J	3,719,359	338	3,719,855		
17	3,719,554	308	3,719,590	406	3,719,326	87.7	3,719,644	3,719,650	CLASS 315	156	3,719,857	346DC	3,719,856		
38	3,719,555	CLASS 209	3,719,275	454	3,719,327	89.5A	3,719,651	3,719,652	CLASS 317	16	3,719,858				
56	3,719,557	79	3,719,274	546	3,719,328	92.8W	3,719,651	3,719,652	167A	3,719,361	31	3,719,859			
65	3,719,558	80.5	3,719,276	CLASS 240	2.13	3,719,821	93.1	3,719,652	176A	3,719,360	63	3,719,867			
78	3,719,559	240	3,719,276	7.1	3,719,819	97.5	3,719,653	3,719,654	182R	3,719,362	100	3,719,860			
	3,719,560	258	3,719,277	52R	3,719,818	112.5	3,719,656	3,719,655	186A	3,719,363	234R	3,719,861			
		CLASS 210	3,719,591	81R	3,719,820	112.7	3,719,657	3,719,658	CLASS 274	4D	3,719,364	235R	3,719,862		
5.4MA	3,719,772	33	3,719,592	CLASS 241	4	3,719,329	154	3,719,659	CLASS 277	53	3,719,365		3,719,863		
5.4ST	3,719,773	135	3,719,593	CLASS 242	55.018	3,719,330	210R	3,719,660	205	3,719,366		3,719,864			
6	3,719,774	169	3,719,594	231R	3,719,331	233.3R	3,719,661	3,719,662	CLASS 279	1A	3,719,367		3,719,866		
6.7R	3,719,775	190	3,719,594	106	3,719,332	233.5	3,719,662	3,719,663	CLASS 280	52	3,719,868				
	3,719,776	231	3,719,595	125.1	3,719,333	233.5	3,719,664	3,719,665	11.35T	135	3,719,869				
6.8	3,719,777	440	3,719,595	158.4	3,719,334	234R	3,719,665	3,719,666	28	138	3,719,870				
	3,719,778	445	3,719,595	181	3,719,335	239BB	3,719,669	3,719,670	33.99C	139	3,719,871				
7.6	3,719,780	477	3,719,595	186	3,719,335	239E	3,719,666	3,719,667	96.2R	214	3,719,872				
30	3,719,781	CLASS 211	3,719,283	239.1	3,719,667	239.1	3,719,667	3,719,668	421	227	3,719,873				
66R	Re.27.595	13	3,719,284	CLASS 244	3.27	3,719,339	3,719,668	3,719,670	474	254	3,719,875				
	3,719,779	50	3,719,284	77D	3,719,337	239.5SC	3,719,670	3,719,671	CLASS 285	97	3,719,374				
1C	3,719,783	CLASS 214	3,719,286	77M	3,719,336	243A	3,719,671	3,719,673	339	3,719,375	341	3,719,877			
1J	3,719,782	IP	3,719,285	137R	3,719,338	243C	3,719,673	3,719,674	CLASS 287	20.3	3,719,376	467	3,719,878		
27CA	3,719,784	16.4A	3,719,287	CLASS 248	48	3,719,340	244R	3,719,678	CLASS 288	53H	3,719,378	565	3,719,879		
5R	3,719,242	17CA	3,719,288	216	3,719,342	247.7C	3,719,675	3,719,676	20.3	60	3,719,377	593	3,719,880		
14R	3,719,243	17D	3,719,290	CLASS 249	65	3,719,341	248NS	3,719,677	CLASS 292	216	3,719,380	633	3,719,881		
19H	3,719,244	34	3,719,291	65R	3,719,824	256.4H	3,719,679	3,719,680	275	3,719,381	3	3,719,882			
79.2R	3,719,245	83.3	3,719,292	71.5S	3,719,823	268PC	3,719,680	3,719,681	CLASS 296	341	3,719,391	51	3,719,883		
90	3,719,246	86A	3,719,294	83.1	3,719,825	294.8A	3,719,684	3,719,685	23MC	3,719,382	54	3,719,884			
103	3,719,247	83.1	3,719,297	83.3PD	3,719,826	294.8C	3,719,683	3,719,684	CLASS 298	161	3,719,384	73R	3,719,885		
112	3,719,248	450	3,719,298	83.3H	3,719,822	294.8F	3,719,682	3,719,683	CLASS 299	26	3,719,386	167	3,719,886		
		509	3,719,299	84.5	3,719,827	295R	3,719,685	3,719,686	CLASS 300	35A	3,719,385	171	3,719,887		
31B	3,719,250	515	3,719,299	CLASS 251	1	3,719,346	308C	3,719,687	CLASS 301	186	3,719,388	186	3,719,889		
36A	3,719,251	658	3,719,300	326.3	3,719,687	343C	3,719,672	3,719,689	CLASS 302	6	3,719,390	55	3,719,890		
		674	3,719,295	343.9	3,719,689	343.9	3,719,689	3,719,690	CLASS 303	341	3,719,391	61	3,719,891		
187	3,719,252	CLASS 217	3,719,301	345.5	3,719,690	345.5	3,719,690	3,719,691	CLASS 304	355	3,719,387	402	3,719,892		
		5R	3,719,301	397.45	3,719,691	397.45	3,719,691	3,719,692	CLASS 305	379	3,719,379	405	3,719,888		
6.12	3,719,253	CLASS 219	3,719,289	404.5	3,719,692	404.5	3,719,692	3,719,693	CLASS 306	440	3,719,389	233	3,719,893		
64	3,719,254	10.49	3,719,289	410.5	3,719,693	410.5	3,719,693	3,719,694	CLASS 307	5	3,719,392	234	3,719,894		
		73	3,719,290	429.9	3,719,694	429.9	3,719,694	3,719,695	CLASS 308	35M	3,719,393	29	3,719,895		
1C	3,719,255	121EB	3,719,291	448A	3,719,695	448A	3,719,695	3,719,696	CLASS 309	1	3,719,394	14	3,719,896		
2R	3,719,256	147	3,719,292	448.2D	3,719,696	448.2D	3,719,696	3,719,697	CLASS 310	5R	3,719,395	51	3,719,897		
73.4	3,719,257	230	3,719,292	448.2N	3,719,697	448.2N	3,719,697	3,719,698	CLASS 311	66	3,719,396	94.5	3,719,898		
79.5P	3,719,258	272	3,719,295	448.8R	3,719,698	448.8R	3,719,698	3,719,699	CLASS 312	2R	3,719,396	117R	3,719,901		
		462	3,719,296	453PC	3,719,699	453PC	3,719,699	3,719,700	CLASS 313	66	3,719,397		3,719,902		
54	3,719,259	501	3,719,297	455P	3,719,700	455P	3,719,700	3,719,701	CLASS 314	21BE	3,719,399	44	3,719,903		
84C	3,719,260	512	3,719,298	464	Re.27.592	464	Re.27.592	3,719,702	CLASS 315	21A	3,719,398	12	3,719,904		
		523	3,719,299	465.9	3,719,701	465.9	3,719,701	3,719,702	CLASS 316	21F	3,719,400	30R	3,719,905		
28R	3,719,561	CLASS 220	3,719,302	471C	3,719,702	471C	3,719,702	3,719,703	CLASS 317	35	3,719,402	30	3,719,906		
66R	3,719,562	9LG	3,719,303	505P	3,719,703	505P	3,719,703	3,719,704	CLASS 318	115	3,719,828	73C	3,719,907		
80R	3,719,563	313S	3,719,303	513R	3,719,704	513R	3,719,704	3,719,705	CLASS 319	149	3,719,829	146	3,719,910		
		513	3,719,305	533C	3,719,706	533C	3,719,706	3,719,707	CLASS 320	218	3,719,830	196	3,719,911		
1R	3,719,261	518	3,719,306	551S	3,719,707	551S	3,719,707	3,719,708	CLASS 321	230	3,719,831	280	3,719,912		
193	3,719,263	554	3,719,611	554	3,719,708	554	3,719,708	3,719,709	CLASS 322	243	3,719,832	2	3,719,913		
		563P	3,719,710	566A	3,719,709	566A	3,719,709	3,719,711	CLASS 323	269	3,719,834	61	3,719,914		
1	3,719,264	566P	3,719,711	567.6P	3,719,712	567.6P	3,719,712	3,719,713	CLASS 324	273	3,719,835	183	3,719,915		
16R	3,719,265	570.5R	3,719,713	570.9	3,719,713	570.9	3,719,713	3,719,714	CLASS 325	296	3,719,833	3R	3,719,916		
35	3,719,266	590	3,719,712	590	3,719,714	590	3,719,714	3,719,715	CLASS 326	308	3,719,836	17CF	3,719,917		
76	3,719,267	607A	3,719,714	607A	3,719,715	607A	3,719,715	3,719,716	CLASS 327	3	3,719,403	90R	3,719,918		
115	3,719,268	619A	3,719,715	619A	3,719,716	619A	3,719,716	3,719,717	CLASS 328	8.1	3,719,837	95A	3,719,919		
179	3,719,269	646	3,719,717	646	3,719,718	646	3,719,718	3,719,719	CLASS 329	49	3,719,838	3D	3,719,921		
219	3,719,270	653	3,719,716	653	3,719,717	653	3,719,717	3,719,718	CLASS 330	71	3,719,840	3R	3,719,920		
		666A	3,719,718	666A	3,719,719	666A	3,719,719	3,719,720	CLASS 331	155	3,719,841	SMP	3,719,922		
5EB	3,719,786	667	3,719,719	667	3,719,720	667	3,719,720	3,719,721	CLASS 332	164	3,719,842	15.5AF	3,719,924		
11TW	3,719,785	669A	3,719,720	669A	3,719,721	669A	3,719,721	3,719,722	CLASS 333	268	3,719,845	147P	3,719,925		
61.27	3,719,787	673.5R	3,719,722	673.5R	3,719,723	673.5R	3,719,723	3,719,724	CLASS 334	184	3,719,844	149R	3,719,926		
153LB	3,719,788	680D	3,719,722	680D	3,719,723	680D	3,719,723	3,719,724	CLASS 335	197	3,719,847	151R	3,719,927		
		827	3,719,723	827	3,719,724	827	3,719,724	3,719,725	CLASS 336	236	3,719,848	172.5	3,719,929		
1T	3,719,564	828	3,719,724	828	3,719,725	828	3,719,725	3,719,726	CLASS 337	57	3,719,846		3,719,930		
15	3,719,565	834	3,719,725	834	3,719,726	834	3,719,726	3,719,727	CLASS 338	60	3,719,847		3,719,931		
34	3,719,566	859R	3,719,726	859R	3,719,727	859R	3,719,727	3,719,728	CLASS 339	85S	3,719,848		3,719,932		
49	3,719,567	860	3,719,727	860	3,719,728	860	3,719,728	3,719,729	CLASS 340	109.5	3,719,849		3,719,934		
129.55	3,719,569	861	3,719,728	861	3,719,729	861	3,719,729	3,719,730	CLASS 341	118	3,719,850		3,719,935		
151	3,719,570	863	3,719,729												



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3 : 3,719,578	3,719,451	3,719,075	3,719,595	3,719,761	3,719,414
4 : 3,718,969	3,719,452	3,719,105	3,719,701	3,719,781	3,719,476
4 : 3,719,145	3,719,459	3,719,113	3,719,741	3,719,806	3,719,511
3,719,216	3,719,473	3,719,143	3,719,742	3,719,817	3,719,646
3,719,361	3,719,524	3,719,209	3,719,856	3,719,825	3,719,650
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3,719,833	3,719,556	3,719,370	3,719,912	3,719,912	3,719,893
3,719,835	3,719,559	3,719,485	3,719,914	3,719,900	3,719,900
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3,719,878	3,719,609	3,719,546	3,719,980	3,719,039	3,719,026
5 : 3,719,252	3,719,611	3,719,551	3,719,002	3,719,045	3,719,045
6 : Re.27,595	3,719,612	3,719,552	3,719,020	3,719,044	3,719,078
3,718,940	3,719,626	3,719,571	3,719,034	3,719,093	3,719,079
3,718,967	3,719,643	3,719,579	3,719,048	3,719,096	3,719,086
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3,719,149	3,719,830	3,719,736	3,719,234	3,719,671	3,719,508
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3,719,255	3,719,967	3,719,607	3,719,406	3,719,932	3,719,932
3,719,320	3,719,979	3,719,642	3,719,409	3,719,936	3,719,936
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3,719,362	3,719,999	3,719,713	3,719,445	3,719,951	3,719,951
3,719,363	3,719,999	3,719,726	3,719,454	3,719,954	3,719,954
3,719,389	3,719,999	3,719,737	3,719,466	3,719,959	3,719,959
3,719,390	3,719,999	3,719,747	3,719,477	3,719,964	3,719,964
3,719,393	3,719,999	3,719,759	3,719,488	3,719,965	3,719,965
3,719,396	3,719,999	3,719,769	3,719,499	3,719,977	3,719,977
		3,719,799	3,719,505	3,719,978	3,719,978
		3,719,812	3,719,529	3,719,979	3,719,979
			3,719,544	3,719,980	3,719,980
			3,719,558	3,719,981	3,719,981
			3,719,580	3,719,982	3,719,982
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			3,719,605	3,719,984	3,719,984
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3,719,198		3,719,461		3,719,037	37 :	3,718,973			3,718,957	3,719,298
3,719,223		3,719,493		3,719,081		3,719,210			3,718,961	3,719,366
3,719,226	34 :	Re.27,596		3,719,165		3,719,212			3,718,976	3,719,373
3,719,242		3,718,943		3,719,169		3,719,293			3,719,021	3,719,386
3,719,249		3,718,990		3,719,183		3,719,356			3,719,028	3,719,434
3,719,253		3,719,019		3,719,189		3,719,733			3,719,031	3,719,438
3,719,259		3,719,051		3,719,190		3,719,880			3,719,067	3,719,584
3,719,268		3,719,065		3,719,192	38 :	3,719,233			3,719,080	3,719,585
3,719,287		3,719,073		3,719,225		3,719,866			3,719,119	3,719,587
3,719,297		3,719,129		3,719,266	39 :	3,718,954			3,719,121	3,719,588
3,719,311		3,719,133		3,719,275		3,718,962			3,719,164	3,719,600
3,719,313		3,719,141		3,719,283		3,718,974			3,719,187	3,719,608
3,719,318		3,719,280		3,719,294		3,718,979			3,719,316	3,719,629
3,719,331		3,719,291		3,719,329		3,718,982			3,719,341	3,719,695
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3,719,350		3,719,338		3,719,349		3,719,030			3,719,403	3,719,827
3,719,352		3,719,348		3,719,357		3,719,064			3,719,404	3,719,858
3,719,367		3,719,384		3,719,358		3,719,098			3,719,407	3,719,876
3,719,387		3,719,410		3,719,360		3,719,100			3,719,446	3,719,913
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3,719,456		3,719,415		3,719,377		3,719,154			3,719,478	3,719,935
3,719,457		3,719,419		3,719,383		3,719,157			3,719,560	3,719,949
3,719,465		3,719,423		3,719,412		3,719,159		49 :	3,719,566	3,718,947
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3,719,521		3,719,462		3,719,424		3,719,222			3,719,577	3,719,146
3,719,522		3,719,468		3,719,432		3,719,254			3,719,586	3,719,197
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3,719,529		3,719,498		3,719,460		3,719,295		50 :	3,719,594	3,719,931
3,719,531		3,719,499		3,719,474		3,719,303		51 :	3,719,618	3,719,564
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3,719,583		3,719,539		3,719,483		3,719,322			3,719,712	3,719,829
3,719,621		3,719,562		3,719,484		3,719,374			3,719,797	3,719,875
3,719,630		3,719,590		3,719,486		3,719,371			3,719,820	3,719,909
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3,719,634		3,719,640		3,719,491		3,719,400			3,719,868	3,719,054
3,719,635		3,719,662		3,719,492		3,719,436			3,719,869	3,719,055
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3,719,659		3,719,678		3,719,501		3,719,443			3,719,888	3,719,146
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3,719,831		3,719,709		3,719,549		3,719,538			3,719,939	3,719,724
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3,719,874		3,719,739		3,719,573		3,719,614		54 :	3,719,943	3,719,328
3,719,886		3,719,752		3,719,575		3,719,624		55 :	3,718,949	3,718,963
3,719,925		3,719,753		3,719,589		3,719,689		44 :	3,719,989	3,719,000
3,719,948		3,719,757		3,719,658		3,719,711		45 :	3,719,181	3,719,057
3,719,975		3,719,759		3,719,698		3,719,730			3,719,332	3,719,059
27 :		3,719,792		3,719,710		3,719,756		46 :	3,719,639	3,719,074
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3,719,497		3,719,832		3,719,778		3,719,815			3,719,359	3,719,191
3,719,687		3,719,903		3,719,779		3,719,824			3,719,509	3,719,281
3,719,798	35 :	3,719,103		3,719,784		3,719,877			3,719,889	3,719,282
3,719,997		3,719,128		3,719,789		3,719,899		48 :	3,719,004	3,719,304
29 :		3,719,155		3,719,800		3,719,910			3,719,052	3,719,321
3,719,201	36 :	3,718,966		3,719,811		3,719,953			3,719,058	3,719,343
3,719,408		3,718,968		3,719,823	40 :	3,719,053			3,719,063	3,719,576
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## PATENT OFFICE NOTICES

### Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office on the basis of 4 years or more service in the Examining Corps. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds should be furnished the Commissioner of Patents on or before April 9, 1973.

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Chairman, Committee on Enrollment.

### Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

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2,834,178. (See 2,830,431.)

2,841,124, H. S. Ackerman, MIDGET GAS FIRED HOT WATER BOILER; 3,320,933, J. F. Baier, GAS FIRED HOT WATER BOILER, filed Apr. 10, 1972, D.C.N.J. (Newark), Doc. 640-72, *Hydrotherm, Inc. v. Intragas, S.A.* Stipulation of dismissal, May 23, 1972.

2,857,730, A. W. Vibber, APPARATUS FOR TWISTING AND PLYING STRANDS; 2,870,596, same, TWISTING SPINDLE BALLOON CONTROL; 3,499,277, same, APPARATUS FOR TWISTING AND PLYING STRANDS; 3,605,394, same, STRAND PLYING METHOD AND APPARATUS; Re. 24,380, same, TWISTING AND PLYING SPINDLE BALLOON CONTROL, filed Jan. 12, 1972, D.C.N.J. (Newark), Doc. 62-72, *Alfred W. Vibber v. Uniroyal, Inc.*

2,870,596. (See 2,857,730.)

3,005,739, Lang and Ford, METHOD AND APPARATUS FOR MAKING MULTI-CONDUCTOR CABLE; 3,208,896, same, APPARATUS FOR MAKING MULTI-CONDUCTOR CABLE, filed June 18, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72-1371-FW, *Spectra-Strip Corporation v. Circuit Assembly Corporation, Roger D. Lang and Kermit D. Lang*.

3,033,988, H. E. Edgerton, METHOD OF AND APPARATUS FOR THE CONTROL OF ELECTRIC IMPULSES; 3,519,879, F. T. Ogawa, FLASH APPARATUS WITH AUTOMATIC LIGHT TERMINATION HAVING GATING AND ANTICIPATION MEANS; Re. 26,999, F. P. Elliott, CONTROL SYSTEM FOR TERMINATING THE DISCHARGE THROUGH A FLASH LAMP, filed July 21, 1971, D.C. Minn. (Minneapolis), Doc. 4-71-C-351, *Roller-Werke Frank & Heidecke v. Honeywell, Inc.*

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3,072,516, Bellinger and Chapdelaine, SOLUTION AND METHOD FOR BRIGHTENING CADMIUM; Re. 26,180, same, filed June 25, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1528, *Conversion Chemical Corporation v. Du Tone Chemical Co., Inc.* Consent agreement between parties, Mar. 3, 1972.

3,196,330, J. Moyson, SEMICONDUCTOR DEVICES AND METHODS OF MAKING SAME; 3,275,909, F. W. Gutzwiller, SEMICONDUCTOR SWITCH; 3,350,611, R. I. Scafe, GATE FIRED BIDIRECTIONAL SWITCH; 3,476,993, Aldrich and Holonyak, FIVE LAYER AND JUNCTION BRIDGING TERMINAL SWITCHING DEVICE; Re. 27,120, J. Moyson, SEMICONDUCTOR DEVICES AND METHODS OF MAKING SAME, filed Aug. 23, 1972, D.C., N.D. Tex. (Fort Worth), Doc. CA-4-2090, *General Electric Company v. ECC Corporation*.

3,208,896. (See 3,005,739.)

3,251,418, E. L. Condra, OIL WELL SCRAPER, filed Sept. 8, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72-2142-RJK, *Midway Fishing Tool Company v. Industrial Concepts Corporation*.

3,275,909. (See 3,196,330.)

3,320,933. (See 2,841,124.)

3,341,982, R. Torresen, BOWLING BALL POLISHING MACHINE, filed Mar. 3, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c498, *Brunswick Corporation v. Thumtectors, Inc.* Court has jurisdiction; judgment is in favor of defendants, and complaint as amended is dismissed for want of equity, Aug. 11, 1972.

3,350,611. (See 3,196,330.)

3,400,227, Lear and Auld, COMBINED RADIO AND MAGNETIC TAPE PLAYER; 3,403,868, W. P. Lear, MAGNETIC TAPE CARTRIDGE SYSTEM; 3,437,762, Lear and Auld, MULTI-TRACK TAPE CARTRIDGE PLAYER; 3,560,126, W. P. Lear, MAGNETIC TAPE CARTRIDGE PLAYER SYSTEM, filed Apr. 26, 1972, D.C. Del. (Wilmington), Doc. 4370, *Motorola, Inc. v. Gates Lear Jet Corporation*. Same, filed May 12, 1972, D.C. Colo. (Denver), Doc. C-4003, *The Gates Rubber Co. v. Motorola, Inc. and Applied Appliances, Inc.*

3,403,868. (See 3,400,227.)

3,431,182, M. S. Frant, FLUORIDE SENSITIVE ELECTRODE AND METHOD OF USING SAME; 3,563,874, Ross, Frant and Riseman, HALIDE-SENSITIVE ELECTROCHEMICAL ELECTRODES AND METHOD OF MAKING SAME; 3,591,464, Frant and Ross, METHOD AND APPARATUS FOR DETECTING IONIC ACTIVITY; 3,672,962, same, ION-SENSITIVE ELECTRODE AND METHOD OF MAKING AND USING SAME, filed Aug. 25, 1972, D.C., E.D.N.Y. (Brooklyn), Doc. 72-C-1128, *Orton Research Inc. v. Brinkmann Instruments, Inc.*

3,437,762. (See 3,400,227.)

3,476,993. (See 3,196,330.)

3,499,277. (See 2,857,730.)

3,519,879. (See 3,033,988.)

3,539,031, T. A. Scanlon, SOUND TUBE HEAD SET EAR CUSHION AND AMBIENT NOISE PLUG; 3,623,571, A. French, Stethoscope; 3,671,685, J. P. McCabe, ELECTRO-ACOUSTIC HEADSET WITH RATCHET; D. 222,144, T. A. Scanlon, SOUND TUBE HEAT SET, filed Aug. 4, 1972, D.C., E.D.N.Y. (Brooklyn), Doc. 72-C-1040, *Instrument Systems Corporation v. Avid Corporation*.

3,546,396, Marcheschi and Perkins, ENCLOSED TELEPHONE HAVING A RACEWAY FOR ITS CORD; D. 210,378, G. D. Perkins, TELEPHONE HANDSET; D. 210,379, same, FRENCH CRADLE TELEPHONE; D. 211,645, same, COMBINED TELEPHONE AND ENCLOSURE THEREFOR, filed Sept. 14, 1972, D.C. Conn. (Bridgeport), Doc. B-594, *United States Telephone Company v. American Telecommunications Corp.*

3,563,874. (See 3,431,182.)

3,560,126. (See 3,400,227.)

MARCH 13, 1973

U. S. PATENT OFFICE

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3,589,660, B. P. Duncel, LIGHTING FIXTURE HANGER, filed Sept. 14, 1972, D.C., E.D. Pa. (Philadelphia), Doc. 72-1814, *National Service Industries, Inc. v. Keystone Lighting Corporation*.

3,591,464. (See 3,431,182.)

3,605,394. (See 2,857,730.)

3,623,571. (See 3,539,031.)

3,632,109, R. Dattner, MODULAR RECREATIONAL UNIT AND COMBINATIONS THEREOF; D. 218,455, same, PLAYGROUND CLIMBER; D. 218,456, same; D. 218,457, same; D. 218,458, same; D. 218,459, same; D. 218,460, same, COMBINED PLAYGROUND CLIMBER AND SLIDE; D. 218,765, same, filed Aug. 18, 1972, D.C., E.D.N.Y. (Brooklyn), Doc. 72-C-1080, *2001 Inc. v. Novaglas Corporation*.

3,671,685. (See 3,539,031.)

3,672,962. (See 3,431,182.)

D. 210,378. (See 3,546,396.)

D. 210,379. (See 3,546,396.)

D. 211,645. (See 3,546,396.)

D. 218,455. (See 3,632,109.)

D. 218,456. (See 3,632,109.)

D. 218,457. (See 3,632,109.)

D. 218,458. (See 3,632,109.)

D. 218,459. (See 3,632,109.)

D. 218,460. (See 3,632,109.)

D. 218,765. (See 3,632,109.)

D. 222,144. (See 3,539,031.)

D. 224,608, Okuhara and Okuhara, MIRRORED COSMETIC CONTAINER, filed Sept. 11, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c2249, *Hideno N. Okuhara et al. v. Creative Concepts Corporation et al.*

Re. 24,380. (See 2,857,730.)

Re. 26,130. (See 3,072,516.)

Re. 26,999. (See 3,033,988.)

Re. 27,090, H. A. Rutter, INDIVIDUAL DRY DOCK FOR BOATS, filed Sept. 22, 1972, D.C., N.D. Okla. (Tulsa), Doc. 72-C-347, *Henry A. Rutter v. Barney Williams*.

Re. 27,120. (See 3,196,330.)



## Certificates of Correction for the Week of Mar. 13, 1973

Re. 27,423	3,676,475	3,690,635	3,697,301
D. 224,850	3,676,612	3,690,735	3,697,525
3,520,972	3,678,033	3,690,822	3,697,551
3,542,753	3,678,146	3,690,872	3,697,773
3,587,282	3,678,176	3,691,140	3,697,802
3,587,283	3,678,375	3,691,187	3,697,834
3,597,008	3,679,397	3,691,484	3,698,186
3,615,406	3,679,755	3,691,616	3,698,192
3,616,440	3,681,093	3,691,825	3,698,233
3,624,066	3,681,441	3,692,108	3,698,278
3,625,330	3,681,992	3,692,191	3,698,571
3,627,453	3,682,373	3,692,199	3,698,746
3,627,581	3,683,271	3,692,572	3,698,968
3,630,725	3,683,614	3,692,615	3,699,041
3,632,584	3,684,069	3,692,791	3,699,048
3,632,801	3,684,278	3,693,055	3,699,247
3,633,725	3,684,551	3,693,117	3,699,272
3,635,546	3,684,922	3,693,148	3,699,276
3,635,981	3,685,059	3,693,430	3,699,638
3,639,348	3,685,405	3,693,452	3,699,763
3,639,478	3,686,400	3,693,775	3,700,004
3,642,649	3,686,581	3,693,822	3,700,035
3,642,813	3,686,744	3,693,828	3,700,078
3,642,975	3,686,880	3,696,860	3,700,101
3,643,407	3,687,427	3,694,069	3,700,209
3,644,838	3,687,855	3,694,260	3,700,214
3,646,458	3,687,995	3,694,286	3,700,282
3,652,388	3,688,051	3,694,301	3,700,439
3,655,657	3,688,239	3,694,587	3,700,565
3,656,799	3,688,448	3,694,631	3,700,644
3,658,802	3,688,568	3,694,739	3,700,674
3,660,415	3,688,767	3,694,818	3,700,773
3,660,427	3,688,781	3,695,009	3,700,775
3,663,150	3,688,839	3,695,173	3,700,882
3,664,782	3,688,853	3,695,401	3,700,912
3,665,538	3,688,915	3,695,419	3,701,045
3,668,184	3,689,211	3,695,662	3,701,255
3,669,708	3,689,255	3,695,726	3,701,425
3,671,098	3,689,382	3,695,758	3,701,836
3,671,354	3,689,383	3,695,841	3,702,044
3,671,399	3,689,475	3,696,071	3,702,617
3,671,542	3,689,489	3,696,100	3,702,696
3,672,731	3,689,604	3,696,310	3,702,712
3,673,187	3,689,618	3,696,338	3,702,784
3,674,567	3,689,694	3,696,823	3,702,909
3,675,216	3,689,804	3,696,871	3,703,068
3,676,093	3,689,992	3,697,065	3,703,899
3,676,233	3,690,132	3,697,069	

## Disclaimers

3,019,497.—*Robert A. Horton*, Dover, N.J., *Richard L. Ashbrook*, La Porte, Ind., and *Roy C. Feagin*, Mountain Lakes, N.J. MAKING FINE GRAINED CASTINGS. Patent dated Feb. 6, 1962. Disclaimer filed Oct. 24, 1972, by the assignee, *Houmet Corporation*.

Hereby enters this disclaimer to claims 1 through 7 of said patent.

3,157,926.—*Robert A. Horton*, Cleveland, and *Richard L. Ashbrook*, Chesterland, Ohio, and *Roy C. Feagin*, Mountain Lakes, N.J. MAKING FINE GRAINED CASTINGS. Patent dated Nov. 24, 1964. Disclaimer filed Oct. 24, 1972, by the assignee, *Houmet Corporation*.

Hereby enters this disclaimer to claims 1 through 11 of said patent.

3,481,882.—*Michael A. Streicher*, Webster Farms, Del. CLEANING COMPOSITION AND METHOD OF CLEANING ARTICLES THEREWITH. Patent dated Dec. 2, 1969. Disclaimer filed Nov. 24, 1972, by the assignee, *E. I. du Pont de Nemours and Company*.

Hereby enters this disclaimer to claims 2, 6, 8 and 9 of said patent.

3,622,029.—*Gordon K. Ware*, Chicago, Ill. ELECTRICAL OUT-LET BOX. Patent dated Nov. 23, 1971. Disclaimer filed Nov. 24, 1972, by the assignee, *Ware Fuse Corporation*. Hereby enters this disclaimer to claim 9 of said patent.

3,635,321.—*Frazier N. James, Sr.*, Alexandria, Va. DOCUMENT VERIFICATION AND BANKING MACHINE. Patent dated Jan. 18, 1972. Disclaimer filed Nov. 1, 1971, by the assignee, *Allied Automation, Inc.*

Hereby disclaims the portion of the term of the patent subsequent to Jan. 5, 1987.

3,645,888.—*John C. Hayes*, Palatine, Ill. CATALYTIC REFORMING PROCESS. Patent dated Feb. 29, 1972. Disclaimer filed July 9, 1971, by the assignee, *Universal Oil Products Company*.

Hereby disclaims the portion of the term of the patent subsequent to May 11, 1988.

3,647,718.—*Walter L. Haden, Jr.*, Metuchen, and *Frank J. Dzierzanowski*, Somerset, N.J. MICROSPHERICAL ZEOLITIC MOLECULAR SIEVE COMPOSITE CATALYST AND PREPARATION THEREOF. Patent dated Mar. 7, 1972. Disclaimer filed June 4, 1971, by the assignee, *Engelhard Minerals & Chemicals Corporation*.

Hereby disclaims the portion of the term of the patent subsequent to Apr. 14, 1987.

3,657,069.—*Robert R. Candor*, Miami Township and *James T. Candor*, Washington Township, Montgomery County, Ohio. METHOD AND APPARATUS FOR TREATMENT OF SHEET-LIKE MATERIAL. Patent dated Apr. 18, 1972. Disclaimer filed Apr. 16, 1971, by the inventors.

Hereby disclaims the portion of the term of the patent subsequent to Jan. 18, 1989.

3,657,435.—*Frederik W. Stonner*, Chatham, N.Y. 17 $\beta$ -HYDROXY-17-ETHYNYL-4-ANDROSTENO-[3,2-c]-2'-(p-FLUOROPHENYL)PYRAZOLE AND COMPOSITIONS CONTAINING SAME. Patent dated Apr. 18, 1972. Disclaimer filed Aug. 5, 1971, by the assignee, *Sterling Drug Inc.*

Hereby disclaims the portion of the term of the patent subsequent to Nov. 10, 1987.

3,669,637.—*Donald L. Klass*, Barrington, and *Carl D. Landahl*, Chicago, Ill. ODORANT REPLACEMENT IN GAS STREAMS. Patent dated June 13, 1972. Disclaimer filed Jan. 12, 1973, by the assignee, *Institute of Gas Technology*.

Hereby disclaims the portion of the term of the patent subsequent to Jan. 11, 1989.

3,699,181.—*Ronald A. Kmecak* and *Stephen M. Kovach*, Ashland, Ky. ALKYL TRANSFER OF ALKYL AROMATICS WITH GROUP VIB METALS ON MORDENITE. Patent dated Oct. 17, 1972. Disclaimer filed Dec. 20, 1971, by the assignee, *Ashland Oil, Inc.*

Hereby disclaims the portion of the term of the patent subsequent to Aug. 3, 1988.

## Dedications

3,301,237.—*Erich Wolf*, Wiesbaden, Germany. TWO-STROKE INTERNAL-COMBUSTION ENGINE. Patent dated Jan. 31, 1967. Dedication filed Nov. 29, 1972, by the assignee, *Zweirad-Union A.G.*

Hereby dedicates to the Public the entire term of said patent.

3,575,448.—*Vincent Licari*, St. Joseph, Mich. FASTENER. Patent dated Apr. 20, 1971. Dedication filed Oct. 27, 1972, by the assignee, *Clark Equipment Company*.

Hereby dedicates to the Public the entire term of said patent.

## PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner  
WILLIAM FELDMAN, Deputy Assistant Commissioner

## CONDITION OF PATENT APPLICATIONS AS OF FEBRUARY 20, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
<b>CHEMICAL EXAMINING GROUPS</b>	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director.....	12-16-71
Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director.....	1-03-72
Heterocyclic; Amides; Alkyls; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director.....	9-20-71
Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director....	10-21-71
Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director...	11-01-71
Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	
<b>ELECTRICAL EXAMINING GROUPS</b>	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director.....	7-03-72
Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director.....	5-31-72
Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director.....	4-03-72
Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director.....	12-08-71
Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director.....	12-27-71
Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	
DESIGNS, GROUP 290—R. L. CAMPBELL, Director.....	5-26-71
Industrial Arts; Household, Personal and Fine Arts.	
<b>MECHANICAL EXAMINING GROUPS</b>	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director.....	3-03-72
Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director.....	1-03-72
Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director.....	4-10-72
Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletary; Printing; Typewriters; Stationery; Information Dissemination.	
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director.....	3-06-72
Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director.....	10-26-71
Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	

**Expiration of patents:** The patents within the range of numbers indicated below expire during March 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 819, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,736,898 to 2,740,116, inclusive  
Plant Patents..... Numbers 1,457 to 1,466, inclusive

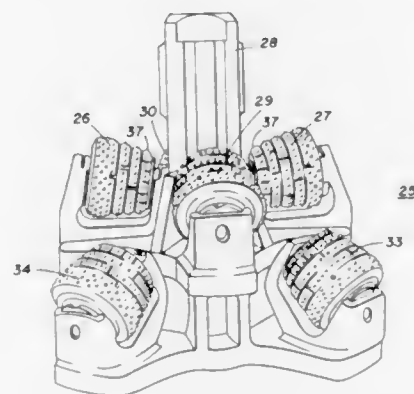


## REISSUES

MARCH 13, 1973

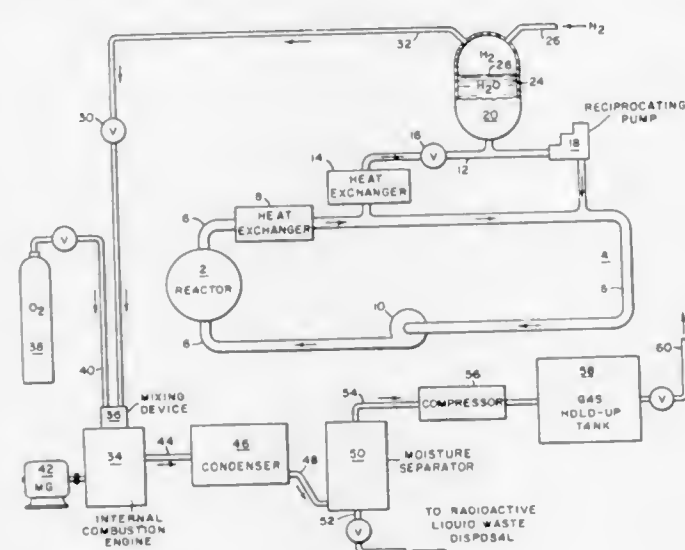
Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

**27,597**  
**LARGE-DIAMETER EARTH BORING BIT**  
Milton L. Talbert, China Springs, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.  
Original No. 3,633,691, dated Jan. 1, 1972, Ser. No. 17,663, Mar. 9, 1970. Application for reissue Apr. 4, 1972, Ser. No. 242,148  
Int. Cl. E21b 9/24; E21c 23/00; E21d 3/00  
U.S. Cl. 175—334



A bit for drilling large-diameter holes. Cutters are arranged in a staged configuration around a central shaft. The innermost cutters are the same large cutters used at other locations on the bit allowing complete interchangeability. The innermost cutters are turned inward. This reduces the uncut bottom next to the pilot hole and provides a stronger bit because the central shaft has not been weakened by milling or other operations.

**27,598**  
**DISPOSAL SYSTEM FOR CONTAMINATED HYDROGEN FROM A NUCLEAR REACTOR**  
William E. Wright, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.  
Original No. 3,362,883, dated Jan. 9, 1968, Ser. No. 525,909, Feb. 8, 1966. Application for reissue Sept. 21, 1969, Ser. No. 869,970  
Int. Cl. G21c 19/32  
U.S. Cl. 176—37



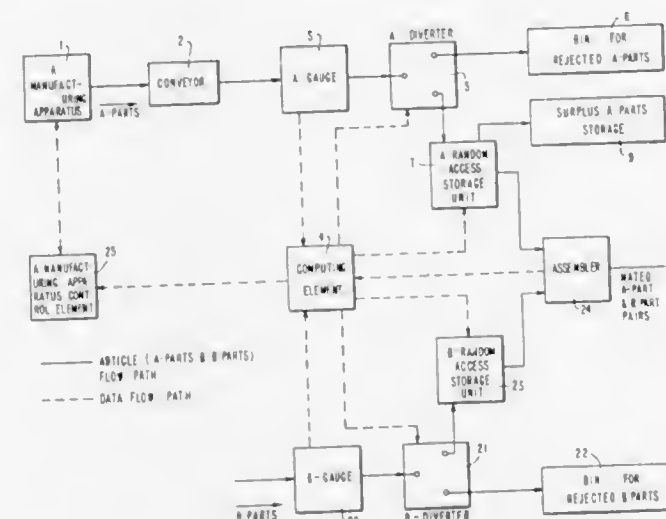
An apparatus for disposing of contaminated hydrogen gas containing potentially explosive quantities of oxygen

and noxious proportions of radioactive fission gases; the apparatus including an internal combustion engine for converting small increments of hydrogen to water.

**27,599**  
**PROCESS FOR THE PRODUCTION OF A GAS CONTAINING GASEOUS HYDROCARBONS**  
Brian Hoyle Thompson and Binay Bhushan Majumdar, Solihull, London, England, assignors to The Gas Council, London, England  
No Drawing. Original No. 3,591,356, dated July 6, 1971, Ser. No. 769,461, July 22, 1968. Application for reissue Mar. 15, 1972, Ser. No. 235,051  
Claims priority, application Great Britain, Aug. 15, 1967, 37,530/67  
Int. Cl. C10g 13/00, 13/30

**U.S. Cl. 48—213**  
A process for the production of a gas containing gaseous hydrocarbons by the hydrogenation of non-distillate hydrocarbon oils. The oil is first preheated in the liquid phase, and then introduced through an atomiser into a gas recycle hydrogenator in which the oil reacts under pressure with, and is continuously entrained into circulation with, a supply of hydrogenating gas. A gas containing gaseous hydrocarbons is formed by reaction of the oil and the hydrogen, and is continuously withdrawn from the hydrogenator. The process is primarily for the hydrogenation of nondistillate oils, such as crude petroleum and particularly light crude petroleum.

**27,600**  
**METHOD AND APPARATUS FOR SELECTING INTERFITTING PARTS FOR ASSEMBLY**  
Seymour Bederman, Yorktown Heights, and Larry G. Lankford, Mahopac, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.  
Original No. 3,538,590, dated Nov. 10, 1970, Ser. No. 775,223, Sept. 30, 1968. Application for reissue Feb. 1, 1971, Ser. No. 111,777  
Int. Cl. B23p 19/04; B23q 17/00  
U.S. Cl. 29—407



This method and apparatus for selective assembly of parts accepts parts of a first class from a manufacturing source not under the control of the apparatus and parts of a second class from a manufacturing source under the

MARCH 13, 1973

U. S. PATENT OFFICE

267

control of the apparatus. The parts are to be assembled in interfitting pairs, one part of the first class being assembled with a part of the second class. The selective assembly apparatus operates to maintain the clearance between the assembled parts of each pair within a clearance range which is substantially smaller than the manufacturing tolerance ranges for the parts of both the first and second classes.

## PLANT PATENTS

GRANTED MARCH 13, 1973

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

**3,317**  
**BEGONIA PLANT**  
Otto Rieger, deceased, by Gertrud Rieger, legal representative, Nürtingen, Germany, assignor to Mikkelsen, Inc., Ashtabula, Ohio  
Filed June 30, 1971, Ser. No. 158,643  
Int. Cl. A01h 5/00

**U.S. Cl. Plt.—68**  
1. A new and distinct variety of begonia characterized particularly by its short squat growth, with close internodes, its masculine flowers, its very floriferous habit, its short and strong stems, its deep dark shining red blooms which have superior keeping qualities, its heart shaped and pointed leaves, and its ease of propagation from leaf cuttings; and particularly distinguished from the variety Rieger's Schwabenland by its deeper red blooms, its shorter compact growth and its hard, pointed foliage.

**3,318**  
**BEGONIA PLANT**  
Otto Rieger, deceased, by Gertrud Rieger, legal representative, Nürtingen, Germany, assignor to Mikkelsen, Inc., Ashtabula, Ohio  
Filed June 30, 1971, Ser. No. 158,642  
Int. Cl. A01h 5/00

**U.S. Cl. Plt.—68**  
1. A new and distinct variety of begonia which is distinguished from the parent variety Rieger's Aphrodite by its light pink petal color and which, together with the parent variety Rieger's Aphrodite, distinguishes from other commercially available begonia varieties of this type by its numerous double azalea type flowers which are durable and long lasting, are borne, on trusses and which have few, if any, reproductive parts, its compact growth and self-branching habit, its dark green, resilient foliage which is relatively tolerant to handling and relatively resistant to disease, and by its soft type growth habit in spring months or in periods of restricted sunlight which allows the new variety to be cascaded or trailed.

**3,319**  
**BEGONIA PLANT**  
Otto Rieger, deceased, by Gertrud Rieger, legal representative, Nürtingen, Germany, assignor to Mikkelsen, Inc., Ashtabula, Ohio  
Filed June 30, 1971, Ser. No. 158,641  
Int. Cl. A01h 5/00

**U.S. Cl. Plt.—68**  
1. A new and distinctive variety of begonia characterized by its numerous double azalea type flowers which have superior durability and long lasting qualities and which continuously flower in the summer period for three to four months, its compact growth habit and prominent self-branching, its dark green, resistant, foliage which has a distinctive thin edging of red pigmentation, and characterized particularly when compared with the parent variety Rieger's Aphrodite by its cherry red flower color, its rapid overall growth, and its ability to be asexually reproduced by stem, leaf or terminal cuttings.

**3,320**  
**BEGONIA PLANT**  
Otto Rieger, deceased, by Gertrud Rieger, legal representative, Nürtingen, Germany, assignor to Mikkelsen, Inc., Ashtabula, Ohio  
Filed June 30, 1971, Ser. No. 158,640  
Int. Cl. A01h 5/00

**U.S. Cl. Plt.—68**  
1. A novel and distinctive hybrid *Begonia elatior* variety characterized particularly by superior durability of the plant and its blooms under normal cultivation practices; the longevity of the blooms; the superior floriferous flowering trait producing bright, vivid orange-red colored bracts with a sharp contrasting yellow eye produced by the abundance of stamens and anthers; an overall larger bloom size; controlled flowering response which allows pot plant producers to flower this variety any season of the year; a vigorous upright growth habit that eliminates the necessity of staking; abundant, large waxy foliage that is resistant to mildew; and its ability to be propagated both by leaf cuttings and stem bud cuttings.



# PATENTS

GRANTED MARCH 13, 1973

## GENERAL AND MECHANICAL

3,719,954

### HEAD SET CONSTRUCTION

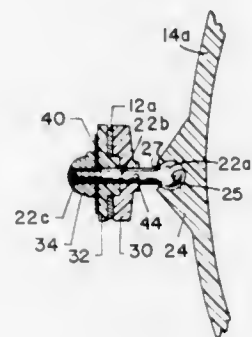
Fred P. Beguin, Sturbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Feb. 12, 1970, Ser. No. 10,787

Int. Cl. A41d 21/00

U.S. Cl. 2-209

2 Claims



Headset construction including headband and earcups having connecting means therebetween allowing smooth dampened swivelling action of earcups into desired close-fitting positions against wearer's head and about his ears and with said connecting means arranged to allow headband to be readily adjusted to different lengths and pivoted relative to earcups so as to be worn in any one of several different positions as conditions of use require.

3,719,955

### DISPOSABLE GARMENT AND METHOD AND APPARATUS FOR MAKING SAME

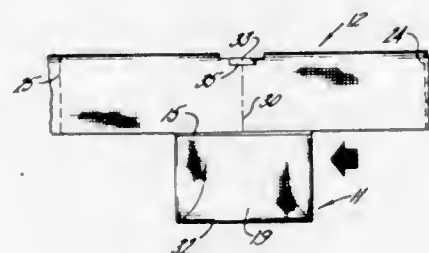
Frederick J. Hrubecy, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 834,993, June 20, 1969, Pat. No. 3,639,915. This application Jan. 25, 1971, Ser. No. 109,624

Int. Cl. A41d

U.S. Cl. 2-243 R

3 Claims



A disposable garment is composed of a rectangular torso section having its quarter sections folded inward to define front and back panels, and a rectangular yoke and sleeve section folded longitudinally, with the torso section secured between the edges of the folds of the yoke and sleeve section. Method and apparatus are provided for making the garment from two fabric webs.

268

3,719,956

### UNDERARM CONSTRUCTION FOR GARMENTS

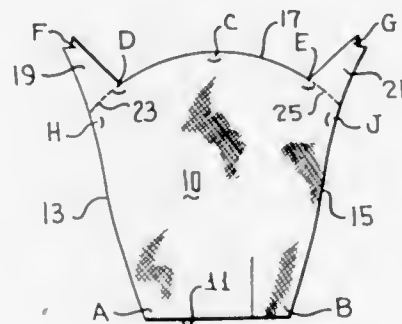
Florence Glassberg, 1489 Shore Parkway, Brooklyn, N.Y.

Filed Oct. 15, 1971, Ser. No. 189,601

Int. Cl. A41b 1/08

U.S. Cl. 2-125

6 Claims



A sleeve and armhole arrangement includes a sleeve pattern having a top edge with an arcuate shoulder portion bounded by two relatively long acute angle projections. The projections extend a distance from the cuff which exceeds the distance between the apex of the arcuate shoulder portion and the cuff. The body pattern armhole is contoured to match the top edge of the sleeve portion. The resulting garment has an underarm region characterized by bias planes which yield in response to all possible arm movement and thereby provides extreme pliancy and comfort.

3,719,957

### FLUSH TANK CONTROL

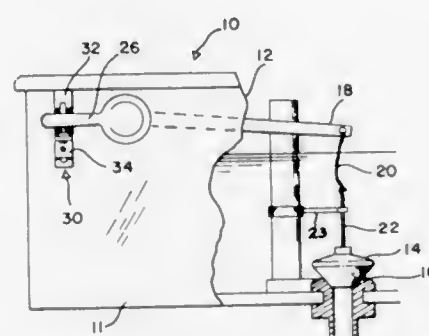
Rudolph T. Riedel, 7198 Sugarbush Street, Orlando, Fla.

Filed Oct. 14, 1971, Ser. No. 189,139

Int. Cl. E03d 1/34, 5/02, 5/10

U.S. Cl. 4-67

2 Claims



A device for controlling and limiting the motion of the handle of the water storage tank of a toilet, such that the handle can be moved only a sufficient distance to bring about the flushing action required in a given instance, thus preventing the entire contents of the tank from being used except when actually needed. The water release valve of the water storage tank does not become free floating in the practice of my invention.

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## GENERAL AND MECHANICAL

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vention, but resides closely by its seat during a flushing operation, thus being in a position to readily return to such seat as soon as the handle is released, thereby effecting a daily savings of many gallons of water.

3,719,958

### WATER CLOSETS

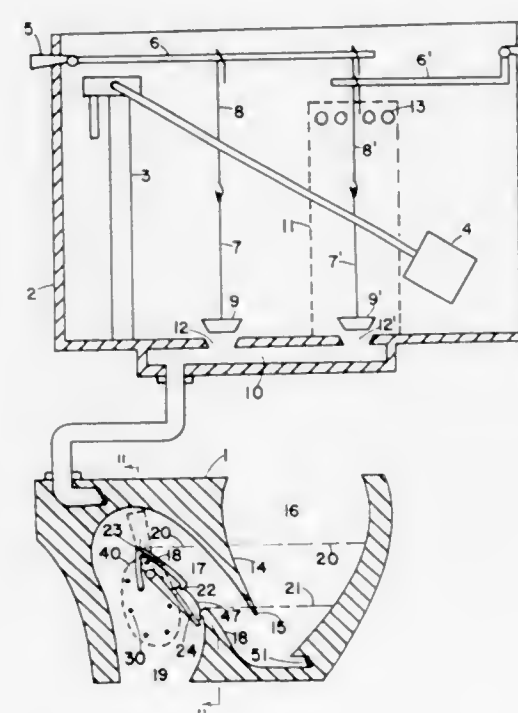
John Raymond Wilhelm, 11605 Split Hall Court, Rockville, Md.

Filed Jan. 24, 1972, Ser. No. 220,257

Int. Cl. A47k 17/00; E03d 11/10

U.S. Cl. 4-76

3 Claims



A valved by-pass connection between the water trap and sewer line of an otherwise conventional water closet to permit the establishment of an alternate water level capability in the toilet bowl to be used in association with a toilet tank that has full as well as fractional flush capability.

3,719,959

### SWINGABLE WASH BASIN FOR COMPACT SHOWER-ROOM

Lars Ekstrom, 11, Stallbacken, Djursholm, Sweden

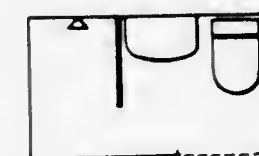
Filed Oct. 27, 1971, Ser. No. 193,069

Claims priority, application Sweden, Oct. 29, 1970, 14573/70

Int. Cl. A47k 1/04

U.S. Cl. 4-168

4 Claims



This invention relates to an arrangement, which reduces the space requirement for a hygiene-room by dual utilization of the floor surface fixtures of said room. A hygiene-room is defined as a room containing a wash-basin, shower-bath, water-closet etc.

3,719,960

### BATHTUB HAVING IMPROVED SAFETY FOR INFIRM OR HANDICAPPED

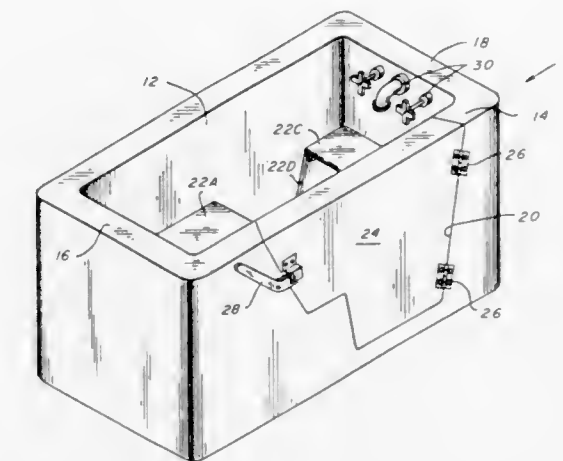
Lionel E. Russell, Route 1, Oologah, Okla.

Filed Sept. 29, 1970, Ser. No. 76,504

Int. Cl. A47k 3/00, 3/024

U.S. Cl. 4-173

2 Claims



A bathtub affording improved safety, especially for the elderly or handicapped, including an opened top tub, the bottom of which has a seat-height horizontal portion extending from one end of the tub and a lower feet-receiving horizontal portion, one wall of the tub having a door opening extending from the top of the tub to the lower feet receiving portion of the tub bottom and the upper portion of the opening being of a width sufficient to expose part of the bottom seat-height horizontal portion, and a door pivotally supported to the tub so that, when the door is in opened position, a user may walk onto the bottom lower feet receiving portion or sit on the exposed part of the bottom seat-height horizontal portion, the door when closed permitting the tub to be filled with water to the height desired.

3,719,961

### DRAIN SHOE PLUG

William E. Politz, Delphi, Ind., assignor to

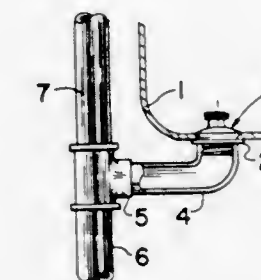
Stephen A. Young, Monticello, Ind.

Filed Oct. 30, 1970, Ser. No. 85,547

Int. Cl. A47k 1/14

U.S. Cl. 4-295

4 Claims



The disclosure herein is of a drain shoe plug of generally conventional use, as the same is required for waste and overflow units of bath tubs, involving the construction of a shoe plug wherein the same is of tubular nature, having suitable guide means therein formed by stamping, such guide means being affixed to the tubular mounting section of the shoe plug, and by reason of the configuration and formation of the same during the stamping operation, providing for raising and lowering of a stopper unit with suitable stop means being provided to facilitate positioning of the stopper unit for draining and to permit the same to shut the drain off in a somewhat conventional manner.



3,719,962

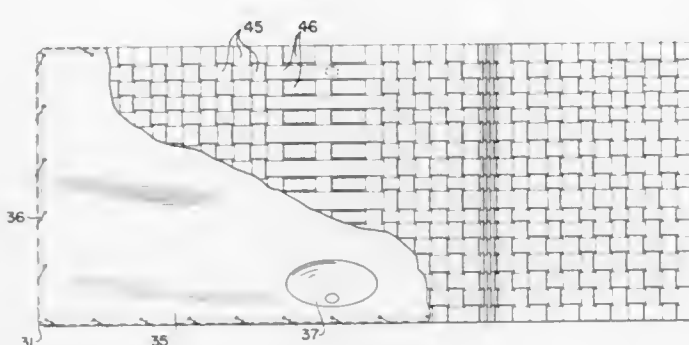
## BODY SUPPORT FOR INVALIDS

Kathleen E. Burkley, 4075 Park Fulton Oval, Cleveland, Ohio  
Filed July 1, 1971, Ser. No. 158,899

Int. Cl. A61g 7/02

U.S. Cl. 5—91

4 Claims



A bed or other body support structure for persons with disabilities. The structure provides means for relieving pressure on areas of the body having bed sores (decubiti and the like) and for hygienic deposit of body wastes. The supporting surface, which may be a bed, a wheelchair seat or the like, is formed of a plurality of criss-crossing fabric strips or bands stretched between opposite sides of a skeletal frame. A sanitary waste collection sheet is spaced below the supporting surface and is sloped so as to drain waste material to one or more drain outlets located above a suitable receptacle.

3,719,963

## METHOD OF MAKING FOAM CUSHIONS AND PRODUCT FORMED THEREBY

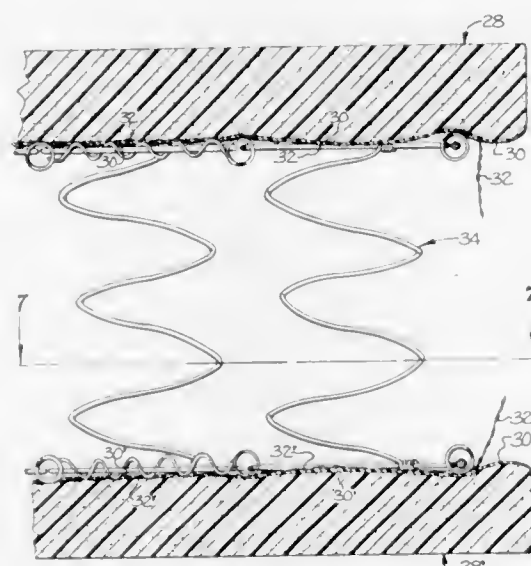
C. Gordon Bullock, Jr., 76 Kimberly Ave.,  
Asheville, N.C. 28804

Filed Apr. 1, 1971, Ser. No. 130,328

Int. Cl. A47c 27/04, 27/22

U.S. Cl. 5—351

6 Claims



A method of making a foam cushion for use as a seat, mattress or the like including the steps of foaming a material in an open top mold to form a cellular pad having a dense upper crust, and supportingly positioning an open mesh fabric and an overlying spring assembly in floating relation on the foaming material. The open mesh fabric thereby becomes essentially embedded in the crust to reinforce the same, and the terminal face portions of the spring assembly are adhered to the crust to interconnect the various components. To form an innerspring mattress,

the resulting structure is removed from the mold, inverted, and positioned on additional foaming material in a like manner. In a further embodiment, the spring assembly is positioned on the pad after the foaming process is completed. In this case, the originally unattached foam pad may be easily stored or shipped to a point of assembly where the spring assembly is later joined by hog ringing or the like. In order to densify the foaming material in this latter embodiment, a screen member having a weight and outline generally similar to that of the spring assembly may be removably positioned on the foaming material during the foaming process.

3,719,964

## UPPER STRETCHING AND CLAMPING MECHANISM

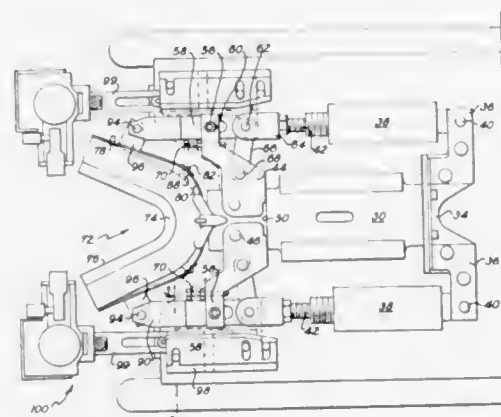
Raymond Boucher, Manchester, N.H., assignor to  
Jacob S. Kamborian Estate, West Newton, Mass.

Filed Jan. 28, 1972, Ser. No. 221,619

Int. Cl. A43d 21/00

U.S. Cl. 12—10.5

2 Claims



A machine for stretching an upper about the heel end of a last and clamping the heel portion of the upper to the last prior to wiping the margin of the heel portion of the upper against an insole located on the bottom of the last. The machine includes a U-shaped clamp pad having pad legs movable towards the last to effect the clamping and pincers mounted to the pad legs operative to grip the breast line portions of the upper margin prior to movement of the pad legs toward the last.

3,719,965

## METHOD OF MAKING FOOTWEAR SOLES

Jacques Chevallereau, Juvisy Sur Orge, France, assignor to Ets  
Partzky S.A., Mauleon-Soule, France

Filed April 13, 1971, Ser. No. 133,628

Claims priority, application France, April 20, 1970,  
7014152

Int. Cl. A43d 13/04

U.S. Cl. 12—146 B

3 Claims



A method of making soles for shoes wherein the soles are cut from extruded material in strip form having a plurality of integrated cylinders extending transversely of the strip. A relatively thick heel portion is extruded as part of the strip.

3,719,966

## COMBINED FLOOR-POLISHER AND SUCTION CLEANER

George Laurence Lamont, New South Wales, Australia, assignor to Contract Cleaning Co. Pty. Limited, Hurlstone  
Park, New South Wales, Australia

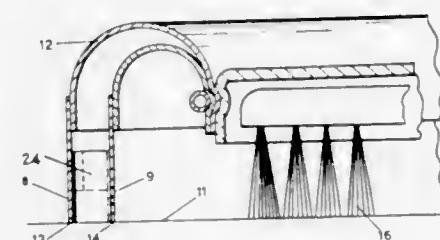
Filed Feb. 9, 1971, Ser. No. 114,019

Claims priority, application Australia, Dec. 9, 1970,  
3440/70

Int. Cl. A47l 5/10

U.S. Cl. 15—385

4 Claims



A combined floor polisher and suction cleaner having an inner and outer floor contacting flexible skirt depending from the housing. A rotary buffing means and suction means is located within the inner skirt and both skirts have apertures along their bottom edges so that large pieces of litter may be drawn into the suction means. These apertures are staggered so that any litter ricocheting off the buffer cannot be propelled through the apertures.

3,719,967

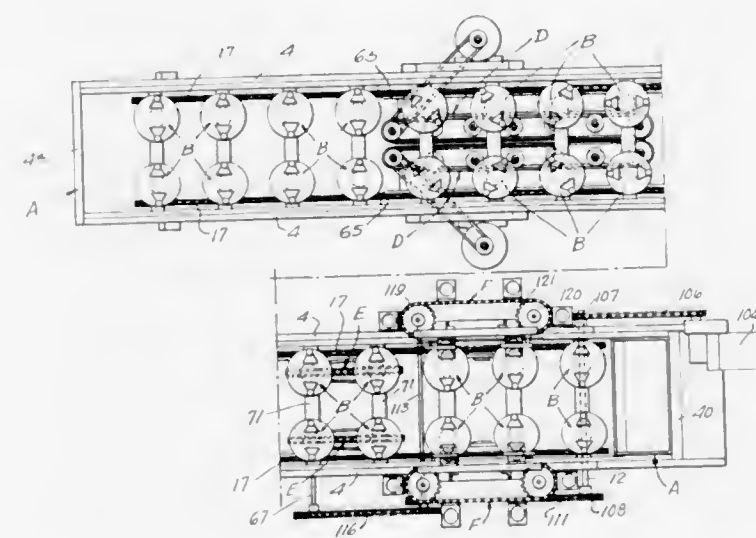
## MACHINE FOR EXTRACTING MEAT FROM CRAB SECTIONS

Warren J. Craig, 245 Hawthorne Road, Ellicott City, Md.  
Filed Feb. 17, 1971, Ser. No. 115,972

Int. Cl. A22c 29/00

U.S. Cl. 17—71

16 Claims



The present machine extracts the meat from the interior body sections of a crab by centrifugal force, that is after crab sections are placed on spinner discs each disc is moved along a line and rotated to discharge the meat into retainers on each disc whereupon the discs are stopped and then positioned for removal of the meat from each disc container by ejection means with each step being automatically carried out by the machine.

3,719,968

## FLEXIBLE UNIT ASSEMBLY FOR PROCESSING TEXTILE FIBRES

Jean Frederic Herubel, Guebwiller, France, assignor to  
N. Schlumberger & Cie, Guebwiller, Haut-Rhin, France

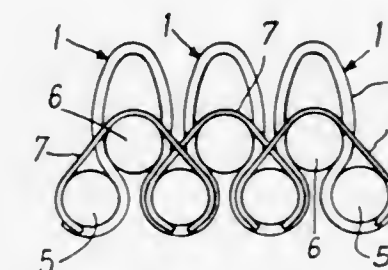
Filed July 2, 1970, Ser. No. 51,913

Claims priority, application France, July 11, 1969,  
6923753

Int. Cl. D01h 5/00

U.S. Cl. 19—236

7 Claims



The flexible unit in accordance with the invention is constituted by a strip of flexible sheet formed of natural or synthetic rubber or any suitable elastomer shaped so as to form waves with crests which have a transverse direction with respect to the length of the sheet and to the direction of the relative displacement of said strip with respect to the textile fibres to be processed, the crests of the waves which are located on one of the faces of said waved sheet being secured to suitable supporting means, whilst the crests of the waves which are located on the other face constitute the flexible elements for processing fibres.

3,719,969

## BELT SPLICE

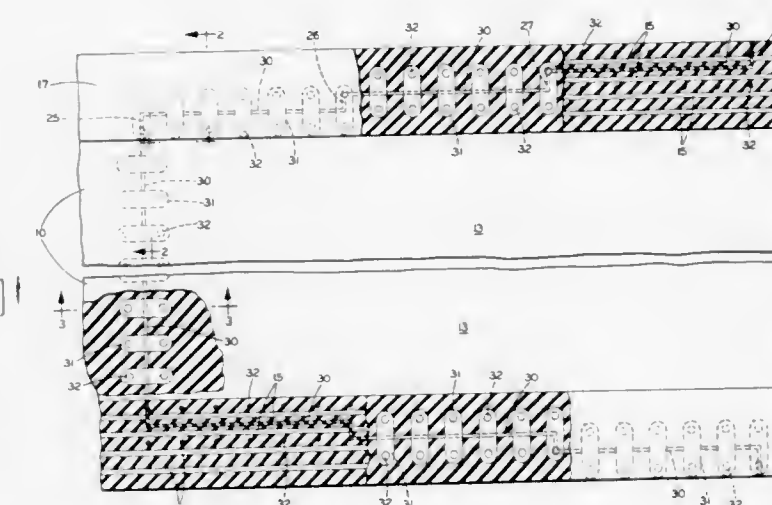
Hebert E. McGinnis, Akron, Ohio, assignor to The B. F.  
Goodrich Company, New York, N.Y.

Filed April 21, 1971, Ser. No. 135,998

Int. Cl. F16g 3/00

U.S. Cl. 24—38

10 Claims



A spliced conveyor belt, and the method of splicing a conveyor belt, of the rubber-covered type provided with transverse and longitudinal reinforcements with the longitudinal reinforcements in the form of cables located only in thickened edges of the belt, characterized in that the rubber cover is removed to expose the reinforcements in the region of the



splice and the adjacent ends to be spliced have the transverse reinforcements of the two ends placed in butting relationship and the adjacent ends of the longitudinal reinforcements in overlapping relationship, the rubber cover is replaced over the exposed reinforcements and shaped to conform with the other areas of the belt. Preferably, the belt ends to be joined have the longitudinal reinforcements cut at staggered locations and the overlapping portions of the said reinforcements are mechanically joined in the region of the splice by a succession of clamps. The transverse reinforcements may also be mechanically joined by a plurality of clamps.

### 3,719,970 RETAINER CLIP DEVICE

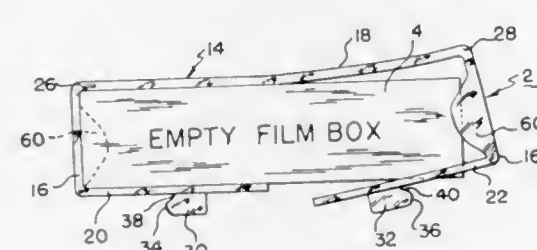
Wilbur E. Carlson, 17316 Fries Avenue, Lakewood, Ohio

Filed March 1, 1972, Ser. No. 230,843

Int. Cl. A44b 21/00

U.S. Cl. 24—73 PB

10 Claims



A retainer clip device for detachably mounting a container on a film holder including a strap-like body made from a resilient material having a pair of oppositely disposed side elements and a pair of oppositely disposed end elements made integral with one another with one of the side elements being severed generally between its ends for yieldable swinging movement toward and away from the other side element. The severed side element includes at least one tab-like projection for detachably mounting the clip on a film holder, and one of the end elements includes a flange-like projection for detachable securement to the container for mounting the latter on the film holder.

### 3,719,971 CABLE HANGER AND CLAMP

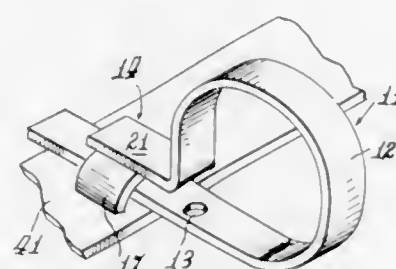
Frank Lodi, Niles, Ill., assignor to Richco Plastics Company, Chicago, Ill.

Filed March 4, 1971, Ser. No. 120,865

Int. Cl. A44b 21/00

U.S. Cl. 24—73 PB

6 Claims



A cable hanger and clamp for securing a bundle of one or more electric, hydraulic, or pneumatic lines or parts, comprising a band of molded plastic insulating material and means for clamping the band around the bundle and retaining the bundle in clamped position and for resiliently mounting the clamped bundle on a selected surface.

### 3,719,972 SAFETY BELT DEVICE FOR OCCUPANTS OF MOTOR VEHICLES

Wolf-Dieter Klink, 7071 Lindach, Danziger 520, Germany

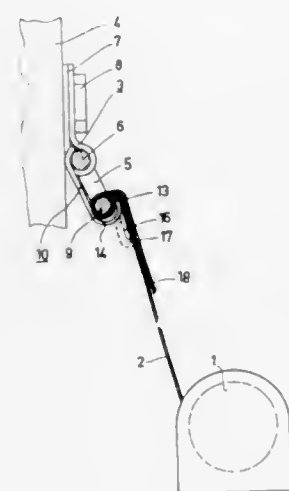
Filed Sept. 21, 1971, Ser. No. 182,323

Claims priority, application Germany, Sept. 28, 1970, P 20 47 706.9

Int. Cl. A44b 11/12; A62b 35/00

U.S. Cl. 24—193

7 Claims



A safety belt device for an occupant of a motor vehicle equipped with a belt rewinding mechanism supplying a safety belt is disclosed. The device includes a bracket mounted on the vehicle and latching arrangement hinge connected to the bracket for holding the belt at a selected point thereof so as to leave the portion of the belt passing through the latching arrangement accessible to the occupant. The latching arrangement includes an ancillary member movable between closed and open positions, the ancillary member being movable to the open position for releasing the belt by direct manual action on the ancillary member as well as by manually pulling the free portion of the belt.

### 3,719,973 T-BAR ZIPPER TAB HANDLE

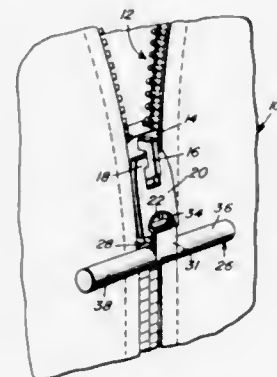
Harold Bell, Gloucester, Mass., assignor to Might-Mac, Inc., Gloucester, Mass.

Filed March 3, 1972, Ser. No. 231,506

Int. Cl. A44b 19/26

U.S. Cl. 24—205.15 H

9 Claims



A handle for the apertured free end of the pull tab attached to the slider of a slide fastening device. The handle comprises an elongated body having a diametrically reduced midportion centrally intermediate its opposite ends and a rigid strap has one end thereof bent into a loop about the diametrically reduced mid-portion of the elongated member and the other end of the strap is bent into a loop passed through the apertured free end of the slider pull tab.

### 3,719,974 INTEGRAL ONE-PIECE KEY RING OR LOCKING RING

Ralph Abrams, 175 Merry Mount Drive, Warwick, and Harry W. Cary, Jr., 16 Kingsford Avenue, East Providence, both of R.I.

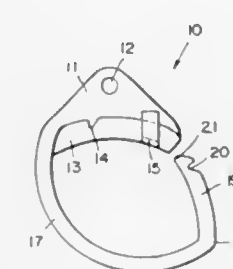
Continuation-in-part of Ser. No. 710,516, March 5, 1968, abandoned. This application March 4, 1971, Ser. No. 121,109

Int. Cl. A44b 13/02

U.S. Cl. 24—237

1 Claim U.S. Cl. 28—72.14

8 Claims



The invention comprises a locking ring molded of plastic material. The ring is molded in a single piece which provides a free arm on which the articles, such as keys, can be hung. The body is provided with a groove or passageway into which the free arm can be slipped. A projection on the body enters a notch on the arm to releasably lock the arm in position to hold the keys on the ring. By lifting the arm away from the projection, the arm is released and can be swung into open position. The ring is molded so that the completed item comes from the mold and requires no further assembly operation.

### 3,719,975 ARRANGEMENT FOR ELIMINATING DISTORTIONS OF WEFT THREADS IN FABRIC

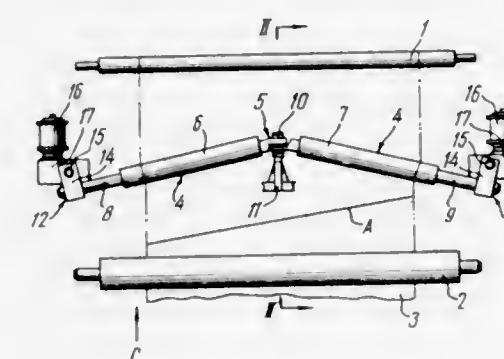
Velizary Semenovich Illarionov, and Vadim Alexeevich Kostin, both of Ivanovo, U.S.S.R., assignors to Ivanovsky Nauchno-Issledovatel'skiy Eksperimentalno-Konstruktorskiy Mashinostroitel'nyy Institut, Ivanovo, U.S.S.R.

Filed June 11, 1970, Ser. No. 45,352

Int. Cl. D06h 3/12

U.S. Cl. 26—51.3

2 Claims



An arrangement to eliminate distortions of weft threads in fabric, comprising a roller passed about by the fabric and freely rotating on an axle, which roller and axle consist in their length of at least two parts connected to each other by a hinge, and rest therethrough on a support, while the free outer ends of these parts are hinged in appropriate supports, that are made mutually displaceable in case of distortions, so as to swing the roller and thus change the length of the distance travelled by different sections of one and the same distorted weft thread, thereby eliminating the distortions.

### 3,719,976 PROCESS FOR PRODUCING CRIMPED POLYESTER FILAMENTS

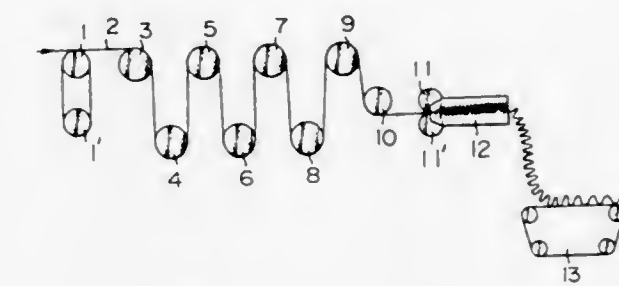
Nobuharu Izawa; Munetsugu Kikuyama; Hiroshi Toyoshima; Ryuji Yamamoto, and Yasuhiro Murase, all of Matsuyama, Japan, assignors to Teijin Limited, Osaka, Japan

Filed May 4, 1971, Ser. No. 140,209

Int. Cl. D02g 1/12

U.S. Cl. 28—72.14

8 Claims



A process for producing polyester filaments having high Young's modulus and excellent crimps, which comprises heat-treating a bundle of drawn filaments of linear polyester in which at least 85 mole percent of the recurring units consist of ethylene terephthalate, at a temperature of 135° to 240°C. under a tension of at least 0.3 g/denier, feeding the filaments to the nip rollers of a stuffer box while maintaining the filaments at a temperature at least 10°C. lower than the heat-treating temperature and between 100° and 140°C. under a tension of at least 0.1 g/denier, crimping the filaments in the stuffer box, and then with-drawing the filaments from the stuffer box.

### 3,719,977 AUTOMATIC TOOL CHANGING DEVICE FOR A MACHINE TOOL

Giuseppe Fantoni, Ivrea, Italy, assignor to Ing. C. Olivetti & Co., S.p.A., Ivrea, Italy

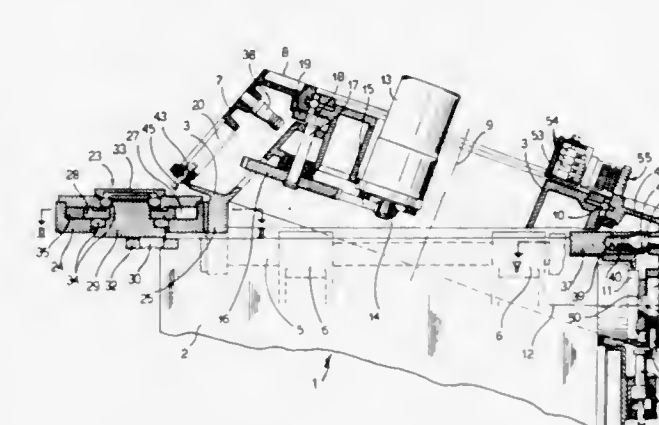
Filed April 29, 1970, Ser. No. 32,811

Claims priority, application Italy, April 30, 1969, 51649 A/69

Int. Cl. B23I 3/157

U.S. Cl. 29—26 A

8 Claims



An automatic tool changing device for aligning a selected tool accurately with a headstock spindle. A rotatable drum has a plurality of tool holding positions and a locating rod adjacent to and axially aligned with each of the tool holding positions. An electric motor with an electromagnetic brake rotates the drum to substantially properly align a selected tool. The drum is laterally movable on a support mounted on the headstock.



between a first position in which the selected tool is spaced axially from the headstock spindle but substantially aligned therewith, and a second position in which said tool engages the spindle. A tapered aligning opening on the headstock receives the locating pin associated with the selected tool as the drum is moved laterally to rotate the drum slightly, if necessary, to precisely align the tool as it engages the spindle.

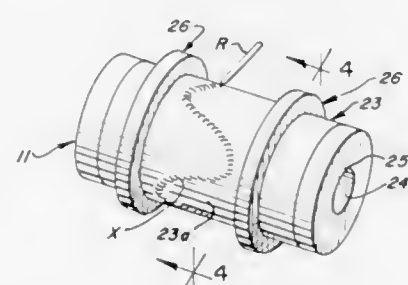
3,719,978

# **IDLER MEMBER AND METHOD OF ROUGHENING A PORTION OF THE EXTERIOR SURFACE THEREOF**

Robert W. Clyne, 5701 North Sheridan Road, Chicago, Ill.  
Filed July 29, 1971, Ser. No. 167,358  
Int. Cl. B21b 27/02

U.S. Cl. 29—121 R

3 Claims



An idler member is provided for use in changing the direction of travel of a moving web. The member has a cylindrical exterior surface which is adapted to be engaged by the moving web. A portion of the said exterior surface has fused thereto material deposits which are adapted to increase the frictional engagement between the idler member and the web.

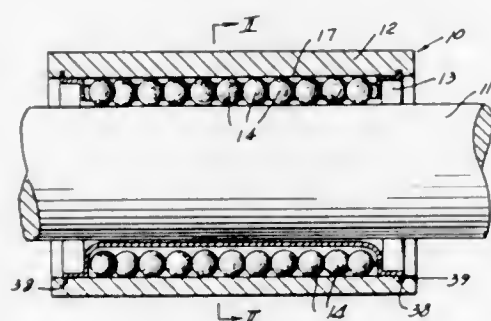
3,719,979

# **LINEAR MOTION ANTI-FRICTION BEARINGS**

Arthur S. Irwin, Bemus Point, N.Y., assignor to TRW Inc., Cleveland, Ohio  
Continuation-in-part of Ser. No. 71,523, Sept. 11, 1970. This application May 17, 1972, Ser. No. 254,157  
Int. Cl. B23p 11/00; B21d 53/12

U.S. Cl. 29—148.4 A

10 Claims



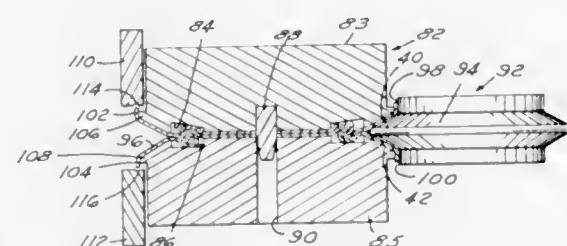
A method of making a linear motion bearing wherein the housing is formed with a varying radius inner diameter providing ball loading and ball return portions; the bearing radius continuing axially of the housing, a ball retainer received in the housing, the ball retainer having pathways impressed in an outer surface thereof, the pathways terminating in spaced relation to the axial ends of the retainer and portions of the retainer intermediate the ballways and the axial ends having a varying radius outer surface which mates with the varying radius inner surface of the housing to lock the retainer against rotation in the housing.

# **3,719,980 METHOD OF MAKING A PERIPHERALLY GROOVED SHEET METAL ARTICLE**

Peter J. Van Bussel, 25501 Glendale Avenue, Detroit, Mich.  
Continuation-in-part of Ser. No. 44,943, June 10, 1970, Pat. No. 3,633,431. This application Aug. 31, 1971, Ser. No. 176,582  
Int. Cl. B21d 53/26; B21k 1/28, 1/42

U.S. Cl. 29—159 R

13 Claims



The invention relates to methods of making or manufacturing peripherally grooved sheet metal articles such as grooved wheels, V-type pulleys, automobile wheel rims, etc. Several embodiments of both the method of manufacture and pulley or wheel construction are disclosed. Basically, all of the embodiments have in common the use of the pair of sheet metal discs as the starting blanks for manufacturing a single peripherally grooved article. The discs are progressively formed into a final pulley in three stages. In the first stage, the metal discs are formed into nesting blanks forming an intermediate pre-clinched blank assembly shaped to facilitate the second step which involves acting upon the first assembly in a die to form an intermediate clinched blank assembly in which the discs are held together by an annular clinched portion. In the third step, the clinched blank assembly is acted upon to spread apart the outer rim sections to form a peripherally grooved sheet metal article. A multi-pulley or wheel construction is disclosed in which a plurality of the single pulleys or grooved sheet metal articles are clinched together to form a multi-pulley or wheel construction having several V-grooves. One preferred form of the clinched portion comprises mutually intertwining generally S-shaped, in cross-section, sections of each disc, end portions of the S-shaped sections being folded back upon the S-shape.

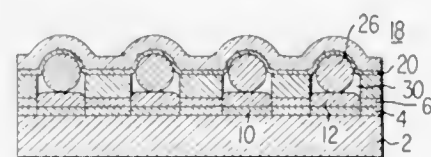
3,719,981

# **METHOD OF JOINING SOLDER BALLS TO SOLDER BUMPS**

Richard Ralph Steitz, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.  
Filed Nov. 24, 1971, Ser. No. 201,783  
Int. Cl. B23p 17/00

U.S. Cl. 29—423

6 Claims



A semiconductor wafer is provided with a plurality of semiconductor device flip chips in regular array, each of the devices having a plurality of solder bumps regularly spaced a certain distance apart. An array of solder balls is formed on

the tacky surface of a piece of pressure-sensitive tape, the balls being spaced like the solder bumps. The array of solder balls is placed in contact with the array of solder bumps both of which are then heated to reflow the solder and then cooled to fix the contact. The tape is then removed.

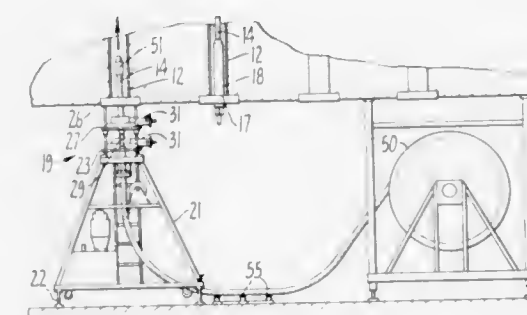
3,719,982

# **METHOD OF THREADING A TENDON THROUGH A SHEATH**

Ian Tindal, San Francisco, Calif., assignor to Bechtel International Corporation, San Francisco, Calif.  
Filed Feb. 13, 1970, Ser. No. 11,100  
Int. Cl. B21d 39/00

U.S. Cl. 29—452

3 Claims



A novel jacking system and method are provided for moving a cable through a sheath which includes opposite vertical portions connected by an intermediate arcuate portion. The cable is relatively heavy, being made up of the order of some 170 to 200 strands of high carbon steel wire, each approximately of the order of one-quarter inch in diameter. The total length of the cable is of the order of 500 feet while its weight is some 7½ to 10 tons.

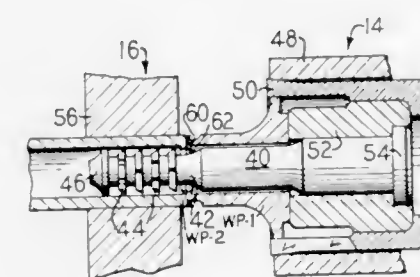
3,719,983

# **INTERNAL FLASH REMOVAL METHOD**

Wiltmer E. Funk, Roanoke, and Ira H. Sage, Peoria, Ill., assignors to Production Technology Inc., Peoria, Ill.  
Original application Sept. 23, 1968, Ser. No. 761,763. Divided and this application Jan. 22, 1970, Ser. No. 10,678  
Int. Cl. B23k 27/00

U.S. Cl. 29—470.3

2 Claims



An internal flash removal broach tool is provided for use with a friction welding machine to remove the internal flash produced at the weld interface of an assembly comprised of two tubular members. The tool is provided with a plurality of cutting edges which produce segmental rather than circular cuttings and the blades progressively increase in diameter to assure removal of substantially all of the flash material.

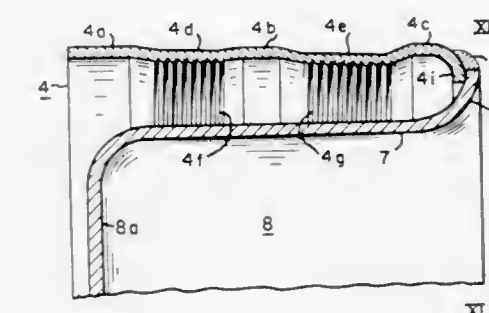
3,719,984

# **MAKING AN ARCTIC THREAD PROTECTOR**

Henry Frishof, Dubois, Pa., assignor to Alco Standard Corporation, Valley Forge, Pa.  
Filed Dec. 22, 1971, Ser. No. 210,825  
Int. Cl. B23k 31/02

U.S. Cl. 29—482

11 Claims



A metal sleeve or collarlike protector for end portions of pipe members has been provided having a fully closed-off forward wall construction. The procedure involves a separate deep-draw forming and shaping of an outer threaded mounting part and of an inner closing-off cup-like part. The two parts are held in an aligned relation with their forward convexly curved rim flanges in engagement and with their side skirt walls in a radially spaced relation, while a continuous weld bead is applied to the joint at the flanges to provide a unitary dual wall unit. The protector unit is only open at its back end to receive and seal-off the open end of a pipe or casing member.

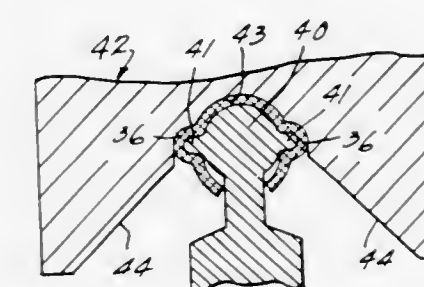
3,719,985

# **METHOD OF MAKING BUSHINGS**

George M. Federspill, Kokomo, Ind., assignor to Steel Parts Corporation, Tipton, Ind.  
Filed Aug. 13, 1971, Ser. No. 171,496  
Int. Cl. B23p 17/00

U.S. Cl. 29—423

5 Claims



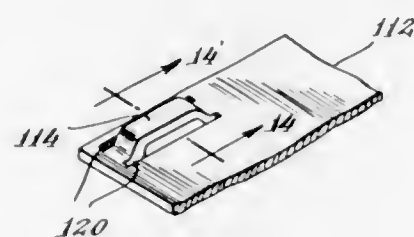
Method of making bushings from a flat rolled strip in which the edges of the strip are roughened as by knurling, notching, serrating or slitting to bushing length and the underside of the strip is then successively coined with equally spaced parallel transversely extending V-shaped grooves at intervals corresponding to the length of the completed blanks. The strip is then severed to length along the coined grooves and formed over a die to an undulating form, having a central section formed about the internal diameter of the finished bushing, and end sections spaced on opposite sides of the central section and formed about radii of the same length as the internal radius of the finished bushing. Intermediate sections are formed between the central and end sections about equal radii and upstanding relative to the end and central sections. A second



die partially closes the undulating strip about a mandrel. A third set of cooperating dies closes the bushing about a second mandrel and partially depresses the intermediate sections to the form of diametrically opposed lobes. The fourth set of dies is in the form of coining dies and completely closes the bushing to size about a mandrel and completes the form of the diametrically opposed lobes.

3,719,986

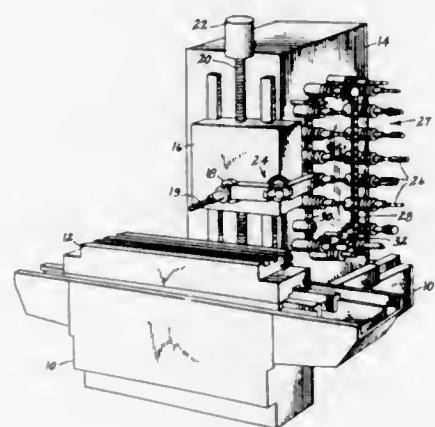
**METHOD OF JOINING SHEET-LIKE AREAS**  
Edward J. Ardolino, Whiting Farm Road, Branford, Conn. 06405, and Edward J. Okay, 200 Ellis St., New Britain, Conn. 06051  
Continuation-in-part of application Ser. No. 631,832, Apr. 18, 1967. This application July 13, 1970, Ser. No. 54,117  
Int. Cl. B21d 39/00; B23p 11/00  
U.S. Cl. 29—509 4 Claims



A first sheet area has an elongated opening pierced therein and a second sheet area has a companion arch like portion displaced therefrom of such dimensions that when the two sheets are superimposed on each other the arch portion fits into the elongated opening. Then while in this superimposed position a pair of opposite edges of the elongated opening are displaced toward each other to be engaged by the bottom of the arch when the arch is flattened out to engage the top surfaces of the displaced edges in locking engagement.

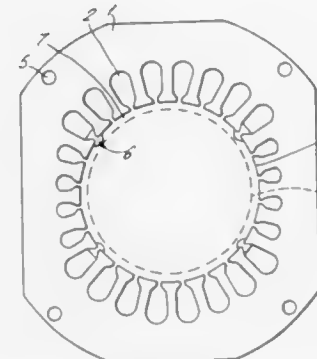
3,719,987

**TOOL CHANGE APPARATUS**  
William B. Seidel, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio  
Filed May 10, 1971, Ser. No. 141,536  
Int. Cl. B23q 3/157  
U.S. Cl. 29—568 1 Claim



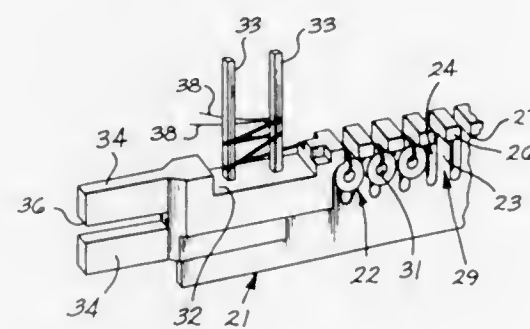
An apparatus for synchronizing movements of a tool storage belt or chain with the movements of the spindle carrier of a machine tool so as to permit a tool change to be effected in all positions of the spindle carrier.

3,719,988  
**METHOD OF CENTERING THE ROTOR OF AN ELECTRIC MOTOR IN ITS STATOR**  
Borge Niels Jorgen Nielsen, Augustenborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark  
Filed Jan. 4, 1971, Ser. No. 103,608  
Claims priority, application Germany, Jan. 13, 1970, P 20 01 179.4  
Int. Cl. H02k 15/00, 15/14, 15/16  
U.S. Cl. 29—596 9 Claims



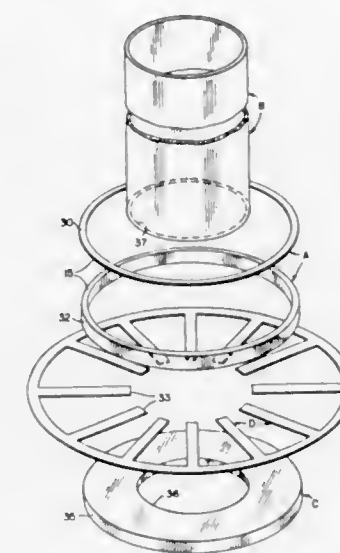
The invention relates to a method for centering the rotor of an electric motor relative to the stator thereof so that a uniform, circumferentially extending air gap is achieved. Spacer elements are used in the manufacture or repair of a motor which are inserted into some of the winding grooves of the stator, these elements each having a head which projects beyond the groove to an extent equal to the width of the air gap. The elements are made of a heat shrinkable material and heat generated by motor current causes the heads to be withdrawn into the grooves as a result of the shrinkage of the material.

3,719,989  
**METHOD OF ASSEMBLING AND SECURING ARTICLES WITH A SUPPORT**  
Joseph W. Fagerstrom, Johnstown, and Frederick E. Robbins, Reynoldsburg, both of Ohio, assignors to Western Electric Company, Incorporated, New York, N.Y.  
Filed Jan. 7, 1971, Ser. No. 104,672  
Int. Cl. H01f 7/06  
U.S. Cl. 29—604 13 Claims



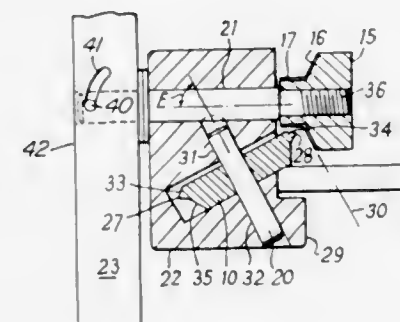
A plurality of stacked magnetic cores have a pair of wires threaded through axially aligned openings of the cores. The free ends of the wires are secured to a comb-like, plastic support stick which is formed with a plurality of nests for receiving and supporting individual cores. The cores are fed successively into the nests of the support stick. As the stick is rocked about its longitudinal axis and also indexed longitudinally, the wires are fed through and between successive slots in the stick adjacent to the nests so that each core is supported on the stick and wired thereby. During the wiring of the cores with the stick, each core is clamped within its nest until the wires secure the core with the stick.

3,719,990  
**VACUUM TIGHT LEAD THROUGH FOR DEWAR MOUNTED INFRARED DETECTORS**  
Jasper J. Long, Healdsburg, and Ben Justus, Petaluma, Calif., assignors to Optoelectronics, Inc., San Rafael, Calif.  
Filed Nov. 23, 1970, Ser. No. 91,648  
Int. Cl. H01j 9/18; H01r 43/00  
U.S. Cl. 29—628 8 Claims



An improved construction and process for constructing vacuum tight lead throughs is disclosed for use with Dewar mounted multi-element infrared detectors.

3,719,991  
**CAN OPENERS**  
Michael Robert French, St. Albans, England, assignor to The Metal Box Company Limited, London, England  
Filed June 23, 1971, Ser. No. 155,998  
Claims priority, application Great Britain, June 24, 1970, 30,610/70  
Int. Cl. B67b 7/34  
U.S. Cl. 30—15.5 3 Claims

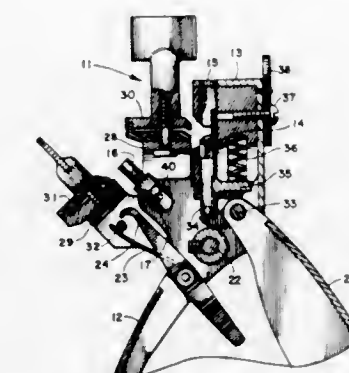


A can opener of the type in which a rotatable cutter cuts through the seaming wall of a double end seam of a can, the cutter being mounted on a spindle in a housing which also carries a rotatable traction roll to run along the can seam during cutting. The cutter spindle is mounted at an acute angle to the traction roll axis, such that the cutter axis is parallel to a face of the traction roll that engages the chuck or rear wall of the can seam.

3,719,992  
**HAND OPERATED KEY CUTTER**  
Sam Reisner, San Fernando, Calif., assignor to Kar Products, Inc., Des Plaines, Ill.  
Filed July 19, 1971, Ser. No. 163,967  
Int. Cl. B26b 13/22  
U.S. Cl. 30—131 4 Claims

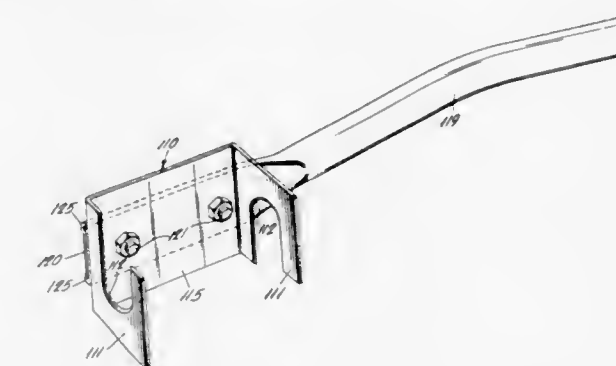
The key cutter includes a first handle terminating in a housing removably supporting a cutter assembly. A mounting

means supports a stylus for rotation about its own axis to the handle at a given spacing from the cutter assembly. A second handle is pivoted to the first handle for operating the cutter assembly. The structure is completed by a key carriage in the form of a yoke holding blank and master keys in positions juxtaposed, respectively, the cutter assembly and stylus. The



mounting of the key carriage to the first handle is such that it can effect in and out or rocking movements and transverse movements so that the stylus follows indentations in the master key and similar indentations can be cut by the cutter assembly in the blank key. A spring biases the master key against the stylus to facilitate the duplicating operation.

3,719,993  
**SCRAPING APPARATUS**  
Daniel P. Caprioli, P.O. Box 792, Devon, Pa.  
Filed April 27, 1971, Ser. No. 137,885  
Int. Cl. B08b 9/02; F28g 1/08  
U.S. Cl. 30—172 8 Claims



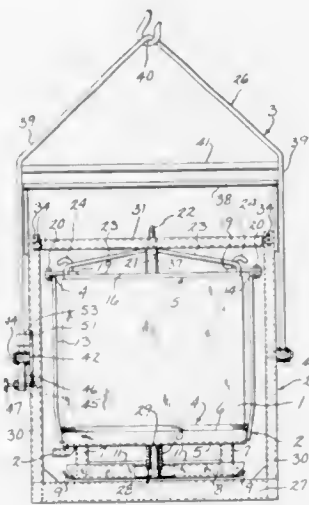
An improved scraper is provided for removing paint, rust, scale and the like from the outer surface of elongated workpieces. The scraper comprises a pair of planar blade elements disposed in spaced relation in parallel planes transverse to the longitudinal axis of the workpiece and secured together by means of a scraper. Each blade has an edge shaped to engage substantially one-half of the periphery of the workpiece, with the edges engaging opposite sides of the workpiece for simultaneously scraping its entire surface. A handle is fastened to the spacer for applying leverage to the blade elements and for reciprocating the blade elements longitudinally of the workpiece thereby to effect the desired scraping action.

3,719,994  
**APPARATUS FOR DRAINING WHEY FROM CHEESE**  
Otis O. Hensel, P.O. Box 185, Hustisford, Wis.  
Filed April 2, 1971, Ser. No. 130,669  
Int. Cl. A01j 25/11  
U.S. Cl. 31—46 10 Claims

An apparatus for pressing and draining whey from cheese curd. The cheese curd to be treated is contained within a box or container having a generally rectangular cross-section and



an open top. The box is mounted within a supporting frame and a perforated lid is connected to the side portions of the frame structure and encloses the open top of the box. The frame containing the box is lifted into a supporting cradle that is adapted to travel on an overhead rail extending within the cheese making plant. The cradle includes an outer cradle member suspended from the rail and an inner cradle member which supports the frame and box. The inner cradle member is pivotally connected to the outer member about a horizontal



axis so that the box can be tilted to a downwardly inclined position to permit the whey to drain from the cheese curd through the perforated lid. A locking mechanism is included to lock the box in the upright, as well as in the downwardly inclined position. To permit the box to be rotated about its longitudinal axis, an axial pin connected to the lid is journaled within a cross bar on the inner cradle member and the base of the inner cradle member is provided with an upstanding pin which is received within an opening in the base of the frame.

3,719,995

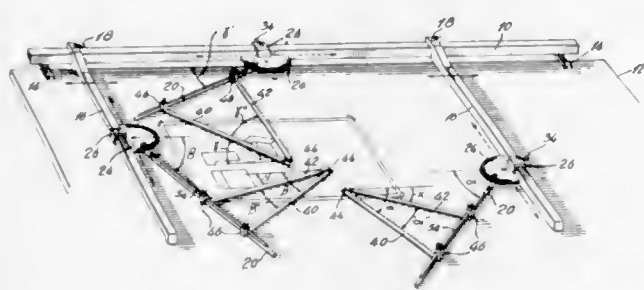
#### APPARATUS FOR DRAFTING AN EXACT AXONOMETRIC PROJECTION DIRECTLY FROM A MULTIVIEW ORTHOGRAPHIC PROJECTION

Marc Sauvageau, 6428, rue Chabot, Montreal, Quebec, Canada

Filed July 13, 1970, Ser. No. 54,159  
Int. Cl. B43I 13/14

U.S. Cl. 33—77

10 Claims



An apparatus mounted on a drafting board for drafting an exact axonometric projection of an object directly from a multiview orthographic projection of such object. The apparatus includes at least two reference devices placed on the drafting board each adapted to be positioned along a running line extending from corresponding points of at least two views placed in their normal orientation in orthographic projection of such object and oriented at a predetermined angle from a reference in the direction of sight, and a tracing device associated with each reference device and defining an axonometric line oriented at an angle from such reference depending upon the

desired angles of the axonometric projection. The intersection of the axonometric lines derived from said two views in orthographic projection defines one point of the axonometric projection. There is also provided a guide member also placed on the drafting board and positioned along a directrix line perpendicular to the bisectrix of the angle formed by each reference and tracing devices for guiding the reference and tracing devices whereby movement of each reference device to positions corresponding to other corresponding points of such object in the multiview orthographic projection will define the corresponding points in the axonometric projection at the intersection of the tracing devices. In an alternative embodiment, the reference and tracing devices could be the same device pivotally mounted on supporting arm to oscillate between a reference position corresponding to a running line to a tracing position corresponding to an exometric line. The supporting arm is perpendicular to the guide member.

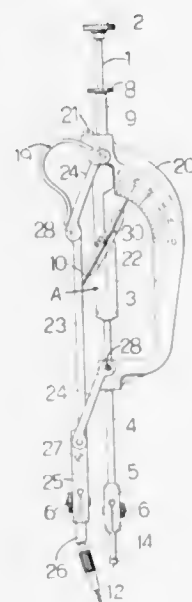
3,719,996  
ELLIPSOGRAPH

Sertorio Arruda Filho, Rua Aristides Espinola, 37/301, Rio de Janeiro, Brazil

Filed Aug. 27, 1971, Ser. No. 175,436  
Claims priority, application Brazil, March 15, 1971, 1634  
Int. Cl. B43I 11/04

U.S. Cl. 33—30 C

5 Claims



An ellipsograph of the compass type having a multi-section centering leg, the medial portion of which is in the form of a crank. A bow-shaped pantograph is rotatably attached to the upper and lower sections of the centering leg and has a straight scribe leg connected thereto by means of a pair of pivoted links. A spring mounted on the upper portion of the pantograph urges the scribe leg against the peripheral edge of a circular modulus disc which is pivotally mounted on the medial portion of the centering leg opposite a scale on the pantograph.

3,719,997

#### AUTOMATIC LINE-UP TABLE

Claude K. Hulen, 1524 Charlotte, Kansas City, Mo.

Filed Aug. 20, 1970, Ser. No. 65,480  
Int. Cl. B43I 5/00

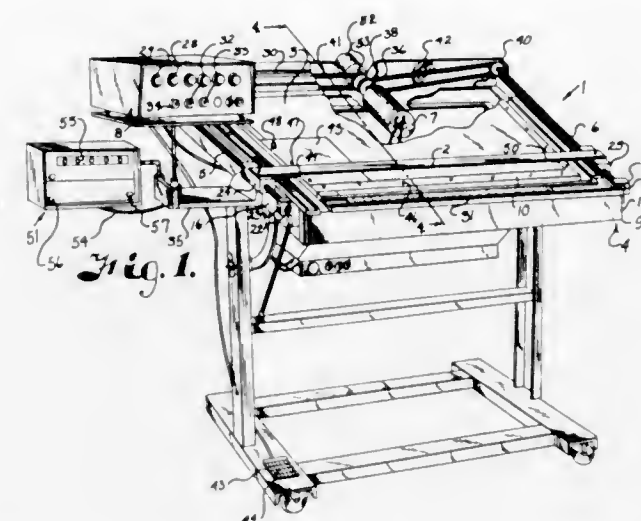
U.S. Cl. 33—80

5 Claims

An automatic line-up table structure having a rectangular table top and a straight edge member which is operable thereover. The straight edge member has guide members operable in ways adjacent opposite side edges of said table top and the straight edge member has members operatively connected to moving members at said opposite side edges operable by an impulse stepping motor whereby activation of the

motor moves the straight edge member. Controls for said motor include a micrometer indexing unit and circuitry therefor whereby the straight edge member is selectively

having a recess thereon for engaging the point of a drafting instrument, cross hairs for locating center points and magnifying means for magnifying an area under the body member. The tool may be temporarily held in place by an



moved in selected directions and in predetermined increments between accurate parallel positions for each impulse imparted to the motor.

3,719,998

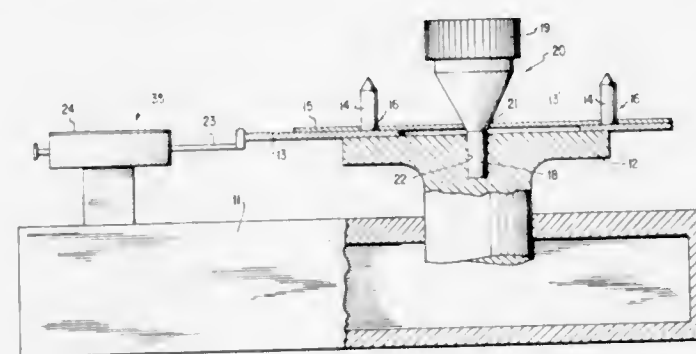
#### TARGET EVALUATION

Heinz Krausser and Alfred Krausser, Munich, Germany, assignors to Carl Edelmann G.m.b.H., Heidenheim (Brenz), Germany

Filed Feb. 27, 1970, Ser. No. 15,079  
Claims priority, application Germany, Feb. 28, 1969,  
P 19 10 345.8  
Int. Cl. G01b 5/14

U.S. Cl. 33—174 R

4 Claims



Apparatus for the exact evaluation of hits on a shooting target including a rotatably mounted holding plate for an annular support disc concentrically holding the target. A plug, which can be inserted into the shot hole, is mounted in a central bore of the holding plate and forms the axis of rotation of the support disc and the target. A measuring device is provided whose sensor contacts the circumference of the support disc to show the eccentricity of the shot hole. Also a method of and apparatus for printing targets and punching positioning holes simultaneously.

3,719,999

#### DRAFTING TOOL

Winston F. Harrington, 9808 Amanita Ave., Tujunga, Calif. 91042

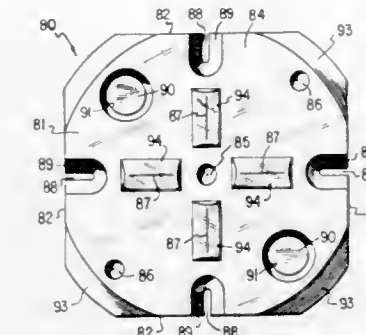
Continuation-in-part of application Ser. No. 2,835, Jan. 14, 1970. This application Jan. 20, 1971, Ser. No. 107,889

Int. Cl. B43I 7/00

U.S. Cl. 33—27 B

5 Claims

A drafting tool comprising a substantially transparent body member adapted to engage a drafting surface and



adhesive material or, alternatively, vacuum-forming means on the bottom thereof. One embodiment incorporates a removable center plug to permit different types of center plugs to be used.

3,720,000

#### TRAILER HITCH GUIDE ASSEMBLY

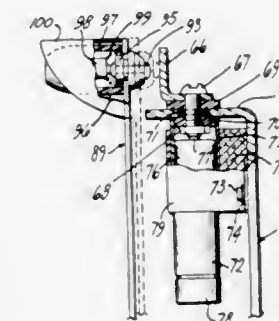
Fred Schlegel, Rural Route No. 1, Box 152(a), Ceresco, Mich.

Filed July 31, 1970, Ser. No. 60,067

Int. Cl. G01c 5/00

U.S. Cl. 33—264

7 Claims



A device is provided for assisting an operator in backing up a trailer towing vehicle to couple the ball hitch member mounted on the rear of the vehicle with the complementary socket hitch member mounted on the tongue of the trailer. The device comprises a guide having sighting means such as a ball at the end thereof adapted to be mounted on the towing vehicle and a second guide having target means at the end thereof adapted to be mounted on the tongue of the trailer. When both guides of the device are properly mounted and adjusted, the operator backs the towing vehicle toward the trailer while aiming the sighting ball at the target means. When the sighting ball engages the center of the target means, as indicated by a signal such as the lighting of an electric light bulb or the sound of a buzzer, the vehicle and the trailer are in proper alignment for coupling.

3,720,001

#### PLUMB BOB WITH INTERCHANGEABLE PARTS

Mieczyslaw Stanislaw Majewski, 102 East 7th Street, New York, N.Y.

Filed May 4, 1970, Ser. No. 34,255. The portion of the term of this patent subsequent to June 10, 1986, has been disclaimed.

Int. Cl. G01c 15/10

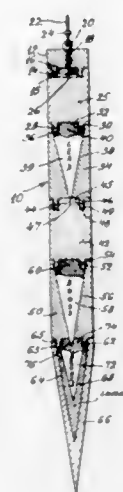
U.S. Cl. 33—392

2 Claims

A plumb bob assembly includes a hollow conical bob having a conical recess in which is a removable heavy conical insert.



The insert has a conical recess in which is a removable conical bob. One or more cylindrical sections are connected successively to the conical bob by detachably engaged threaded nip-



ples and recesses. One or more of the cylindrical members may have conical recesses containing removable other conical bobs. The bobs are of different sizes and different materials.

3,720,002

## DRYING SHEET MATERIAL

Patrick Douglas Martin, High Wycombe, England, assignor to Wiggins Teape Research & Development Limited, London, England

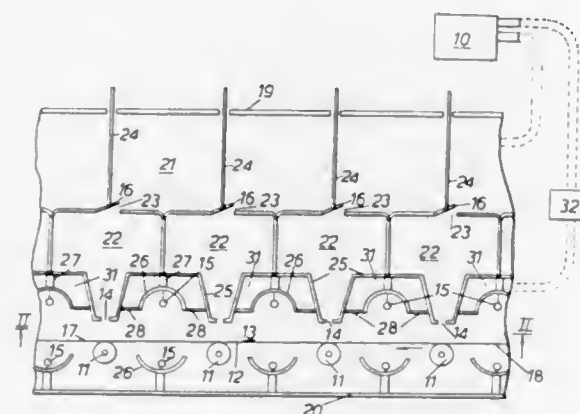
Filed March 3, 1971, Ser. No. 120,507

Claims priority, application Great Britain, March 19, 1970, 13,377/70

Int. Cl. F26b 7/00

U.S. Cl. 34—18

12 Claims



Sheet material to be dried is conveyed through a drying region where a combination of radiant heat and heated gas is directed towards the material. The proportion of radiant heat relative to the amount of heated gas is adjusted through the drying region so that a higher radiant heat/heated gas ratio is provided at the end of the path than at the beginning of the path.

3,720,003

## METHOD AND APPARATUS FOR THE DRYING OF GREEN CERAMIC AND OTHER MATERIALS

Erich Huthmann, Laggenbeck, Germany, assignor to Keller Ofenbau GmbH, Laggenbeck, Germany

Filed Feb. 10, 1971, Ser. No. 114,245

Claims priority, application Germany, Feb. 11, 1970, P 20 06 043.9

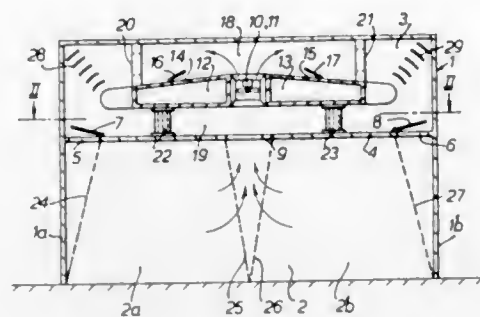
Int. Cl. F26b 21/06

U.S. Cl. 34—72

1 Claim

Apparatus for drying green ceramic articles such as high-voltage insulators, includes a drying chamber and an adjacent

chamber in which drying air is pre-treated to give a required temperature and humidity. Once the latter has been achieved



valves are opened, initially to a small extent, to admit the pre-treated air to the drying chamber.

3,720,004

## ROTARY DRIER FOR SLUDGE

Daiji Okawara, Shizuoka, Japan, assignor to Kabushiki Kaisha Okawara Seisakusho, Kando, Yoshidacho, Haibara-gun, Shizuoka-ken, Japan

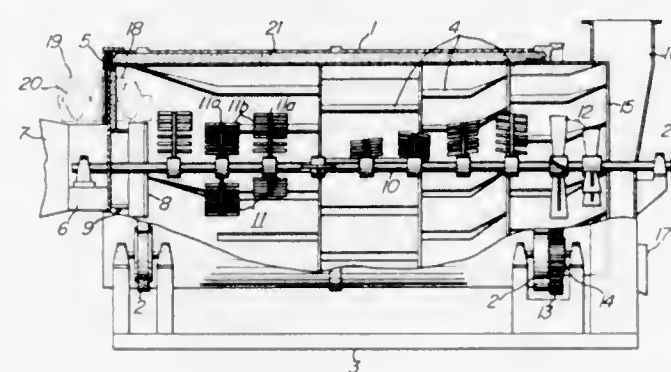
Filed Nov. 30, 1971, Ser. No. 203,264

Claims priority, application Japan, Oct. 15, 1971, 46/81503

Int. Cl. F23b 1/32; F23g 5/06

U.S. Cl. 34—130

4 Claims



In a rotary drier for drying sludge by drying gas within a drum during travel of said sludge from one end to the other end of said drum, a deflector is provided in the proximity of a drying gas inlet to deflect the flow direction of drying gas so that the drying gas may flow evenly within the drum, and further stirring members and blade members are mounted on a rotary shaft extending through the drum so that the sludge charged into the drum may be broken and stirred and the drying gas may be caused to swirl to form turbulent flows by said stirring members and the velocity of the drying gas flowing toward an outlet of the drum may be lowered and the concentration of the sludge particles residing in the drum may be increased by said blade members.

3,720,005

## AUDIO-VISUAL SYSTEM

John L. Roche, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 12, 1971, Ser. No. 114,834

Int. Cl. G09b 3/06

U.S. Cl. 35—8 A

26 Claims

An audio-visual system for presenting correlated audio and visual information comprising a thin audio-visual record medium and an audio-visual presentation apparatus. The audio-visual record medium comprises an audio record including in a predetermined sequence a plurality of sound tracks containing recorded audio information, with each sound track having a beginning at a given position near the periphery of the audio record and with the sound track beginnings distributed at predetermined intervals; and a visual record including a plu-

ality of spaced visual display areas containing projectable visual information correlated with the information recorded in the sound tracks, which visual display areas are positioned in a predetermined sequence corresponding to the predetermined sequence of sound tracks. The visual display areas further include a given number of projectable predetermined response choices and a like number of projectable predetermined programs individually relating a predetermined response choice to the subsequent presentation of a correlated visual display area and sound track combination. The audio-visual presentation apparatus comprises means for receiving the audio-visual record medium, audio reproducing means, a viewing screen,

denoting different answers, a platen locatable behind the sheet and bearing a plurality of separate electrically conductive areas registrable with the sheet demarked areas, a probe in circuit with the conductive areas and connectable to an electric energy source, and a multivibrator for applying to the conductive areas at will periodically time-varying signals separable to a receiver T1 and capable of causing from the conductive areas radiation of corresponding electromagnetic waves capable of being sensed in front of the sheet by the probe touching the sheet, the receiver T1 being coupled to the probe to identify the wave picked up thereby and actuating indicating means indicating the correctness of the selected answer.

3,720,007

## VISUAL DISPLAY SIMULATOR

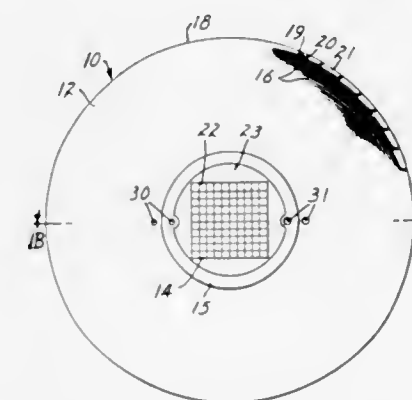
John C. McKechnie, Maitland, and Paul D. Grimmer, Winter Park, both of Fla., assignors to The United States of America as represented by the Secretary of the Navy

Filed Jan. 4, 1971, Ser. No. 103,462

Int. Cl. G09b 9/08; B64g 7/00

U.S. Cl. 35—12 N

3 Claims



projection means, and positioning means for relatively positioning the audio reproducing means and the audio record for enabling the audio reproducing means to engage the beginning of any of the sound tracks and for relatively positioning the projection means and the visual record for enabling projection onto the viewing screen of an image of visual information from any of the visual display areas. The positioning means are controlled by control means in accordance with a projectable predetermined program sensed in response to the operation of selection means to select one of the given number of response choices projected onto the viewing screen.

3,720,006

## TEACHING APPARATUS

Frank Boram, Esher, and Denis Harold Kail, Banstead, both of England, assignors to Gerald Barry Stillit, London, England

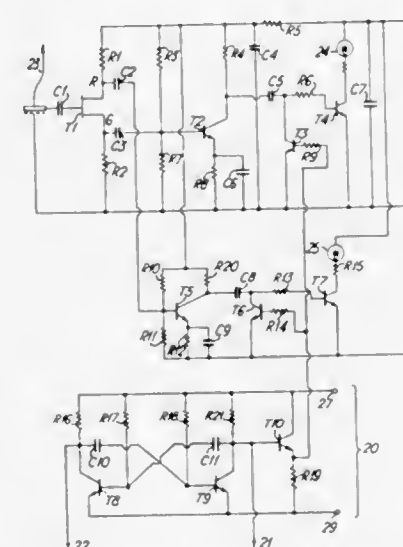
Filed Jan. 19, 1971, Ser. No. 107,715

Claims priority, application Great Britain, Jan. 28, 1970, 4,113/70

Int. Cl. G09b 7/06

U.S. Cl. 35—9 C

5 Claims



A teaching apparatus comprising a printed sheet carrying questions and for each question a number of demarked areas

A visual display simulator is described wherein a scene is viewed by a pinhole lens element which casts images of the scene on a fiber-optic bundle for transmittal to a T.V. camera tube unit of a closed circuit T.V. having a display unit viewable by a trainee. The pinhole lens element is positionable by a roll, pitch, and yaw drive means about three orthogonal axes intersecting at the pinhole, and is also positionable in translation by other drive means.

3,720,008

## COMPACT DEVICE FOR THE MULTIDIMENSIONAL PRESENTATION OF QUALITATIVE AND QUANTITATIVE DATA

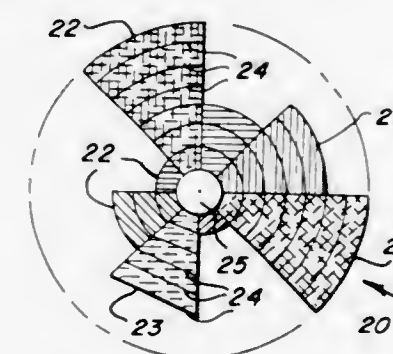
Laddie F. Hutar, 3800 Lake Shore Drive, Chicago, Ill.

Filed Nov. 22, 1971, Ser. No. 200,997

Int. Cl. G09b 19/18

U.S. Cl. 35—24 R

10 Claims



To cope with the "explosion" of qualitative and quantitative information available today and to present it in a comprehen-



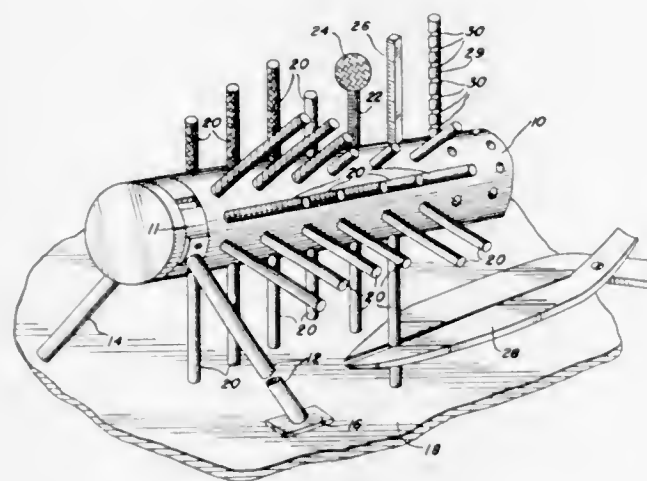
sive and usable form for a plurality of time periods, a compact multidimensional device is provided comprising a plurality of multisegmentable discs and means for assembling said discs coaxially in juxtaposed parallel relationship. The segments of each disc are distinguishable appearance-wise from each other, such as by a color coding, so as to qualitatively distinguish data. The pattern of visually distinguishable appearance is common to all the discs with like segments of successive discs being in longitudinal axial alignment, whereby each disc may represent a finite time period. The radial size of each segment is adjustable so as to be quantitatively correlatable with the data. Particular embodiments have additional elements or features which increase the versatility and data handling capacity of the device.

**3,720,009**  
**DEVICE FOR THE MULTIDIMENSIONAL PRESENTATION OF QUALITATIVE AND QUANTITATIVE DATA**

Laddie F. Hutar, 3800 Lake Shore Drive, Chicago, Ill.  
Filed Nov. 22, 1971, Ser. No. 201,073  
Int. Cl. G09b 19/18

U.S. Cl. 35—24 R

22 Claims



To cope with the "explosion" of qualitative and quantitative information available today and to present it in a comprehensive and usable form for a plurality of time periods, a multidimensional device is provided comprising an elongated hub means; a support means for rotatably mounting the hub means; and a multiplicity of projections supported by said hub means. The projections are arranged in a plurality of juxtaposed parallel planes along the hub means. The projections in each plane are distinguishable appearance-wise from each other, such as by a color coding, so as to qualitatively distinguish data. The pattern of distinguishable appearance is common to all the planes with like projections in successive parallel planes being in longitudinal alignment, whereby each plane may represent a finite time period. The length of each of the projections is adjustable so as to be quantitatively correlatable with the data. Particular embodiments have additional elements or features which increase the versatility and data handling capacity or render the device automatically adjustable by, for example, computer control.

**3,720,010**  
**SNOWPLOW WING**

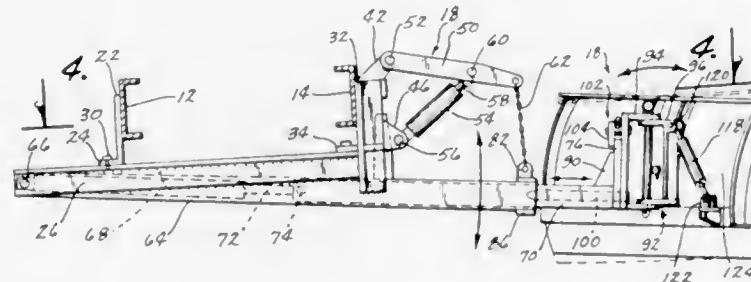
Frank D. Coates, Corydon, Iowa, assignor to Coates Manufacturing Co., Corydon, Iowa  
Filed Aug. 25, 1970, Ser. No. 66,691  
Int. Cl. E01h 5/06; E02f 3/86

U.S. Cl. 37—42 R

6 Claims

A snowplow wing for use on a truck which may be moved from a non-operative position adjacent the truck

to an operative position laterally of the truck. A first support means is secured to the truck frame rearwardly of the cab and has the inner end of a first tube pivotally secured thereto. A second tube is slidably mounted in the outer end of the first tube by means of a first hydraulic cylinder mounted in the first tube. A second hydraulic cylinder is connected to the outer end of the first tube for pivotally raising and lowering the outer end of the tubes. A mounting bracket is secured to the outer end of the second tube and is adapted to be detachably connected to



a pivot bracket assembly secured to the rearward side of the moldboard. A third hydraulic cylinder is connected to and extends between the moldboard and pivot bracket assembly for pivotally moving the moldboard about a horizontal axis intermediate the length thereof. A stabilizer rod extends between the moldboard and first tube which causes the moldboard to be pivoted about a vertical axis as the first hydraulic cylinder is operated. The moldboard automatically folds or moves to a position adjacent the truck as the first hydraulic cylinder slidably moves the second tube into the first tube.

**ERRATUM**

For Class 40—104.18 sec:  
Patent No. 3,720,130

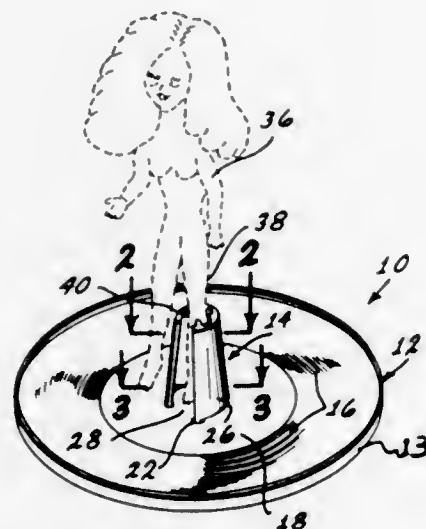
**3,720,011**  
**FIGURE TOY STAND AND PHONOGRAPH RECORD COMBINATION**

Richard L. May, Manhattan Beach, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Dec. 2, 1970, Ser. No. 94,354  
Int. Cl. G09f 27/00

U.S. Cl. 40—28.2

7 Claims



A doll stand having a phonograph record for a base and a doll-leg-engaging member connected to the base so that a doll may be mounted on the doll stand and rotated during playing of the record on a phonograph turntable. The doll-leg-engag-

ing member may be connected to either side of the record so that both sides may be played with the doll in position thereon. chain and in frictional engagement with the chamber of the firearm, a bead chain for insertion through the barrel of the

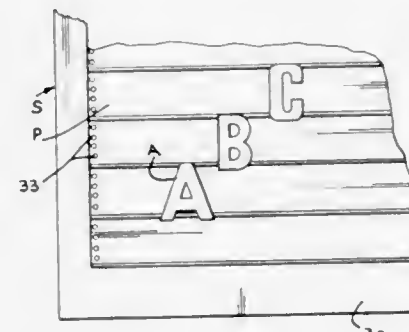
**3,720,012**  
**SIGNBOARD CONSTRUCTION**

Robert J. Loper, Pasadena, Tex., assignor to Trail-R-Signs, Pasadena, Tex.

Filed Oct. 1, 1970, Ser. No. 77,054  
Int. Cl. G09f 7/02

U.S. Cl. 40—140

2 Claims

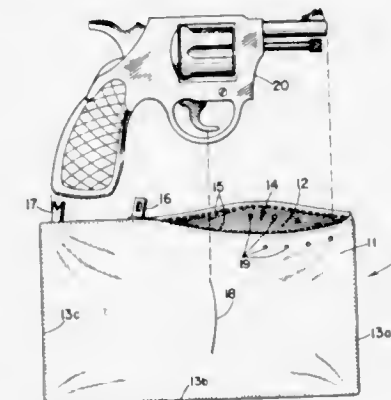


The specification discloses a signboard construction comprising a plurality of longitudinally extending, interlocking face pieces adapted to be secured to a supporting frame with means formed on the opposite edges of such interlocking pieces forming longitudinally extending rails adjacent to the opposite edges of such interlocking pieces for supporting a plurality of letters or figures on such signboard.

**3,720,013**  
**HANDGUN CONCEALING POUCH**  
Hugh C. McDonald, Santa Monica, Calif. 90291  
(8200 Redlands St., 308, Playa del Rey, Calif. 90291)  
Filed Apr. 23, 1971, Ser. No. 136,954  
Int. Cl. F41c 9/00, 27/00

U.S. Cl. 42—1 R

6 Claims



A pouch includes a slit formed in a central side portion through which a person may pass his trigger finger to fire a handgun concealed in the pouch.

**3,720,014**  
**REMOVABLE SAFETY DEVICE FOR DISABLING FIREARMS**

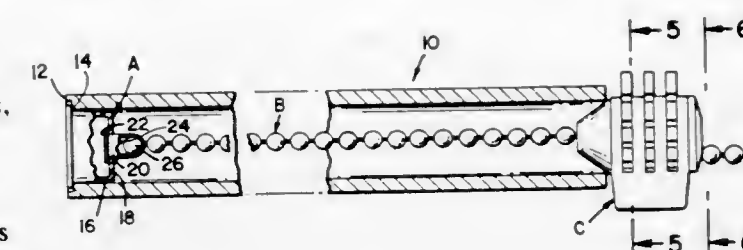
Robert S. Goodrich, El Segundo, Calif., assignor to James Kalfsbeck and Peter Kalfsbeck, College City, Calif.

Filed March 11, 1971, Ser. No. 123,345  
Int. Cl. F41c 27/00, 27/08

U.S. Cl. 42—1 N

6 Claims

A universal safety device for preventing the loading of firearms, including a plug adapted to be secured to a bead



firearm and having a length in excess of the length thereof and a locking mechanism for engaging the bead chain at a location wherein the mechanism will block the end of the barrel.

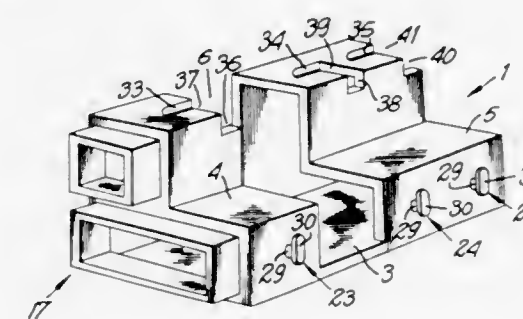
**3,720,015**  
**COMBINED BOX AND CONSTRUCTION ELEMENT WITH CONNECTING MEANS CONNECTABLE FROM TWO DIRECTIONS**

Germaine Van der Veken, Vryheidslaan 171, Brussels, Belgium

Filed Dec. 22, 1970, Ser. No. 100,664  
Claims priority, application Belgium, Aug. 26, 1970, 50404  
Int. Cl. A63h 33/08

U.S. Cl. 46—11

3 Claims



The invention pertains to a novel packing element which, after its primary use, can be combined with similar elements, to form a toy construction set.

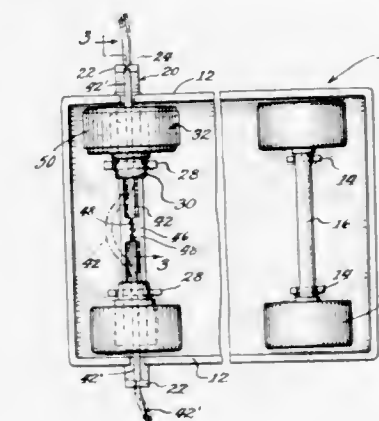
**3,720,016**  
**TOY HAVING SLOTTED AXLE AND ELASTIC STRIP DRIVE MEANS LATERALLY INSERTABLE THERE THROUGH**

Sam Kupperman, and Dennis I. Kupperman, both of 4319 Main St., Skokie, Ill.

Filed Aug. 18, 1971, Ser. No. 172,840  
Int. Cl. A63h 17/00

U.S. Cl. 46—206

6 Claims



A power unit for operating a toy or the like which comprises a pair of wheels supported on a longitudinally slotted tubular

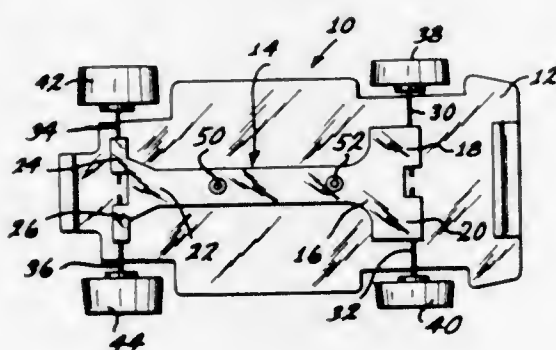


member, with the wheels fixedly secured to the tubular member to rotate therewith, an elastic strip or rubber band extending through said tubular member and being anchored inside said tubular member to prevent rotation of said strip relative to said tubular member at said anchoring point, and a toy body or housing to which said tubular member and wheels are rotatably secured, with said toy body or housing having means to which the opposite ends of the strip or rubber band are anchored to prevent rotation of said strip or rubber band at said opposite end anchoring points during the winding and unwinding of said rubber strip. The unwinding of said strip causes the toy to be propelled.

**3,720,017**  
**CHASSIS FOR A MINIATURE TOY VEHICLE**  
Levati Ersilio, Vimercate, Italy, assignor to  
Mattel, S.p.A., Milan, Italy  
Filed Feb. 3, 1971, Ser. No. 112,196  
Claims priority, application Italy, Feb. 3, 1970,  
20,160/70, 20,719/70  
Int. Cl. A63h 17/26

U.S. Cl. 46-221

3 Claims



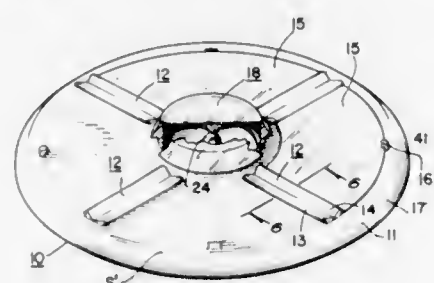
A chassis for a toy vehicle including a metal support plate and a strip of resilient material having generally U-shaped longitudinal end portions. Embedded within each leg of the U-shaped end portions is a separate small diameter wire axle which in turn is connected to a wheel to provide a freely rotatable wheel system so as to minimize friction upon moving to provide a flexible suspension to insure against breakage of the small diameter wire axles and to further realistically simulate an independent four wheel suspension found in full-size vehicles.

**3,720,018**  
**LIGHTED DISK-TYPE FLIGHT TOY AND COMPONENTS THEREOF**  
Harry L. Peterson, 504 North Second East, Bountiful, and Alfred L. Fellows, 2457 Wilson Avenue, Salt Lake City, both of Utah

Filed March 25, 1971, Ser. No. 127,885  
Int. Cl. A63h 33/26

U.S. Cl. 46-228

2 Claims



A disk shaped flight toy which is illuminated for night flying. An included dome, with the rest of the toy, simulates artists' conceptions of flying saucers. The dome encases suitable light means that can be selectively activated so that the object can be illuminated as desired for night flying, retrieval, and so

forth. Rays from the central light object of the toy are deflected outwardly and radially so illuminate either the material of the toy itself, internally, or to reflect light from one or both opposite surfaces thereof.

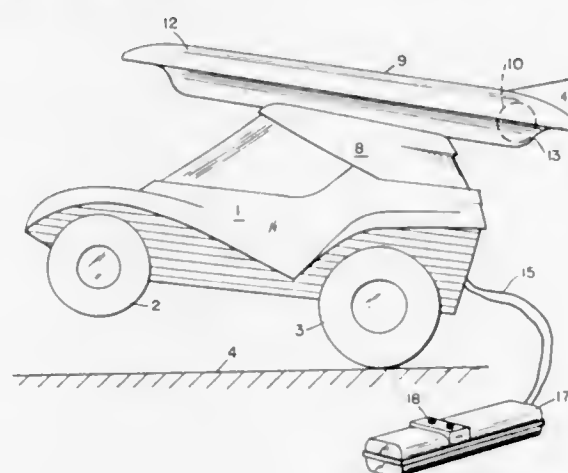
**3,720,019**  
**REMOTE CONTROLLED BUCKING TOY VEHICLE**

Peter J. Waznys, Richmond Hill, and Philip D. Bart, Monsey, N.Y., assignors to Remco Industries, Inc., Harrison, N.J.

Continuation of application Ser. No. 882,111, Dec. 4, 1969. This application Dec. 10, 1971, Ser. No. 206,786  
Int. Cl. A63h 29/08, 29/22

U.S. Cl. 46-244 A

8 Claims



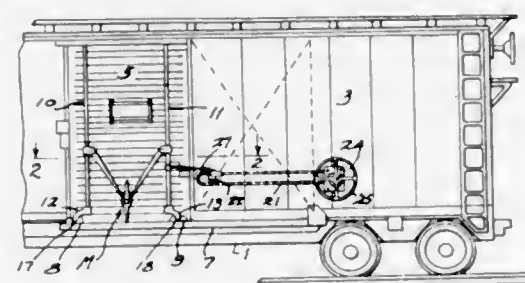
A toy vehicle is provided capable of bucking and turning motions, having a gyrating effect, controlled by a simple remote reversing switch, the vehicle itself being designed to resemble a dune buggy with a surfboard on top. The vehicle includes means for temporarily shifting the center of gravity to a position behind the rear wheels when forward motion is started, so the front wheels lift off the ground momentarily. This shifting of the center of gravity is caused by the rolling from a forward position to a rearward position of a small weighted ball within the surfboard as the car accelerates. Torque in the rear wheels then causes the front wheels to rise. The front wheels of the vehicle normally point in the forward direction but, through a linkage, turn to the side when the direction of motion of the vehicle is reversed. Thus, when moving forward, the vehicle's front wheels momentarily leap into the air; and, in one reverse motion, the whole vehicle turns.

**3,720,020**  
**PLUG DOOR CONTROL MECHANISM**  
Luther L. Bollinger, Sr., Reading, Pa., assignor to Hennessy Products, Incorporated, Chambersburg, Pa.

Filed Sept. 9, 1971, Ser. No. 179,001  
Int. Cl. E05f 11/54; E05d 15/10

U.S. Cl. 49-362

6 Claims



Mechanism mounted on a railroad house car, side wall, for sliding a plug door lengthwise of the car in combination with a

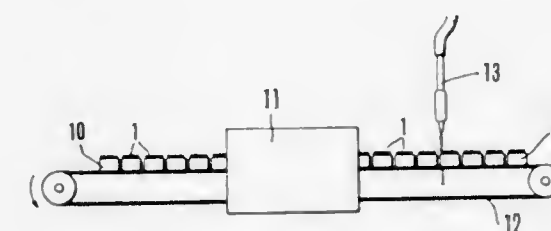
device mounted on the car wall for shifting the door transversely of an opening in the wall, there being means whereby the thrust of the door sliding mechanism is maintained in a direction parallel to the wall irrespective of the transverse shifting of the door relative to the wall.

**3,720,021**  
**METHOD FOR REMOVING CUTTING AND GRINDING BURRS FROM MACHINED INJECTION NEEDLE TUBES**  
Shoji Wada, 4-11, Katase-Kaigan, 1-chome, Fujisawa-shi, Kanagawa-ken, Japan

Filed Dec. 22, 1970, Ser. No. 100,717  
Int. Cl. B24c 1/00

U.S. Cl. 51-281 R

3 Claims



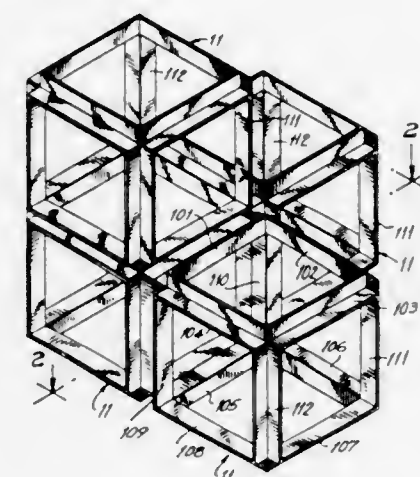
A method is provided for removing the cutting and grinding burrs sticking to or generated at the cut or ground tips of injection needle tubes. A high pressure water stream is sprayed over injection needle tubes cut to a specified length or ground at one end. The needle tubes are held upright closely adjacent to one another within a water-draining basket stretched at the bottom with a metal wire-net or the like, and the basket is put on a metal wire net conveyor continuously moving at a slow rate.

**3,720,022**  
**BUILDING CONSTRUCTION**  
Richard Dattner, 881 Seventh Ave., Room 605, New York, N.Y.

Filed Dec. 4, 1970, Ser. No. 94,326  
Int. Cl. E04h 11/12, 9/06

U.S. Cl. 52-79

2 Claims



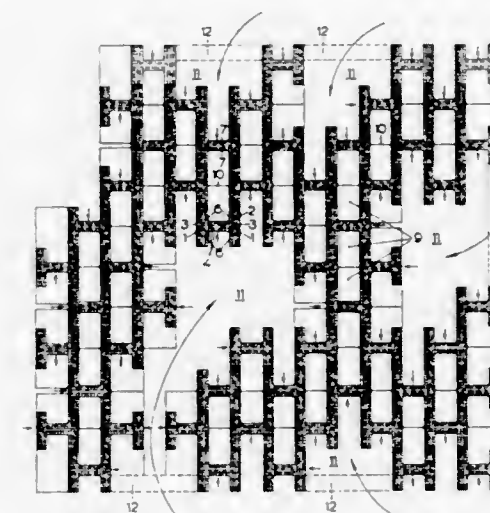
A building construction in which a basic unit of twelve elements is fabricated into a rectangular parallelepiped to define a structurally rigid module requiring no additional structural members. A plurality of modules in the form of rectangular parallelepipeds can be assembled together in side-by-side and/or stacked relationship to form a building of substantially any desired size. Each of the twelve elements of each module has at least two legs joining the legs of adjacent elements at right angles to form a closed parallelepiped.

**3,720,023**  
**COMPLEX OF PATIO HOUSES**  
Adriaan Stoop, Sarenburgerweg 1A, Bloemendaal, Netherlands

Filed Aug. 25, 1971, Ser. No. 174,648  
Int. Cl. E04h 1/02; E04b 1/348

U.S. Cl. 52-169

9 Claims



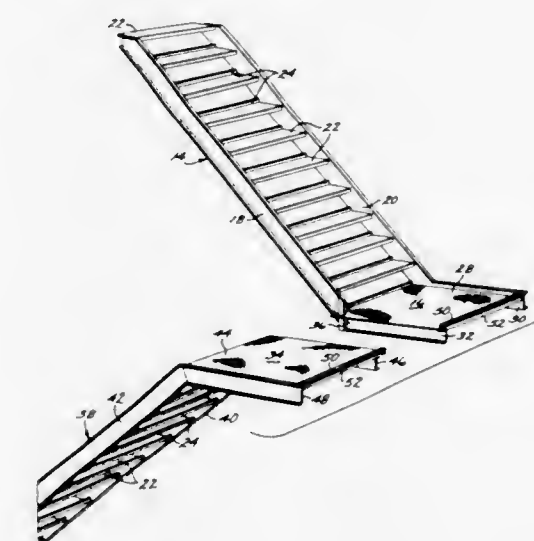
A complex of patio houses each having two mutually parallel wings and an interconnecting part perpendicular to said wings, and having an H- or h-shaped outer circumference. The houses of the complex are arranged in such a way, that the wings of any two adjacent houses always lie on one line whereas the interconnecting parts of these houses lie on opposite sides of this line. In this manner each house has at least one patio which is partially bounded by the wings of adjacent houses.

**3,720,024**  
**PREFABRICATED STACKABLE STAIR UNIT**  
John W. Theisen, 3437 Tulane Avenue, Long Beach, Calif.

Filed Oct. 19, 1970, Ser. No. 81,727  
Int. Cl. E04f 11/02

U.S. Cl. 52-185

1 Claim



A prefabricated stackable stair unit comprising a stair flight integrally attached to a half landing having a width approximating that of the stair flight. A second stair flight with a similar half landing, but attached to its opposite extremity, can be assembled in abutting relation to the first half landing to provide a full landing. The outer stringer and adjacent outer portion of the half landing are welded together, while the inner stringer and corresponding inner portion of the half landing are secured together by a member of substantial structural strength to thereby provide load transfer.



3,720,025

## CURTAIN WALL SYSTEM WITH VENTS

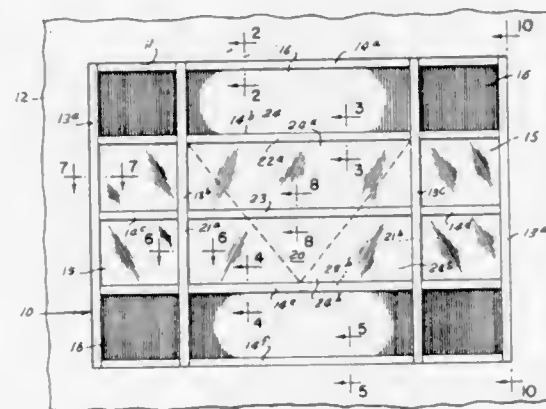
Ellis V. Eichman, 790 Fruitdale Road, Brownsville, Tex.

Filed March 5, 1971, Ser. No. 121,277

Int. Cl. E04b 2/88

U.S. Cl. 52—204

9 Claims



A curtain wall structure includes common extruded aluminum members which are assembled to form narrow profile vertical and horizontal mullions defining bay frames for supporting panels of glass or other structural panels. Frames for casement operating windows or vents are formed from similar extruded aluminum members, with the vent frames interfitting with the bay frames to maintain the narrow profile appearance of the curtain wall mullions. The common framing members are L-shaped in cross section defining side walls and face walls, with the face walls providing the narrow profile appearance; and are configured so that two framing members interfit with each other to maintain the narrow profile appearance. The framing members include longitudinal grooves which define panel supporting channels in the bay frames, or which retain longitudinal stops defining alternative panel supporting channels.

3,720,026  
PARTITION

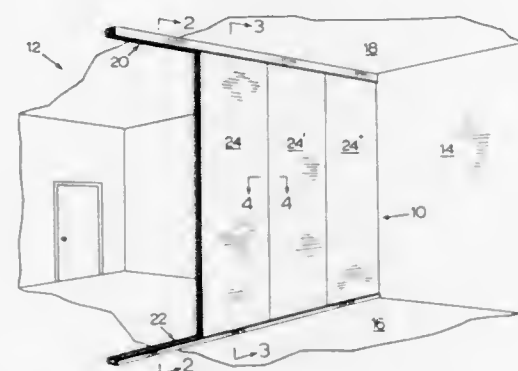
Otto Ferdinand Gasteiger, R.R. No. 1, Cedar Valley, Ontario, Canada

Filed June 23, 1970, Ser. No. 49,147

Int. Cl. E04h 1/00, 3/00, 5/00

U.S. Cl. 52—241

3 Claims



A demountable partition for dividing a large room into smaller units and including a ceiling channel and a floor channel arranged in parallel and in vertical alignment. Wall panels are adapted to engage in the channels and spring means in the ceiling channel applies a downward force on the panels and floor channel. A trim strip is housed in the ceiling channel to distribute the spring load more evenly on the panel and improve the appearance of the ceiling channel when the panels are removed.

3,720,027

## FLOOR STRUCTURE

Poul Sondergaard Christensen, Ronde, Denmark, assignor to Bruun &amp; Sorensen A/S, Aaboulevarden, Aarhus, Denmark

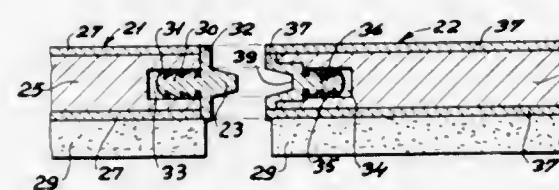
Filed Feb. 22, 1971, Ser. No. 117,674

Claims priority, application Denmark, Feb. 20, 1970, 835

Int. Cl. E04f 15/06

U.S. Cl. 52—309

5 Claims



A floor structure for covering an ice rink and comprising elements adapted to be joined together by means of a key and tongue, characterized in that it comprises elements each of which has a wooden core and is covered on all sides by a vapor-tight material, preferably plastics.

3,720,028

## SANDWICH-PANEL BUILDING CONSTRUCTION

Lajos Garay and Gabor Urban, Budapest, Andras Romhanyi, Jaszbereny, and Laszlo Sisa, Budapest, Hungary, assignors to Hutogepgyar, Jaszbereny, and Epitestudomanyl Intezet, Budapest, Hungary

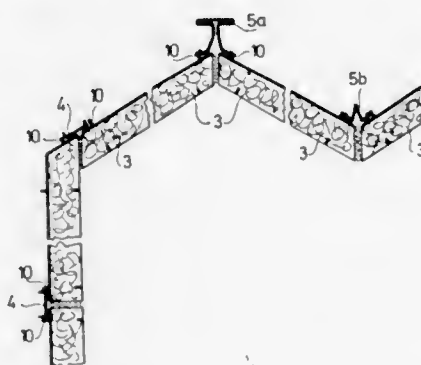
Filed Oct. 8, 1970, Ser. No. 79,173

Claims priority, application Hungary, Oct. 17, 1969, CA-979

Int. Cl. E04b 2/08

U.S. Cl. 52—284

4 Claims



A building is constructed of elongated sandwich panels without framework, by disposing the sandwich panels upright for the front and rear walls of the building and horizontal for the side walls of the building and horizontal for the roof. The roof can be a series of inverted V's. The panels are connected by overlapping connectors secured on the outer side of their outer skins, and to this end are provided with special ribs and overhanging edge portions to which the connectors are secured.

3,720,029

## FLOORING SECTION AND COMPOSITE FLOOR UTILIZING THE SAME

Bernard E. Curran, Sewickley, Pa., assignor to H. H. Robertson Company, Pittsburgh, Pa.

Filed July 2, 1970, Ser. No. 51,940

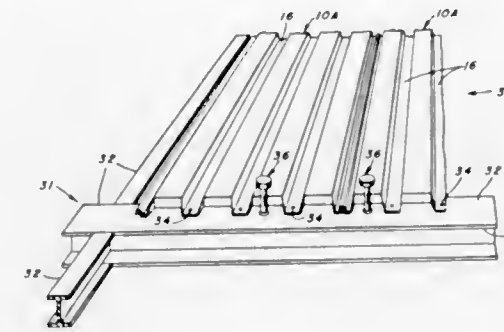
Int. Cl. E04b 1/24

U.S. Cl. 52—334

1 Claim

A building floor structure having flooring sections assembled in side-by-side connected relation above the horizontal beams of a building structure. Each flooring section is corrugated and has opposite transverse ends overlying the horizontal beam. Closure means at the opposite ends of the corruga-

tions, expose upper surface portions of the horizontal beam. At least one shear transfer element is secured directly to the horizontal beam at one of the upper surface portions and is



positioned to connect a subsequently poured layer of concrete to the horizontal beam and achieve composite beam construction.

3,720,030

## METHOD AND APPARATUS FOR ATTACHING A MOLDING BETWEEN THE FRAME OF A VEHICLE AND AN EXPOSED EDGE OF A WINDOW PANE INSTALLED IN THE FRAME

Otto Krodol, Sindelfingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Unterturkheim, Germany

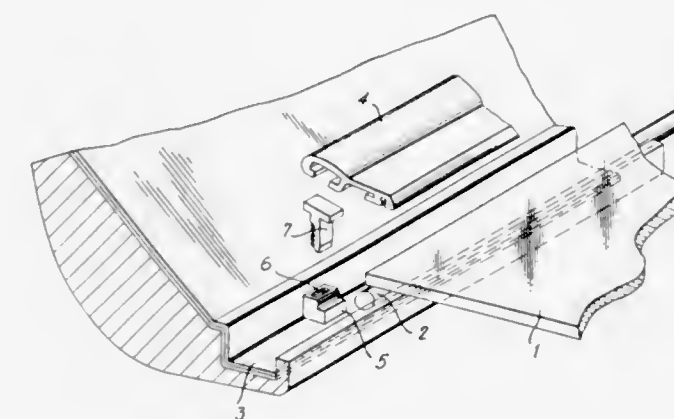
Filed Mar. 5, 1971, Ser. No. 121,396

Claims priority, application Germany, Mar. 6, 1970, P 20 10 564.0

Int. Cl. E04f 19/02; E04c 2/02

U.S. Cl. 52—400

7 Claims



A molding strip is mounted in the space between the exposed edge of a window pane and a frame in which the pane is installed by means of a retainer constituted of two parts which are interengaged by pushing one into the other. A first part is attached to the molding strip and has a projecting stem and a second part of L shape is mounted on the frame with one leg inserted beneath the pane, the other leg having a recess into which the stem is pushed. The stem is provided with projections to insure gripping in the recess.

3,720,031

## STRUCTURAL SURFACE COVERING AND METHOD OF MAKING A COVER ELEMENT THEREFOR

Robert J. Wilson, 1076 W. San Bruno, and Robert W. Naden, 39880 Avenue 7 1/2, both of Fresno, Calif.

Continuation-in-part of Ser. No. 817,607, March 24, 1969, abandoned. This application Dec. 14, 1970, Ser. No. 97,773

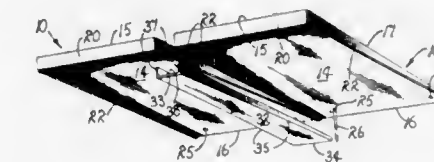
Int. Cl. E04d 3/362

U.S. Cl. 52—520

3 Claims

A structural surface covering means for a wall or roof of a building or the like and method of making a cover element

used in said covering means, said covering means including a plurality of tapered flanged panels or outer metal shingle-like cover elements disposed in side-by-side relation and in overlapping rows or courses upon a surface, said outer cover elements defining a plurality of tapered slots therebetween, the covering means also including a plurality of tapered flanged



spacer flashing strips underlying and interlockably connecting the flanges on the adjacent outer cover elements in masking relation to the slots to provide a relatively lightweight, virtually leak-proof, fireproof metal structural covering requiring fewer construction components than a comparable wooden shingle or shake covering.

3,720,032

## LIGHT WEIGHT PANEL CONSTRUCTION

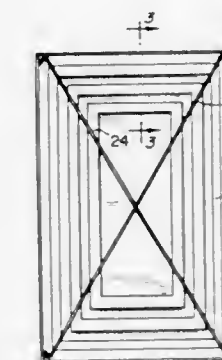
James D. Harman, R.D. 1, Hegins, Pa. 17928

Filed Aug. 17, 1970, Ser. No. 64,416

Int. Cl. E04c 2/32; E06b 3/70

U.S. Cl. 52—618

8 Claims



A light weight rigid panel construction including a plastic core member having a plurality of concentric corrugations, rigid frame means positioned in the outermost of the corrugations, tensioning means connecting diagonally opposite corners of the core member, and cover means on each face of the core member.

3,720,033

## ROOF BUILDING ELEMENT AND METHOD OF MAKING A ROOF

Johannes Balfour Van Burleigh, Ede, Netherlands, assignor to Cornelia Breas and Margo Charlotte Breas, both of Ede, Netherlands, part interest to each

Filed Aug. 13, 1970, Ser. No. 63,515

Claims priority, application Netherlands, Aug. 16, 1969, 12507/69

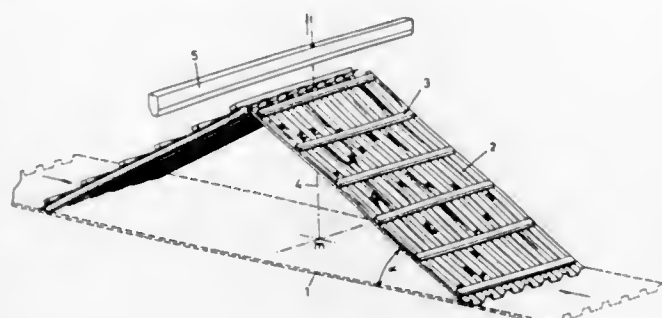
Int. Cl. E04d 3/30

3 Claims

A roof is made by means of a building element in the form of sheet piling having a narrow weakened central zone trans-



verse to its longitudinal direction, by which the panel is hoisted from, and attached to, the ridge beam, the panel



thereby being automatically bent to form a gable roof section by gravity. The cross-sectional contour of the panel provides channels for insulation and ventilation.

After the superstructure columns have been raised to their final positions with the second, third, fourth, fifth, sixth floor slabs and the roof slab permanently secured at their selected vertical heights thereon, the said superstructure columns are fixed in a supported relationship on the superstructure footings. The spaces between the superstructure columns and the apertures provided therefor in the superstructure footings are grouted and a reinforced concrete basement floor slab is poured and finished in a conventional manner at said selected basement floor level.

**3,720,035**  
**PACKAGES FOR SHEET MATERIAL**  
Peter William Rutter, Ilford, England, assignor to Ilford Limited, Ilford, Essex, England  
Continuation-in-part of application Ser. No. 775,289, Nov. 11, 1968. This application June 26, 1970, Ser. No. 50,099

Claims priority, application Great Britain, June 26, 1969, 32,424/69

Int. Cl. B65b 13/02, 25/14

U.S. Cl. 53—3

7 Claims

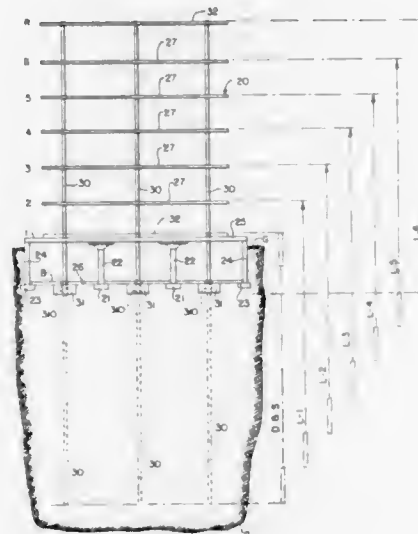
**3,720,034**  
**METHODS FOR CONSTRUCTING MULTI-STORY STRUCTURES**  
Fred M. Dawley, 200 Country Club, Camelot, Apts., Largo, Fla.

Filed March 10, 1971, Ser. No. 122,778

Int. Cl. E04g 21/14

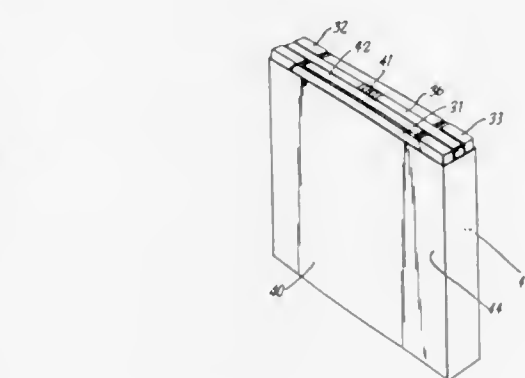
U.S. Cl. 52—742

11 Claims



The method of building multi-story structures comprising storing superstructure columns vertically in the ground with the tops thereof disposed at a selected distance above a selected first floor level, providing a footing for each superstructure column at a selected distance below a selected basement floor level centrally apertured to accommodate said columns freely therethrough. Each said superstructure column is of a sufficient length ultimately to extend from the bottom of said footing to a small distance above the roof level of the completed structure. A conventional first floor slab is constructed at said selected first floor level supported on conventional basement columns, basement walls and footings spaced uniformly from said superstructure columns and footings.

Reinforced concrete roof and floor slabs are then sequentially constructed in removable relationship on forms provided therefor on said conventional first floor slab including supporting and permanently fixing each said roof and floor slab on said superstructure columns in advance of raising the same, sequentially raising said superstructure columns in unison the desired designed distance between the roof and each of the floors therebelow after said roof slab and each said floor slab therebelow has been constructed in removable relationship on said forms and permanently supported on and fixed to said superstructure columns.



This application describes a method of packing a stack of flexible sheet material which comprises the steps of positioning four corner pieces made of a relatively strong material so as to embrace each of the four corners of stack to form a substantially tight fit thereon, placing a length of strapping material so that it passes around each of the positioned corner pieces, applying tension to the length of strapping material so causing the corner pieces to pull into close contact with the stack of flexible sheet material and then joining the length of strapping material to form a tension band around the pack, there being applied to the stack two sheets of rigid material on the opposite faces of the stack, as a step preceding the application of tension to the strapping material, said sheets of rigid material serving to disable the stack from flexing.

**3,720,036**  
**METHOD FOR AUTOMATICALLY ATTACHING A HANDLE TO BAGS**  
William A. Armstrong, Brookpark, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 21, 1970, Ser. No. 99,781

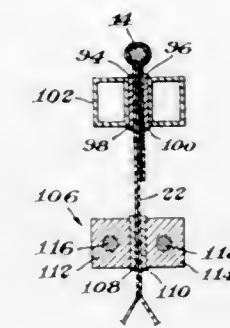
Int. Cl. B65b 61/14

U.S. Cl. 53—14

5 Claims

Method and apparatus for affixing a stiffening member such as a wooden or plastic rod across the top end of a filled or unfilled bag element to provide a handle therefor that uniformly distributes the carrying load across the width of the bag. In one form of the invention, for example, a plastic bag and a rod of discreet length are moved together through a folding tunnel where the top portion of the bag is automatically folded over to encapsulate the rod. The folded over portion is then secured circumferentially about the rod by heat welding. A

second weld is formed beneath the first weld, and hand or finger-size cutouts are punched or otherwise located in the region between the two welds. The cutouts cooperatively with



the rod form a carrying handle of the above-noted quality. A step of strategically heating the film to tightly shrink the same about the encapsulated rod is additionally disclosed.

**3,720,037**  
**METHOD AND APPARATUS FOR PACKAGING MEDICATED GAUZE PADS**  
Edward W. Jones, Brigantine, N.J., assignor to Pioneer Laboratories, Inc., Pleasantville, N.J.

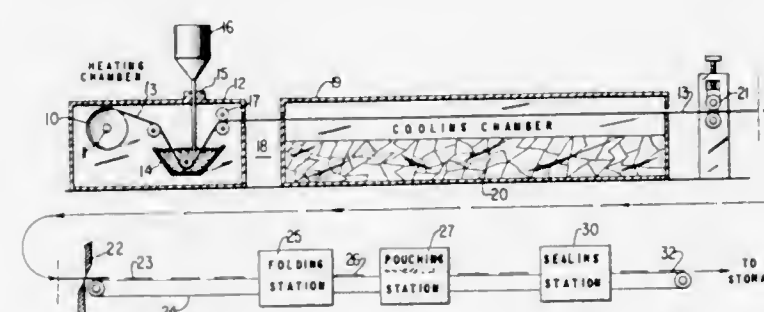
Continuation of Ser. No. 886,995, Dec. 22, 1969, abandoned.

This application Nov. 18, 1971, Ser. No. 200,139

Int. Cl. B65b 55/14

U.S. Cl. 53—21 FC

8 Claims



A supply roll of gauze or similar material in the form of a continuous web is enclosed within a heated chamber and passed through medication in viscous form so as to place it on the moving web within the heating chamber. The medication is distributed throughout the gauze so as to impregnate the gauze and the gauze web is then moved through a cooling chamber to solidify the medication. The medication impregnated web is then cut into sections of a predetermined length and each of the sections are folded. The folded section is then inserted into a flat package and sealed.

**3,720,038**  
**METHOD AND APPARATUS FOR COVERING OPEN ENDED CONTAINER BODIES**  
George D. Bryan, Jr., Mechanicsville, and Nicholas Constantino, Richmond, both of Va., assignors to Reynolds Metals Company, Richmond, Va.

Filed March 26, 1971, Ser. No. 128,360

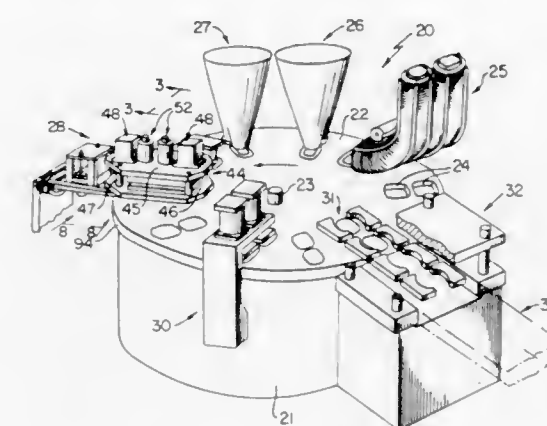
Int. Cl. B65b 7/00, 41/12, 51/04

U.S. Cl. 53—39

23 Claims

Method and apparatus for covering a product filled and open ended container body wherein an annular knife is carried by a stationary frame and a blanking die is also carried by the frame so that relative movement between the blanking die and the knife can compress an unblanked portion of a cover strip between the same to cut a cover member therefrom. A transfer device is also movably carried by the frame and has means for holding the cut cover member as the cover member

is cut from the strip so that the transfer device can transfer the cut cover member from adjacent the knife to the open end of the container body. As the transfer device is disposing the cover member on the open end of the container body, a securing device tack seals part of the cover member to the open end



of the container body. The transfer device has means for forming a slight depression in the cover member inboard of the open end of the container body for cover member expansion purposes as the transfer device places the cover member on the open end of the container body.

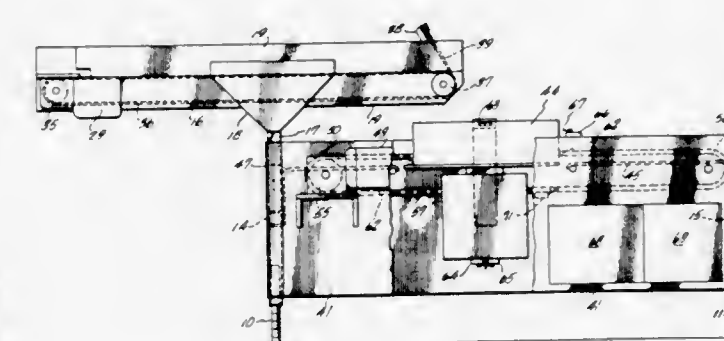
**3,720,039**  
**BOX FILLING APPARATUS**  
Aaron James Warkentin, 23561 East Dinuba Avenue, Dinuba, Calif.

Filed Nov. 5, 1970, Ser. No. 87,091

Int. Cl. B65b 57/00

U.S. Cl. 53—59 W

9 Claims



An apparatus for filling boxes with produce such as plums, apples, citrus fruit, melons, or vegetables such as potatoes, or the like, comprises an endless belt conveyor which is drive when energized by a variable electric motor at a fast or full speed until the box to be filled is substantially 95% filled and then stops momentarily after which it proceeds at a slower speed to cause a dribble feed to fill the box to substantially 100 percent of the desired weight. The momentary stop is to accommodate fruit which is freely falling, which occasionally causes the box to be substantially 100 percent filled without the necessity of the dribble feed. Associated means drives boxes to be filled to a scale, which scale has associated switches to control the stopping of the fast run of the conveyor belt, the starting of the slow run of the conveyor belt, and eventually to stop the conveyor belt and start the index motor to convey the boxes to be filled to the scale and, when filled, off of the scale. A safety switch is provided to prevent running of the conveyor in the absence of a box to be filled.

The apparatus is arranged so that the conveyor of the produce to the boxes to be filled runs countercurrent into the path of the boxes, or alternately in the same direction thereof. The speed of the conveyor is adjustable to accommodate different size fruit and different rates of packing.



3,720,040

# APPARATUS FOR FORMING PARCELS OF PARALLELIPIPED SHAPE FROM INDIVIDUAL STACKS OF FLATTENED PAPER

Herman Rocker, Hulben, Germany, assignor to Windmoller & Holscher, Lengerich of Westphalia, Germany  
Filed April 15, 1971, Ser. No. 134,307  
Claims priority, application Germany, April 17, 1970, P 20 18 592.6

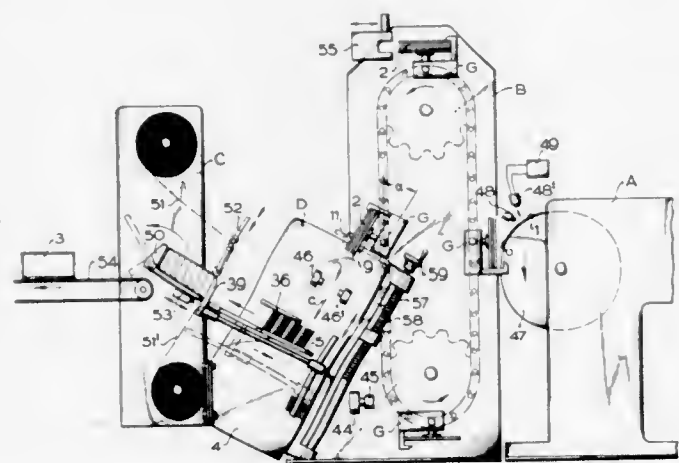
Int. Cl. B65b 35/36, 35/52, 57/14  
U.S. Cl. 53—62

13 Claims

U.S. Cl. 55—25

Int. Cl. B01d 53/04

7 Claims



Parcelling apparatus for installation downstream of a stacking device of paper or plastics bag-making machinery that delivers stacks of flattened bags, the parcelling apparatus having means for engaging successive stacks arriving lengthwise from the stacking device and for swinging the stacks sideways through 90° in alternately opposite directions, means for feeding the swung stacks to and depositing them side-on onto a table which extends normal to the feeding direction, and a reciprocating pushing device which is adapted to move the deposited stacks to a parcelling station where a plurality of the stacks are juxtaposed preparatory to being packaged.

3,720,041

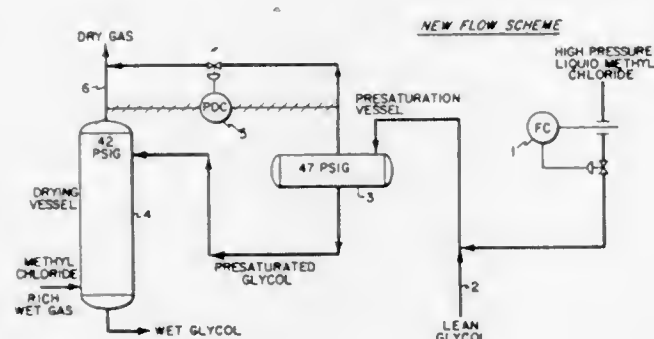
# PROCESS FOR DRYING METHYL CHLORIDE IN A POLYMER PLANT

Jose A. Alvarez, 10301 H Malcom Circle, Cockeysville, Md., and Edward F. Upchurch, 59 Keats Road, West Millington, N.J.

Filed Dec. 8, 1971, Ser. No. 205,787  
Int. Cl. B01d 53/14

U.S. Cl. 55—29

8 Claims



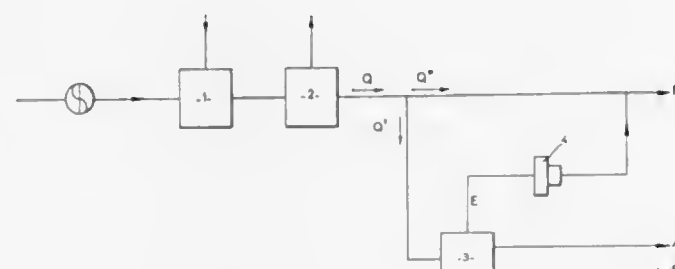
A process for drying methyl chloride in a butyl rubber process using glycol is improved by presaturating the glycol with liquid methyl chloride thereby avoiding temperature increases during presaturation. Need for a glycol-methyl chloride cooler is thereby eliminated. Since the absorber operates at a lower temperature, drying of the methyl chloride stream is more complete.

# METHOD OF PRODUCTION OF PURE HYDROGEN AND MIXTURES CONTAINING HYDROGEN IN DEFINITE PROPORTIONS

Guy Simonet, Paris, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation de Procédes Georges Claude, Paris, France  
Filed July 12, 1971, Ser. No. 161,614  
Claims priority, application France, July 16, 1970, 7026211

Int. Cl. B01d 53/04

7 Claims



A method of production of hydrogen of high purity together with a mixture containing hydrogen and a second gaseous compound in definite molar proportions, from a gaseous flow containing a preponderant content of hydrogen and the said second gaseous compound, in which a portion of the gaseous flow is subjected to a treatment for separation of the excess hydrogen, a gaseous fraction rich in the second gaseous compound being recovered and sent into the other portion of the said gaseous flow, the said separation treatment being effected by passing the said portion over at least one adsorption mass, the gaseous fraction rich in the second gaseous compound being recovered during the course of desorption of the said adsorption mass. The said second gaseous compound is carbon dioxide or nitrogen and the said portion of the flow is passed over at least two separate adsorption lines operating alternately. The invention also relates to an installation for carrying this method into effect.

3,720,043

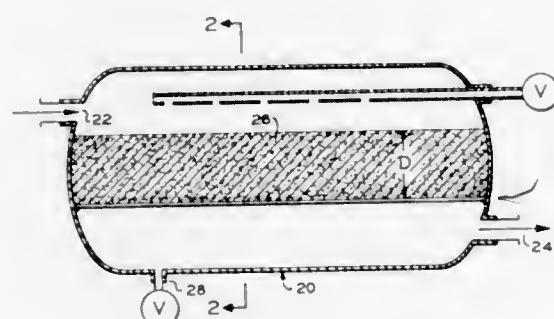
# METHOD FOR HIGH EFFICIENCY FILTERING SYSTEM

Julius Louis Kovach, Columbus, Ohio, assignor to North American Carbon, Incorporated, Columbus, Ohio  
Filed June 22, 1970, Ser. No. 47,941

Int. Cl. B01d 53/04

U.S. Cl. 55—74

4 Claims



A method for high efficiency filtration of both gaseous and particulate radioactive contaminants characterized by a single pass of an air stream carrying the contaminants through a single bed of granular materials and then venting the filtered

stream to the surrounding environment. The granular bed is characterized by a given minimum depth of adsorbent particles of a given minimum size range which preferably is calculated on a basis dependent upon a given minimum removal efficiency of radioactive gaseous and particulate matter.

3,720,044

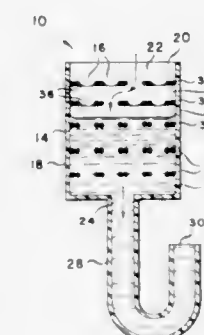
# STRENGTH COMPOUNDING CAPILLARY ARRAY

Robert K. Grove, Los Altos, and Richard O. Sloma, Cupertino, both of Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Jan. 4, 1971, Ser. No. 103,742  
Int. Cl. B01d 19/00

U.S. Cl. 53—159

5 Claims



A strength compounding capillary array for liquid management systems such as liquid-gas separators. Multiplication of the capillary liquid retention force available from a single capillary element and/or an increase in capillary aperture dimensions for improved liquid flow is provided. A plurality of peripherally enclosed self-wicking and self-sealing capillary elements are held in a serial spaced apart relationship. The spacing may be provided by stacking the capillary elements interleaved with non-self-sealing elements. The closed liquid films at each capillary element maintain an additive series of closed gas retaining compartments between the elements during the absence of liquid therein.

3,720,045

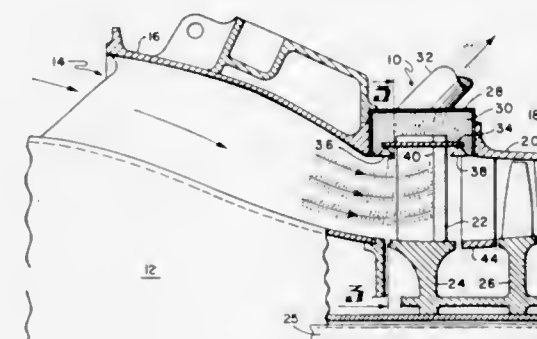
# DYNAMIC BLADE PARTICLE SEPARATOR

Joseph P. Murphy, Newtown, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Nov. 16, 1970, Ser. No. 89,733  
Int. Cl. B01d 45/12

U.S. Cl. 55—306

1 Claim



A dynamic rotor blade particle separator for separating and removing foreign particles from the engine inlet air is disclosed. The dynamic separator utilizes a rotating set of blades, each with a radial slot and catching lip on the pressure side of

the blade. The foreign particles are caught by the lip, subjected to the centrifugal force field of the blades and centrifuged to an outer collection chamber for ejection.

3,720,046

# FLOW DISTRIBUTION APPARATUS

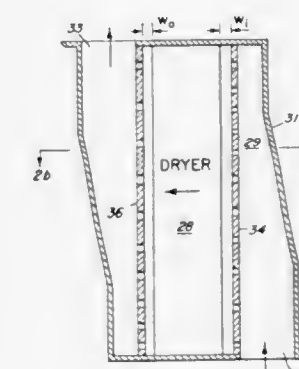
Alvydas A. Kudirka, Elliott L. Burley, and Robert H. Moen, San Jose, Calif., assignors to General Electric Company

Filed June 5, 1969, Ser. No. 830,769

Int. Cl. B01d 45/00

7 Claims

A flow distribution structure for distributing the flow of fluid through low-pressure drop fluid processing apparatus such as a vane type gas separator or dryer situated between parallel or counter-flow headers wherein



variably apertured flow distribution plates are provided adjacent inlet and outlet sides of the separator.

3,720,047

# UNIVERSAL TRACTORS

Cornelius van der Lely, 7 Bruschenrain, Zug, Switzerland

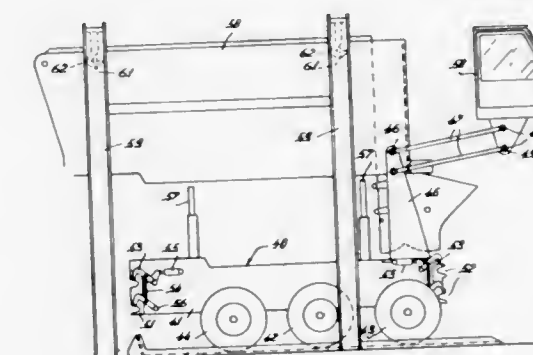
Filed Oct. 3, 1969, Ser. No. 863,576

Claims priority, application Netherlands, Oct. 7, 1968, 6814307; May 28, 1969, 6908076; Aug. 7, 1969, 6912024; Sept. 23, 1969, 6914378

Int. Cl. A01d 75/22

U.S. Cl. 56—15.6

15 Claims



A self-propelled vehicle has a driver platform pivotally coupled to its frame through one or more arms. The platform can be moved to occupy various positions to facilitate loading and handling. Various implements and other objects can be supported on or coupled to the vehicle by moving the driver platform to accommodate the objects. The entire loading surface supported by the frame can thus be used. Coupling members



and lifting devices are mounted on the vehicle to assist in loading, unloading and connecting the objects.

3,720,048

**TRACTOR DRAWN MOWER**

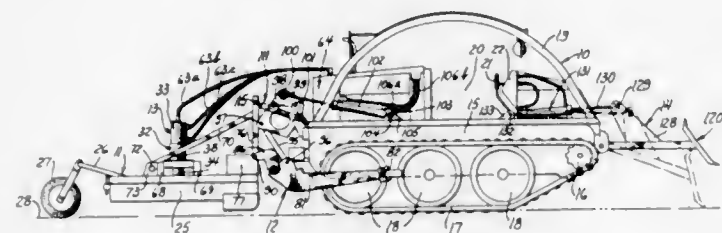
Willard L. Grubb, Richmond; Howard E. Turner, Jeddo, both of Mich., and James W. Brazell, Atlanta, Ga., assignors to Health International, Inc., Richmond, Mich.

Filed Feb. 16, 1971, Ser. No. 115,248

Int. Cl. A01d 35/26

U.S. Cl. 56—15.9

34 Claims



A flexible tracked tractor having a mower operatively connected to the rear end thereof. The mower is provided with a ground engaging wheel at the rear end thereof, and it is supported at the front end thereof by a three-point lift hitch which is attached to the rear end of the flexible tracked tractor. The rotary cutter is power driven from a pressurized hydraulic fluid source carried on the tractor. The rotary cutter is operatively connected through a gear type coupling to a hydraulic drive motor which is provided with hydraulic fluid under pressure from said pressurized hydraulic fluid source on said tractor. The three-point lift hitch includes an upper link having one end pivotally attached to the front end of the mower and the other end pivotally attached to the tractor, a lower link assembly having one end thereof pivotally attached to the tractor and the other end thereof pivotally attached to the front end of the mower at two spaced apart positions below the attachment position of the upper link, a lift bar having a lower end pivotally attached to said lower link assembly, a lever pivotally mounted on a horizontal axis on said tractor, and with the upper end of said lift bar being pivotally attached to said lever on a horizontal axis at a position laterally spaced apart from, and parallel to, the pivot axis of said lever on said tractor, and power means mounted on said tractor and being pivotally connected to said lever on a horizontal axis at a point triangularly spaced from, and parallel to, the pivotal mounting axes of said lever and said lift bar, wherein when the power means is actuated, the lever is pivoted upwardly from a mowing position to lift said lower link assembly to a raised position.

3,720,049

**SIDE SHARPENABLE CUTTER STRUCTURES**

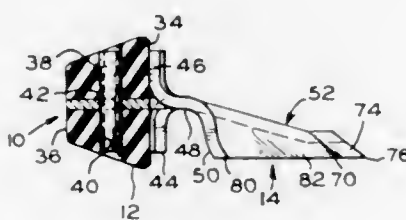
Myron D. Tupper, Portland, Oreg., assignor to Omark Industries, Inc., Portland, Oreg.

Filed Sept. 28, 1971, Ser. No. 184,337

Int. Cl. A01d 55/24

U.S. Cl. 56—291

5 Claims



Endless V-belts mounted on swathers or mowers carry side sharpenable cutters secured to the belts. One cutter includes a body having a tang projecting through a slot in the V-belt and locked thereto by a transverse roll pin with angular, oppositely

extending, transverse feet portions of the body engaging the outer face of the belt, an offsetting portion extending outwardly from the belt, a shank portion transverse to the offsetting portion, and an inclined cutter plate which has a side surface which can be ground to sharpen a cutting edge thereon. The cutter plate has an angularly positioned outer edge portion which causes the cutting edge to be hooked when sharpened. In another cutter, the mounting plate extends completely through the V-belt and a roll pin and an arcuate washer secure the mounting plate to the V-belt. Another cutter includes an angular body portion, an off-setting portion and a shank portion forming a U. The shank portion carries an inclined side cutter, and a staple extends through the body, the belt and an arcuate washer to secure the cutter to the belt. An inclined side plate is secured to a shank carried by a body portion joining the shank and the foot.

3,720,050

**BLUEBERRY PICKER**

Ralph E. Rozinska, 921 Lewis Avenue, St. Joseph, Mich.

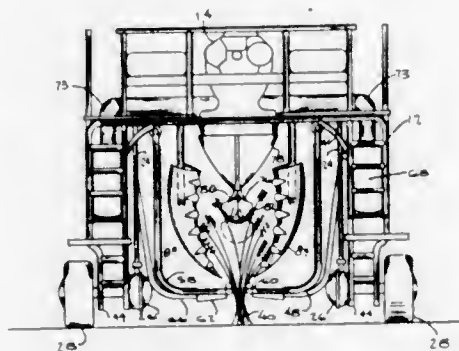
Continuation-in-part of Ser. No. 876,244, Nov. 13, 1969,

abandoned. This application Feb. 4, 1972, Ser. No. 223,448

Int. Cl. A01g 19/00

U.S. Cl. 56—330

10 Claims



A self-propelled blueberry picker with a deflector and cooperating means which may be reciprocally agitated to force the bushes outwardly and downward and including means to direct air streams against the bushes to aid in removing berries from the bushes into pickup arms which extend along opposite sides of the frame of the machine. The berries are conveyed by vacuum from the arms to a container wherein leaves and trash are separated from the berries.

3,720,051

**GROUND COVER FRUIT HARVESTING MACHINE**

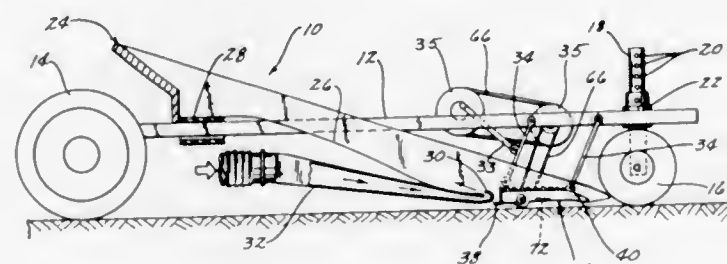
Graeme R. Quick, Ames, Iowa, assignor to Iowa University Research Foundation, Inc., Ames, Iowa

Filed Nov. 26, 1971, Ser. No. 202,271

Int. Cl. A01g 19/00

U.S. Cl. 56—330

10 Claims



A ground cover fruit harvesting machine comprises a wheel-mounted supporting frame having forward and

rearward ends, and having a plurality of laterally spaced tooth elements extending forwardly therefrom. Each of the tooth elements has a longitudinal slot therein. A picking element is mounted for sliding movement within each of the slots of the tooth elements, and means are provided for oscillating the picking elements within the slots.

3,720,052

**HAYSTACKING MACHINE**

Joseph A. Anderson, Minot, and Chester G. Neukom, Jamestown, both of N. Dak., assignors to Haybuster Manufacturing, Inc., Jamestown, N. Dak.

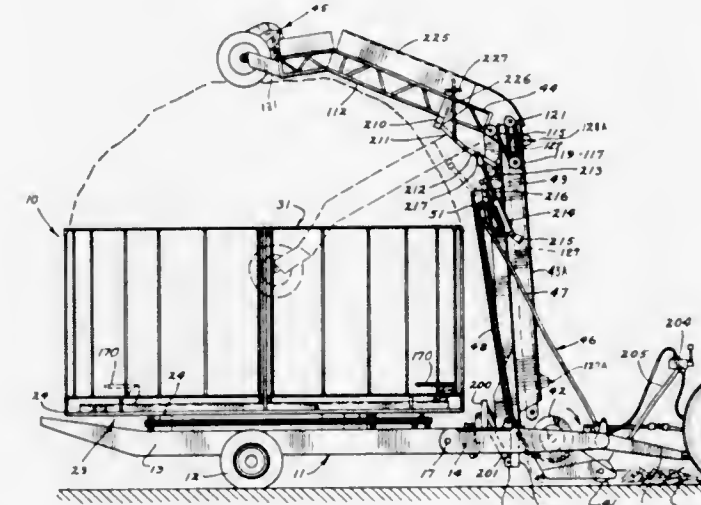
Continuation of Ser. No. 858,999, Sept. 18, 1969, abandoned.

This application May 3, 1971, Ser. No. 139,892

Int. Cl. A01d 87/02

U.S. Cl. 56—346

22 Claims



A hay stacking assembly which includes a pickup for picking loose hay up from a window and conveying it into a stacker assembly that has a stack support bed that rotates as the stacker moves. Means are provided for packing the hay into the stacker assembly until a complete hay stack is formed. When the hay stack is formed, the packed hay stack is removed from the stacker bed through the use of a push off device, and the unit is then again used for making another hay stack.

The unit can be used as a hay stack mover if desired upon the application of proper hay stack loading means.

3,720,053

**AGRICULTURAL IMPLEMENT FOR WORKING CROP LYING ON THE FIELD**

Petrus Wilhelmus Zweegers, Nieuwendijk 46, Geldrop, Netherlands

Filed Jan. 11, 1971, Ser. No. 105,274

Claims priority, application Netherlands, Jan. 14, 1970, 7000493

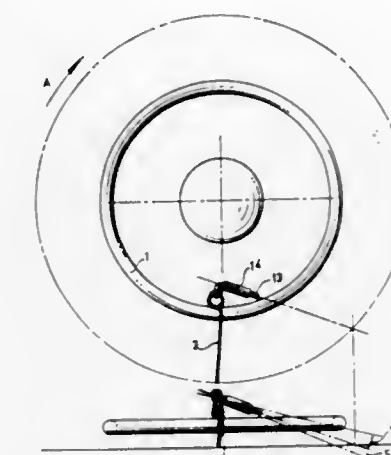
Int. Cl. A01d 79/00

U.S. Cl. 56—370

11 Claims

An agricultural rotary rake implement for working crop lying on the field. The implement comprises a movable frame which carries at least one rotary element for rotation in a substantially horizontal, slightly forwardly inclined plane. Each rotary element carries a circular array of substantially radially protruding resilient tines. A tine which is restrained in its ro-

tary movement, is upwardly guided with respect to its mounting by means of a guide surface such as an inclined cam fixed on the rotary element, or by means of an inclination of the



pivot pin of the tine with respect to the tangential direction of the rotary element, or by means of an inwardly yielding mounting of the tine.

3,720,054

**METHOD AND APPARATUS FOR WIRE WINDING**

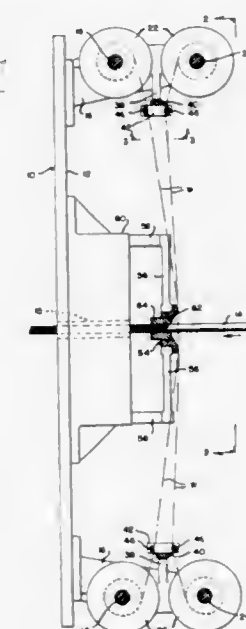
Rudolf H. Haehnel, West Lawn, and John L. Willy, Reading, both of Pa., assignors to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Sept. 7, 1971, Ser. No. 177,979

Int. Cl. B65h 81/08

U.S. Cl. 57—9

9 Claims



An improved method of winding a plurality of wires about a hose carcass in helical convolutions having a predetermined winding tension which comprises mounting a hose carcass for movement parallel to its longitudinal axis, rotating in unison a plurality of wire supply bobbins and preform roller pins about said axis, withdrawing a single wire from each bobbin, guiding it along a path extending toward said axis, independently tensioning each wire to have a predetermined uniform withdrawal tension, attaching the wires to the carcass and longitudinally advancing the carcass to simultaneously pull the wires from their bobbins and progressively wind the wires in helical convolutions about the carcass, wrapping each wire 360° around a preform roller pin curvature having a preselected diameter less than said hose carcass diameter to impart to each wire a permanent convoluted shape prior to



winding it on the carcass, and selecting that combination of uniform wire withdrawal tension and roller pin curvature diameter which produces said predetermined winding tension.

An improved and novel apparatus for carrying out the above-described winding method is also provided.

3,720,055

## SYNTHETIC MATERIAL TEXTILE FILAMENTS

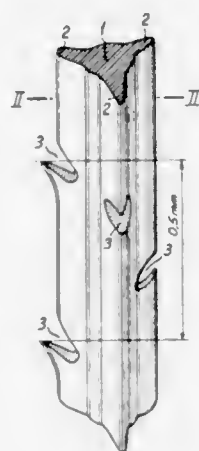
Henri de Mestral; Albert Decosterd, both of Morges; Guy Calame, Le Brassus, and George de Mestral, Commugny, all of Switzerland, assignors to Sobico Inc., Apartado, Panama  
Filed March 11, 1971, Ser. No. 123,239

Claims priority, application Switzerland, March 20, 1970, 4237/70

Int. Cl. D01d 5/22; D02g 3/34

U.S. Cl. 57—140 J

6 Claims



A synthetic material textile filament comprises an elongated core, a plurality of ribs around the core, each rib extending along the core, and a plurality of notches in the ribs distributed along the filament.

3,720,056

## DRIVE OR INDICATING SYSTEM EMPLOYING FLUID CONTROLS

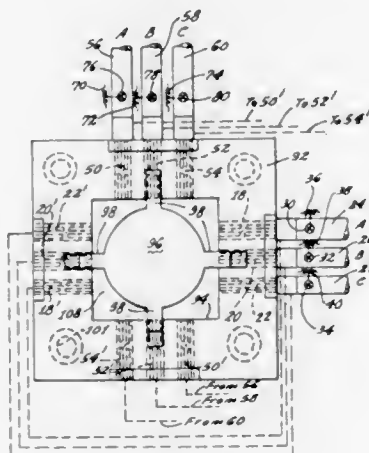
Bruce A. Sawyer, 20120 Allentown Drive, Woodland Hills, Calif.

Filed Dec. 28, 1970, Ser. No. 101,998

Int. Cl. F03g 7/00

U.S. Cl. 60—1

41 Claims



This invention relates to a system in which a head is displaced from, but is in contiguous relationship to, a platen and is driven or is positionable along either a single axis or a pair of

coordinate axes relative to the platen. The head and the platen have grooves for receiving a fluid such as pressurized air which causes the head and the platen to interact so that the head is driven on a controlled basis along either the single axis or independently along the pair of coordinate axes relative to the platen. Because of the provision of the grooves in the head and the platen, the position of the head relative to the platen can be indicated at each instant as the head moves along the platen. Means may be provided on the head for preventing the head from rotating as it moves along the platen. Means may also be provided in the head for maintaining the head in displaced relationship to the platen.

3,720,057

## METHOD OF CONTINUOUSLY VAPORIZING AND SUPERHEATING LIQUEFIED CRYOGENIC FLUID

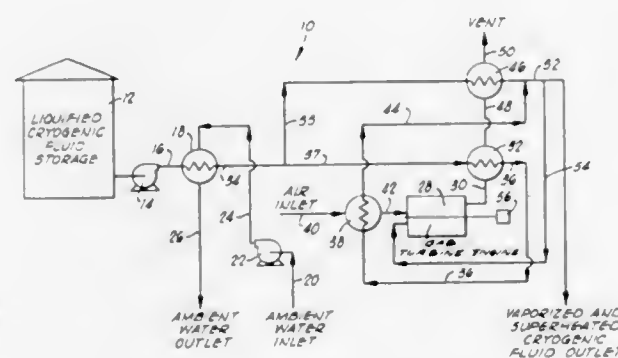
Edwin M. Arenson, El Reno, Okla., assignor to Black, Sivalls & Bryson, Inc., Oklahoma City, Okla.

Filed April 15, 1971, Ser. No. 134,159

Int. Cl. F02c 7/34; F02m 31/60

U.S. Cl. 60—39.02

18 Claims



The present invention relates to a method of continuously vaporizing and superheating liquefied cryogenic fluid for an ultimate use. A stream of liquefied cryogenic fluid is passed in heat exchange relationship with a stream of ambient water so that the cryogenic fluid is heated and vaporized. The vaporized cryogenic fluid stream is divided into first and second portions and the first portion is passed in heat exchange relationship, with the input combustion air to a gas turbine engine so that the air is cooled and the power output of the turbine increased. The second portion is passed in heat exchange relationship with the exhaust gases generated by the gas turbine engine so that the second portion is superheated to a predetermined temperature level, and the first and second portions of the vaporized cryogenic fluid stream are then combined so that a stream of vaporized cryogenic fluid superheated to a desired temperature level is produced. The power output of the gas turbine is advantageously used for providing power for pumping the streams of liquefied cryogenic fluid and ambient water.

3,720,058

## COMBUSTOR AND FUEL INJECTOR

Eric S. Collinson, deceased, late of Loveland, Ohio, by Eva M. Collinson, executrix, Loveland, and Werner E. Howald, Cincinnati, Ohio, assignors to General Electric Company

Filed Jan. 2, 1970, Ser. No. 352

Int. Cl. F02k 1/00

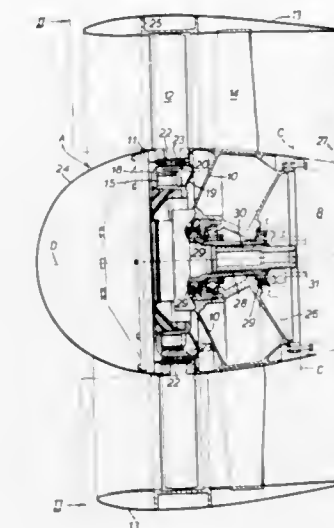
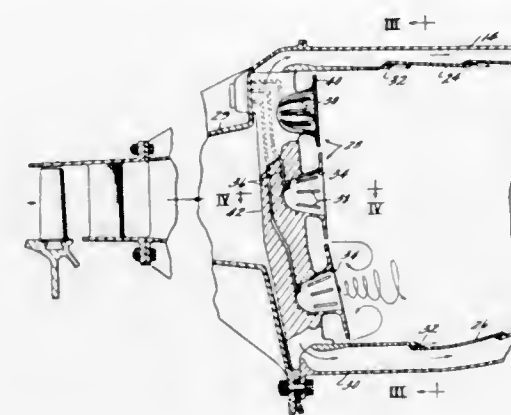
U.S. Cl. 60—39.74 R

9 Claims

A fuel injector is shown having a hemispherical cup which opens downstream into a combustion zone. A baffle plate extends outwardly of the cup. Air entering tangential slots creates an axial vortex which breaks up fuel introduced tangentially at the rear of the cup. Air flowing over the edges of the cup creates a peripheral vortex. The com-

bined action of these vortices provides a stable flame front of short axial length. The fuel injectors are disposed in three circumferential rows around an annular combustion

fitted and removed as such. The assembly comprises a non-rotative portion including a main body and a by-pass duct, and a rotative sub-assembly supported in bearings by the non-rotative



zone. The injectors are radially aligned on integral mounting struts. Alternate alignments and shapes of injectors are shown.

3,720,059

## HYDRAULIC SYSTEM AND VALVE THEREFOR

Siegfried Schurawski, Aschaffenburg, and Walter Kropp, Obernau, both of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Germany

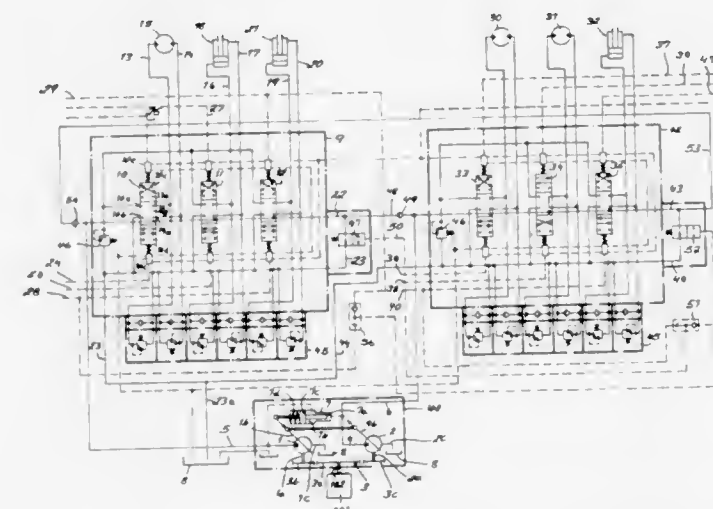
Filed Oct. 14, 1970, Ser. No. 80,665

Claims priority, application Germany, Oct. 15, 1969, P 19 52 034.4

Int. Cl. F16b 15/18

U.S. Cl. 60—421

19 Claims



A two-pump hydraulic system having a hydraulic load which, when actuated, is automatically pressurized by both pumps through a novel valve system. Normally each of the pumps circulates hydraulic fluid along a closed path to a reservoir and can be used independently to operate respective loads.

3,720,060

## FANS

Stuart Duncan Davies, Charlton Kings, and John Alfred Chilton, Painswick, England, assignors to Dowty Rotol Limited, Gloucester, England

Filed Nov. 19, 1970, Ser. No. 91,000

Int. Cl. F02k 3/00

U.S. Cl. 60—226 R

13 Claims

A fan assembly for attachment to the front of a main gas turbine engine assembly to provide an engine of the ducted-fan by-pass type is constructed as a unitary assembly which can be

tive portion and including a hub structure and fan blading positioned and rotatably supported within the non-rotative by-pass duct.

3,720,061

## CLAMPING UNIT FOR THE CASTING MOLD OF AN INJECTION MOLDING MACHINE

Karl Hehl, Siedlung 183, Lossburg, Wurt., Germany

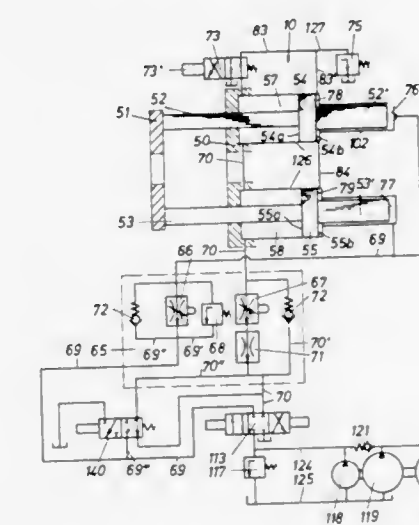
Filed Oct. 18, 1971, Ser. No. 189,977

Claims priority, application Germany, Oct. 17, 1970, P 20 51 083.2; Jan. 28, 1971, P 21 03 926.9

Int. Cl. F15b 15/18

U.S. Cl. 60—468

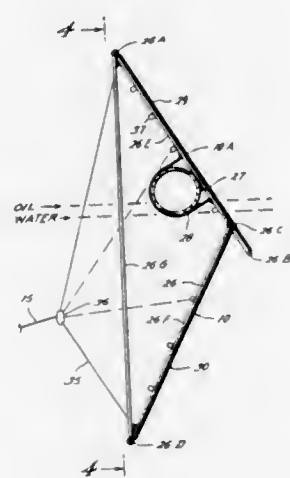
17 Claims



A clamping unit for the mold halves of an injection molding machine including a mold carrier for one of the mold halves and hydraulic drive means including pressure cylinders, hydraulic drive cylinders and a pump system. The pressure cylinders include a piston therein from which the pistons of the hydraulic drive cylinders extend. The pistons divide the pressure cylinders into two chambers with the surface area of the piston being different in each chamber. The pressure cylinders include a connecting channel for connecting the two chambers, with the connecting channel including a shut-off valve for effecting control between the two chambers. The pressure cylinders further include a frontal face on which the other of the mold halves is supported. The pressure cylinders and drive cylinders are each directly fed by the pump system which delivers a pressure medium in either one of two ranges for effecting control of the clamping unit.

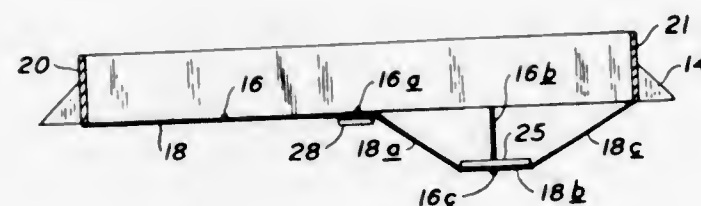


3,720,062  
**LIQUID CONFINING AND COLLECTING APPARATUS**  
 William T. Mack, 2527 Azalea, Tyler, Tex.  
 Filed July 9, 1970, Ser. No. 53,586  
 Int. Cl. E02b 15/04; B01d 21/00  
 U.S. Cl. 61—1 F 16 Claims



There is disclosed an elongate, impervious barrier which is flexible intermediate its ends and has upper and lower faces which converge forwardly to intersect on its front side. Buoyant means is carried by the barrier to normally maintain it in a generally upright position within a body of water and with the intersection of the upper and lower faces below a lighter phase thereof.

3,720,064  
**TIE RODS SYSTEM FOR SWIMMING POOLS WITH HOPPER BOTTOMS**  
 Raymond L. Hall, 19 Hamilton Court, Whippany, N.J.  
 Filed Feb. 17, 1972, Ser. No. 227,123  
 Int. Cl. E04h 3/18 12 Claims



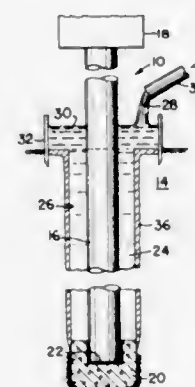
This invention pertains to swimming pools and in particular to those swimming pools made with substantially straight sidewalls disposed to generally retain a flexible liner. These sidewalls are usually restrained against outward thrust by tie rods or straps extending from one side to the other when the swimming pool configuration is other than round. These tie rods or straps prevent the sidewalls from moving outwardly from the side thrust of the water pressure in the pool. In the present invention these tie bars or straps for holding the two sidewalls in their erected and spaced condition are disposed to extend from one side to an opposite side while conforming to a hopper contour and with each retained in a depressed condition at its mid-points by means of a pressure pad of determined size which utilizes the weight of the water within the pool to apply a downward force sufficient to keep the pad and the restrained straps from lifting.

3,720,063  
**APPARATUS FOR FORMING SAND PILES**  
 Masaru Shono, 18, 5-chome, Tezukayamanishi, Sumiyoshi-ku, Osaka, Japan  
 Filed Aug. 4, 1971, Ser. No. 168,830  
 Claims priority, application Japan, May 25, 1971, 46/35666  
 Int. Cl. E02d 3/08, 5/34 8 Claims



An apparatus for forming compacted sand piles the apparatus is provided with a sleeve fitted slidably into the lower portion of a casing pipe and a removable neck portion which moves in the an associated relationship with said sleeve at said casing pipe at the upper position spaced appropriately from the lower end of said casing pipe thereby to be able to form the compacted sand piles.

3,720,065  
**MAKING HOLES IN THE GROUND AND FREEZING THE SURROUNDING SOIL**  
 James L. Sherard, 70 Hillcrest Road, Berkeley, Calif.  
 Continuation of Ser. No. 838,219, July 1, 1969, abandoned.  
 This application July 6, 1971, Ser. No. 160,146  
 Int. Cl. E02d 3/12 17 Claims



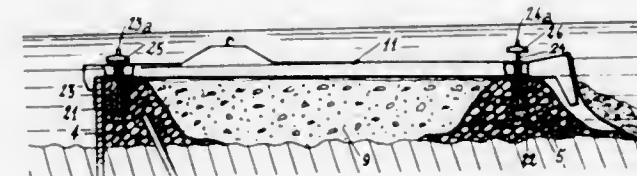
A method and apparatus for forming holes in the ground and for freezing the soil forming the walls of the holes for the purpose of temporarily solidifying zones of unstable soil adjacent to excavations and for forming open holes in unstable soil below the water table that are useable to make cast-in-place concrete piling, sand drains and water wells. The general method comprises the steps of forming a hole in the ground by driving or pushing a mandrel downward, which mandrel has a stem with cross-sectional area smaller than a drive foot on its lower end; supplying a flowable material in the space in the ground around the mandrel stem which prevents the hole from caving in, keeps the ground water out of the hole and freezes the soil surface comprising the walls of the hole.

3,720,066  
**INSTALLATIONS FOR SUBMARINE WORK**  
 Robert H. Villain, Maisons-Alfort, France, assignor to Compagnie Francaise D'Entreprises Metalliques, Paris, France  
 Filed Nov. 20, 1969, Ser. No. 878,460  
 Int. Cl. B63b 35/44; B65d 87/08; E02d 17/00  
 U.S. Cl. 61—46.5 10 Claims



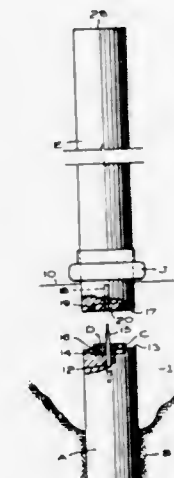
An offshore drilling platform has a column which can be articulated by a universal joint to a base anchored to the seabed. The column is subdivided into a plurality of superposed ballasting compartments. Means are provided for external control, from a compressed air source, of the flooding or emptying of at least one of the compartments. One compartment close to the articulated end of the column can be flooded during positioning the structure so that the water compresses the air before it. Means are provided to allow the air to escape thereafter or be further pressurized to drive out the water. Floats which can be partly filled with water can be arranged radially around the column and emptied during the setting up operation. Oil dashpot type shock-absorber means can be provided for damping impact against the base.

3,720,067  
**METHOD FOR BUILDING IMMERSED STRUCTURES AND A DEVICE FOR CARRYING OUT SAID METHOD**  
 Jean Aubert, 8, rue La Boetie, Paris, France  
 Filed April 15, 1971, Ser. No. 134,328  
 Int. Cl. E02b 3/06, 7/00; E02d 27/20, 29/06  
 U.S. Cl. 61—46 19 Claims



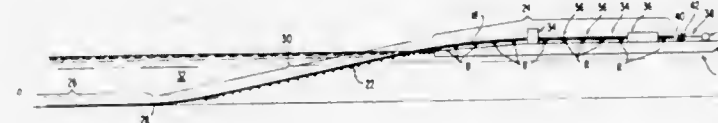
A method and device for the construction of dams or dikes either in rivers or in the sea. A wall of sheet piles is set in position by embedding in the bottom, a row of projecting elements is placed alongside said wall in substantially parallel relation thereto, the space formed between said projecting elements is packed with filling material, a prefabricated raft which is supported on the sheet-pile wall and on the row of elements is set in position underwater on the bottom which has thus been prepared, grout is injected into at least part of the foundation mass, whereupon the raft is anchored relative to the mass.

3,720,068  
**METHOD AND APPARATUS FOR SPLICING REPLACEMENT PILE SECTION TO PILE STUB**  
 Eugene R. De Rosa, 1649 Fernside St., Redwood City, Calif. 94061  
 Filed Apr. 12, 1972, Ser. No. 243,342  
 Int. Cl. E02d 5/60 9 Claims



Method and apparatus for splicing replacement pile section to pile stub, wherein the replacement pile section is moved into axial alignment with respect to the pile stub so that the former will be mounted on the latter, with a waterproof adhesive being placed therebetween to provide a bonded joint. Moreover, a plurality of connector plates are nailed to the replacement pile section and the pile stub to overlap the joint, and layers of waterproof mastic are placed over the connector plates; and then felt, or the like, is disposed over the mastic to protect a resilient tubular boot from damage by the nail heads when the boot is subsequently rolled over the joint.

3,720,069  
**PIPELINE LAYING OPERATION WITH EXPLOSIVE JOINING OF PIPE SECTIONS**  
 Joe C. Lockridge, Houston, Tex., assignor to Brown & Root, Inc., Houston, Tex.  
 Filed Jan. 6, 1971, Ser. No. 104,431  
 Int. Cl. F16l 1/00; B23k 21/00; B63b 35/04  
 U.S. Cl. 61—72.3 10 Claims



A technique for explosively welding conduit sections to one another to provide a conduit joint particularly amenable to underwater use through the formation of a substantially totally welded assembly. The conduit sections joined may be provided with mating frusto-conical male and female end portions to enhance the formation of a completely welded joint, and the explosive charge is preferably disposed to runout beyond the conduit portions overlapped by a surrounding collar.

A pipeline laying operation utilizing an inclined ramp and one-pass explosive joining of conduit sections to a continuous pipeline.



3,720,070

## APPARATUS AND METHOD FOR PLOWING CABLE OR PIPE

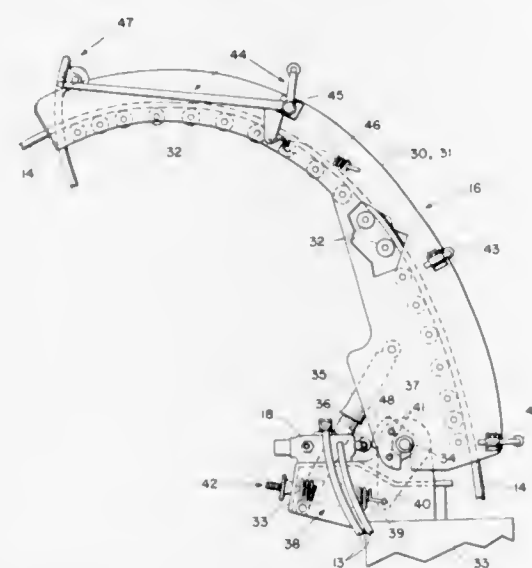
John Reginald Raves, Dollard des Ormeaux, Quebec, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Calif.

Filed July 7, 1971, Ser. No. 160,417

Int. Cl. F16I 11/00; B65h 23/20

U.S. Cl. 61—72.6

2 Claims



An apparatus for regulating the pay out tension of a cable passing from a cable reel into the cable chute of a cable plow. The tension in the cable deflects a cable guide which supports the cable as it passes from the cable reel into the cable chute. This deflection of the cable guide adjusts the flow of hydraulic fluid through an associated valve so as to vary the drive to a hydraulic motor which rotationally drives the cable reel.

3,720,071

## HEAT EXCHANGER

Gamal El Din Nasser, Planegg, and Hans Waldmann, Wolfratshausen, both of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Germany

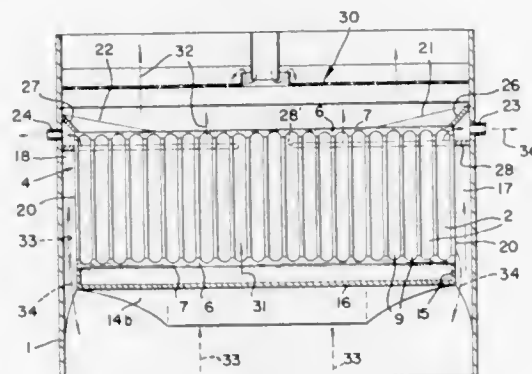
Filed June 15, 1970, Ser. No. 45,976

Claims priority, application Germany, June 14, 1969, P 19 30 347.0

Int. Cl. F25j 3/02, 5/00

U.S. Cl. 62—42

14 Claims



A heat exchanger, especially a condensate-evaporator or like unit for a gas-rectification column in which a prismatic heat-exchange body is surrounded by a cylindrical housing such that sectoral compartments form passages for the fluids traversing the heat exchanger body. The body of the heat exchanger consists of a stack of plate pairs, the plates of each pair being corrugated such that alignment of the corrugations produces tubes. The tubes of the stacked arrays are staggered from one array to the next and communicate via a space at the bottom of the cylinder housing, with one of the sectoral compartments. The device functionally connects but physically separates the high-pressure and low-pressure sides of a column.

3,720,072

## APPARATUS FOR THE RECOVERY OF HALOCARBONS

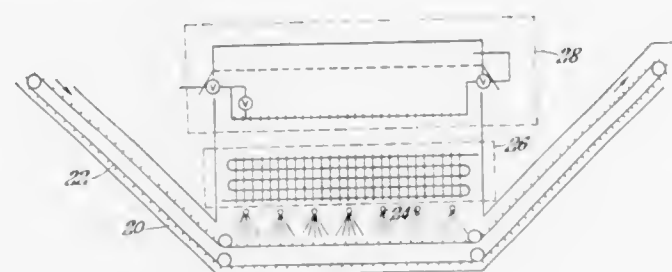
Remo Joseph Berta, Chappaqua, and Peter Gordon Byrnes, Mahopac, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Feb. 26, 1971, Ser. No. 119,261

Int. Cl. F17c 13/02

U.S. Cl. 62—54

3 Claims



Method and apparatus are disclosed for the condensation of halocarbon vapors evolved at a heat transfer work site comprising: passing said vapors through a conventional primary condensation zone to condense the major portion of said vapors; and passing the uncondensed portion of said vapors to a secondary condensation zone in which substantially complete condensation is effected across a heat transfer barrier between said vapors and a low temperature liquified gas.

3,720,073

## AIR CONDITIONER

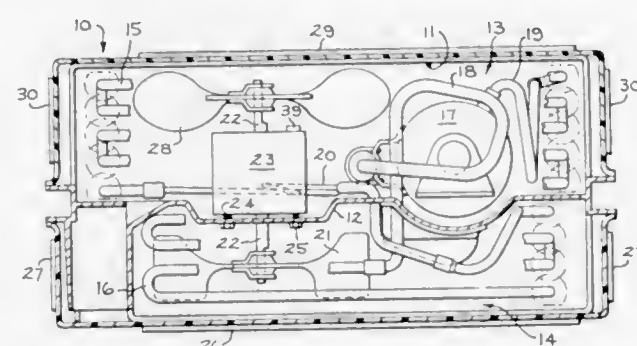
William J. McCarty, Louisville, Ky., assignor to General Electric Company

Filed July 2, 1971, Ser. No. 159,236

Int. Cl. F25b 39/04

U.S. Cl. 62—183

2 Claims



This invention provides an improved air-conditioner. Basically, it comprises: a casing mountable in an opening into a room and having openings communicating with indoor and outdoor air; a refrigeration system mounted in the casing and including a compressor, a condenser and an evaporator interconnected in a refrigerant flow relationship; and a fan mounted in the casing for circulating outdoor air over the condenser. However, in accordance with the present invention, a multi-speed electric motor is mounted in the casing with its output shaft connected to the condenser fan. The motor has a slower first speed and a faster second speed. In particular accordance with the present invention, thermally responsive switch means are mounted on the motor for cooling by the outdoor air and have a movable switch member that will remain in a first position causing the motor to operate the condenser fan at the slower and consequently quieter first speed unless the outdoor air temperature is sufficiently high to cause the switch means to sense a temperature exceeding a first predetermined temperature. Then, the switch member will move to a second position causing the motor to operate the condenser fan at the faster and consequently louder second speed, but only until the outdoor air temperature becomes sufficiently low to cause the switch means to sense a second

predetermined temperature that is lower than the first. Then, the switch member will return to its first position causing the motor to resume operation of the condenser fan at the slower and quieter first speed.

3,720,074

## COLD PLATE AND DRAIN DESIGN

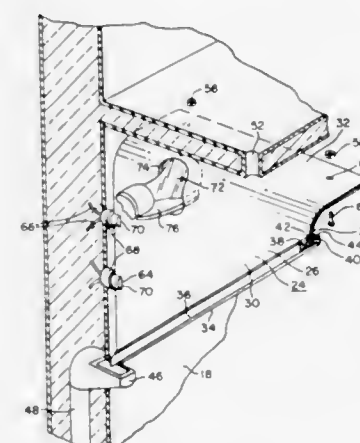
Robert J. Jansen, Columbus, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 24, 1971, Ser. No. 146,237

Int. Cl. F25d 21/00

U.S. Cl. 62—272

9 Claims



The invention provides a refrigerator in which a cold plate having a novel triangular configuration is disposed. A plastic drain strip is provided on the side forming the hypotenuse of the triangular shape so that a downwardly and angularly disposed drain means is provided for drainage of water from the cold plate to the rear of the refrigerator to thereby prevent the contents of the refrigerator from becoming covered with moisture. The bottom of the freezer compartment contains a drain hole which communicates with the triangular cold plate so that during defrosting any water formed thereon also runs down the cold plate and then down along the plastic drain strip. Because one of the acute angle apexes of the triangular shape is disposed at the front of the refrigerator, little obstruction is occasioned to the user of the refrigerator. The cold plate may include a right angle portion which extends substantially at a right angle relative to the triangular shape to provide additional cooling surface if this is required.

3,720,075

## ABLATIVE SYSTEM

Vernon H. Gray, Bay Village, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

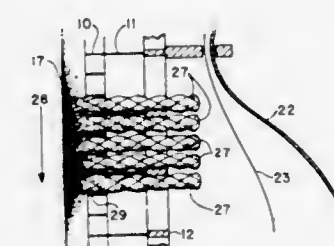
Division of Ser. No. 47,063, June 17, 1970, Pat. No. 3,656,317.

This application June 4, 1971, Ser. No. 150,215

Int. Cl. F25b 19/00; F02k 11/02

U.S. Cl. 62—467

7 Claims



A carrier liquid containing ablative material bodies is supplied to a plenum chamber one wall of which has openings therethrough and which wall is exposed to a high temperature environment. The liquid and the bodies pass through the openings in the wall to form a self-replacing ablative surface.

In another embodiment the wall comprises honeycomb layers. Spheres containing ablative whiskers or wads, and a hardening catalyst for the carrier liquid are dispersed in the liquid.

Yet another embodiment utilizes wicks woven of ablative material fibers, and extending through the openings in the wall and into the plenum chamber containing the carrier liquid.

3,720,076

## CONSTANT TORQUE CLUTCHES

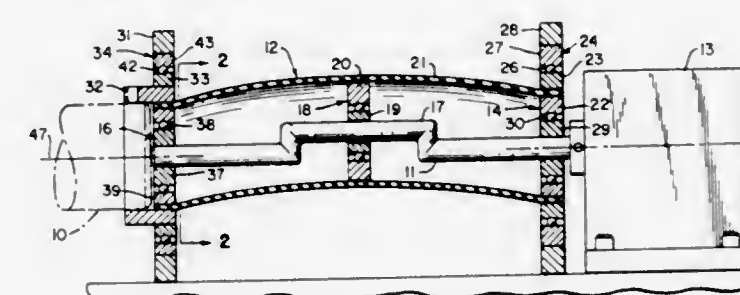
Robert W. Nordin, Skokie, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Mar. 26, 1971, Ser. No. 128,417

Int. Cl. F16d 3/14

U.S. Cl. 64—27 HM

18 Claims



A clutch disposed between an input shaft and an output shaft is designed to slip if an excessive torque load is placed on the output shaft or if excessive power is delivered to the clutch by the input shaft. The output shaft is connected positively to a flexible, deformable member or members while the input shaft delivers motion to the deformable member or members through rotation of an eccentrically disposed section of the input shaft. For transmission of motion between the input shaft and the output shaft all elements of the clutch including the flexible member rotate as a unit; however, upon encountering an excessive torque load on the output shaft, the clutch will slip as the rotating eccentric portion of the input shaft deforms the deformable member or members and thereby absorbs the excessive torque.

3,720,077

## HOIST HAVING YIELDING MEANS FOR LOAD LIMITING

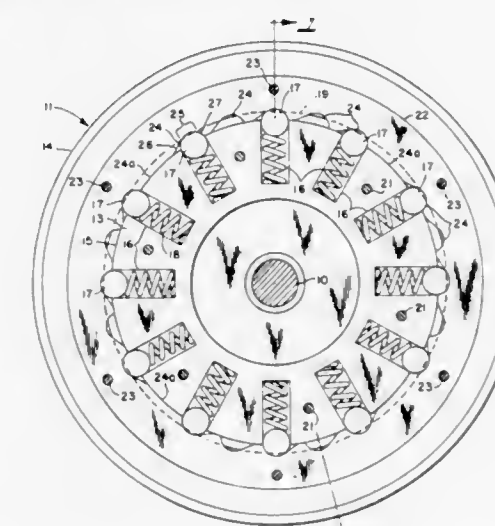
Harry Y. Jackson, Cherry Hill, N.J., Charles C. Walker, Forrest City, Ark., and John Ramoska, Philadelphia, Pa., assignors to Eaton Yale & Towne Inc., Cleveland, Ohio

Filed Apr. 12, 1971, Ser. No. 133,098

Int. Cl. F16d 7/00

U.S. Cl. 64—29

5 Claims



A hand operated hoist has a hand wheel that is formed in parts operatively connected through spring pressed



roller detents engaging detent recesses of asymmetrical shape for applying load lifting torque to the hoist. The recesses have long inclined surfaces on which the detents will ride after an overload amount of lifting torque causes the detents to leave seated position in the recesses. Thereby the detents will yield gradually while in effect releasing the load lifting effort that an operator applies to the hand wheel, but offering resistance to the operator's effort so as to reduce the hazard that would be incidental to a sudden release. The asymmetrical shape of each recess includes a steep surface that will hold a detent in the recess so as to permit an application of the amount of force necessary to release a load brake when a load is to be lowered.

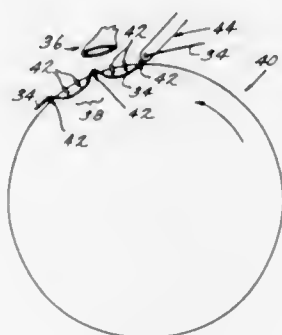
3,720,078

# KNITTED COMPRESSIVE STRETCH FABRICS, AND METHOD AND APPARATUS FOR THE MANUFACTURE THEREOF

Aaron Burleson, Burlington, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.  
Filed Mar. 16, 1970, Ser. No. 20,007  
Int. Cl. D04b 9/18, 9/46, 15/50

U.S. Cl. 66-133

7 Claims



A knitted compressive stretch fabric having a portion made of a lighter and a heavier stretch yarn wherein the lighter stretch yarn is the basic yarn in that portion and the heavier stretch yarn is arranged in pre-selected courses of the lighter yarn in said portion and in a minimally tensioned condition during knitting. Structure and manufacturing or process techniques are also provided wherein fluid under pressure, for example air, is directed at the heavier yarn, during knitting, so as to minimize the tension produced therein during knitting of that yarn into the fabric by positioning the heavier yarn with respect to the floated needles to assure proper floating without significantly stretching or imparting any tension to the heavier yarn.

3,720,079

# DRY AND WET HEATER FOR COMBINED USE

Takuma Katsumata, Inazawa; Hisao Takahashi, Higashi-ku, Nagoya, and Shinji Kato, Makagawa-ku, Nagoya, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 11, 1971, Ser. No. 142,264

Claims priority, application Japan, May 25, 1970, 45/51297 (utility model)

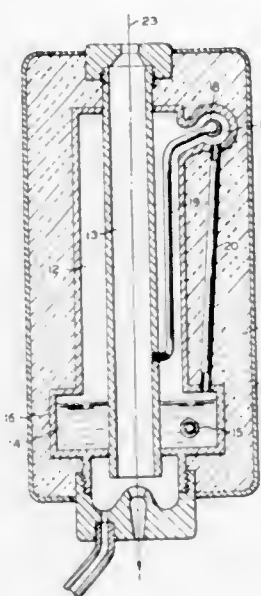
Int. Cl. D06c 1/00

U.S. Cl. 68-6

2 Claims

A dry and wet heater for combined use, characterized in that said heater comprises a steam passage disposed inside a

steam heating medium chamber and communicating with a steam supply source; and a pipe of a small diameter disposed



inside said steam heating medium chamber and connecting a yarn introducing tube to said steam passage.

3,720,080

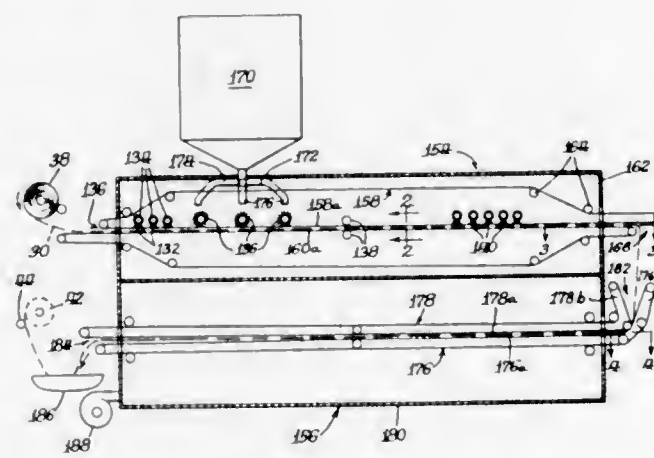
# CONTINUOUS LAUNDERING

Paulette Grantham, 1830 White Oak Drive, Menlo Park, Calif.  
Continuation-in-part of Ser. No. 510,596, Nov. 30, 1965. This application Oct. 19, 1970, Ser. No. 81,701

Int. Cl. B05c 5/02, 9/14

U.S. Cl. 68-19.1

6 Claims



A washing/rinsing unit, and a drying unit, with continuous conveyor means in each unit, the laundry pieces being transferred from the washing/rinsing unit to the drying unit in a continuous operation; in one form, the laundry pieces drop by gravity into the drying unit, and in another, they are positively fed thereto. The conveyor means are of open work, enabling water and air to freely pass therethrough into the laundry pieces, and in one form of laterally spaced segments providing gaps for brushes to enter thereinto and engage the laundry pieces.

3,720,081

# ROLLER BEARING DEVICE FOR A WASHING MACHINE, PARTICULARLY FOR A LINEN WASHING MACHINE

Maurice Marie Achille Trouillet, Lyon, France, assignor to Calor, Lyon, France

Filed Nov. 2, 1971, Ser. No. 194,941

Claims priority, application France, July 8, 1971, 7125073

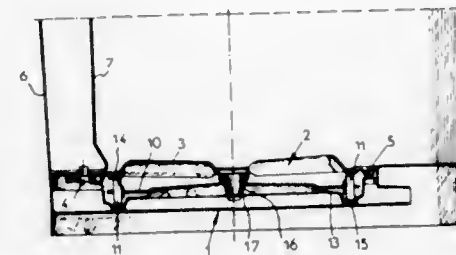
Int. Cl. D06f 7/02

U.S. Cl. 68-132

5 Claims

The present invention relates to a roller bearing device for a small linen washing machine. The device is constituted by a

flat ring provided at its periphery with a plurality of rollers and interposed between the linen agitating wheel and a removable plate mounted at the tub bottom of the machine. Circular guiding grooves for the rollers are provided in the mutually



confronting faces of the plate and the wheel, the latter thus resting upon the rollers during its rotation in the tub of the machine, so as to prevent friction between the said agitating wheel and the tub bottom.

3,720,082

# COMBINATION PADLOCK

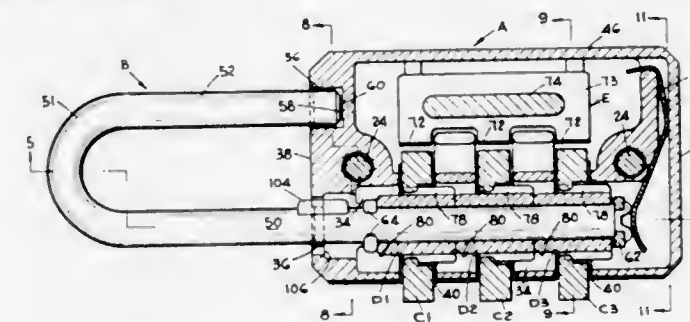
Irving Feinberg, Saddle Brook, and Henry Heine, Vernon, both of N.J., assignors to Presto Lock Company, Division of Walter Kidde & Company, Inc., Clifton, N.J.

Filed Sept. 13, 1971, Ser. No. 179,753

Int. Cl. E05b 37/02; B05b 67/22

U.S. Cl. 70-25

7 Claims



A combination padlock of the multiple dial type is constructed so that manipulation of the essential shackle enables changing or setting the combination, thereby eliminating additional elements to accomplish this function.

3,720,083

# PADLOCK TYPE LOCKS

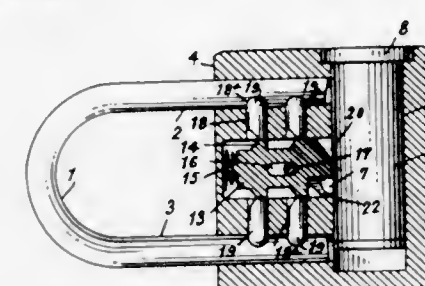
John F. Wellekens, 51 E. 42nd Street, New York, N.Y.

Filed June 11, 1971, Ser. No. 152,216

Int. Cl. E05b 67/22

U.S. Cl. 70-38 A

4 Claims



A lock of the padlock type comprising, in one embodiment of the invention, a substantially U-shaped yoke having legs provided with notches, the notched parts of the legs entering a housing which bridges the space between the legs. The housing has a cavity containing a movable, spring-biased plug that is effective when in one position, to hold locking pins in position to engage the notches in the legs. The plug when in

another position permitting movement of the pins to disengage them from the notches. A lock casing fits in the housing and normally blocks movement of the plug to maintain the parts in locking position and when the lock casing is partly or completely removed from the housing it permits movement of the plug to allow shifting of the pins in order to disengage them from the notches in the legs. The lock mechanism in the lock casing includes a retractable latch engageable with the plug to hold the lock casing from withdrawal out of the housing unless a suitable key is used to retract the latch. In another embodiment of the invention, the lock casing has a part of a spline engaging one of the legs of the yoke, the spline becoming disengaged from the yoke by axial shift of the lock casing and the lock carries a latch holding the lock casing against axial movement until release of the latch by operation of a key in the lock.

3,720,084

# ELECTROMAGNETIC AND MANUAL CONTROL SYSTEMS OF VEHICLE DOOR LOCKS

Pierre Ventre, and Robert Ferraris, Billancourt, France, assignors to Regie Nationale des Usines Renault, Billancourt and Automobiles Peugeot, Paris, France

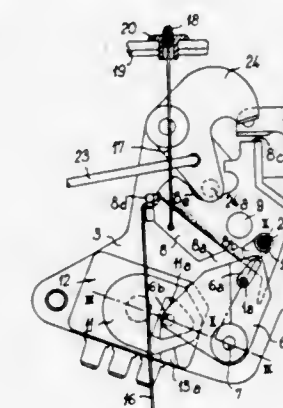
Filed Dec. 11, 1970, Ser. No. 97,243

Claims priority, application France, Dec. 16, 1969, 6943576

Int. Cl. E05b 65/36

U.S. Cl. 70-264

7 Claims



This electric control device is applicable to the door locks of vehicles and comprises an electromagnetic control device having two stable positions and a reversing switch device delivering electric pulses to the electromagnetic device of all the door locks, the control lever of said reversing switch device being associated through a stud to an intermediate pivoting lever co-acting on the one hand with a pivoting locking latch connected to the electromagnetic control device and to a telltale system provided on the door, and on the other hand with a control member associated with the external key.

3,720,085

# PICK PROOF LOCK

Mark L. Zucca, 1608 Lafayette, Oakland, Calif.

Filed Sept. 13, 1971, Ser. No. 179,674

Int. Cl. E05b 35/00, 19/08

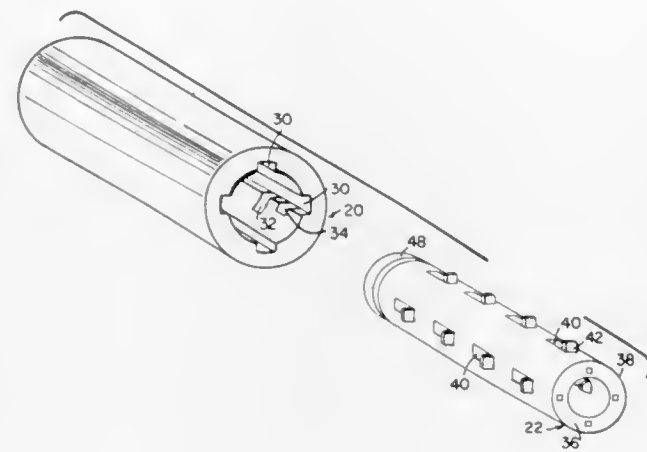
U.S. Cl. 70-358

8 Claims

A pick proof lock assembly in which an annular housing or body member having a plurality of axial grooves telescopically receives a cylinder having rows of radially extending lug projections receivable in the body grooves. The cylinder is connected to a bolt actuating mechanism in any conventional manner with rotation of the cylinder in the body effecting bolt movement for locking and unlocking a door. The cylinder is normally prevented from rotation in the body by engagement of one or more of the lug projections with the side walls of the grooves. A key is used to axially move selected ones of the key projections into alignment with transaxial peripheral notches communicating with an associated groove, and when so aligned, further key rotation will permit rotation of the



cylinder for unlocking operation. The non-selected projections will already be normally aligned with such peripheral notches. As a further feature, a plurality of short dummy peripheral notches may be provided which are normally aligned with the selected operative lug projections, such



notches not being sufficiently long to permit operative cylinder rotation, but their presence is intended to thwart any person attempting to pick the lock, since such person could not ascertain whether a lug projection was aligned with an operative or a dummy notch.

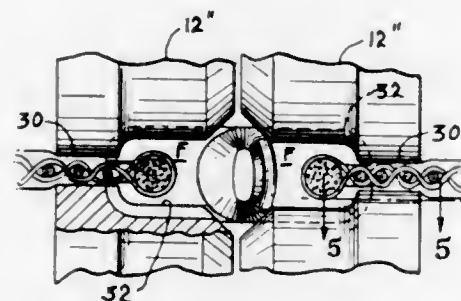
3,720,086

**APPARATUS FOR FINISHING METAL ZIPPER CHAIN**  
John Emerson Burbank, Middlebury, Conn., assignor to  
Scovill Manufacturing Company, Waterbury, Conn.  
Filed May 7, 1971, Ser. No. 141,162

Int. Cl. B21h 7/00

U.S. Cl. 72-194

2 Claims



Apparatus for blunting selected edges of the metal elements of a zipper chain comprises a pair of spaced toothed gears adapted to intermesh with the opposite sides respectively of fastener elements of a zipper chain moving between them.

3,720,087

**METALLURGICAL PROCESS OF BENDING STEEL TO DESIRED CURVATURE OR STRAIGHTNESS WHILE AVOIDING LOSSES IN STRENGTH**  
Rudolf W. Gottschlich, Griffith, Ind., assignor to La Salle Steel Company, Hammond, Ind.

Filed Oct. 3, 1969, Ser. No. 863,490

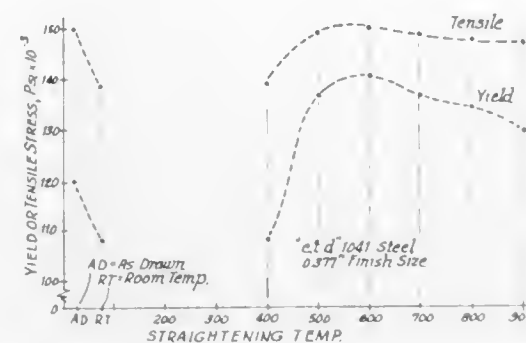
Int. Cl. B21d 3/00

U.S. Cl. 72-364

6 Claims

A metallurgical process for bending steel bars or rods to the desired finished curvature or straightness without the normally expected losses in strength properties by bending the

steel to straighten, etc., while at a temperature within the range of 300°-900° F. and preferably 400°-700° F. Steels



which respond to such treatment are of the type which precipitation harden in response to such bending.

3,720,088

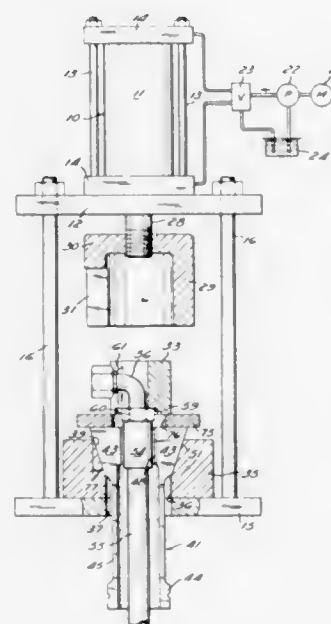
**SPLIT COLLET CRIMPER**

Bruce H. Pauly, Chagrin Falls, Ohio, John Nicol, Palos Verdes Peninsula, Calif., and Karl K. Chen, Cleveland, Ohio, assignors to The Weatherhead Company  
Continuation of abandoned application Ser. No. 798,972, Feb. 13, 1969. This application Apr. 29, 1971, Ser. No. 138,832

Int. Cl. B21d 41/00

U.S. Cl. 72-402

12 Claims



A method and apparatus are disclosed for crimping a sleeve onto a tubular member inserted therein. A spring type collet is split into two semicircular sections, each of which is provided with a plurality of spring fingers which extend axially from a base portion. The spring fingers each have an internal crimping die segment which forms a part of a circular die. An externally coned surface of the collet is forced into an internally coned socket to displace the die segments radially inwardly and crimp the sleeve. The force is applied to the collet by a cylindrical ram which is provided with a slotted side wall to receive any projecting appendage of the sleeve. The collet sections are then separated to remove the crimped sleeve.

3,720,089

**DOUBLE BALL METER PROVER SYSTEM**

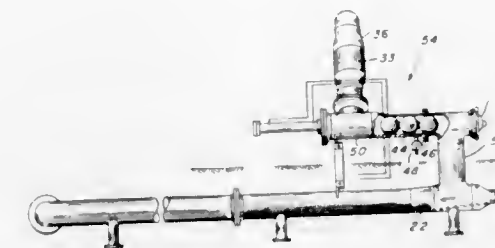
Billy E. Davis, and Ronald G. Dunegan, both of Tulsa, Okla., assignors to Signet Controls Incorporated, Tulsa, Okla.

Filed June 16, 1971, Ser. No. 153,752

Int. Cl. G01F 25/00

U.S. Cl. 73-3

2 Claims



The meter prover system of this invention uses the conventional test loop of pipe, or barrel, through which a seal ball is carried by the fluid flowing through the meter and through the barrel. The seal ball in its passage through the test loop operates two spaced detectors, and the differential count of the meter during the time of passage of the ball between the two detector stations is compared to the known volume of the barrel between the detector stations. The barrel is formed in a U-shape with the inlet and outlet in relatively close proximity. A ball return conduit connects from the outlet of the barrel to the inlet so that seal balls can be recycled through the system. A portion of the ball return conduit has a diameter less than that of the barrel and means are provided for forcing the seal balls into and through this reduced diameter portion from the outlet to the inlet of the barrel. At least one seal ball remaining in the reduced diameter portion at all times, to prevent fluid flow through the ball return conduit.

3,720,090

**SWITCH WITH IMPROVED MEANS AND METHOD FOR CALIBRATION**

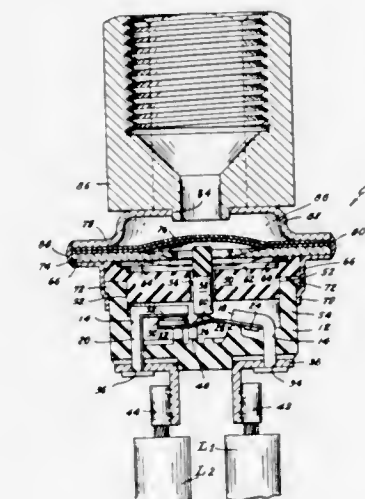
Robert T. Halpert, Providence, and Peter O. Fiore, Cumberland, both of R.I., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 787,639, Dec. 30, 1968, Pat. No. 3,584,168. This application Feb. 9, 1971, Ser. No. 114,074

Int. Cl. G01I 27/00

U.S. Cl. 73-4 R

3 Claims



A pressure responsive device including a primary subassembly of a casing member having a cavity sealed by a snap-acting diaphragm member of either mono or bi-metal. An annular calibration-stop member is located adjacent to the diaphragm and is deformed in either of two directions to change the calibration of the diaphragm member. The device is shown operatively connected to an electric switch.

3,720,091

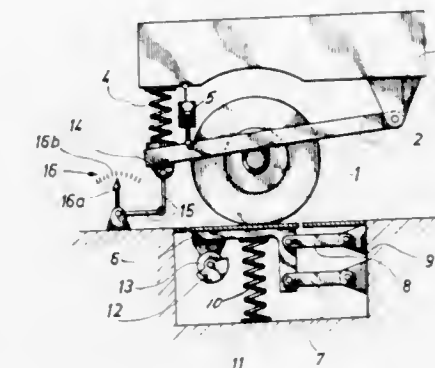
**TESTING DEVICE FOR TESTING OSCILLATION ABSORBERS OF VEHICLES**

Heinz Kiefer, Haydnstrasse 5, 776 Radolfzell, Germany  
Continuation of Ser. No. 797,142, Jan. 6, 1969, abandoned.  
This application Jan. 11, 1971, Ser. No. 105,676

Int. Cl. G01m 17/04

U.S. Cl. 73-11

3 Claims



An apparatus for checking vehicle shock absorbers in installed condition which comprises vertically oscillatable plate means for receiving and supporting a vehicle wheel, said plate means being adapted to be subjected to oscillations for causing the wheel axle mass to carry out sympathetic vibrations the amplitudes of which are measured by a gauge.

3,720,092

**CHROMATOGRAPHIC APPARATUS FOR ANALYZING A RICH OIL SAMPLE**

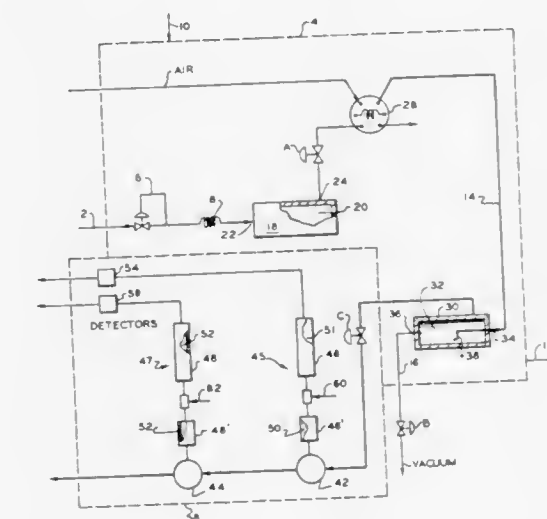
Marvin E. Reinecke, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 28, 1970, Ser. No. 101,999

Int. Cl. G01n 31/08

U.S. Cl. 73-23.1

2 Claims



An apparatus for heating and vaporizing a rich oil sample, mixing the sample vapors, diluting the vapor sample with a diluent gas, mixing the diluted vapors sample, extracting first and second volumes of a vapor sample, and selectively extracting and passing first and second different groups of hydrocarbons from the respective first and second vapor samples to separate first and second detectors.



### 3,720,093 CARBON DIOXIDE INDICATING METER

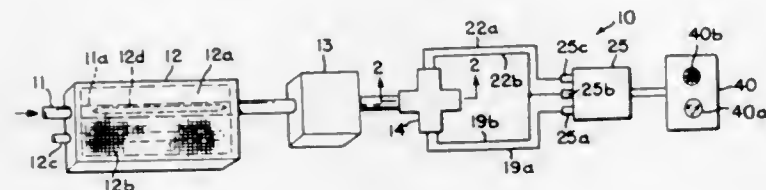
George Herbert Gill, San Diego, Calif., assignor to the United States of America as represented by the Secretary of the Navy.

Filed Dec. 3, 1970, Ser. No. 94,660

Int. Cl. G01n 31/00

U.S. Cl. 73—27 R

1 Claim



A pair of thermistors isolated from one another in a detector housing, are responsive to a gas sample and a reference sample to vary their impedances as a result of the different thermal conductivities of the gases. Varying the impedances unbalances a resistance bridge circuit to provide a signal representative of the percentage concentration of carbon dioxide in the gas sample. Humidifying the gas sample to a predetermined magnitude equaling the relative humidity of the reference gas, providing a spacious heat sink for maintaining the gas sample and reference sample at the same temperature, and providing baffles for preventing the direct impingement of the gas sample onto a thermistor greatly ensures a reliable, accurate determination of CO<sub>2</sub> concentration. Including operational amplifier circuits, having linear characteristics, and packaging the detector to minimize the effects of vibration and shock greatly increase reliability over contemporary devices.

### 3,720,094 AUTOCLAVE FOR PRESSURE JUMP RELAXATION MEASUREMENT

Wilhelm Knoche, Göttingen, Germany, assignor to Max-Planck-Gesellschaft zur Förderung der Wissenschaften e.V.

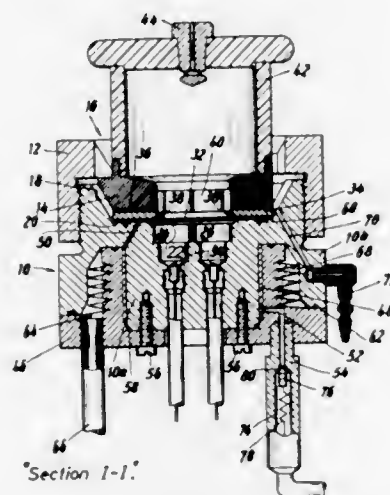
Filed July 27, 1971, Ser. No. 166,490

Claims priority, application Germany, Aug. 4, 1970, G 70 29 349.1

Int. Cl. G01m 3/02

U.S. Cl. 73—37

11 Claims



An autoclave for pressure jump measurements comprises a body affording a pressure chamber having an open top closed by a rupture disc which is pressed against the margin of the chamber by a clamping ring held by a readily releasable closure. The pressure chamber has a floor spaced from the rupture disc by a narrow gap communicating with a supply of pressure medium, the floor having in it two wells each containing a resistance cell.

### 3,720,095 METHOD OF TESTING CIGARETTE PAPER

Desmond Walter Molins, Deptford, London, England, assignor to Molins Organization Limited, London, England

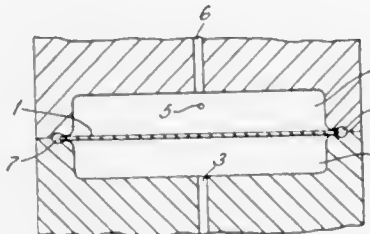
Filed Oct. 7, 1968, Ser. No. 765,375

Claims priority, application Great Britain, Oct. 11, 1967, 46,373/67

Int. Cl. G01m 3/02

U.S. Cl. 73—38

1 Claim



In a cigarette making system the porosity of the paper web forming the wrapper of the cigarettes is tested, for example by means of a pneumatic test device, and a signal thus obtained is fed to a cigarette inspector device which tests the cigarettes for leaks in the wrapper; the inspector device thus is compensated for variations in the paper porosity.

### 3,720,096 METHOD AND APPARATUS FOR MONITORING THE MOLECULAR WEIGHT OF HYDROCARBON MIXTURES

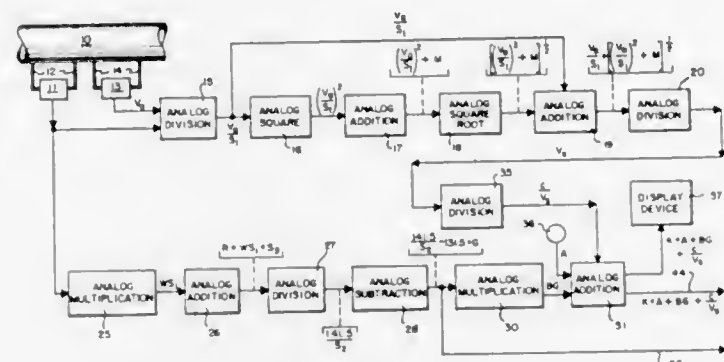
Robert A. Woodle, Nederland, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Nov. 25, 1970, Ser. No. 92,619

Int. Cl. G01n 11/00

U.S. Cl. 73—53

4 Claims



A method for determining the molecular weight of hydrocarbons wherein the Watson-Nelson characterization factor has been determined from the sensing of gravity and viscosity to provide first and second signals, respectively, corresponding to the Saybolt viscosity and API gravity and a third signal corresponding to the characterization factor. The signals are then combined in accordance with the following equation:

$$MW = \exp \ln [ \exp(a+bK) + \exp(c+dK) ] + m(G-30)$$

where:

MW = the molecular weight of the hydrocarbon mixture; K = the Watson-Nelson characterization factor of the hydrocarbon mixture; G = the API gravity of the hydrocarbon mixture at 60°F; and a, b, c, d, and m are predetermined constants;

and where the abbreviations ln = natural logarithm of; exp = e raised to the power; and e is the base of the natural logarithms.

### 3,720,097 APPARATUS AND METHOD FOR MEASURING MAMMALIAN BLOOD VISCOSITY

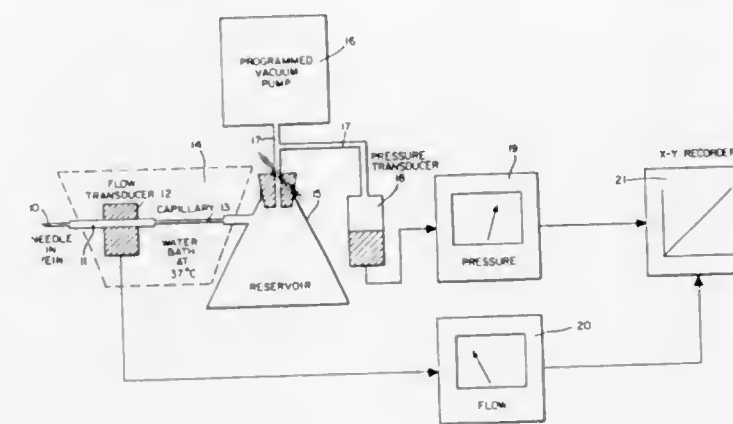
Reuben E. Kron, Penn Valley, Pa., assignor to The Trustees of the University of Pennsylvania, Philadelphia, Pa.

Filed Jan. 21, 1971, Ser. No. 108,433

Int. Cl. G01n 11/08

U.S. Cl. 73—55

5 Claims



A diagnostic method and apparatus are disclosed by which instantaneous measurements are obtained which reflect the viscosity of native mammalian blood. A sample of fresh mammalian blood is taken by puncturing a blood vessel and introduced into a system including (1) a capillary calibrated to deliver 20 ml. of saline solution in one minute at -50 mm. Hg. at 37°C.; (2) an electromagnetic flowmeter which senses the flow rate of the blood through the capillary, (3) a programmed vacuum pump which draws the blood sample through the capillary at a variety of pressures, and (4) recording means to instantaneously plot the resultant of the blood flow with respect to pressure variations.

### 3,720,098 ULTRASONIC APPARATUS AND METHOD FOR NONDESTRUCTIVELY MEASURING THE PHYSICAL PROPERTIES OF A SAMPLE

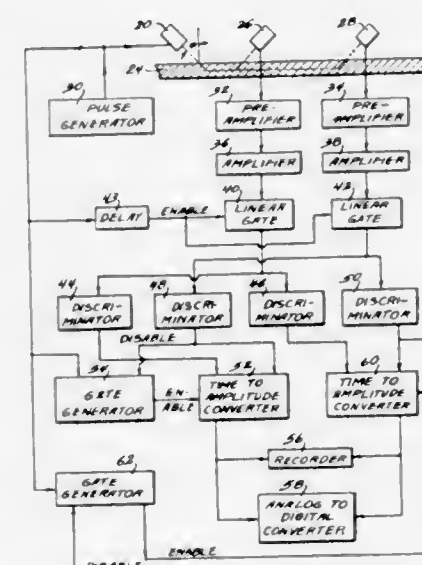
Norman E. Dixon, Pasco, Wash., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed March 22, 1971, Ser. No. 126,712

Int. Cl. G01n 29/00

U.S. Cl. 73—67.7

11 Claims



The physical properties of a sample are measured by generating a collimated beam of pulsed ultrasound and transmitting the ultrasound at an incident angle relative the sample greater than the longitudinal-ultrasonic-wave critical angle and less than the longitudinally induced-shear-ultrasonic-wave

critical angle for the sample to generate simultaneously within the sample longitudinal and mode-converted-shear ultrasonic waves. The propagation of the generated longitudinal and shear ultrasonic waves through the sample is measured to provide a measure of the physical properties of the sample.

### 3,720,099 TESTING OF ELASTOMERIC MATERIALS

Siegfried Wolff, Bezirk Cologne; Siegfried Baumgart, Hurth Bezirk Cologne; Ulf-Erick Arnold, Hurth-Mitte; Hannelore Pohnisch, Erfstadt-Dirmersheim, and Peter Herbrich, Cologne, all of Germany, assignors to Deutsche Gold-Und Silber-Scheideanstalt Vormals Roessler, Frankfurt am Main, Germany

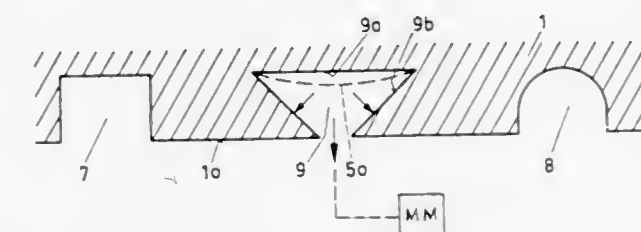
Filed Jan. 13, 1971, Ser. No. 106,129

Claims priority, application Germany, Jan. 15, 1970, P 20 01 613.1

Int. Cl. G01n 3/32

U.S. Cl. 73—101

7 Claims



Wall means surrounds and defines an interior chamber in which a sample of vulcanized elastomer is to be accommodated. At least two separate surfaces bound this chamber and are provided with undercut grooves of dovetail-shaped cross-section in which portions of the sample are received. At least one surface can be moved with reference to the other in a sense effecting distending of the test sample.

### 3,720,100 APPARATUS FOR THE MEASUREMENT OF TENSILE STRESSES ON BANDS, FILAMENTS OR THE LIKE

Heinrich Grunbaum, Binningen, Switzerland, assignor to Dr. C. Schachenmann & Co., Basel, Switzerland

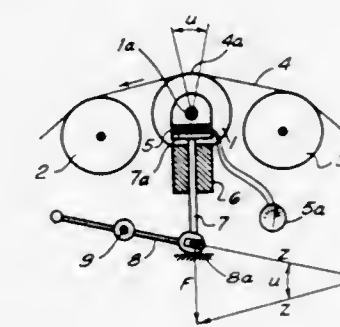
Filed Sept. 3, 1970, Ser. No. 69,270

Claims priority, application Switzerland, Sept. 9, 1969, 13,854/69

Int. Cl. G01l 5/04

U.S. Cl. 73—144

10 Claims



Testing apparatus for measurement of tensile stresses on elongated flexible band-like or filamentary products has two stationary guide rollers and a movable testing roller which is displaced through short distances in response to changes in tensile stresses upon the product. The product is trained over the rollers whereby the testing roller causes a transducer to produce appropriate signals whenever the testing roller changes its position in response to a change in tensile stress. The operating range of the



testing apparatus can be broadened by moving the testing roller sideways independently of the changes in tensile stress to whereby change the extent of overlap between the product and the peripheral surface of the testing roller.

3,720,101

## AUTOMATIC SPRING RATE PLOTTER

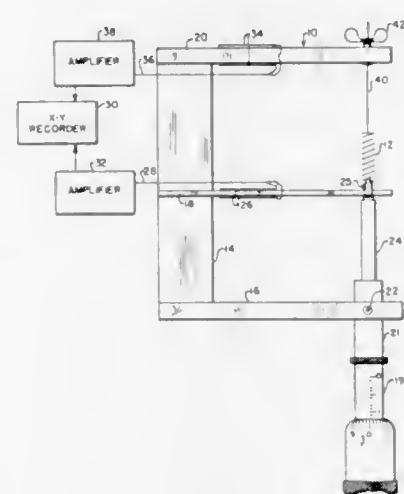
Herman R. Kollmeyer, Riverside, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed July 23, 1971, Ser. No. 165,594

Int. Cl. G011 1/04

U.S. Cl. 73—161

7 Claims



Apparatus for automatically measuring and plotting the force-deflection curve of springs, especially small springs on which forces are to be applied in order of 0.1 to 100 grams.

3,720,102

## WATER SEALED BOAT SPEEDOMETER

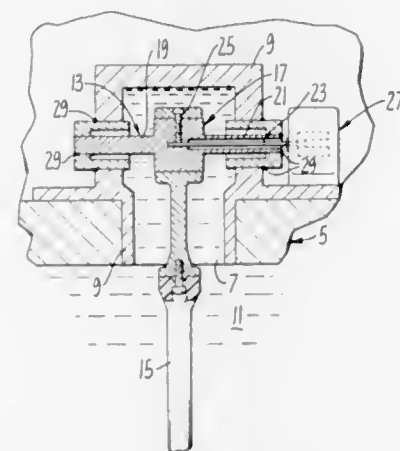
Robert D. Ogg, Portland, Maine, assignor to The Eastern Company, Naugatuck, Conn.

Filed April 15, 1971, Ser. No. 134,204

Int. Cl. G01c 21/00

U.S. Cl. 73—186

6 Claims



A boat speedometer of the type wherein a vane extends into the water from a torsion arm and speed is determined by the deflection of the arm, wherein the arm is at least partially hollow and the indicator mechanism is actuated by a shaft through the hollow arm. The arm is substantially surrounded by a water chamber and is supported at fixed points so that no motion is transmitted through a moving seal. This permits the torsion arm to be completely sealed to the water chamber so that the leakage problem normally associated with moveable seals is obviated.

3,720,103

## HEAT FLUX MEASURING SYSTEM

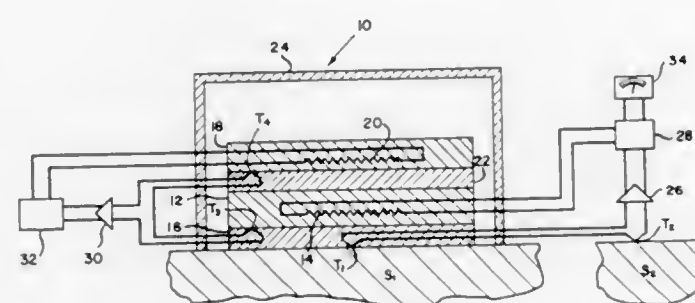
Donald E. Adams, Williamsville, and Franklin A. Vassallo, Lancaster, both of N.Y., assignors to Cornell Aeronautical Laboratory, Inc., Buffalo, N.Y.

Filed Nov. 3, 1970, Ser. No. 86,552

Int. Cl. G01k 17/00

U.S. Cl. 73—190 H

5 Claims



A heat flux meter having thermocouples responsive to temperature differentials between two similar surfaces, the heat flux to one of which is to be determined, a first heater responsive to the thermocouples for heating the other surface, a second heater responsive to temperature differences between it and the first heater to prevent heat flow away from the other surface and a reflective shield for preventing environmental heat flow to the other surface.

3,720,104

## FLOWMETERS

Klaus Joachim Zanker, Streatley, Bedfordshire, England, assignor to Kent Instruments Limited, Luton, England

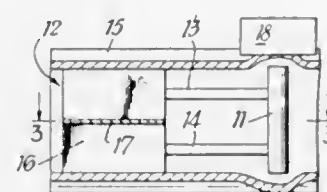
Filed Aug. 17, 1970, Ser. No. 64,365

Claims priority, application Great Britain, Aug. 20, 1969, 41,629/69

Int. Cl. G01f 1/00; G01p 5/00

U.S. Cl. 73—194 B

5 Claims



A device for measuring the velocity of a fluid flowing along a duct comprising a generally cylindrical member positioned in the duct for bodily oscillatory movement at right angles to the fluid flow in response to streams of periodic eddies generated by fluid flow therepast, and transducer means for providing a signal in response to such oscillatory movement. The member is situated and arranged so that the bodily motion thereof gives rise to a coherent two-dimensional eddy pattern in the flowing fluid. The member may be positioned in the duct by one or more flexures, by a plurality of springs, or by a magnetic levitation.

3,720,105

## ACOUSTIC FLOWMETER

Uldis Cirulis, Midland Park, N.J., assignor to NU Sonics, Inc., Paramus, N.J.

Filed March 24, 1971, Ser. No. 127,551

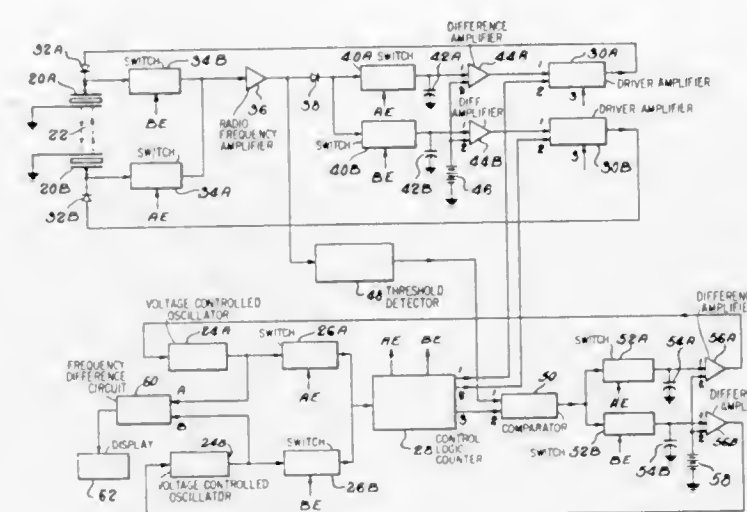
Int. Cl. G01f 1/00

U.S. Cl. 73—194 A

6 Claims

An acoustic flowmeter for measuring the flow of fluid in a pipe having a pair of transducers mounted on the pipe opposite each other with one downstream from the other, an oscillator associated with each transducer, the transducers

sharing time so that each is used in the transmit mode and the receive mode to use the same acoustic path and thereby eliminate the variables due to the use of different paths, means for controlling the amplitude of the excitation applied to the



transmit mode transducer and means for controlling the frequency of the oscillators, and means for obtaining the difference between the two oscillator frequencies which frequency is a function of the velocity of flow of the fluid in the pipe.

3,720,106

## FLUID METER

Andrew Varga, 1603 E. Cardeza St., Philadelphia, Pa.

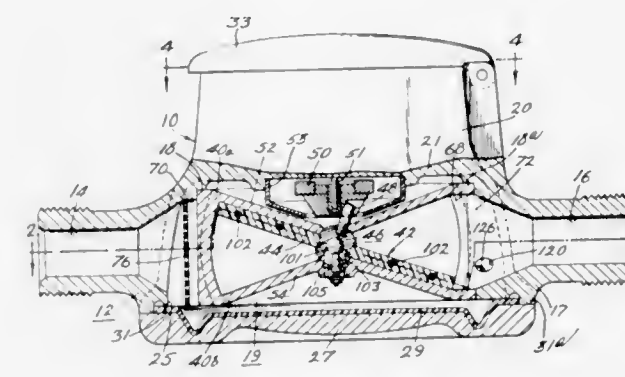
Division of Ser. No. 663,265, Aug. 25, 1967, Pat. No.

3,564,919. This application Feb. 16, 1971, Ser. No. 115,226

Int. Cl. G01f 15/14

U.S. Cl. 73—273

4 Claims



A fluid meter comprising a casing, a measuring chamber unit defining a measuring chamber mounted in said casing, fluid inlet and outlet ports communicating with said measuring chamber, a piston assembly mounted for movement in said chamber upon flow of fluid therethrough, indicator means operatively connected to said piston assembly to indicate at least rate of flow through said measuring chamber, means defining an opening in said casing for assembly of said measuring chamber unit therein, a bottom cover member including a seal detachably secured over said opening, said casing including a circumferentially extending rib spaced inwardly from the outer edge defining said opening, said edge projecting beyond said rib to provide in the assembled relation contact between said cover and edge and engagement of said rib with said seal, and said casing constructed without internal protuberances thereby allowing unobstructed fluid flow about the measuring chamber and wherein the centerline of the inlet and outlet ports are aligned with a plane through the center of the measuring chamber to minimize pressure drop across the fluid meter.

3,720,107

## TEMPERATURE RESPONSIVE ACTUATION

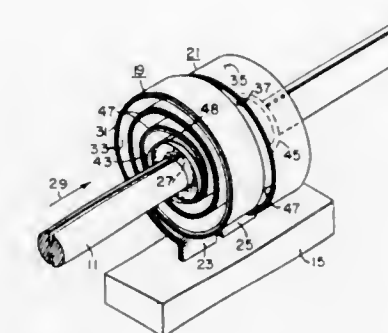
Basil S. Shepard, Greenbelt, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 2, 1971, Ser. No. 167,937

Int. Cl. G01k 5/70

U.S. Cl. 73—363.7

8 Claims



There is disclosed an actuator having a shaft which, responsive to temperature changes, is rotated by bi-metallic coiled members. The members are tightly coiled so that each produces a high spring torque. One member is coiled with the lower-thermal-coefficient-of-expansion layer radially inward and the higher coefficient-of-expansion layer radially outward; the other member is coiled with the higher thermal coefficient-of-expansion layer radially inward and the lower coefficient-of-expansion layer radially outward. The inner ends of the members are connected to the shaft and the outer ends to a fixed support; the members being positioned about the shaft with their coils wound oppositely so that the spring torques of the members counteract at any temperature but the torques produced by change in temperature act cumulatively.

3,720,108

## DIFFERENTIAL PRESSURE MEASURING MECHANISM

Edmund Freitag, Tillystrasse 1, Minden, Westphalia, Germany

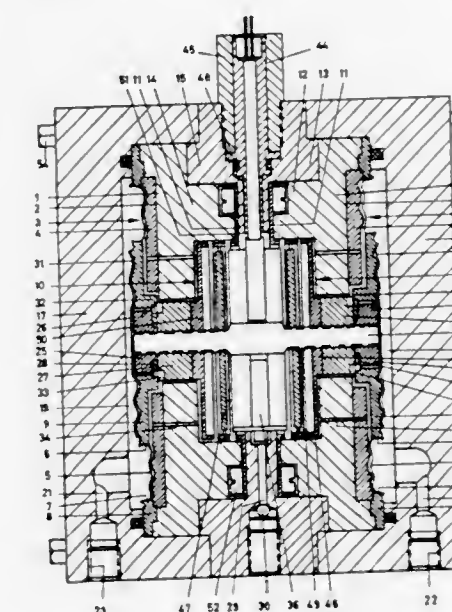
Filed Feb. 24, 1971, Ser. No. 118,350

Claims priority, application Germany, Feb. 26, 1970, P 20 09 043.1

Int. Cl. G011 9/10

U.S. Cl. 73—398 R

11 Claims



Mechanism is symmetrical on each side of a middle plate provided with opening therethrough containing electrical inductive pickup responsive to position of a rod carrying rigid inner part of measuring membranes on each end. Membrane sockets over the opening provide a chamber enclosing pickup and filled with liquid. Compensating membranes allow for thermal expansion of liquid.

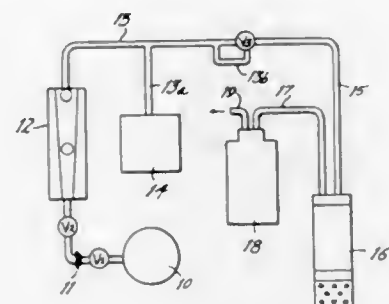


3,720,109

**FLUID-OPERATED SAMPLER AND FLOWMETER**Robert M. Blechman, Honey Brook Township, Chester County, Pa., assignor to Pro-Tech, Inc., Malvern, Pa.  
Filed May 3, 1971, Ser. No. 139,759  
Int. Cl. G01n 1/14

U.S. Cl. 73-421 B

11 Claims



Sampling apparatus is operated by continuous flow of fluid from a pressurized source through a regulating valve and a flowmeter having dual floats. At intervals determined by the flow rate a pressure-sensitive valve releases accumulated fluid to propel sampled medium from a sample intake to a collection location. Principal uses are in stream monitoring for pollution control, sewage treatment facilities, and industrial waste reduction programs.

3,720,110

**METHOD AND APPARATUS FOR DETECTING ANGULAR POSITION AND AMOUNT OF DYNAMIC UNBALANCE OF ROTATING BODY**

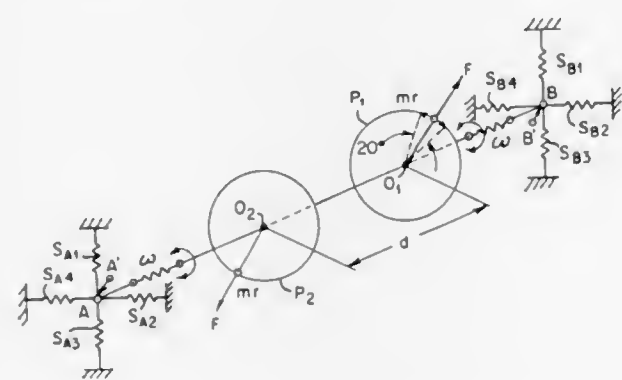
Hiroshi Sakuraba, Kanagawa-ken, Japan, assignor to International Mechanical Vibration Laboratory, Inc., Osaka-shi, Osaka, Japan

Filed Aug. 13, 1971, Ser. No. 171,460

Int. Cl. G01m 1/16

U.S. Cl. 73-460

8 Claims



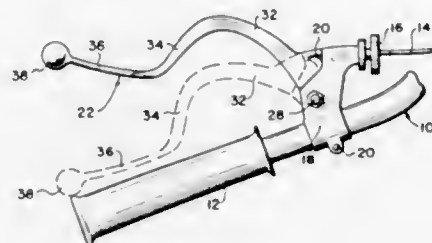
A method and apparatus for detecting the angular position and amount of a dynamic unbalance of a rotary body by detecting the direction and magnitude of a displacement of the normal axis of rotation of a rotationally vibrated rotary body, the displacement corresponding to the position and amount of the unbalance of said rotary body. The rotary body is rotationally vibrated within a minute angular range around its own normal axis of rotation and is resiliently supported to two spaced points along said axis so that it may be displaced in a plane perpendicular to said axis. As a result, said normal axis of rotation of the rotary body is displaced as a function of the angular position and amount of the unbalance of the rotary body. The magnitude and direction of the displacement are detected, whereby the angular position and amount of the dynamic unbalance of the rotary body are detected.

3,720,111

**LEVER FOR BRAKE AND CLUTCH OPERATION ON CYCLE HANDLEBARS**Glen B. Guyton, 3401 E. Newton, Tulsa, Okla.  
Filed June 4, 1971, Ser. No. 150,137  
Int. Cl. G05g 11/00

U.S. Cl. 74-489

7 Claims



A lever for hand operation of the brakes and clutch from the handlebars of a cycle, wherein said lever is of a configuration for avoiding engagement with the fingers of the hand when the brakes or clutch members are actuated by depressing of the lever against the handlebars. The lever is particularly designed and constructed for ease of use during actuation of the brakes or clutch, but provides a sufficient clearance between the lever itself and the forefinger of the hand in the depressed position of the lever for precluding pinching or squeezing of the finger against the handlebars, thus improving the operating efficiency of the cycle.

3,720,112

**LOAD LIMITER FOR SELF-ENERGIZING DRIVE**

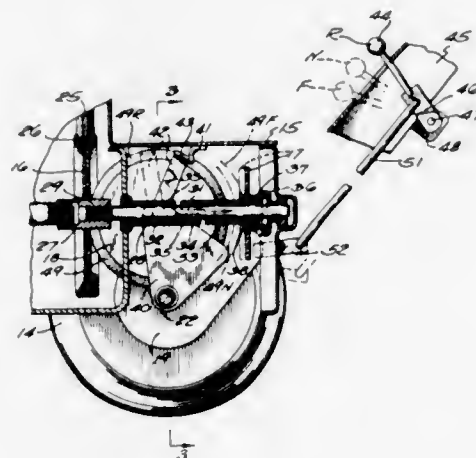
Edward W. Enters, Fredonia, and Warren H. Price, Sheboygan, both of Wis., assignors to Gilson Bros. Co., Plymouth, Wis.

Filed Oct. 22, 1971, Ser. No. 191,646

Int. Cl. F16h 15/08, 13/02

U.S. Cl. 74-196

4 Claims



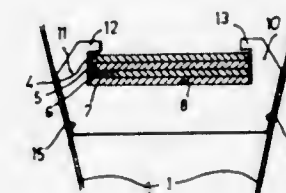
A load limiter for a self-energizing drive mechanism which has a rotating disk, a wheel driven therefrom and a swing mechanism on which the wheel is swung toward and away from the disk, said limiter comprising stop means for limiting swinging motion of the swing mechanism toward the disk and yieldable spring biased mounting means for the disk on which the disk will yield prior to engagement of the stop means, whereby the pressure between the wheel and disk is limited to the spring bias of the disk mounting means.

3,720,113

**FLEXIBLE CONTINUOUS POWER TRANSMISSION MEANS**Hubertus Josephus van Doorne, Deurne, and Hemmo Hermannes Johannes Ludoph, Heeze, Netherlands; said Ludoph assignor to said Van Doorne, Doornehof, Deurne, Netherlands  
Filed Apr. 6, 1971, Ser. No. 131,594  
Int. Cl. F16g 5/10

U.S. Cl. 74-236

3 Claims



A flexible continuous transmission means for transferring torque between V-shaped discs wherein a predetermined number of metallic strips is provided along which a plurality of V-shaped members can shift in a longitudinal direction. The V-shaped members link up and extend around the total circumference of the strips, and are blocks made of a non-compressible material, such as metal. In this way the torque is substantially transmitted by the compressive stress through the V-shaped blocks. The V-shaped blocks are so shaped that they can tilt with respect to each other when they are entrained around a disc and the diameter of the tilting line is smaller than that diameter of the innermost metallic strip.

3,720,115

**MACHINE ELEMENT DRIVE MEANS**

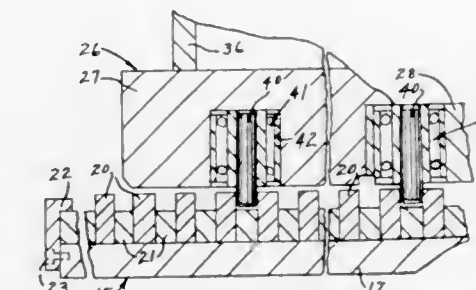
Thomas D. Vertin, 37540 Lake Shore Rd., Mount Clemens, Mich.

Filed Feb. 16, 1971, Ser. No. 115,586

Int. Cl. F16h 1/18, 1/04, 55/18

U.S. Cl. 74-424.6

40 Claims



A machine element drive means for moving one machine element, as a column, relative to another machine element, as a base, including a gear rack means on one of said machine elements and a rotatable drive worm on the other of said machine elements in driving engagement with the gear rack means, whereby when said drive worm is rotated, a relative movement between the machine elements is produced. The gear rack means may be provided with square teeth and the drive gear worm with teeth formed from a plurality of rotatably mounted studs, or the gear rack may have teeth formed from a plurality of rotatably mounted studs and the drive worm be provided with square teeth.

3,720,116

**ARRANGEMENT FOR PRELOADING BALL SCREW ASSEMBLIES & METHOD OF MANUFACTURE OF THE BALL SCREW NUT THEREFOR**

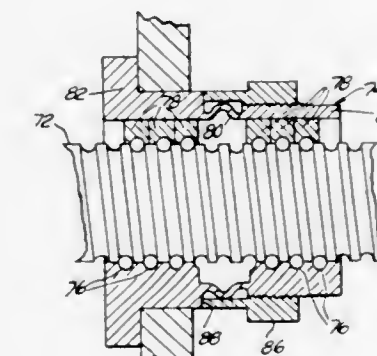
Bernard R. Better, Chicago; Joseph W. Kosinski, Riverside, and Edward Hain, Chicago, all of Ill., assignors to The Bendix Corporation

Filed March 23, 1971, Ser. No. 127,212

Int. Cl. F16h 55/22, 55/18

U.S. Cl. 74-459

13 Claims



3,720,114

**MACHINE ELEMENT DRIVE MEANS INCLUDING A GEAR RACK ASSEMBLY OF INDIVIDUAL SQUARE TEETH**

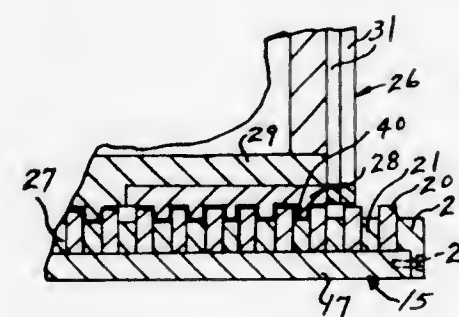
Thomas D. Vertin, 37540 Lake Shore Road, Mount Clemens, Mich. 48043

Filed Feb. 16, 1971, Ser. No. 115,598

Int. Cl. F16h 1/18, 1/04, 55/08

U.S. Cl. 74-424.6

21 Claims



A machine element drive means for moving one machine element, as a column, relative to another machine element, as a base, including a gear rack means on one of said machine elements and a rotatable drive worm on the other of said machine elements in driving engagement with the gear rack means, whereby when said drive worm is rotated, a relative movement between the machine elements is produced. The gear rack means is formed from a plurality of individual square teeth.

A method and arrangement for preloading ball screw assemblies in which a ball screw nut having an axially and resiliently deformable intermediate section integral therewith is utilized which is rigid in torsion and shear, with an arrangement for axially spreading the nut portions connected by the deformable section and securely positioning the portions in their separated position by means of variable width spacers to thereby vary the preload. The method of preloading includes the step of deforming an intermediate portion of the nut so as



to cause axial separation of the connected portions thereof and securing the portions in their separate position to create the nut preload. The method of manufacture consists of first machining the screw thread, and other geometry into the nut blank, and then machining an intermediate section so as to render the section axially deformable to provide accurately matched nut portions which are relatively movable axially, but securely located with respect to each other radially and angularly.

3,720,117

## COMPACT VOICE UNIT

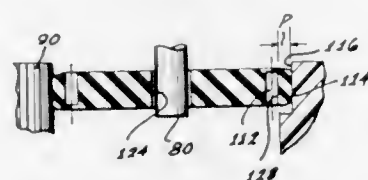
William Hart, Torrance, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Division of Ser. No. 863,450, Oct. 3, 1969, abandoned. This application Jan. 14, 1971, Ser. No. 106,547

Int. Cl. F16h 13/06, 15/68, 55/34

U.S. Cl. 74—798

5 Claims



A compact and simplified toy phonograph of a type which includes a constant force spring that drives a record turntable, the turntable driving a governor through a planetary drive. The planetary drive includes three planetary discs of elastomeric material, each disc having slots arranged in a circle near its rim to increase its flexibility, to thereby allow greater production tolerances in producing the drive. The spring has a coiled inner portion which is held in a small chamber in the unit housing, to eliminate the need for a pivotally mounted spring-holding hub. The outer end of the spring is attached to the turntable by a tab formed in the spring which is firmly captured by a protuberance on a pair of walls of the turntable.

3,720,118

## INTEGRATED SERVO ACTUATOR

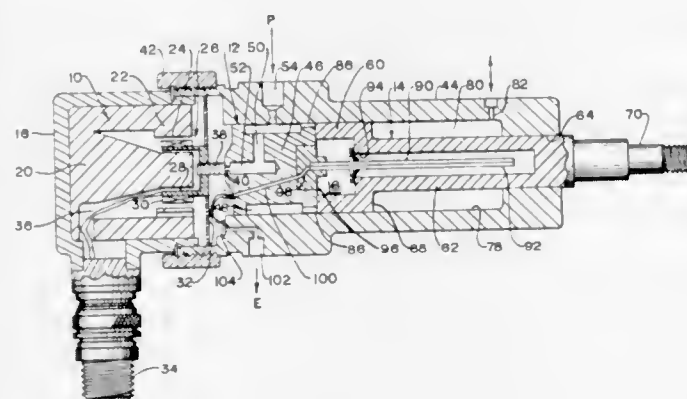
Joseph McCormic, Pawling, N.Y., assignor to Delta Hydraulics, Inc., Braintree, Mass.

Continuation of Ser. No. 808,749, March 20, 1969, abandoned. This application March 17, 1971, Ser. No. 125,333

Int. Cl. F15b 13/16, 15/17

U.S. Cl. 91—47

9 Claims



An integrated servo actuator including in a single package a force motor, a fluid modulator controlled directly by the force

motor, and an actuator movable in response to the characteristic flow of fluid through the modulator. An integral potentiometer mounted in the housing produces a signal which is a function of the actuator position.

3,720,119

## MECHANISM FOR FEEDING BAR STOCK TO A MULTI-SPINDLE LATHE

Harold James Gilbert, Coventry, and Norman Yearsley, Kenilworth, both of England, assignors to Wickman Machine Tool Sales Limited, Coventry, England

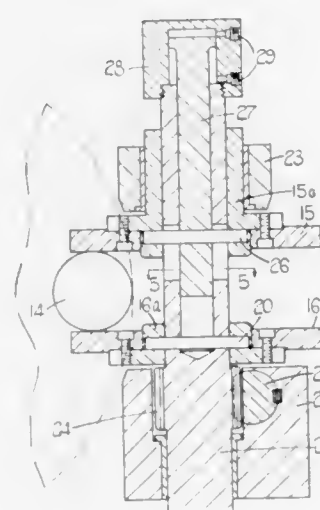
Filed July 27, 1971, Ser. No. 166,466

Claims priority, application Great Britain, Aug. 1, 1970, 37,271/70

Int. Cl. B23b 13/00, 3/34

U.S. Cl. 82—2.7 R

7 Claims



Mechanism for feeding bar stock to a multi-spindle lathe in which a plurality of rotatable spindles provided respectively with collets for gripping the stock are equiangularly mounted within a drum which is intermittently rotated through an angle equal to the angular spacing of the spindles in the drum. The feed member is adapted to make frictional contact with a stock bar to feed it through the collet whilst the drum is stationary, and is rotatable about an axis extending tangentially to a circle described about the axis of rotation to the drum. The feed member has a cut away portion whereby sufficient clearance is provided to enable the drum and carrier to rotate when the said portion is presented towards the bar.

3,720,120

## NUMERICAL CONTROL SYSTEM ADAPTIVE TO WORKPIECE HARDNESS

Hymie Cutler, Detroit, Mich., assignor to The Bendix Corporation

Filed Sept. 21, 1970, Ser. No. 73,811

Int. Cl. B23b 7/00

U.S. Cl. 82—2 B

13 Claims

A stored program computer uses input numerical information to control the path of motion of a lathe cutter relative to the lathe spindle. The system also controls the rate of motion of the spindle in such a way as to attain a predetermined useful cutter life and a maximum volume of metal removal by the cutter during that life. The force exerted by the cutter on the workpiece is measured by a transducer to produce a signal which is operated upon in connection with information on the tape

to produce an inches-per-revolution number. This number is multiplied by a number derived from a spindle speed transducer to develop a feedrate number to control the rate of operation of interpolators which generate control signals for the two mutually perpendicular cutter

3,720,122

## APPARATUS TO CONTROL THE CUTTING DEPTH MADE IN A WORKPIECE BY A CUTTING MACHINE

Gonzalo R. Mendoza, Avenida Alemania No. 376, Guadalajara, Mexico

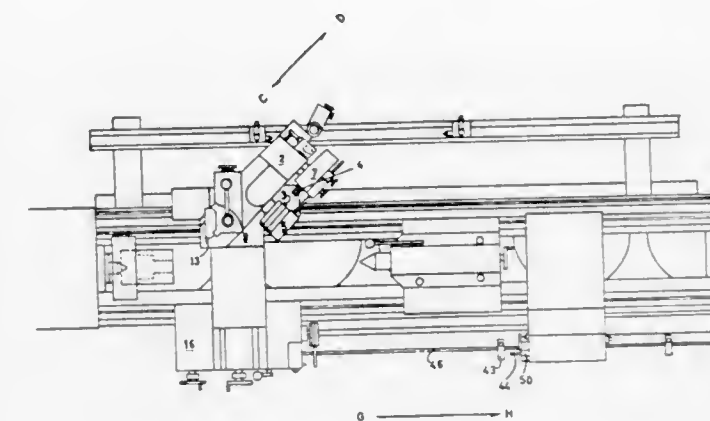
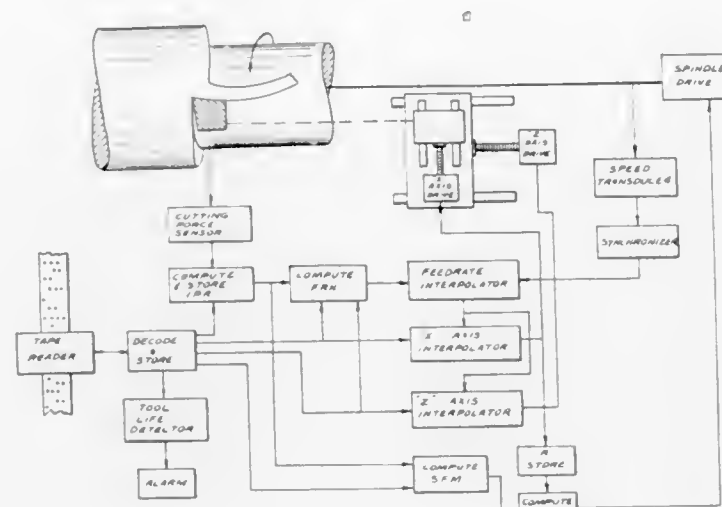
Filed July 20, 1971, Ser. No. 164,400

Claims priority, application Mexico, Aug. 12, 1970, 124473

Int. Cl. B23b 21/00

U.S. Cl. 82—24 R

5 Claims



In a cutting machine having a cutting tool movable toward and away from a workpiece, an apparatus for automatically changing the depth of cut made by the tool in the workpiece in successive movements of the tool towards the workpiece.

3,720,123

## FACING STOP SYSTEM

Josef Eichenhofer, Brampton, Ontario, Canada, assignor to Automatic Bar Feed Ltd., Downsview, Ontario, Canada

Filed Aug. 13, 1971, Ser. No. 171,538

Int. Cl. B23b 3/36, 3/34

U.S. Cl. 82—34 A

16 Claims

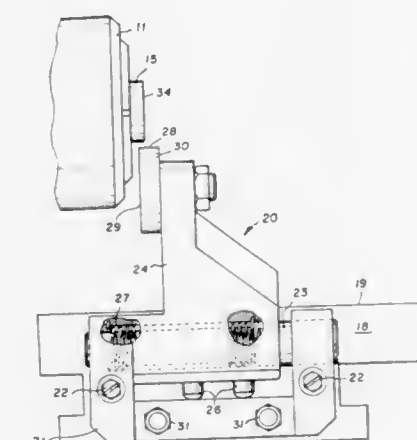
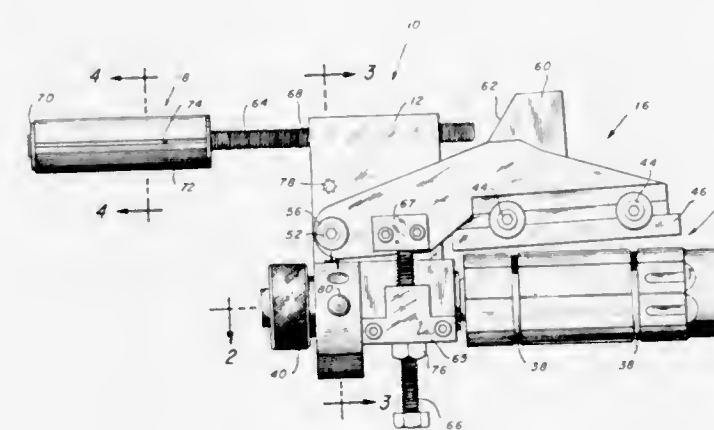
3,720,121  
FIBERGLASS PIPE WORKING TOOL  
Rudolph G. Foss, Tulsa, Okla., assignor to Unique Industries, Inc., Tulsa, Okla.

Filed Feb. 10, 1971, Ser. No. 114,191

Int. Cl. B23b 5/16

U.S. Cl. 82—4 C

4 Claims



A tool for putting a male taper on the end of a length of pipe includes a supporting member which rotatably carries an expandable collet and pivotally carries a cutter blade assembly having a cutter blade thereof extending directly above the expandable collet. A combination handle and blade advancer is utilized to rotate the cutter blade relative to a length of pipe received over the collet and at preselected intervals to advance the blade onto the outer wall of the pipe to obtain the desired angle and length of taper.

A facing stop system for a multi-spindle screw machine ejects bar remnants and stops a replenishment bar in position for facing off. It includes a stop member supported for movement axially and transversely of the bar and urged transversely into the path of the bar and toward the spindle. The support for the stop member is secured to the inward facing edge of the cross-slide associated with the feed spindle to be clear of the tool-mounting region of the cross-slide. The stop member is normally closer to the spindle than the end of a faced bar being indexed to the feed station, so that a faced bar moves the stop aside during the feed cycle, and the stop pivots upward to eject a bar remnant fed out of the spindle and to intercept a replenishment bar in proper position for facing off.



3,720,124

## ROTARY WORK DRIVER FOR MACHINE TOOLS

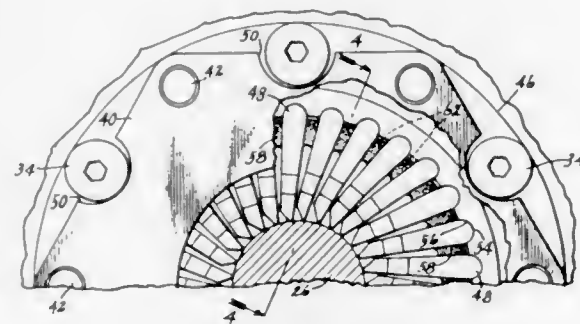
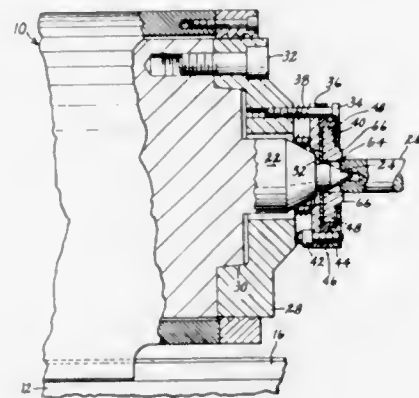
Carl W. Kaesemeyer, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed May 20, 1971, Ser. No. 145,293

Int. Cl. B23b 33/00

U.S. Cl. 82-40

2 Claims



This specification and drawings disclose a work driver in combination with a machine tool such as a precision grinding machine or a lathe. The device has a series of tooth-like sprags to surround a workpiece and apply a rotational drive force in one direction to that workpiece in opposition to the force produced during a machining operation. Each of the sprags is movable in a limited swinging motion independent of the other sprags to permit the variation in size and eccentricity normally found in a series of similar unfinished workpieces in a manufacturing operation. Further, the device is shown to have in its preferred form an axial motion to facilitate positioning and removal of workpieces prior and subsequent to machining and to account for variations in length of workpiece and inaccuracies in center hole depths. Controls are also included in the disclosure to permit the device to be used with an automatic machine.

3,720,125

## ADJUSTABLE STRIPPER WITH STROKE CONTROL

William B. Scott, 650 Race Street, Rockford, Ill., assignor to W. A. Whitney Corp., Rockford, Ill.

Filed Aug. 2, 1971, Ser. No. 168,099

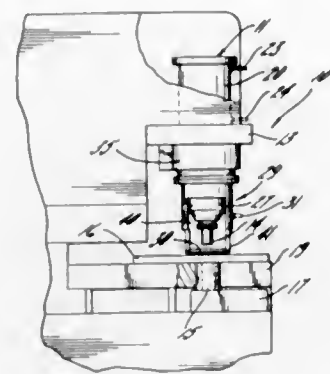
Int. Cl. B26d 7/26; B26f 1/02

U.S. Cl. 83-146

3 Claims

A punch press includes a fluid actuator operable to reciprocate a punch through advance and return strokes relative to a die to punch holes in an intervening workpiece. A stripper is supported by the press to prevent upward movement of the workpiece on the return stroke of the punch and is

adjustable vertically relative to the die to accommodate different thicknesses of workpieces. A proximity detector carried by and adjustable with the stripper detects the return of the



lower end of the punch upwardly past the stripper and in response to such detection, produces a signal controlling the actuator to terminate the return stroke of the punch.

3,720,126

## DIE TEST STAND

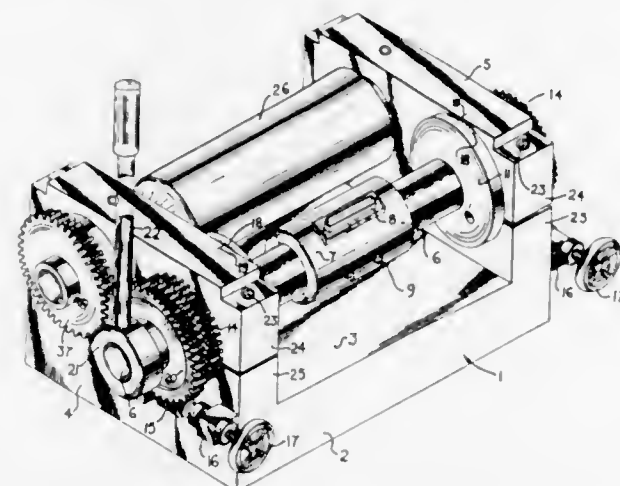
Richard Kranz, Shawnee Mission, Kans., assignor to Tension Envelope Corporation, Kansas City, Mo.

Filed Dec. 11, 1970, Ser. No. 97,121

Int. Cl. B23d 25/02; B26f 1/08

U.S. Cl. 83-344

3 Claims



Dies for cutting windows in envelope blanks are set up on mounting sleeves to permit rapid placement in an envelope making machine without substantial machine down-time through use of a test stand having a mounting shaft and back-up roller simulating that of the machine. The mounting shaft is accurately adjustable in distance from a back-up roller and the back-up roller is selectively adaptable to rotate in synchronization with the mounting shaft or remain stationary depending upon the type of envelope machine to be simulated.

3,720,127

## METHOD AND APPARATUS FOR PRESS WORKING

Anatol Michelson, Swarthmore, Pa., assignor to Gulf &amp; Western Industrial Products Company, Grand Rapids, Mich.

Filed May 14, 1971, Ser. No. 143,582

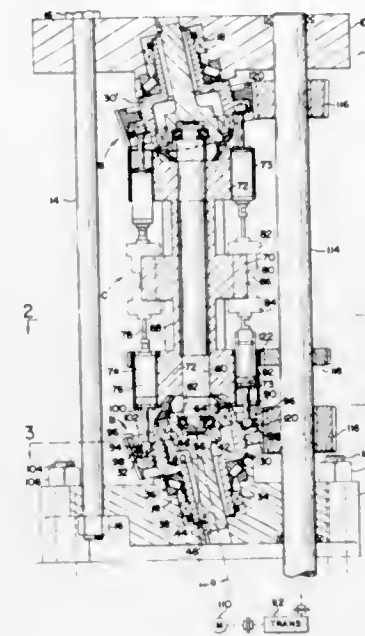
Int. Cl. B26d 5/08

U.S. Cl. 83-550

11 Claims

A method and apparatus for successively performing a press-type operation of a plurality of workpieces located in work stations which are arranged in a circle. Tool

means rotatable, in unison with the work stations are forcibly reciprocated by drive means into and out of engagement with the work stations during each revolution



thereof. Unprocessed workpieces are fed into the work stations as the processed workpieces are removed therefrom during each revolution.

3,720,128

## TONE INDICATING MUSIC BOX AND ITS APPLICATION TO A MUSIC INSTRUMENT

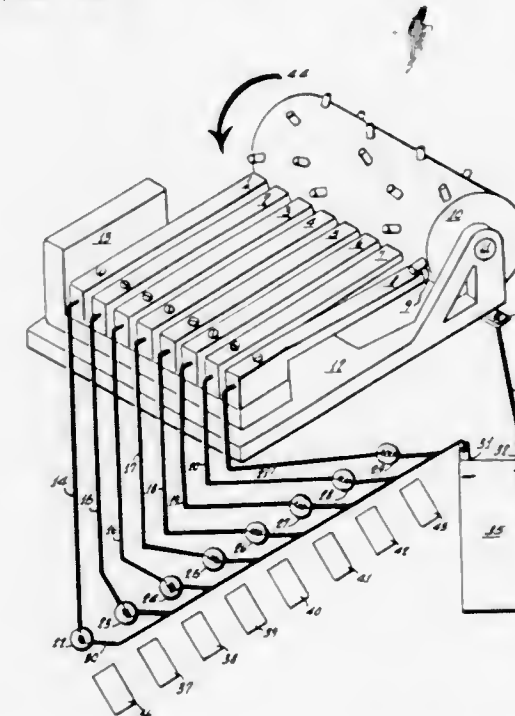
Eugene P. Frank, 350 East St. James St., San Jose, Calif.

Filed Dec. 30, 1971, Ser. No. 214,094

Int. Cl. G10f 1/06; A63j 17/00

U.S. Cl. 84-94

2 Claims



My invention comprises a music box mechanism with its metal revolving drum studded with metal plucking pins and its metal tone producing reeds, but where each of the tone producing reeds is electrically isolated from each other and from the electrical ground. The other working parts, including the plucking pins and revolving drum, are part of the electrical ground, and continuity exists and only exists between a tone producing metal keep and the electrical ground when the reed is in the process of being plucked by a metal plucking pin of said ground potential. To each key (or other point of actuation) of a music instrument (such as a toy piano) is placed a light bulb wired in series with the metal reed (or switch) producing the same tone when plucked as the key of the music

instrument, when struck. The other connection of all the light bulbs is connected to one side of a battery, and the other side of the battery (or other voltage source) is connected to the electrical ground. Thus, as the music box plays, a child may accompany, (on a toy piano) the music boxes tune correctly by striking only those keys heard (or signaled) by a blinking light. As each light blinks over a given key (of a toy piano) just before the corresponding metal reed in the music box sounds, (this being the point when the plucking pin is in the process of plucking) there is even some allowance of time for the child's reflexes in his responding to the light signal.

3,720,129

## SPIRAL HEAD ADJUSTING SCREW

Joseph Louis Lagasse, Montreal, Quebec, Canada, assignor to Northern Electric Company, Ltd., Montreal, Quebec, Canada

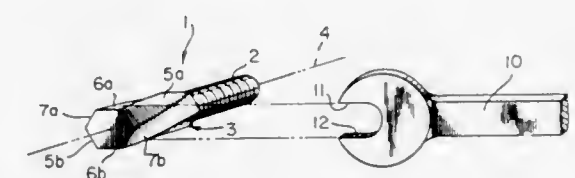
Continuation of Ser. No. 790,023, Jan. 9, 1969, abandoned.

This application Dec. 18, 1970, Ser. No. 99,639

Int. Cl. F16b 23/00

U.S. Cl. 85-9 R

3 Claims



A fastener element has a wrench engaging portion provided with wrench engaging surfaces having a helical configuration about the rotational axis of the fastener element.

3,720,130

## CHATTERLESS PHOTO ALBUM PAGE

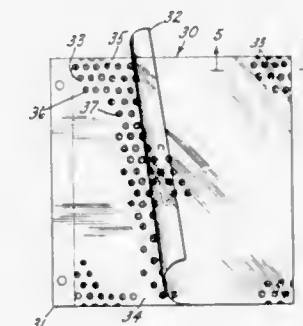
Sheldon Holson, Norwalk, Conn., assignor to The Holson Company, Wilton, Conn.

Continuation-in-part of Ser. No. 824,171, May 13, 1969, abandoned. This application Jan. 15, 1971, Ser. No. 106,880

Int. Cl. B42f 5/00

U.S. Cl. 40-104.18

2 Claims



A photographic album page of the type comprising a relatively opaque center lamina having exposed adhesively coated surfaces, and a pair of transparent overlay members adapted to be selectively adhered thereto on the inner surface, photographic prints being positionable therebetween to be retained by such adherence. The adhesive is applied to the surfaces in such a manner as to be discontinuous in circular areas of critical sizes and interstitial distance, whereby when the transparent overlay is peeled, no chattering occurs.



3,720,131

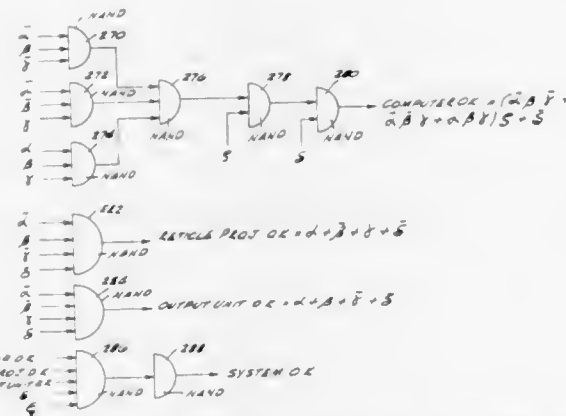
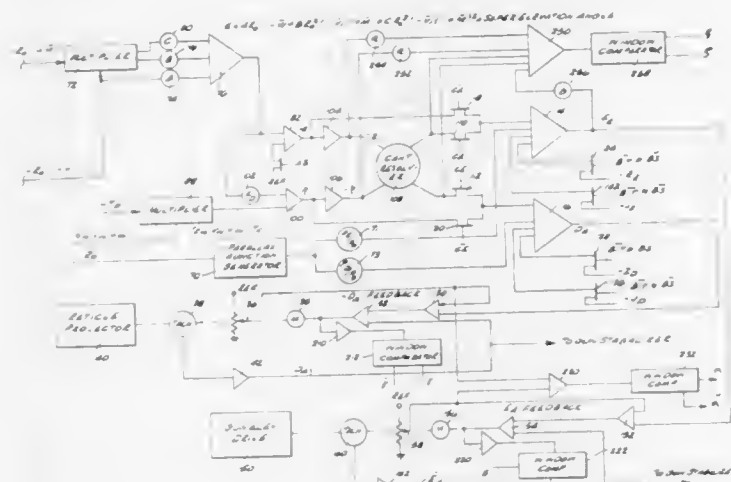
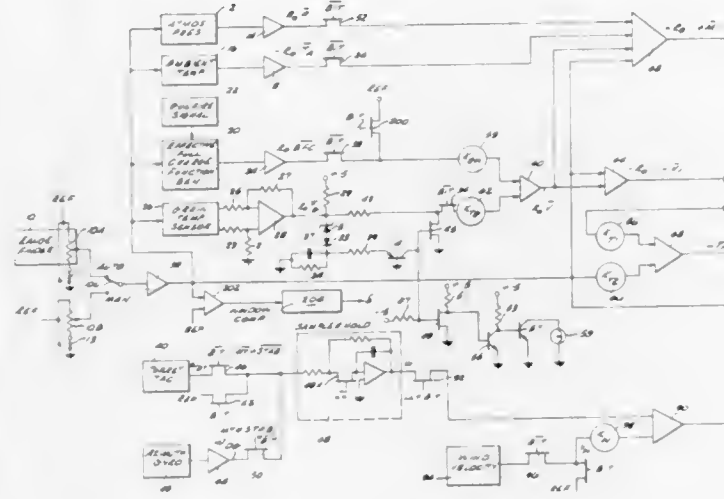
**BUILT-IN TEST FOR TANK FIRE CONTROL COMPUTER**  
 Millard M. Frohock, Jr., Thousand Oaks; Michael A. Riley,  
 and William E. French, both of Los Angeles, all of Calif.,  
 assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Jan. 28, 1971, Ser. No. 110,572

Int. Cl. F41f 25/00

U.S. Cl. 89—41 ME

10 Claims



In combination with a Tank Fire Control Computer, comparators and logic for isolating faults in the system to a particular unit.

3,720,132

**BARREL MOVING DEVICE FOR GUNS**

Karl-Josef Wiemers, Dusseldorf, Germany, assignor to Rheinmetall GmbH, Dusseldorf, Germany

Filed Dec. 16, 1970, Ser. No. 98,731

Claims priority, application Germany, Dec. 24, 1969, P 19 64 896.5

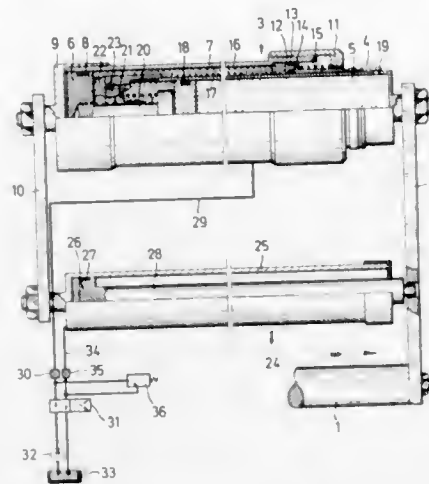
Int. Cl. F41f 19/14

5 Claims

U.S. Cl. 89—43 R

A barrel moving device for guns, moving the guns and a barrel relative to each other, which comprises two members constituting a hydropneumatic counter-recoil mechanism and a hydraulic barrel mover. The members comprise cylinders effective in the same direction, and a piston and a piston rod

rigidly connected therewith. A beam body is provided and the piston reciprocates in the cylinders. The latter are secured to the beam body. A part connects the counter-recoil mechanism with the gun. The piston rod is connected with the part and comprises a hollow cylinder having a movably mounted separation disc therein. The separation disc is charged on one



side with a gaseous medium and on the other side with a hydraulic fluid. The counter-recoil mechanism and the barrel mover are hydraulically connected by valve means, and a first conduit leads to the cylinder of the barrel mover, a second conduit leads to the cylinder of the counter-recoil mechanism, and the conduits include each a shut-off valve for closing the conduits.

3,720,133

**INFANTRY WEAPON ADAPTED TO FIRE A PLURALITY OF CARTRIDGES SIMULTANEOUSLY**

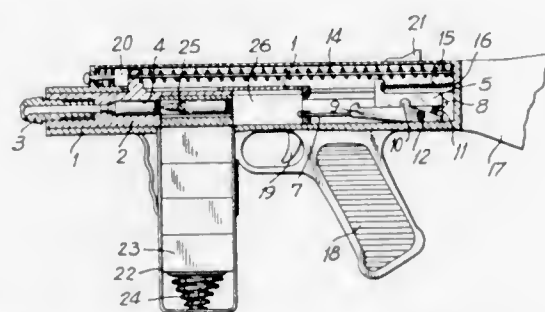
Pierre Jampy, 5, rue Pauphile; Henri Bouix, Cote du Monteil,  
 and Rene Armand, 22, rue Georges Thyvent, all of Tulle,  
 France

Filed Aug. 26, 1970, Ser. No. 67,096

Int. Cl. F41d 9/00

U.S. Cl. 89—126

2 Claims



An infantry weapon comprises a carrier block with a plurality of firing chambers and barrels carried by the block in extension of the chambers. A clip with a plurality of cartridges equal to the number of barrels is fed from a stack in the weapon and a breech block carrier pushes the cartridges from the clip into the firing chambers. After percussion of the cartridges, the breech block carrier and carrier block retract to enable insertion of a new clip into the weapon and expulsion of the old clip after the spent cartridges have been reintroduced therein.

3,720,134

**CONTROL SYSTEM FOR MACHINE TOOL MEMBERS**

Jaromir Zeleny, Prague, Czechoslovakia, assignor to Vyzkumny ustav obrabecich stoji a abrabení, Prague, Czechoslovakia

Filed March 3, 1970, Ser. No. 16,092

Claims priority, application Czechoslovakia, March 6, 1969, 1646/69

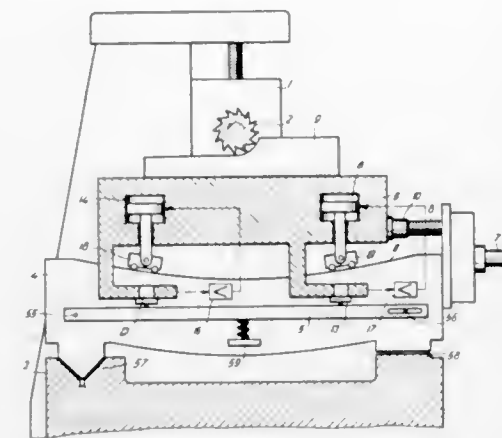
Int. Cl. B23b 9/00, 17/00

U.S. Cl. 90—11 R

19 Claims

A control system for positioning relatively movable machine tool members comprising a templet secured to one of said machine members, a servo indicator secured to the other

of said members and adapted to engage the templet to produce a signal indicative of the direction and degree of deviation between said members, a servomotor position in



contact with one of said members responsive to said signal to reposition said member until full compensation for said deviation is effected.

3,720,135

**FEED RATE CONTROLLER**

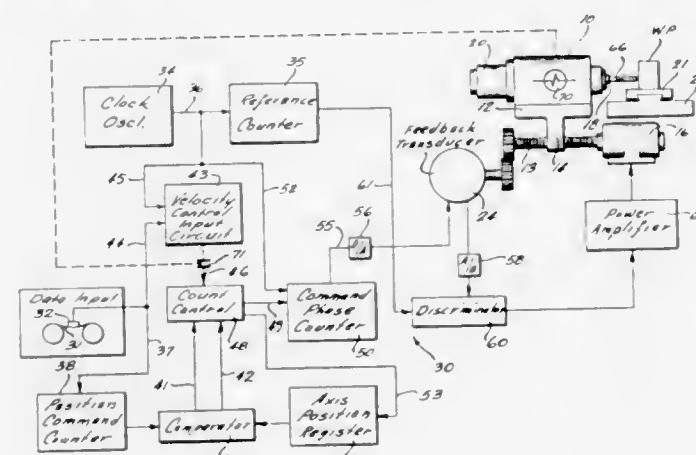
Kenneth R. Merner, and Richard E. Stobbe, both of Greendale,  
 Wis., assignors to Kearney & Trecker Corp., West Allis,  
 Wis.

Filed Feb. 1, 1971, Ser. No. 111,326

Int. Cl. B23b 47/24

U.S. Cl. 90—14

4 Claims



An apparatus to eliminate the stalling of a machine tool spindle electric drive motor when a cutting tool secured in the spindle encounters a hard spot in a workpiece. A current relay is connected in the spindle motor circuit and is energized upon the occurrence of an abnormal load on the spindle motor. A normally closed contact of the relay is located in the feed axis drive system and effects the interruption of the command pulses to the feed axis drive system.

**ERRATUM**

For Class 91—47 see:  
 Patent No. 3,720,118

3,720,136

**VIBRATING TABLE**

Jiro Uchida and Minoru Osugi, Komatsu, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

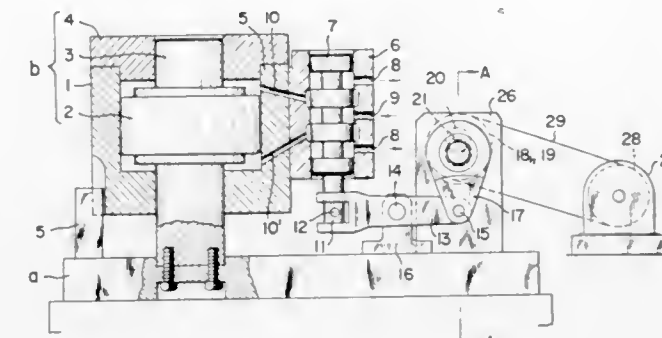
Filed Sept. 23, 1970, Ser. No. 74,693

Int. Cl. F15b 21/02; F01b 15/00

U.S. Cl. 91—35

5 Claims

The present invention relates to a vibrating table comprising an eccentric rotatable shaft driven by a prime



ing the rotation of said eccentric shaft and the reciprocating movement of the spool of the servo valve causing alternate switching of the outlet and inlet of a pressurized fluid to vibration actuator.

3,720,137

**AUTOMATICALLY REVERSING, DOUBLE ACTING FLUID CYLINDER MECHANISM**

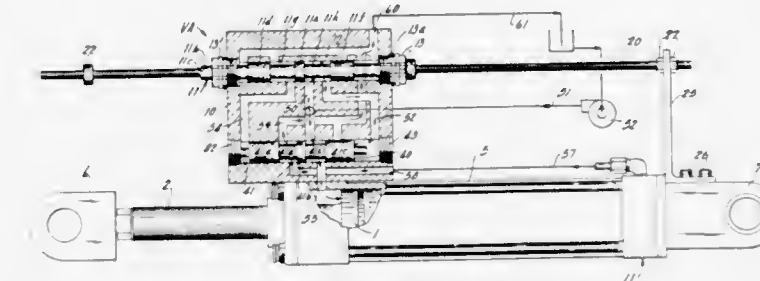
Lawrence R. Landherr, Racine, and Karl J. Prohaska, Pewaukee, both of Wis., assignors to Milwaukee Cylinder Corporation

Filed May 24, 1971, Ser. No. 146,407

Int. Cl. F01l 25/06

U.S. Cl. 91—279

1 Claim



A double acting fluid cylinder and piston unit having valve control means for providing constant reciprocating motion of the piston. The valve control means includes a pilot spool which is actuated by the piston at either end of its predetermined travel, and which spool then directs pressure fluid to actuate a flow directing spool so that pressure fluid is directed to the opposite end of the cylinder to thereby reverse direction of movement of the piston. The relationship between the pilot spool and follower means on the piston is externally adjustable to vary the stroke of the piston.

3,720,138

**OPERATOR**

Davis A. Van Scoy, Houston, Tex., assignor to Helmerich & Payne, Inc., Houston, Tex.

Filed Feb. 4, 1971, Ser. No. 112,579

Int. Cl. F01b 25/26, 31/12; F15b 11/18

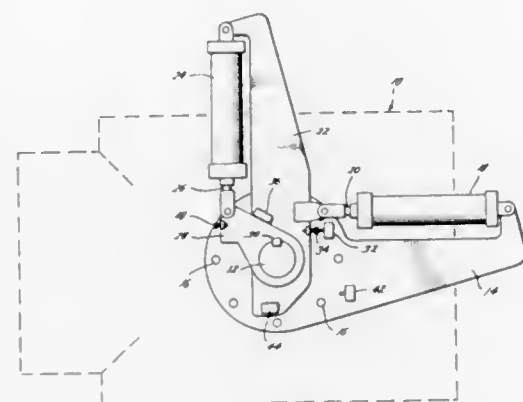
U.S. Cl. 91—1

4 Claims

An apparatus for operating a valve either 90° or 180° comprising a first hydraulic cylinder driving a first arm, and a



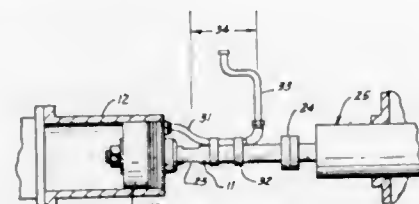
second hydraulic cylinder mounted on the first arm and driving a second arm and including limit switches to indicate the



**3,720,140**  
**PUMP PISTON**  
Larry E. Lee, Houston, Tex., assignor to G. W. Murphy Industries, Inc., Houston, Tex.  
Filed Aug. 27, 1971, Ser. No. 173,506  
Int. Cl. F01b 31/00

U.S. Cl. 92—87

1 Claim



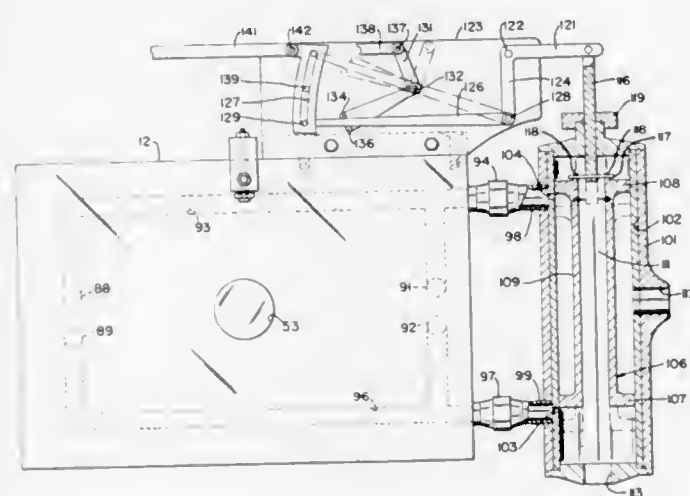
A single-acting pump having an elastomeric and synthetic fabric piston seal ring and means to supply fluid to the piston to cool and clean the piston and cylinder.

extremes of valve operation and a hydraulic system to supply fluid to the hydraulic cylinders.

**3,720,139**  
**OSCILLATING STEAM ENGINE**  
Raymond Blackney, 3105 Merrywood Drive, Sacramento, Calif.  
Filed Dec. 16, 1971, Ser. No. 208,830  
Int. Cl. F01b 15/06

U.S. Cl. 91—176

4 Claims

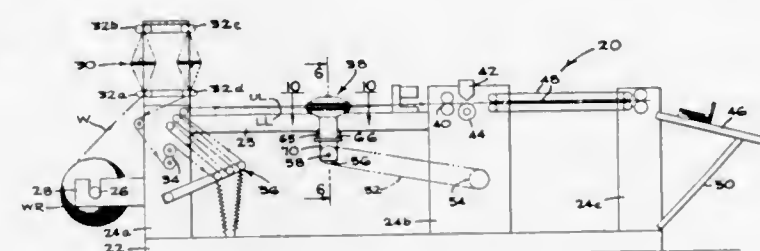


An oscillating steam engine has a frame including a valve plate with opposite planar faces arranged vertically and normal to the engine crank shaft. A first cylinder incorporates a plate having flanges outstanding therefrom and defining a planar face adapted to abut the valve plate. A pivot connection near its center joins the cylinder to the frame plate. The cylinder houses a reciprocating piston on a piston rod extending to a crank on the crank shaft. The cylinder is held against the valve plate by a holding yoke extending from the frame around a cylinder plate flange and carrying a roller abutting an outer face on the cylinder plate flange. Preferably, a second cylinder and appurtenances duplicate the first cylinder arrangement, the holding yoke being symmetrically extended to balance forces on the frame and preferably being repeated above the below the pivot connection. A mechanism similar to a Stephenson link connects a throttling and reversing valve in a steam supply and conduit.

**3,720,141**  
**APPARATUS FOR MAKING THERMOPLASTIC HANDLE BAGS**  
David K. Stock, Green Bay, Wis., assignor to FMC Corporation, San Jose, Calif.  
Filed April 8, 1970, Ser. No. 26,483  
Int. Cl. B31b 1/14, 1/86; B32b 31/00

U.S. Cl. 93—33

11 Claims

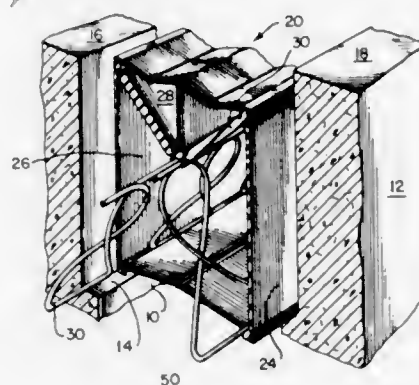


This application discloses a bag machine adapted to form handle bags from a thermoplastic web material. The handle bags are made with a reinforced mouth comprising two or more layers of web which are of sufficient width so that hand receiving cut-outs can be formed therein. A bat of this form can be securely and easily grasped by one hand and the multi-layered web provides sufficient strength to prevent tearing of the bag about the cut-outs.

**3,720,142**  
**ELASTOMER SEAL FOR MODULAR ROADBEDS**  
Robert Lee Pare, 1106 Turks Head Bldg, Providence, R.I.  
Filed Sept. 7, 1971, Ser. No. 177,953  
Int. Cl. E01c 11/12

U.S. Cl. 404—67

7 Claims



An elastomer joint seal used in modular, slab-like construction for pavements, roads, wall panels and the like. The seal is

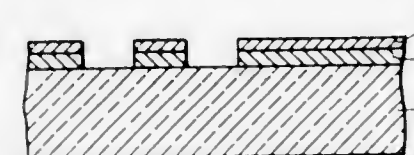
generally elongated and is placed between facing edges of adjacent modular elements. A pair of spring elements, lodged in the form of an inverted V, runs longitudinally of the seal. By virtue of the internal geometry of the elastomer seal, movement of the modular elements relative to each other strains the spring elements in their respective planes. Two other forms of the seal are disclosed in which one or two additional spring elements are included in the construction.

**3,720,143**  
**MASK FOR SELECTIVELY EXPOSING PHOTO-RESIST TO LIGHT**

Toshio Hashimoto, and Isao Tanabe, both of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan  
Hitachi, Ltd., Tokyo, Japan  
Filed Feb. 2, 1971, Ser. No. 111,972  
Claims priority, application Japan, Feb. 2, 1970, 45/8500  
Int. Cl. G03b 5/00; B32b 31/14

U.S. Cl. 95—1

3 Claims

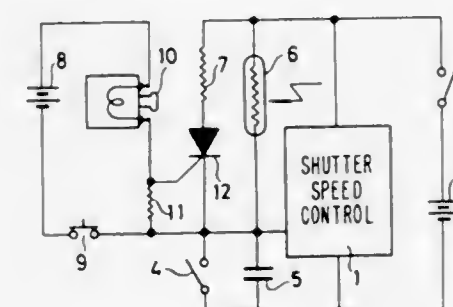


A mask for photoengraving and its method of manufacture, which mask comprises a transparent glass substrate, an aluminum layer formed on the substrate with a predetermined pattern and an anodized aluminum oxide layer formed on the aluminum layer, the aluminum oxide layer may include a substance which does not reflect light, such as ultraviolet rays.

**3,720,144**  
**FLASH APPARATUS FOR A CAMERA**  
Takashi Uchiyama, Tsurumi-ku, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan  
Filed Dec. 8, 1970, Ser. No. 96,106  
Claims priority, application Japan, Dec. 10, 1969, 44/99571  
Int. Cl. G03b 7/08

U.S. Cl. 95—10 CT

19 Claims

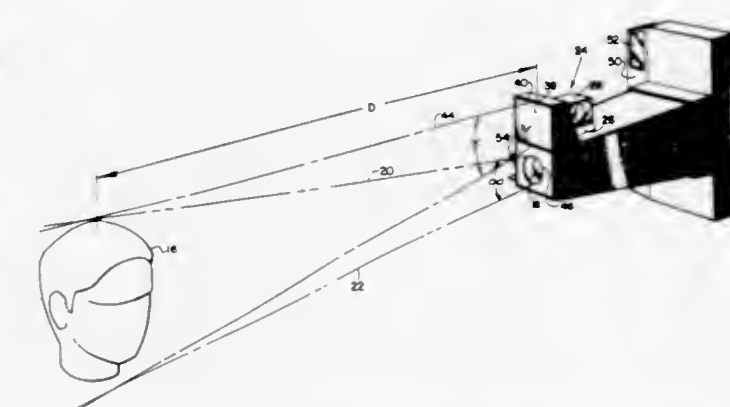


In the flash apparatus disclosed, an electric shutter is controlled by a photosensitive element forming a time constant circuit with a timer capacitor. A switching element, that responds to current flowing through a triggered flash unit, connects a resistive element in series with the time capacitor to form another time constant circuit. This adjusts the shutter to flash.

**3,720,145**  
**PORTRAIT CAMERA HAVING SYNCHRONIZED FLASH ILLUMINATION SOURCE**  
Bruce K. Johnson, Andover, and William A. Shelton, Cambridge, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.  
Filed June 29, 1970, Ser. No. 50,648  
Int. Cl. G03b 9/70

U.S. Cl. 95—11.5 R

11 Claims

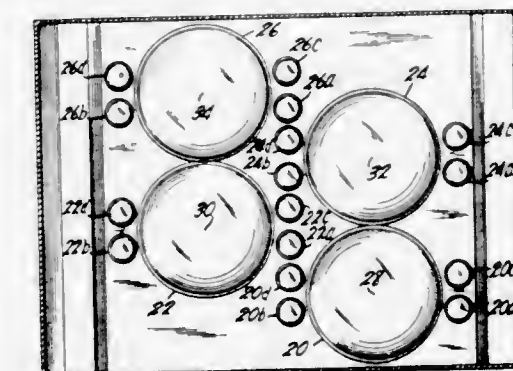


A portrait camera designed for closeups, having a Fresnel lens in front of the flashcube mount for focusing light from the flashcube into a relatively narrow and limited field angle, corresponding to the narrow field of view of the objective lens of the camera, and for directing light toward the axis of the camera lens.

**3,720,146**  
**MULTISPECTRAL CAMERA**  
Edward F. Yost, Jr., Northport, N.Y., assignor to Spectral Data Corp., Hicksville, N.Y.  
Division of Ser. No. 842,133, July 16, 1969. This application March 15, 1972, Ser. No. 234,853  
Int. Cl. G03b 33/04

U.S. Cl. 95—12.2

5 Claims



A multispectral camera simultaneously forms four black-and-white pictures of the same subject on a strip of photographic film. A different region of the electromagnetic spectrum is primarily employed in forming each picture. Simultaneously with the forming of the pictures, penlights mounted in the camera form on the film a number of fiducial marks associated with each picture. In projecting the pictures for viewing after they are developed, an additive color viewer is used having a separate projection lens for each picture, the lenses being movable with three degrees of freedom so that the projected images of the fiducial marks can be made to coincide. In this way, the projected images of the four pictures are accurately superimposed to produce a composite image in true or false color.



3,720,147

## MASK FOR SURVEILLANCE CAMERA

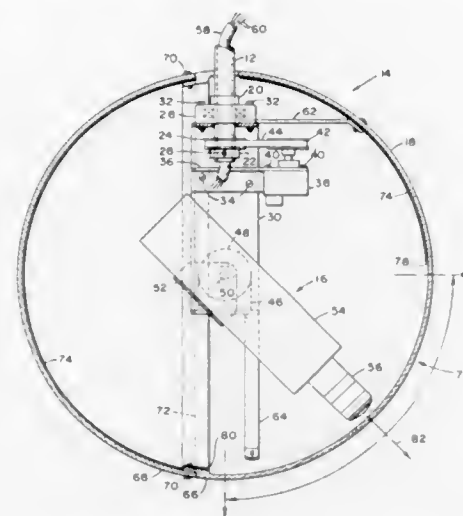
Winfield W. Bemis, Maynard, Mass., assignor to Setronics Corp., Maynard, Mass.

Filed April 29, 1971, Ser. No. 138,600

Int. Cl. G03b 17/56

U.S. Cl. 95—86

10 Claims



A surveillance camera is mounted within and disguised by a hollow spherical mask. The mask and camera rotate about an axis to scan a field of view, and the camera is aimed through a transparent window in the mask. The inner surface of the mask in the line of vision through the window and the outer surface adjacent the window are darkened to minimize the visibility of the camera.

3,720,148

## APPARATUS HAVING AN AUTOMATIC RANGE FINDER MECHANISM

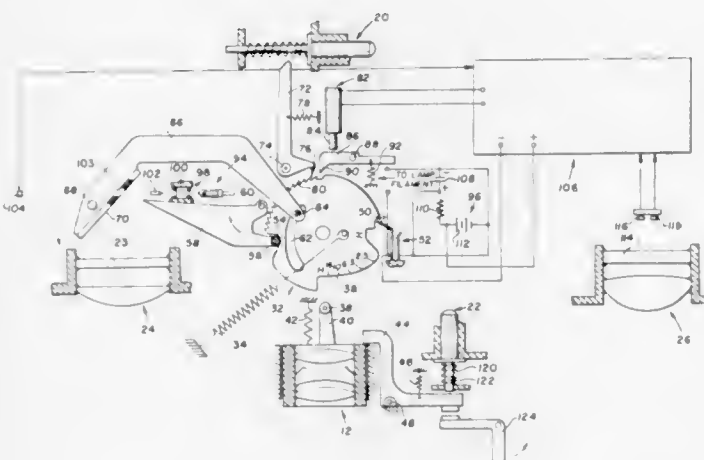
Donald M. Harvey, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 743,471, July 9, 1968. This application May 18, 1970, Ser. No. 38,304

Int. Cl. G03b 3/00

U.S. Cl. 95—44 C

3 Claims



A photographic camera or the like, using triangulation for range distance measurement, and having an automatic range finder mechanism. The apparatus is arranged to sweep a modulated light beam across a plane which includes a subject of interest, and the reflected light returning to the apparatus is imaged on spaced photoelectric transducers differentially connected to produce a varying electrical signal. The range finder mechanism includes a cam having a predetermined cam surface indicating defined range distances and adapted to move as a function of the sweeping light beam. When the reflected light falls equally on the photoelectric transducers, an output signal is developed and applied to an elec-

tromechanical transducer which arrests further rotational displacement of the cam. The range distance is thus established by the cam position, and any utilization means, such as a camera objective lens or the like, may be employed to utilize the range distance intelligence defined by the cam position.

3,720,149

## LIGHT SHIELDING DEVICE FOR INTER-CHANGEABLE LENS CAMERA

Sunao Ishizaka, Tokyo, and Minoru Takahashi, Kanagawa-ken, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

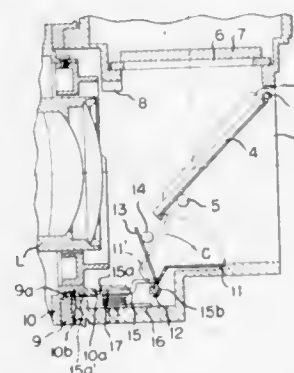
Filed Apr. 7, 1969, Ser. No. 814,066

Claims priority, application Japan, Apr. 9, 1968, 43/28,507

Int. Cl. G03b 17/24

U.S. Cl. 95—44

4 Claims



A light shielding device for cameras with interchangeable lenses which prevents the light entering the camera body through the lens mounting opening from reaching the shutter curtain when there is no lens mounted in the camera body. A light shielding plate mounted within the camera body is biased to a position interposed between the lens mounting opening and the shutter curtain. A cam means on each of the interchangeable lenses for the camera actuates an interlocking device within the camera to withdraw the light shielding plate from between the lens and the shutter curtain as the lens is installed in the camera body.

3,720,150

## DIAZO FILM DEVELOPER

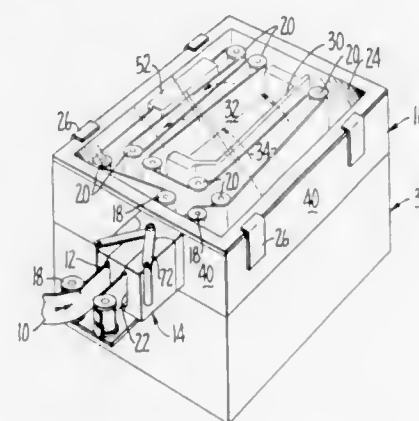
Roy Eugene Hurtig, Montsereno; Don Winston Geri, Sunnyvale, and Paul Horst Becker, San Jose, all of Calif., assignors to Memorex Corporation, Santa Clara, Calif.

Filed Feb. 16, 1971, Ser. No. 115,588

Int. Cl. G03d 7/00

U.S. Cl. 95—94 G

12 Claims



A diazo film developer and method of developing roll-type diazo film, continuously fed into the developer through a seal, wherein the film is (1) subjected to a cycled air mixture containing water vapor cooled to the dew point whereby a water condensate is deposited on the surface of the film, (2) simul-

taneously subjected to an ammonia vapor which is absorbed by the water condensate to develop the film, (3) subsequently subjected to the cycled air mixture preheated to dry the film and scavenge excess ammonia gas.

3,720,151

## DEVICE FOR OSCILLATING IMAGE PLANE ON THE SIDE OF PHOTOELECTRIC ELEMENT IN AUTOMATIC FOCUSING DEVICE

Yoshihisa Katsuyama, Kawasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

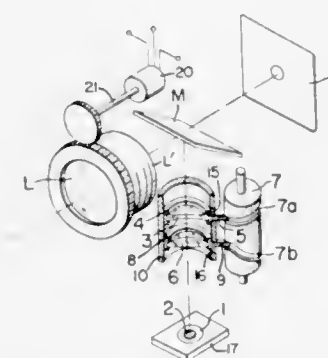
Filed Sept. 17, 1970, Ser. No. 72,983

Claims priority, application Japan, Sept. 29, 1969, 44/77066

Int. Cl. G03b 3/02

U.S. Cl. 95—44 R

10 Claims



An automatic focusing apparatus in a camera includes a photoelectric element adapted to receive the light rays passing through the objective and partly reflected by a semi-transparent mirror. The image plane of the reflected light rays is oscillated by two lenses disposed between the mirror and the photoelectric element which are engaged with a cam to move in opposite directions from each other. The electric signal from the photoelectric element actuates a servo motor to move the objective for automatic focusing.

3,720,152

## ELECTRONIC EXPOSURE CONTROL APPARATUS FOR A CAMERA

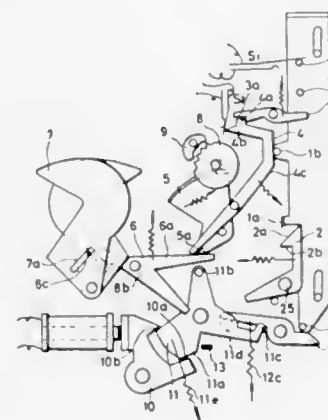
Takashi Uchiyama, and Kanehiro Sorimachi, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 13, 1970, Ser. No. 36,953

Int. Cl. G03b 9/62

U.S. Cl. 95—53 EB

2 Claims



In the electronic exposure control apparatus disclosed the shutter blades also serve as diaphragm blades. An actuating mechanism moves the shutter blades in response to a shutter

release. At the same time, the actuating mechanism or shutter release starts charging a capacitor on the basis of the response of a photocell to ambient light. When the capacitor reaches a given state of charge an electric circuit constrains the actuating mechanism to stop the blades from opening and to reclose. A lock device in the actuating mechanism holds the release in the position in which it causes the actuating mechanism to start opening the blades until the electric circuit constrains the actuating mechanism to reclose the blades.

3,720,153

## AUTOMATIC FIRE-SPREAD PREVENTER VALVE FOR VENTILATION DUCTS

Pierre Jardinier, Gournay-sur-Marne, and Jack Simonnot, Lesigny, both of France, assignors to Societe d'Etudes et de Recherches de Ventilation et d'Aeraulique, Villiers, sur Marne, France

Filed March 12, 1971, Ser. No. 123,783

Claims priority, application France, Mar. 13, 1970, 7009001

Int. Cl. F16k 13/00, 17/40

U.S. Cl. 98—86

7 Claims



A valve device is provided which is intended for preventing the propagation of fire in ventilation ducts or the like. It comprises a valve adapted, in case of abnormal or sufficient temperature increment, to automatically close the duct in which it is mounted.

3,720,154

## REGISTER STRUCTURES

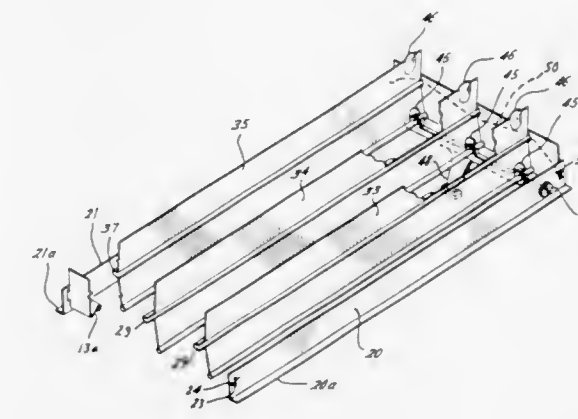
Frank J. Biggi, 5445 Katy Freeway, Houston, Tex. 77007

Filed Jan. 27, 1972, Ser. No. 221,217

Int. Cl. F24f 13/00

U.S. Cl. 98—110

6 Claims



Improved register structures which are assembled without use of welds, or rivets or screws, or other similar connection devices. The face plates of the registers have oppositely directed louvers or vanes with which the frame and closure assembly are engaged. The vanes with which such assemblies are engaged are oppositely angular, and the frame parts are engaged therewith so that the parts are firmly held.



### 3,720,155 FRYING APPARATUS WITH REMOTE CONTROL THERMOSTAT

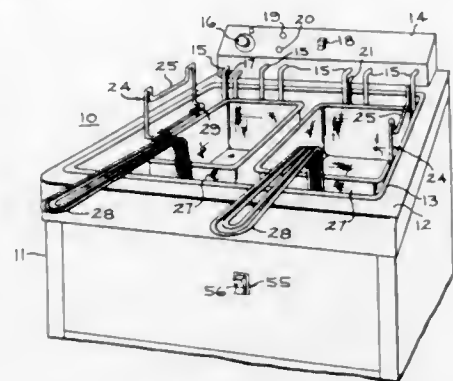
Donald E. Fritzsche, Chicago Heights, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Filed March 22, 1972, Ser. No. 237,088

Int. Cl. A47j 37/00

U.S. Cl. 99—337

4 Claims



A frying apparatus includes a support housing, an open top fat container, heating means for heating the fat in the container, and an escutcheon mounted above and behind the fat container. A thermostat, mounted in the escutcheon, is operatively connected to the heater for controlling energization of the heater. An electric motor unit is operatively connected to the thermostat for adjusting the setting of the thermostat upon energization of the motor. There is a circuit for connecting the motor unit to a suitable source of electric energy, including a manually operable switch. The switch is mounted in the housing forward of the open fat container.

### 3,720,156 ELECTRIC EGG COOKER

Harry Hentschel, Munich, and Otto Bjarsch, Traunreut, both of Germany, assignors to Siemens-Elektrogeräte GmbH, Berlin and Munich, Germany

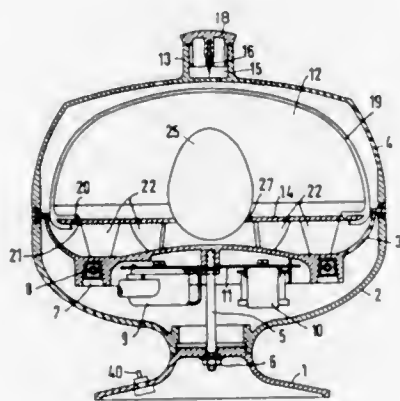
Filed Jan. 25, 1971, Ser. No. 109,442

Claims priority, application Germany, Jan. 27, 1970, G 70 615.2; Feb. 3, 1970, G 70 03 539.1

Int. Cl. A47j 29/02

U.S. Cl. 99—332

8 Claims



An electric egg cooker for cooking eggs has a chalice-shaped housing defining a cooking space in which the eggs are cooked.

### 3,720,157 WEIGHT COMPENSATOR FOR BARBECUE SPITS

Frederick H. Van Bergen, 2005 Argonne Drive, Minneapolis, Minn.

Filed May 13, 1971, Ser. No. 142,918

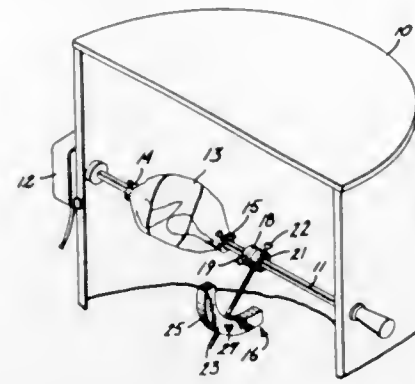
Int. Cl. A47j 37/04

U.S. Cl. 99—421 H

9 Claims

A weight compensator for barbecue spits is shown. The device can be securely attached to any known spit configura-

tion, but yet adjusted to any selected position around the spit. A sleeve is secured to the spit by a set screw. A rotatable collar is mounted on the sleeve. A spoke-like rod is attached to the



collar and carries an adjustable weight. A set screw is provided to lock the collar to the sleeve at any selected position on the circumference of the sleeve.

### 3,720,158 BALE STRAPPING APPARATUS

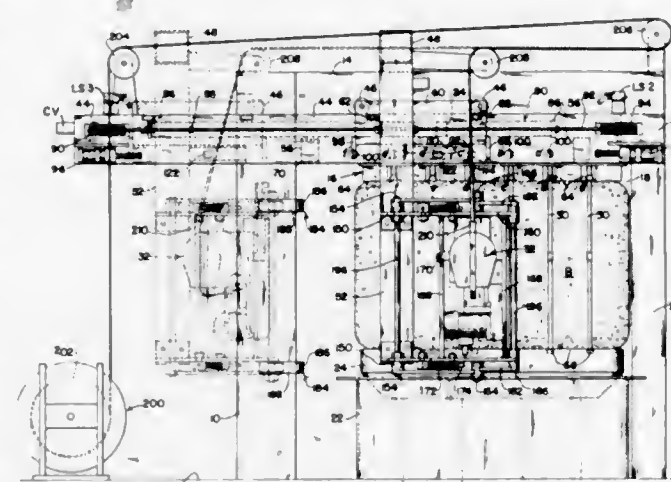
Leo Peter Sauer, and Gale Huson, both of Glenview, Ill., assignors to Signode Corporation, Chicago, Ill.

Filed Oct. 18, 1971, Ser. No. 190,203

Int. Cl. B65b 13/04

U.S. Cl. 100—4

14 Claims



The improved strapping apparatus comprising the present invention has been designed primarily in connection with the strapping of springy fibrous materials such as cotton or synthetic fibers while the same are held in bale form and under compression in the press box chamber of a baling press. The invention is however capable of other uses and strapping apparatus embodying the principles of the present invention may be found useful in connection with the strapping of a wide variety of other articles to which multiple strapping loops are to be applied at longitudinally spaced regions therealong. Irrespective however of the particular use to which the invention may be put, the essential features are at all times preserved.

### 3,720,159 FRUIT PRESS

Otto Gunkel, 71 Heilbronn, Germany, assignor to Schenk Filterbau Gesellschaft mit Beschränkter Haftung, Waldstetten, Germany, a part interest

Filed Feb. 24, 1971, Ser. No. 118,361

Claims priority, application Germany, Feb. 25, 1970, P 20 08 739.2

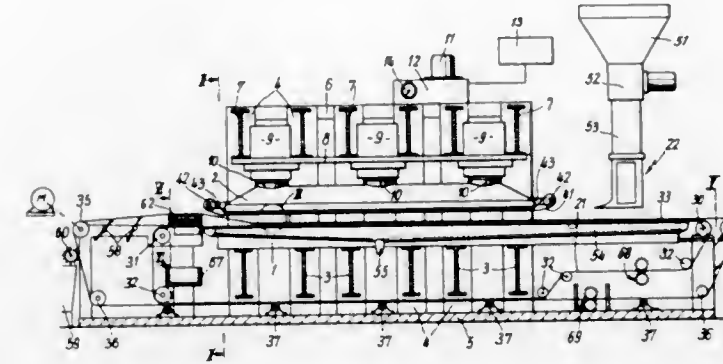
Int. Cl. B30b 5/04

U.S. Cl. 100—118

12 Claims

A fruit press in which a press punch is moveable toward a bed member for pressing fruit mash to express juice

therefrom. A grate band having spaced bars is moveable over the bed member and over the the grate band is a filter cloth. The mash is charged onto the cloth at one side of the press and



is conveyed into the press by the filter cloth. An automatic controller controls the press punch so the mash on the cloth has the juice expressed therefrom over a period of about 2 to 4 minutes.

### 3,720,160 DEVICE FOR SURFACE TREATMENT OF MATERIAL

Rupert Kraft, Piertstrasse 8, and Johannes Zimmer, Ebenthalerstrasse 133, both of Klagenfurt, Austria

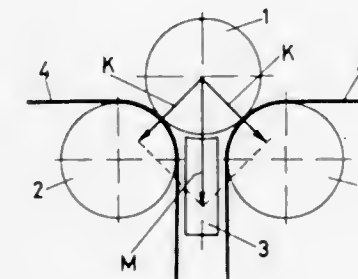
Division of Ser. No. 786,137, Dec. 23, 1968, Pat. No.

3,641,928. This application June 21, 1971, Ser. No. 154,923

Int. Cl. B30b 3/02

U.S. Cl. 100—160

26 Claims



A calender device for the surface treatment of material moved between peripherally coacting roller and counter roller surfaces exerting a pressure onto one another during relative rotation under the action of magnetic forces. The device comprises at least two rollers of magnetizable material spaced apart and coacting peripherally with at least two other counter rollers usually having non-magnetic peripheries, and with a magnet body interposed generally between the first-mentioned rollers so as to exert a magnetic attractive force thereon such that regardless of the form and number of rollers opposite components of the magnetic attractive force between the magnet body and rollers of magnetizable material lie in intersecting planes connecting the respective axes of the counter rollers and the axis of the roller of magnetizable material which they adjoin. The counter rollers are disposed parallel to and are equally spaced at opposite sides of the magnet body and at least one of the rollers of magnetizable material, and in another embodiment from both of said rollers.

Further forms embody respectively three and four of the rollers of magnetizable material arranged peripherally in a spaced apart manner alternately engaging with interposed counter rollers and having a centrally disposed non-rotatable magnet body with a plurality of opposite polarity pole faces corresponding in number to and disposed adjacent the first-mentioned rollers, and the rollers therearound form a static closed system in which the rollers and magnet longitudinal bodies are not subjected to longitudinal deflection in most forms, and in others only to minimal deflection during operation. Still further more preferred forms embody circumferentially disposed coacting rollers and counter rollers disposed concentrically around a central roller with which only the counter rollers also peripherally coact during relative rotation of the rollers, and with said counter rollers usually being mounted at a uniform diameter form the axis of the center roller which diameter is less than that of the other rollers. The magnet body in one of these latter forms includes having the form of separate magnet bars interposed radially between the center roller and the rollers of magnetizable material and extending longitudinally over the length of the rollers. Another form has the magnet bodies in the form of a plurality of opposite polarity pole faces integrally disposed in a circumferentially spaced manner around the periphery of the central rotatable roller to exert the aforestated magnetic attractive forces sequentially on the encircled rollers thereabout during operation.

### 3,720,161 BALER FEEDER WITH MATERIAL ACCUMULATION PREVENTION MEANS AT THE OUTBOARD END

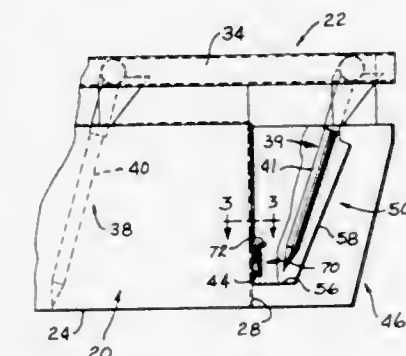
Charles A. Smith, New Holland, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.

Continuation-in-part of abandoned application Ser. No. 846,665, Aug. 1, 1969. This application Dec. 7, 1971, Ser. No. 205,645

Int. Cl. B30b 15/30

U.S. Cl. 100—189

6 Claims



A shield for the outermost set of feeder fingers of a baler, the shield being so designed to prevent the accumulation of crop material at the outer end of the crop material receiving chamber. The baler is of the type having a longitudinally extending bale case and a transverse feeding mechanism which has a plurality of sets of feeder fingers which reciprocate inwardly towards the bale case to feed material into the bale case and outwardly therefrom upon a return stroke. The outer side wall of the crop material receiving chamber is provided with an aperture through which the outermost set of feeder fingers pass on their return stroke, the opening being of a width and depth only slightly greater than the width and depth of the feeder fingers. The shield which prevents material accumulation is mounted on the outer surface of the outer side wall adjacent the aperture and has an internal width equal to the width of the aperture and a sloping outer wall which is disposed at an angle greater than the angle of repose for the crop material which is to be fed into the bale case, the lower portion of the outer wall being disposed in close proximity to the lower ends of the outer-



most feeder fingers. The upper surface of the bottom wall of the shield is at the same level as the bottom of the aperture.

**3,720,162**  
**APPARATUS FOR DECORATING ROTATABLE ARTICLES**

David Richard James, Hasfield, England, assignor to Murray Curvex Printing Limited, Gloucester, England

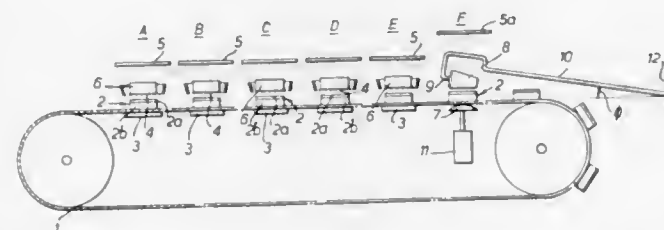
Filed June 26, 1970, Ser. No. 50,085

Claims priority, application Great Britain, June 26, 1969, 32256/69

Int. Cl. B41f 17/28

U.S. Cl. 101—39

4 Claims



A machine for printing or decorating the external surfaces of articles has a freely rotatable work holder on which an article can be mounted, an offset printing blanket and a screen stencil or stencils by which an offsetting image presenting a developed view of the pattern to be applied to the article can be produced on the blanket. Either the work holder or the blanket is mounted on a pivotal arm pivotal movement of which produces relative movement of the article and blanket during which the article rolls along the surface of the blanket and thus picks up the image.

**3,720,163**  
**DOCTOR DEVICE FOR LOW PRESSURE ROTATING PRESSES**

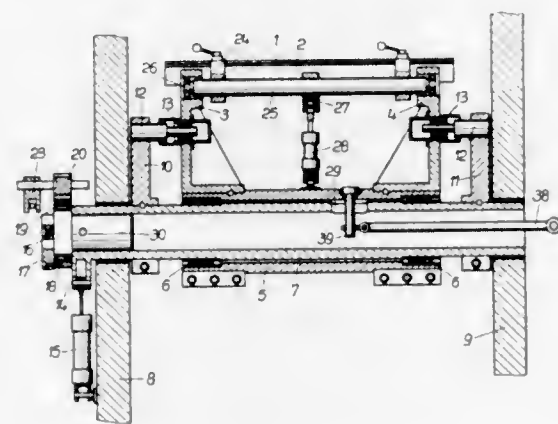
Rudolf Frey, Dirmstein, Pfalz, Arnold Niedermaler, Beindersheim, and Peter Maier, Worms (Rhine), Germany, assignors to Schnellpressenfabrik Frankenthal Albert & Cie Aktiengesellschaft, Frankenthal, Pfalz, Germany

Filed June 24, 1971, Ser. No. 156,214  
Claims priority, application Germany, June 26, 1970, P 20 31 680.7

Int. Cl. B41f 9/10

U.S. Cl. 101—169

5 Claims



A doctor device for photogravure printing presses. The doctor is pivotally mounted on a non-twistable frame on the printing press so as to be movable to and away from the printing cylinder of the press. A bushing, upon which the doctor device is mounted, is oscillated longitudinally along the axis of the printing cylinder to oscillate the doctor and distribute the wear of the doctor more evenly during operation.

**3,720,164**  
**METHOD OF MAKING CORROSION RESISTANT METALLIC PLATES PARTICULARLY USEFUL AS LITHOGRAPHIC PLATES AND THE LIKE**

Edward A. Casson, Jr., Easton, Md., assignor to Duroolith Corporation, Easton, Md.

Continuation of Ser. No. 5,531, Jan. 26, 1970, abandoned.

This application Dec. 23, 1971, Ser. No. 211,800

Int. Cl. B41n 3/00; B01d 15/00

U.S. Cl. 101—463

1 Claim

In a process for making lithographic plates which includes a step for forming on metallic plates a protective layer or film which additionally provides a hydrophilic film on at least one surface thereof and in the course of which the metallic plates are placed in contact with water at diverse steps of the process, the improvement consisting in using purified water. The metallic plates initially take preferably the form of a continuous web of an appropriate metal, such as aluminum, which is successively: cleaned by suitable detergent, rinsed in purified water, provided with a protective layer or film, rinsed again in purified water, and coated with a sensitizing diazo resin or the like. The metallic plates are provided with a protective layer or film by dipping in a solution of a soluble silicate in purified water at a predetermined temperature, or alternately, the metallic plates may have a protective layer electrolytically formed thereon, the electrolyte consisting of a solution of sodium silicate in purified water. The use of purified water, which is basically tap water which has been deionized, de-chlorinated, de-gasified, and which is free of solid particles, in the diverse steps of the process prevents the formation of "black spots" on the surface of the plates provided with a photosensitive coating of diazo resin or the like.

**3,720,165**  
**TORPEDO EXPLODER MECHANISM**

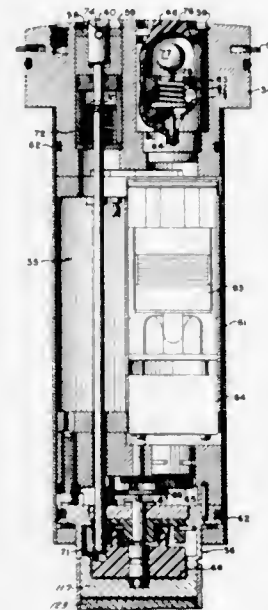
Theodore E. Dinsmoor, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed March 14, 1952, Ser. No. 276,707

Int. Cl. F42c 15/08

U.S. Cl. 102—16

11 Claims



1. A torpedo exploder comprising, in combination, a base unit having bores therein, hydrostatically controlled switch means disposed in one of said bores, inertia actuated firing means disposed in another of said bores, a control unit detachably secured to said base unit, motor means within said control unit, gear means driven by said motor means, and an arming device detachably secured to said control unit, a rotor provided with detonators within said arming device and adapted to be moved to an armed position in response to

movement of the gear means, said hydrostatically controlled switch means and said inertia actuated firing means being included in a circuit supplying an electrical charge to said detonators.

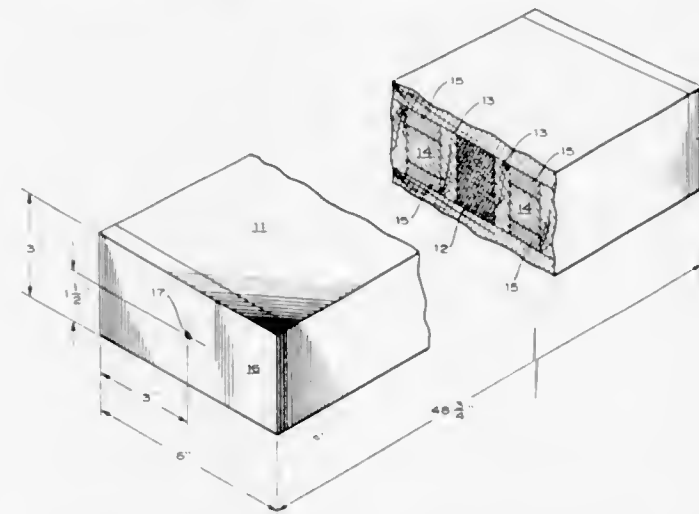
**3,720,166**  
**APPARATUS AND METHOD FOR TERRAIN CLEARANCE**  
Robert G. S. Sewell, and Carl C. Halsey, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Aug. 2, 1971, Ser. No. 168,358

Int. Cl. F42b 3/60

U.S. Cl. 102—22

6 Claims



Rod expelling explosive apparatus is used to clear bushes and trees from foliage covered terrain. The apparatus comprises a box containing a linear explosive charge and at least one rod which is forcefully expelled at high velocity when the charge is detonated. The method involves placing rod expelling apparatus on the ground in a position such that the rod or rods will be expelled in a predetermined desired direction at a trajectory just above ground level and detonating the charge.

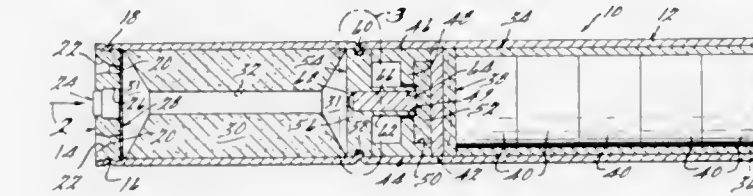
**3,720,167**  
**ROTATABLE ROCKET HAVING MEANS FOR PREVENTING FLAMEOUT DUE TO CENTRIFUGAL FORCE CREATED DURING ROTATION THEREOF**  
Robert Malnhardt, P.O. Box 225, Diablo, Calif.; David L. Cochran, 165 Valle Verde, Danville, Calif.; Arthur L. Deleray, 5171 Oakview Court, Pleasanton, Calif.; Gary L. Fritzler, 1100 Lincoln, Apt. 35, Walnut Creek, Calif., and Robert C. Mawhinney, 170 Camino Encanto, Danville, Calif.

Continuation-in-part of Ser. No. 694,208, Dec. 28, 1967, abandoned. This application April 16, 1970, Ser. No. 28,219

Int. Cl. F42b 13/40

U.S. Cl. 102—34.4

4 Claims



A rocket device comprising an elongated generally tubular shaped housing; a propulsion charge in one end of the housing; means for directing the products of combustion of the propulsion charge rearwardly of the housing in a manner so as to impart rotary motion to the device as it is propelled forwardly by the charge; signal means in the form of a quantity of radar signaling chaff in the housing; an expulsion charge for expelling the signaling means from the housing; means including a combustible material within the housing for igniting the expulsion charge at a predetermined time after the propulsion

charge has been ignited, and an enclosure for operatively supporting the combustible material within the housing and for preventing the ignited portion of the combustible material from being forced out of the enclosure under the influence of centrifugal force resulting from rotation of the device.

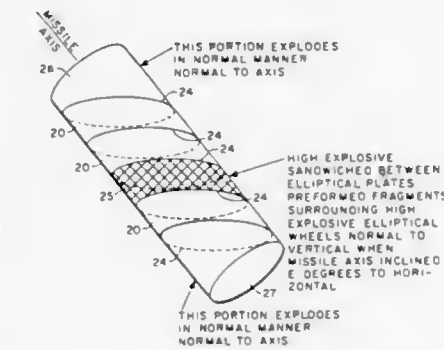
**3,720,168**  
**ELLIPTICAL WARHEAD**  
Alfred V. Sylwester, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Dec. 14, 1970, Ser. No. 97,455

Int. Cl. F42b 13/48

U.S. Cl. 102—67

7 Claims



High explosive or shaped charge modules are sandwiched between offset elliptical plates, and a series of such elliptical sections pack into a cylindrical, roll-stabilized air-to-surface missile body when inclined to the missile axis at a nominal dive angle. A preformed fragmentation or modified continuous rod shell surrounds the high explosive sections and when detonated above ground a horizontal orientation is obtained for maximum lethal effects.

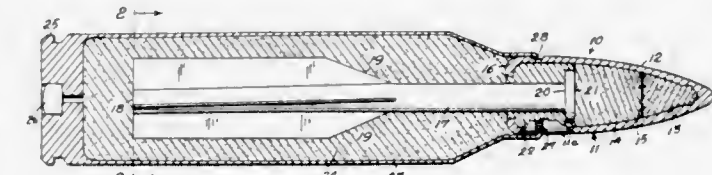
**3,720,169**  
**INCENDIARY PROJECTILE FOR SMOOTH BORE SPECIAL PURPOSE INDIVIDUAL WEAPON**  
Theodore B. Johnson, Stratford; William T. Cole, Jr., Bridgeport, and Orval M. Stamm, Stamford, all of Conn., assignors to The United States of America as represented by the Secretary of the Army

Filed March 30, 1971, Ser. No. 129,359

Int. Cl. F42b 11/24

U.S. Cl. 102—90

4 Claims



An incendiary projectile for smooth bore special purpose individual weapons comprising a flechette provided with a head consisting of a bullet jacket having a combination of incendiary mixtures therein.

**3,720,170**  
**HEAVY SMALL ARMS PROJECTILE**  
Wesley Lynn Godfrey, 2020 N. Road 44, Pasco, Wash. 99301

Filed Oct. 12, 1970, Ser. No. 79,933

Int. Cl. F42b 11/00

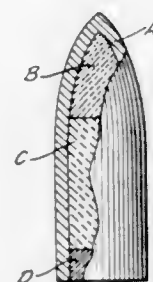
U.S. Cl. 102—92.3

1 Claim

A standard copper alloy jacket is used to envelope two or more dissimilar core materials which fill the axial cross

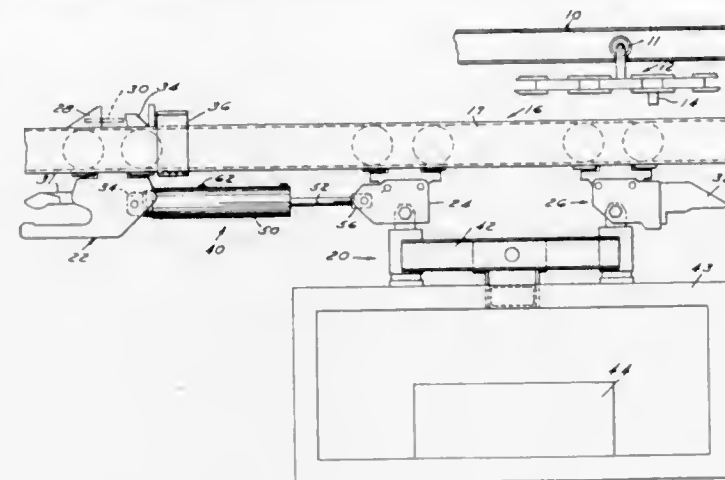


section of the jacket. During the manufacture, the core materials, at least one of which is more dense than lead, are sequentially seated under pressure, in the jacket. The



forward most or nose core is lead or an alloy thereof which is deformable on impact in a manner common to the art.

decrease within limits defined by abutments on the coupling members. Relative movement between the coupling members



is yieldingly opposed by a cylinder and piston damper isolated from forces transmitted through the coupling members.

3,720,173

## ROTATABLE HOT METAL CAR

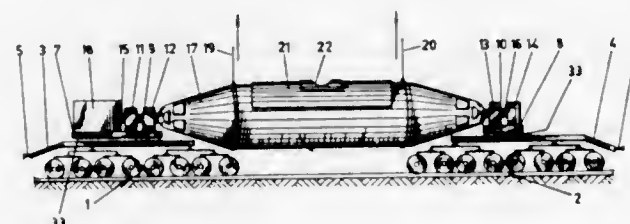
Wilhelmus Lamberus Van Wierst, Santpoort, Netherlands, assignor to Koninklijke Nederlandsche Hoogovens en Staalfabrieken N.V., IJmuiden, Netherlands

Filed Oct. 26, 1970, Ser. No. 83,682

Int. Cl. B61d 9/02, 17/00; B61f 3/00

U.S. Cl. 105—271

4 Claims



A car for conveying molten metal comprising two independent bogies spaced longitudinally one behind the other in the direction of movement, said bogies carrying horizontally oriented bearings and being connected together by a longitudinal vessel having journals rotatable in said bearings, said vessel, with said bearings, forming a unit detachably connected to said bogies, and especially from frame plates having spherically movable engagement with the bogies one of which carries motor means for tilting the vessel, the detachable connections being provided by forming the frame plates of upper and lower sections mutually aligned by self-centering male and female interfitting portions, with readily detachable means securing said upper and lower sections together.

3,720,174

## LOCKING MECHANISM FOR BULKHEADS

Robert E. Heard, Plymouth, Mich., assignor to Evans Products Company

Filed Jan. 7, 1970, Ser. No. 1,095

Int. Cl. B60p 7/14

U.S. Cl. 105—376

11 Claims

A freight bracing bulkhead assembly embodying an improved locking mechanism for facilitating release under load. Two embodiments of locking mechanisms are disclosed each of which incorporates a locking member that is slidably supported in a socket opening between a locked position and a released position. A wedging member is also received in the socket opening and precludes transverse movement of the locking member when the wedging member is in a locking position. An operating mechanism is incorporated for first moving the wedging member between its locking position and

3,720,172

## CONVEYOR CARRIER TOW BAR

Clarence A. Dehne, Farmington, Mich., assignor to Jervis B. Webb Company

Filed July 29, 1970, Ser. No. 59,321

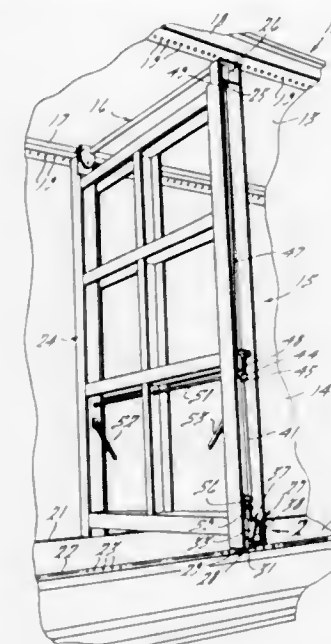
Int. Cl. B65g 17/42

U.S. Cl. 104—172 S

10 Claims

A conveyor carrier, having a driving trolley with a driving dog engageable by a propelling pusher and at least one other trolley, the driving trolley being connected to the other trolley by a tow bar which has two motion transmitting or coupling members interconnected for relative longitudinal movement so that the spacing between the trolleys can increase and

a released position and subsequently moving the locking member from its locking position to its released position. When the wedging member is in its released position and the



locking member is still in its locking position, the locking member and socket member may move in the direction of the load so as to facilitate release of the locking member.

3,720,175

## RESILIENTLY MOUNTED RAILWAY VEHICLE TRUCK

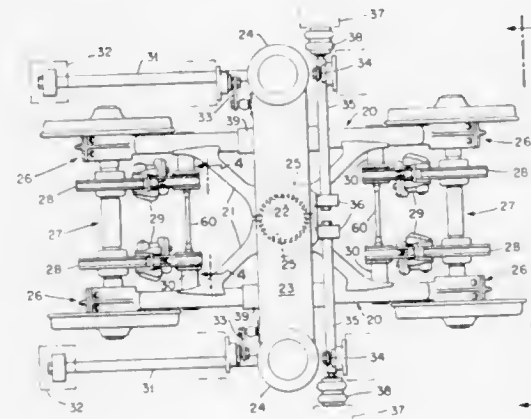
Harry M. Russell-French, Philadelphia, Pa., assignor to The Budd Company, Philadelphia, Pa.

Filed Dec. 28, 1970, Ser. No. 101,697

Int. Cl. B61f 3/08, 5/30; B61h 13/00

U.S. Cl. 105—224.1

10 Claims



This application discloses a railway vehicle truck having axle connections with the side frame members which provides adequate springing to isolate the unsprung wheel axle units from the truck frame, together with auxiliary tie structure to prevent separation of frame side members independently of the axle connections; also means assisting the supporting air springs to improve the connection between the truck frame and vehicle body.

3,720,176

## MOLDED PALLET

Thomas Munroe, c/o Moraine Box Company, P.O. Box 538, Dayton, Ohio

Filed Aug. 13, 1970, Ser. No. 63,573

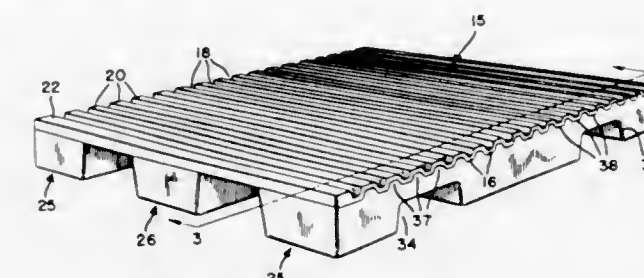
Int. Cl. B65d 19/38

U.S. Cl. 108—58

11 Claims

Resin impregnated wood fibrous material is molded to form a rectangular deck member and a set of separate elongated hollow leg members. The deck member has a generally uniform wall thickness and defines parallel spaced

downwardly projecting reinforcing ribs, and the side walls of each of the leg members have teeth-like projections which extend upwardly between the ribs. The leg members are spaced laterally across the deck member and are secured to the underneath surface of the deck member by a waterproof adhesive. The leg members have outer surfaces perpendicular to



the deck member to provide for storing loaded pallets within a rack, and define longitudinally spaced recesses to provide for four-way entry by a fork lift truck. The bottom wall portion forming each recess is spaced from the underneath surface of the deck member to define a longitudinally extending chamber within each leg member for receiving a longitudinal rigid longitudinally extending reinforcing member.

3,720,177

## STITCH FRAME ACTUATING MECHANISM MOUNTABLE ON AN ORDINARY SEWING MACHINE

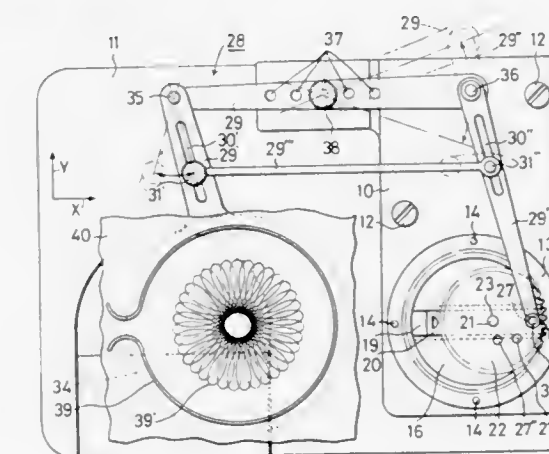
Bunsaku Taketomi, 56-141 Aza-Ishikane, Oaza-Iwasaki, Japan

Filed June 25, 1971, Ser. No. 156,827

Int. Cl. D05c 3/02

U.S. Cl. 112—102

8 Claims



A stitch frame actuating mechanism mountable on an ordinary linear sewing machine for the purpose of stitching cycloidal patterns and their modifications without using conventional pattern-cams in which a planetary gearing driven by a rotation-generating means actuated by one of the reciprocating members of the sewing machine is connected to a stitch frame holder through a parallelogram link to displace said stitch frame holder along a cycloidal curve.

3,720,178

## CHAINSTITCH CONVERSION DEVICE FOR LOCKSTITCH SEWING MACHINES

Michael F. Ivanko, Bloomsburg, Pa., assignor to The Singer Company, New York, N.Y.

Filed Nov. 23, 1971, Ser. No. 201,514

Int. Cl. D05b 1/14

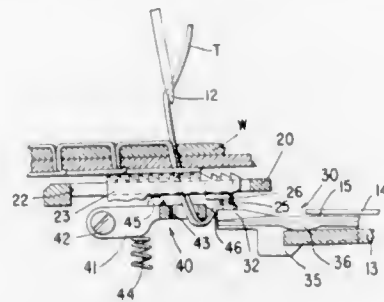
U.S. Cl. 112—168

2 Claims

A device for converting a lockstitch sewing machine into condition for forming single thread chainstitches, including a replacement throat plate with a thread engaging pin depending therefrom, and a thread deflecting member adapted to replace the bobbin in the sewing machine and formed with a



radial arm arranged in cooperative relation with said thread engaging pin. The thread deflecting member is shiftably supported in the loop taker and arranged to be influenced only by



the sewing thread for movement into and out of a position maintaining the sewing thread in engagement with the thread loop engaging pin.

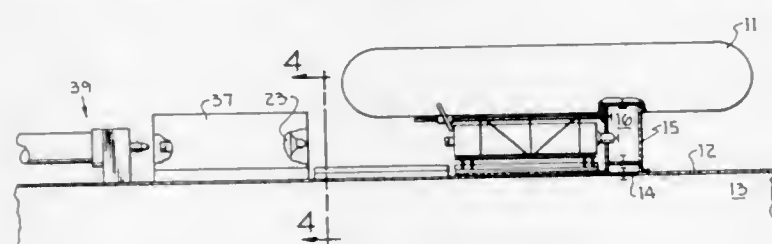
3,720,179

**POWER SYSTEM FOR UNDERWATER VEHICLE**  
Ronald Cohen, Newington, Conn., assignor to The United States of America as represented by the Secretary of the Air Force

Filed Dec. 9, 1971, Ser. No. 206,461  
Int. Cl. B63g 8/00

U.S. Cl. 114-16 G

4 Claims



A power system for an underwater vehicle adaptable for being replaced underwater. An access compartment is provided in a crew transfer compartment and the access compartment has an opening which is engaged by a protrusion on a power supply to provide a watertight access compartment. Electrical connectors are provided on said power supply and in said access compartment and a cable connects these connectors thereby providing electrical power to said underwater vehicle. Locking means which are actuatable from the crew transfer compartment are provided for locking said power supply to said underwater vehicle.

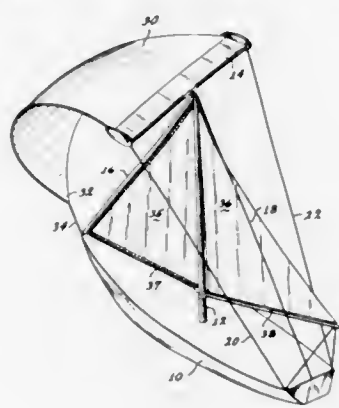
3,720,180

**RAFFE SAIL FOR BOATS**  
Phillip F. Stangeland, 121 Wavecrest Avenue, Venice, Calif.  
Filed Nov. 27, 1970, Ser. No. 93,084

Int. Cl. B63h 9/04

U.S. Cl. 114-102

3 Claims



A sail for a boat rigged to present a horizontal rather than a vertical luff. The sail is triangular, one edge being attached to

a yard which is supported from a mast in a horizontal position. The yard is formed as an air foil so that the horizontal luff produces a lifting force on the yard. One apex of the triangular sail is sheeted so that it bellies out with the upper part extending forwardly so that the wind pressure produces an upward thrust on an area of the sail tending to lift the bow of the boat.

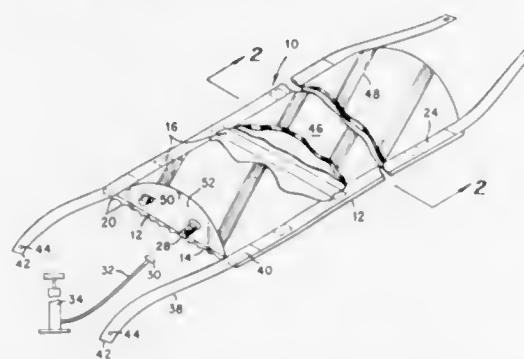
3,720,181

**INFLATABLE WARNING DEVICE FOR ROADWAYS**  
Jack D. Elkins, Route 2, Kingston, Tenn.

Filed March 29, 1971, Ser. No. 129,051  
Int. Cl. E01f 9/10

U.S. Cl. 116-63 P

8 Claims



An elongated inflatable warning device adapted to be removably disposed transversely of a roadway during selected periods for control of vehicular traffic.

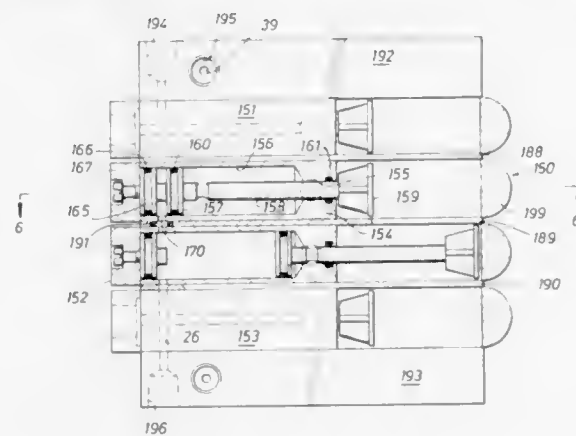
3,720,182

**PNEUMATIC ANNUNCIATOR SYSTEM**  
Robert S. Harrah, P.O. Box 14410, Houston, Tex.  
Division of Ser. No. 56,892, July 21, 1970, Pat. No. 3,651,643.  
This application Nov. 18, 1971, Ser. No. 199,894

Int. Cl. G08b 1/04

U.S. Cl. 116-65

18 Claims



As a representative embodiment of the present invention, pressure-responsive indicators are coupled to suitable transducers monitoring selected operating conditions of an industrial machine. Pneumatic controls are arranged for providing first pneumatic signals when these operating conditions reach a predetermined value and producing second pneumatic signals should any of the operating conditions vary from its selected range. Other pneumatic controls are uniquely arranged for responding to the second signals to produce a brief third pneumatic signal which is effective to operate only the associated indicator while the other unaffected indicators are positively retained in their safe indicating positions. The indicators of the present invention are adapted to be stacked together and respectively include a number of passages adapted to coincide with the matching passages in the other indicators. One set of these passages in each indicator can be isolated from the other set by orienting the indicator in one position in relation to the other indicators. A second set of these passages is coupled to an alternately-positionable spool

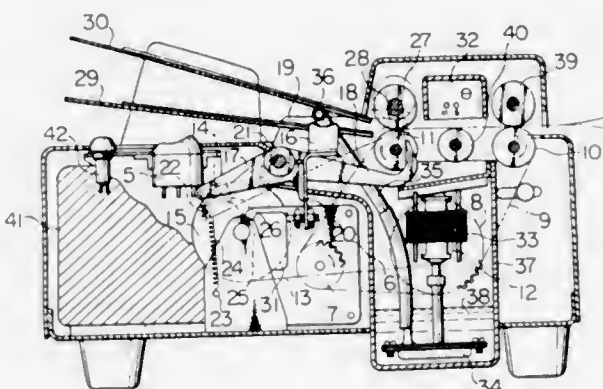
in each indicator which is uniquely arranged to select which of the passages in this other set is to be coupled to the pressure-responsive element in that indicator.

3,720,183

**TRANSFER DEVICE FOR IMAGES BY THE USE OF LIQUID DEVELOPMENT ELECTROPHOTOGRAPHY**  
Shigeru Suzuki, Yokohama, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan  
Division of Ser. No. 771,162, Oct. 28, 1968, abandoned. This application Dec. 29, 1970, Ser. No. 102,529  
Claims priority, application Japan, Nov. 8, 1967, 42/71778  
Int. Cl. G03g 13/00

U.S. Cl. 118-637

5 Claims



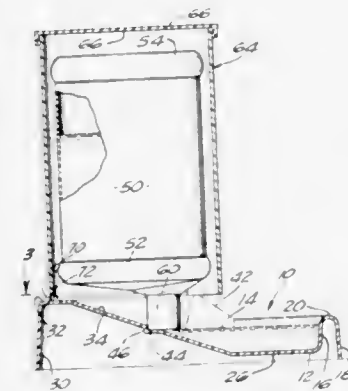
There is disclosed herein a simple and reliable liquid development transfer device for images by the use of liquid development electrophotography.

3,720,184

**COMBINATION PET FEEDER FOR FLOWABLE SOLID MATERIAL AND LIQUID**  
Woodrow W. Pearce, 1200 Riverside Drive, Burbank, Calif.  
Filed Oct. 19, 1970, Ser. No. 81,997  
Int. Cl. A01k 05/00, 07/00

U.S. Cl. 119-51.5

1 Claim



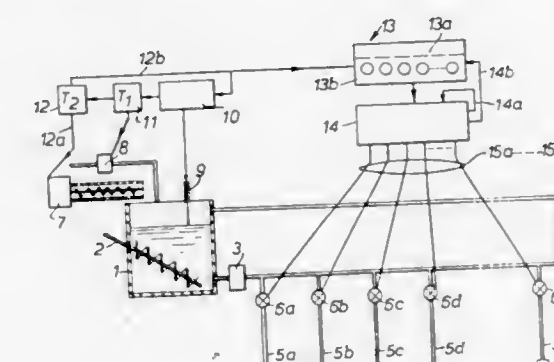
A pet feeder in the form of a feeding dish combined with containers for flowable materials which may be either liquid or granulated solid materials. The feeding dish has a slanting surface or ramp. A container for solid particulate material is positioned over the ramp to feed onto it. A liquid container having a discharge spout is positionable over the ramp which is provided with a flat ledge portion on which the spout normally rests, partially obstructing it and allowing flow through the remainder into the dish up to the level of the spout orifice. The liquid container is removable from the enclosure for filling and for use of the feeder for feeding solid material.

3,720,185

**MIXING AND SUPPLY ARRANGEMENT FOR FEEDING LIQUID FEEDSTOCK**  
Maurice William Aldous, 73/75 High St., Bildeston, Ipswich, England, and John Clement Hitchcock, Chapel Farm, Ringshall, Stowmarket, England  
Filed Oct. 26, 1970, Ser. No. 83,962  
Int. Cl. A01k 5/02

U.S. Cl. 119-51.11

8 Claims



Liquid food material for livestock is automatically fed to a multiplicity of delivery points by a mechanism operating cyclically in which each cycle involves the introduction of a given amount of solids and delivery is continued for a number of cycles sufficient to deliver sufficient solid material to the delivery points.

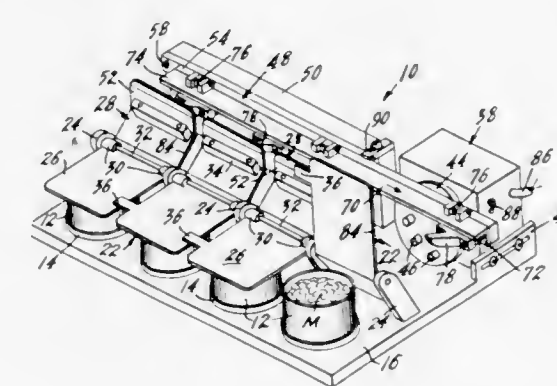
3,720,186

**DISPENSING APPARATUS**  
William J. O'Rourke, 27 Palmyra Road, RFD 3, Brewster, N.Y.

Filed Oct. 14, 1971, Ser. No. 189,351  
Int. Cl. A01k 5/02

U.S. Cl. 119-51.12

12 Claims



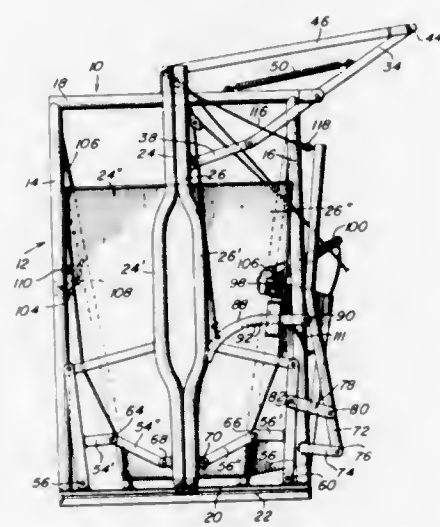
An apparatus for uncovering a predetermined quantity of material at the ends of consecutive preselected time periods has a plurality of stationarily-positioned receptacles, each for containing the predetermined quantity of material. A lid is associated with each receptacle and is pivotable between an upright position in which it covers the receptacle and an up-turned position in which it uncovers the receptacle. Fingers which outwardly project from a slide at predetermined spaced locations thereon are each engageable with one of the lids for holding the lid in its upright position. Spaced projecting elements secured to a rotatable drive wheel in a circular arrangement thereon are each carried by the drive wheel into engagement with one of a succession of spaced depending elements which project downwardly from the slide to thereby move the slide along a generally linear path of travel as the drive wheel turns through a portion of one rotation cycle. As the slide moves along its path, one of the fingers, which are engaged with the lids at the beginning of the time periods, will disengage from one lid at the end of each time period to allow that lid to pivot to its upright position and thereby uncover one of the receptacles.



3,720,187  
CATTLE RESTRAINING STANCHION  
William P. McDonough, Box 836, Gunnison, Colo.  
Filed Feb. 8, 1971, Ser. No. 113,556  
Int. Cl. A61d 3/00

U.S. Cl. 119—98

8 Claims

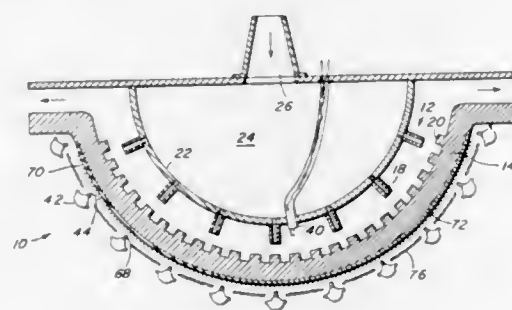


An animal catching gate including an upstanding frame having opposite sides and from which a pair of upstanding stanchion bars are supported for movement toward and away from each other along paths generally paralleling the medial plane of the frame. The lower ends of the stanchion bars are oscillatably supported from the frame for guided movement toward and away from each other and also for oscillation relative to each other and the frame about axes disposed generally normal to the frame. Actuating structure is also supported from the frame and operatively connected to the stanchion bars for shifting the stanchion bars toward and away from each other, the actuating structure, when actuated to open the catch gate, being operable to slid the lower ends of the stanchion bars apart while at the same time swinging the upper ends of the stanchion bars away from each other. Also, one side of the frame of the catch gate includes a stop gate panel member oscillatably supported therefrom for angular displacement about an axis disposed generally normal to the frame between a retracted depending position disposed at one side of the frame and a raised operative position extending between the stanchion bars when the latter are open.

3,720,188  
COMPACT STEAM GENERATOR AND SYSTEM  
George N. J. Mead, 3 Robin Lane, Exeter, N.H.  
Filed Jan. 11, 1971, Ser. No. 105,561  
Int. Cl. F22b 27/16

U.S. Cl. 122—41

15 Claims



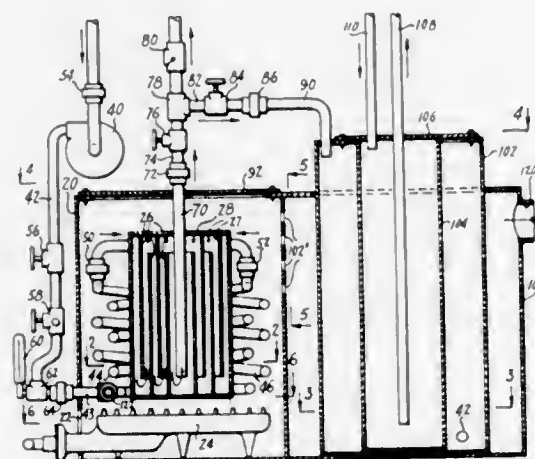
An ultra-compact flash steam generator is provided for driving various types of steam engines such as turbines, rotary positive displacement and reciprocating piston engines. Water or other liquid medium is injected against one side of a heat transfer boundary and premixed air-fuel fluid is injected against the opposite side of the boundary where combustion

becomes self-sustaining. Sub-systems and controls are provided for a complete, operational prime mover functioning on the generated steam.

3,720,189  
HEATER AND HOT WATER BOILER  
Robert L. Meyers, 104 Blackiston Avenue, Cumerland, Md.  
Filed April 9, 1971, Ser. No. 132,696  
Int. Cl. F22b 27/08

U.S. Cl. 122—250 R

2 Claims

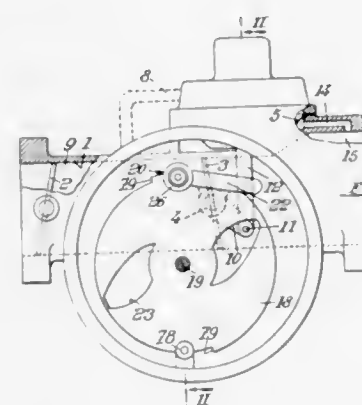


A pump connected to a boiler with cylindrical baffles encircled by coils and a heater unit encircled by hot air from the boiler and also surrounded by water heated from the boiler.

3,720,190  
FUEL FEED DEVICES FOR INTERNAL COMBUSTION ENGINES  
Andre Louis Mennesson, Neuilly-sur-Seine, France, assignor to Societe Industrielle de Brevets et d'Etudes S.I.B.E., Neuilly-sur-Seine, France  
Filed May 24, 1971, Ser. No. 146,029  
Claims priority, application France, June 5, 1970, 7020853  
Int. Cl. F02m 51/00

U.S. Cl. 123—32 EA

2 Claims

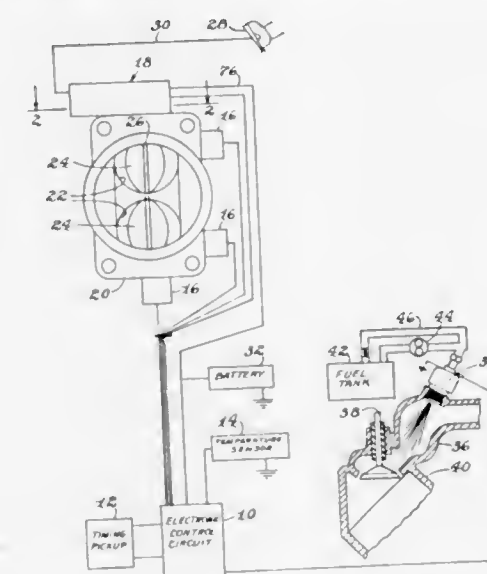


Several valves supplied by a source of fuel under pressure are each actuated by an electromagnet energized over a variable fraction of each revolution of a rotary member driven by the engine. The energizing current passes through a distributor constituted by a light source, two photodiodes and electronic gates, the rotary member allowing the light source to illuminate or not the photodiodes according to its angular position.

3,720,191  
ACCELERATION ENRICHMENT CIRCUITRY FOR ELECTRONIC FUEL SYSTEM  
Todd L. Rachel, Elmira, N.Y., assignor to The Bendix Corporation, Elmira, N.Y.  
Filed Jan. 25, 1971, Ser. No. 109,277  
Int. Cl. F02d 5/02

U.S. Cl. 123—32 EA

11 Claims

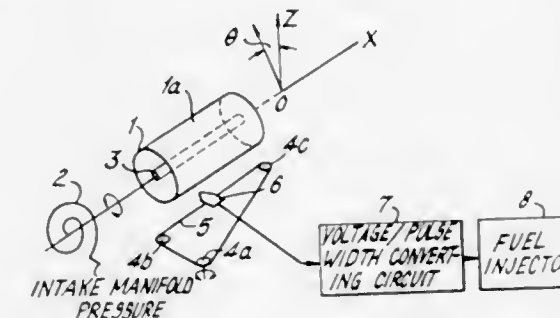


A circuit is disclosed for generation of an output voltage signal having a characteristic which varies as the magnitude, and rate, of change of a setting of a remote control member. The present circuit is comprised of a signal receiving and processing circuit adapted to suitably vary a signal indicative of instantaneous control member setting, and an analog signal generating circuit responsive to the first-mentioned circuit for producing an output and voltage signal having an amplitude proportional to the magnitude, and rate, of change of the output of the processing circuit. A further circuit is provided to produce a single signal of fixed magnitude and variable duration suitable for controlling a single pulse circuit.

3,720,192  
CONTROLLING DEVICE FOR FUEL INJECTION OF AN INTERNAL COMBUSTION ENGINE  
Shigeo Aono, Yokosuka, Japan, assignor to Nissan Jidosha Kabushiki Kaisha, Yokohama City, Japan  
Filed Sept. 9, 1970, Ser. No. 70,805  
Claims priority, application Japan, Oct. 22, 1969, 44/83976  
Int. Cl. F02b 3/00; F02m 51/00

U.S. Cl. 123—32 EA

6 Claims



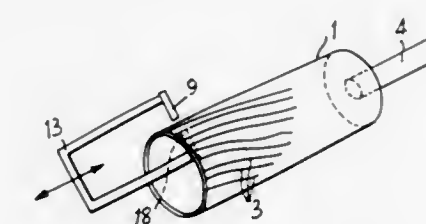
A controlling device for controlling an operation of fuel injection system of an internal combustion engine, comprising an optical means having light absorbing characteristics and a photodetecting means arranged to move relative to said optical means, the optical means has prerecorded optical variation of the light absorbing characteristics corresponding to requested two-dimensional characteristics of the operation of the internal combustion engine, the optical variation is detected by the photodetecting means to produce an electric

output voltage to control the injection period of fuel injector to obtain desired output characteristics of the internal combustion engine.

3,720,193  
METHOD AND APPARATUS FOR CODING AND READING DATA GOVERNING THE DURATION OF ENERGIZATION OF FUEL INJECTION IN AN INTERNAL COMBUSTION ENGINE  
Louis A. Monpetit, Etang-la-Ville, France, assignor to Societe des Procèdes Modernes d'Injection Sopromi, Les Mureaux, France  
Continuation-in-part of Ser. No. 774,362, Nov. 8, 1968, abandoned. This application April 13, 1971, Ser. No. 133,597  
Claims priority, application France, Nov. 27, 1967, 129,744  
Int. Cl. F02m 51/06

U.S. Cl. 123—32 EA

18 Claims



An arrangement for coding and reading data representing the duration of fuel injection in an internal combustion engine comprising a pulse generator, such as a transparent cylinder driven by the engine shaft and on which are recorded a plurality of series of points distributed in accordance with a hyperbolic law and each series corresponding to pulses to be generated for a predetermined position of the power-controlling means such as the throttle valve in the input manifold of the engine. A detector is shifted under the control of said power-controlling means across said series of points so that at each revolution of the pulse generator a corresponding series of points is detected and transformed into a series of pulses, the interval of time between the pulses depending on the spacing of the points and on the speed of rotation of the said pulse generator, the detected pulses being transformed by a discriminator into a rectangular pulse, the width of which is dependent on the intervals between the detected pulses. The rectangular pulse is utilized to energize an electrically controlled fuel supply system for the duration of said rectangular pulse.

3,720,194  
IGNITION SYSTEM  
Marion Mallory, Jr., Carson City, Nev., assignor to Mallory Electric Corporation, Carson City, Nev.  
Filed May 20, 1971, Ser. No. 145,276  
Int. Cl. F02p 1/00

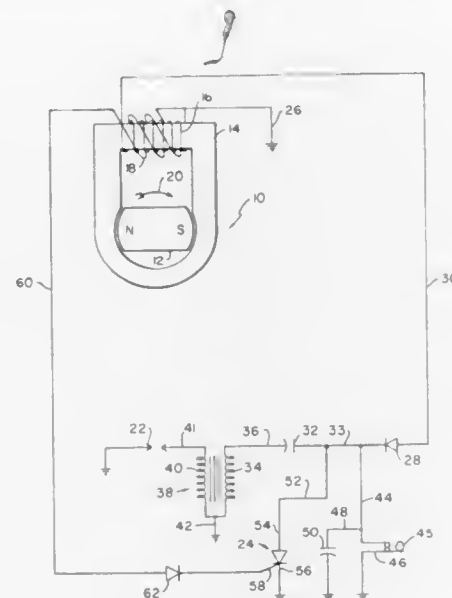
U.S. Cl. 123—148 E

6 Claims

A capacitive-discharge magneto ignition system for internal combustion engines is provided. The magneto output is utilized during one-half cycle to charge a capacitor. During the initial stages of the half cycle, the magneto output is discharged to ground through conventional points. The points are opened at a predetermined voltage level whereupon discharge to ground terminates and the capacitor is charged. The capacitor is connected through the primary winding of a step-up transformer which in turn is connected to a sparking device. A trigger winding is inductively coupled to the magneto winding. The output of the trigger winding is connected to the excitation circuit of an electronic switch which completes a circuit from the capacitor to ground. A voltage is in-



duced in the trigger winding upon collapse of the field of the magneto winding. The magneto winding field collapses when the capacitor is charged. The induced voltage



is sufficient to excite the electronic switch to conduct thus discharging the capacitor through the primary winding of the step-up transformer.

3,720,195

#### IGNITION SYSTEM FOR MULTI-CYLINDER INTERNAL COMBUSTION ENGINES

Hideo Fujii, Kariya, Japan, assignor to Nippondenso Co., Ltd., Kariya-shi, Aichi-ken, Japan

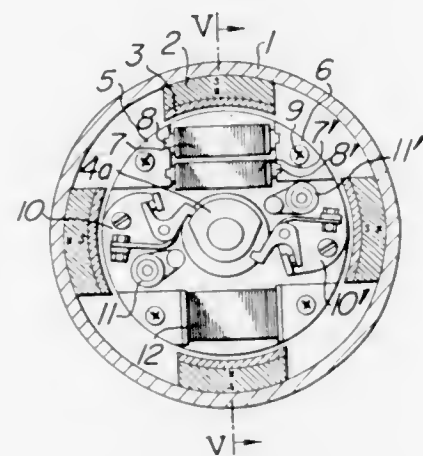
Filed March 10, 1971, Ser. No. 122,982

Claims priority, application Japan, March 13, 1970, 45/24814

Int. Cl. F02p 1/02

U.S. Cl. 123—149 D

3 Claims



An ignition system for multi-cylinder internal combustion engines is disclosed, which comprises a plurality of electrically independent, ignition power generating coils wound on respective main cores arranged side by side along a line at right angles to the rotor shaft of a magnet generator, said main cores being magnetically coupled with a pair of auxiliary cores arranged such that the magnet flux from the magnet pole pieces of said magnet generator pass by these auxiliary cores. The ignition power generating coils are each connected in parallel to an ignition coil and with an interrupter switch.

#### 3,720,196 SHUTTER ARRANGEMENT FOR WINDOWED DOOR OF HEAT CLEANING OVEN

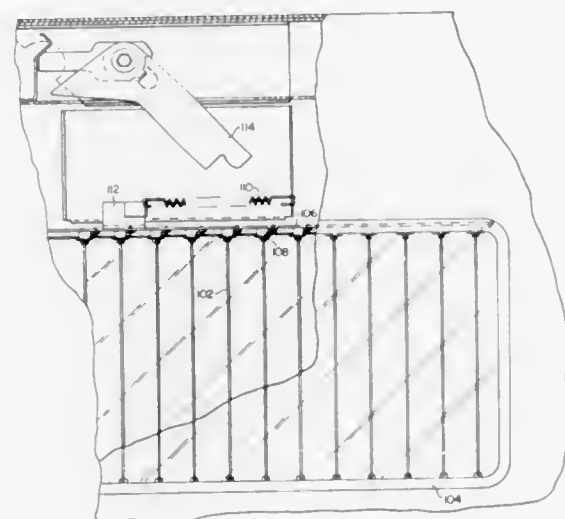
Eugene J. Barnett, 1165 Monterey Dr., and Wesley E. Shreffler, both of Mansfield, Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 25, 1968, Ser. No. 770,488

Int. Cl. F23m 7/00

U.S. Cl. 126—197

16 Claims



The titled apparatus in which a movable shutter arrangement is disposed in the door and connected to the latching means for the door for movement to a closed position when the latching means is operated to a position to initiate a heat cleaning operation of the oven, and is moved to an open position when the latching means is operated back to a position permitting the door to be opened.

3,720,197

#### SOLAR ENERGY FOR WARMING OBJECTS, SUCH AS GOLF BALLS AND THE LIKE

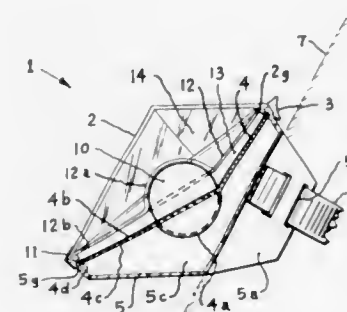
John J. Schroth, 19 Buttonwood Drive, Doylestown, Pa.

Filed May 21, 1971, Ser. No. 145,620

Int. Cl. F24j 3/02

U.S. Cl. 126—270

11 Claims



This invention relates to the efficient utilization of solar energy, to a practical level, for the warming or heating of objects such as golf balls and the like.

The device is portable and comprises a clear, insulated cover, a black, conductive absorber plate and an insulated carrying base.

Ultra-violet and visible light is admitted and trapped within the casing and is converted to infra-red by the absorber plate. The absorber plate conducts the heat generated, by the conversion to infra-red, through means of intimately contacting pockets containing the objects being warmed.

#### 3,720,198 HEAT STORAGE ELEMENTS, A METHOD FOR PRODUCING THEM AND DEVICES COMPRISING HEAT STORAGE ELEMENTS

Nikolaus Laing, and Ingeborg Laing, both of Hofener Weg 35-37, 7141 Aldingen bei Stuttgart, Germany

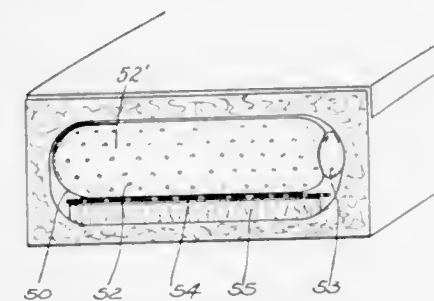
Filed June 4, 1969, Ser. No. 830,457

Claims priority, application Austria, June 6, 1968, A 5389/68; June 6, 1968, A 121/69; June 6, 1968, A 1068/69; June 6, 1968, A 1072/69; June 6, 1968, A 5389/68

Int. Cl. F24h 7/00

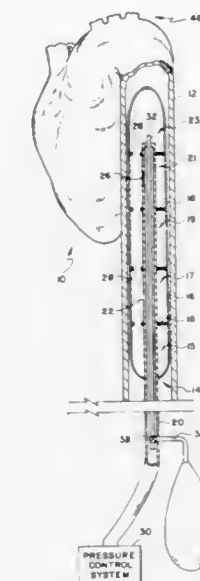
U.S. Cl. 126—400

16 Claims



A heat-storing element comprising a storage substance which can absorb latent heat, seed crystals distributed uniformly in said storage substance and a structure which prevents any change of the distribution during the melting phase of the substance.

loon pump comprises an elongated elastic membrane having a number of compartments supplied with pressure for expansion from an exterior source via a central tube and orifices between



3,720,199

#### SAFETY CONNECTOR FOR BALLOON PUMP

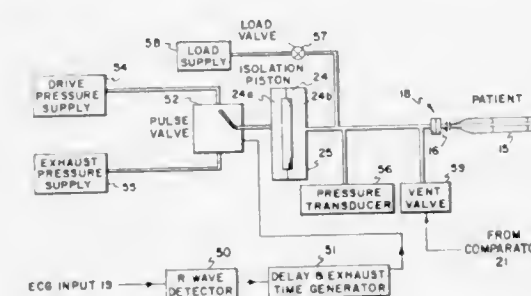
Michael L. Rishton, Reading, and Armando Federico, Needham, both of Mass., assignors to Avco Corporation, Cincinnati, Ohio

Filed May 14, 1971, Ser. No. 143,392

Int. Cl. A61b 19/00

U.S. Cl. 128—1 D

6 Claims



An intra aortic balloon catheter assembly for use in a circulatory assist system which includes a special connector for joining a balloon implanted in the patient to a control console which may house both pneumatic and electronic controls. The connector is adapted to provide a signal which indicates volumetric displacement of the balloon. This volume is compared to the volume of load gas utilized and shuts the system down if an over-inflation condition exists, prevents overinflation of the balloon, inadvertent use of an incorrectly sized balloon, and allows presterilization of the whole assembly.

3,720,200

#### INTRA-ARTERIAL BLOOD PUMP

John D. Laird, Rotterdam, Netherlands, assignor to Avco Corporation, Cincinnati, Ohio

Filed Oct. 28, 1971, Ser. No. 193,370

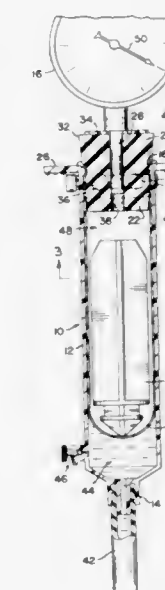
Int. Cl. A61b 19/00, 5/02; A61m 1/00

U.S. Cl. 128—1 D

7 Claims

The disclosure illustrates an intra-aortic circulatory assist balloon pump, expanding and contracting in synchronism with a patient's heart rhythm to assist systemic circulation. The bal-

A pressure monitoring device is disclosed which is designed to be discarded after each use. This device utilizes a tube which is separated by a flexible diaphragm. One end of the tube is attached to the source of pressure, and the distal end is attached to a pressure sensing device. The pressure sensing device is of any standard reusable type and it does not require sterilization. The tube and its components are made of inexpensive, sterilizable material and are designed to be disposed of after one use.

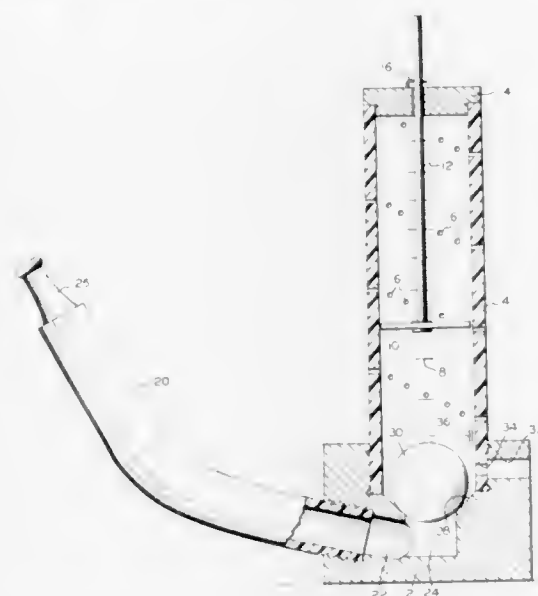




**3,720,202**  
**INSTRUMENT FOR MEASURING MAXIMUM**  
**EXPIRATORY FLOW RATE**

James M. Cleary, P.O. Box 541, Falmouth, Mass.  
Filed Oct. 5, 1971, Ser. No. 186,663  
Int. Cl. A61m 16/00; A61b 5/08  
U.S. Cl. 128—2.08

8 Claims

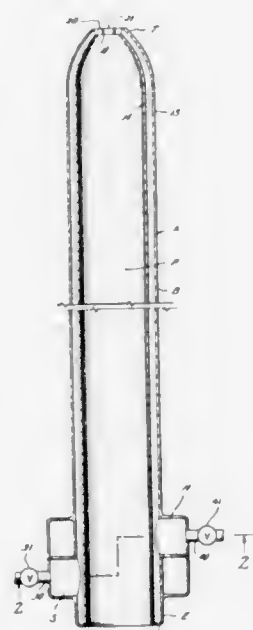


An instrument for measuring maximum expiratory flow rate having a vertically disposed cylinder with a plurality of equal sized orifices distributed along its length, a floating piston disposed in the cylinder having a guide rod passing through a closure on the top of the cylinder, a holdback clip mounted on the cylinder closure and operatively engaging the guide rod to prevent the guide rod from moving downwardly once the piston has moved upwardly in the cylinder and a suitable, flexible air tube having a mouthpiece at one end and connected in open communication with the bottom of the cylinder at its other end. The instrument can also be provided with a check valve at the lower end of the cylinder to prevent backflow of air through the air tube and adjustable port means adjacent the base of the cylinder to adjust the range of the instrument.

**3,720,203**  
**TUBULAR INSTRUMENT**

John R. Brown, 221 West Parker Road, Houston, Tex.  
Filed June 12, 1970, Ser. No. 45,655  
Int. Cl. A61b 1/00  
U.S. Cl. 128—4

1 Claim



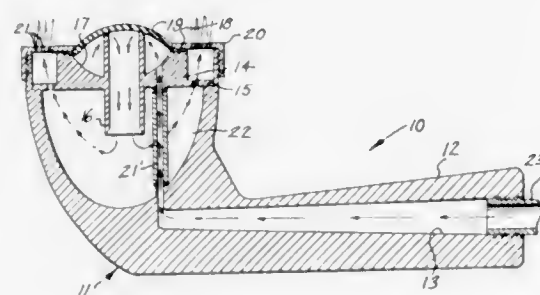
A tubular proctoscope or sigmoidoscope instrument for insertion into a body cavity, such as the rectum or sigmoid

colon, with such instrument having a plurality of circumferentially spaced conduits disposed in or adjacent the wall of the tubular instrument so as not to obstruct the main passage therethrough. Some of the conduits are provided for discharging water or other fluids adjacent the tip of said instrument and others of the circumferentially spaced conduits have inlets adjacent the tip of the instrument and are connected to an aspiration device for removing fluid or fecal matter from such body cavity during examination and treatment with the instrument.

**3,720,204**  
**VIBRO-SHOWER**

Adam S. Wojtowicz, 3055 N. Lawandole, Chicago, Ill.  
Filed Feb. 4, 1971, Ser. No. 112,589  
Int. Cl. A61h 7/00  
U.S. Cl. 128—64

4 Claims

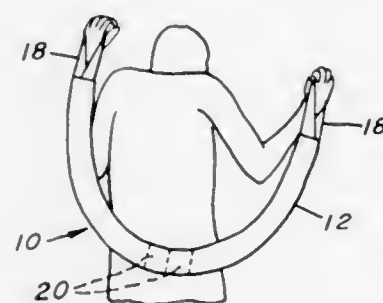


A shower device for physical therapy. The device includes a rubber diaphragm which is activated by water pressure enabling it to be used in the bathtub as a massaging unit, the device being also adaptable for use by barbers for shampooing and massaging the scalp.

**3,720,205**  
**BODY RUBBING DEVICE**

Arno J. Liebman, 1819 Shore Drive S. Shore View 218, Saint Petersburg, Fla.  
Filed Feb. 23, 1971, Ser. No. 118,057  
Int. Cl. A61h 7/00  
U.S. Cl. 128—67

3 Claims



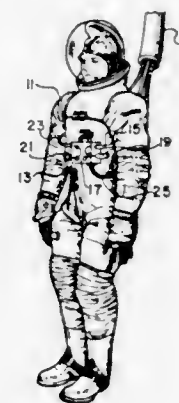
A device for use by a person for rubbing across sections of his body, particularly the back of his body, as for scrubbing, massaging, applying lotions, body creams, and the like, is disclosed. The device includes an elongated tubular liquid absorber.

**3,720,208**  
**UNDERWATER SPACE SUIT PRESSURE CONTROL**  
**REGULATOR**

Billy R. Aldrich, Huntsville; Charles R. Cooper, and John R. Rasquin, both of Madison, all of Ala., assignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.  
Division of Ser. No. 869,260, Oct. 24, 1969, Pat. No. 3,636,966. This application Nov. 2, 1971, Ser. No. 195,061  
Int. Cl. A61m 16/00

U.S. Cl. 128—142.5

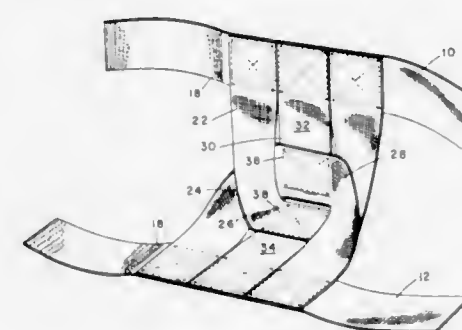
3 Claims



**3,720,206**  
**ANKLE HITCH**  
Joseph J. Walker, 955 3rd St., Encinitas, Calif. 92024, and Oran M. Bell, 5623 Dorothy Way, San Diego, Calif. 92115  
Filed Nov. 19, 1971, Ser. No. 200,418  
Int. Cl. A61f 5/04

U.S. Cl. 128—84 R

8 Claims



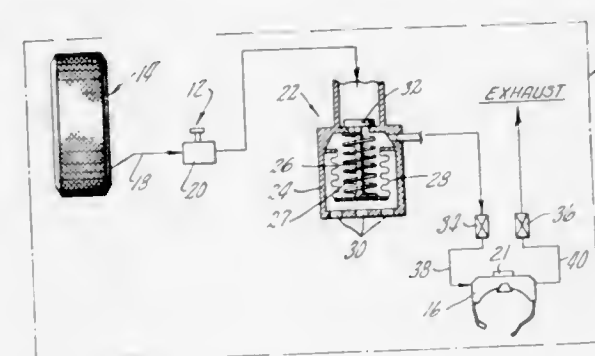
This article, commonly called an ankle hitch is an accessory in lower limb traction splint equipment for attachment on the foot and ankle and enabling securement of the actual tensioning means with a reasonably accurate measurement of the tension applied. The article is constructed so that it can scarcely be improperly applied since it is reversible as to foot and ankle strap attachment with complete non-slip assurance in both positions, a foot-uprighting or lateral support function, and an easily read tensioning scale eliminates guesswork in determining the degree of tension to be applied.

A device for regulating the pneumatic pressure in a ventilated space suit relative to the pressure imposed on the suit when being worn by a person underwater to simulate space environment for testing and experimentation. A box unit located on the chest area of the suit comprises connections for suit air supply and return lines and carries a regulator valve that stabilizes the air pressure differential between the inside and outside of the suit. The valve and thus suit pressure is controlled by the suit occupant and the valve includes a mechanism for quickly dumping the suit pressure in case of emergency. Pressure monitoring and relief devices are also included in the box unit.

**3,720,207**  
**EMERGENCY AIR SUPPLY SYSTEM FOR PASSENGERS**  
**OF A SUBMERGED LAND VEHICLE**

Alfred Paul Matheny, 616 Prosperity Farms Road, North Palm Beach, and John R. Rahon, 2052 Ardley Road, Juno Isles, both of Fla.  
Filed Dec. 2, 1970, Ser. No. 94,483  
Int. Cl. A62b 7/00  
U.S. Cl. 128—142

11 Claims

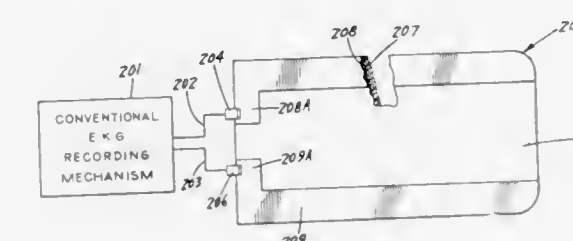


An available pressurized air source, such as an inflated tire, connectable by appropriate conduit means, with flow control and pressure regulation provisions, through an air transmitter or face mask, to the breathing passages of a passenger in a submerged land vehicle to either provide emergency breathing air for the passenger, or to fill an inflatable and portable air pack which the passenger may leave the vehicle with, or both.

**3,720,209**  
**PLATE ELECTRODE**

Lee R. Bolduc, Minneapolis, Minn., assignor to Medical Plastics, Inc., Minneapolis, Minn.  
Continuation-in-part of Ser. Nos. 711,949, March 11, 1968, Pat. No. 3,543,760, and Ser. No. 866,630, Oct. 15, 1969, Pat. No. 3,642,008. This application Nov. 25, 1970, Ser. No. 92,767  
Int. Cl. A61b 5/04  
U.S. Cl. 128—2.06 E

37 Claims



A one-piece disposable electrode having a flat flexible base of non-electrical conductive sheet material. An electrical conductive skin is secured to one side of the base. The skin is divided into separate sections engageable with distinct portions of a body. Clamps and cables are used to attach the electrode to an electrical-surgical machine, an electrocardiograph recording mechanism, or a device coupled to a cardiac catheter.

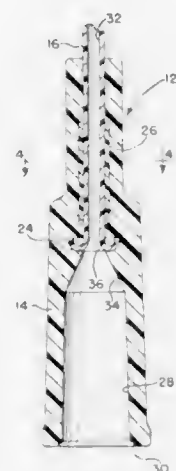


### 3,720,210 INDWELLING CATHETER DEVICE

Lambert John Diettrich, Glencoe, Ill., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.  
Filed Mar. 3, 1971, Ser. No. 120,418  
Int. Cl. A61m 5/00, 25/00

U.S. Cl. 128—214.4

10 Claims



An indwelling catheter device is provided for use in an intravenous catheter placement unit or infusion set to permit the introduction or withdrawal of liquids from a human body. The catheter device includes an elongated flexible tube section of a low friction material, preferably fluorinated ethylene propylene polymers or tetrafluoroethylene polymers, having a tubular, preferably thermoplastic, collar member mounted thereon with an interference fit adjacent an enlarged flange of the elongated flexible tube section. A hub element of a different higher friction material, such as polyethylene, is insert molded over and around the tubular collar member and enlarged integral flange of the elongated flexible tube section to form a unitary catheter device. The heat of the molding operation causes a chemical bonding or fusing of the material of the hub to the material of the collar so as to provide a fluid tight seal between the hub and catheter tube.

### 3,720,211

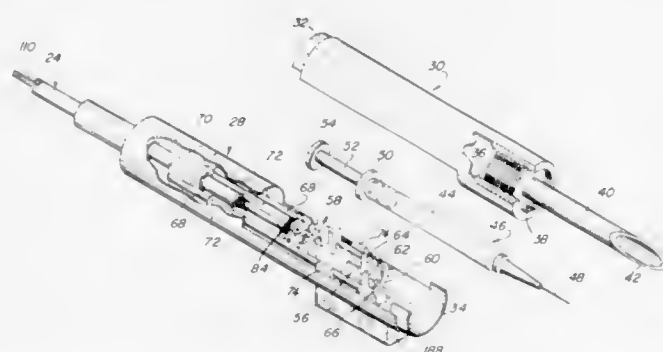
#### AUTOMATIC INJECTION SYSTEM

George M. Kyrias, 330 E. Wakefield, Apt. No. 3, Anaheim, Calif.

Continuation-in-part of Ser. No. 869,484, Oct. 27, 1969, abandoned. This application Aug. 18, 1971, Ser. No. 172,651  
Int. Cl. A61m 5/00, 5/22

U.S. Cl. 128—218 A

14 Claims



Apparatus for manipulating a hypodermic syringe to automatically administer an injection. The apparatus includes a hand held probe unit within which a loaded hypodermic syringe is placed. Operation of a control switch on the hand held unit will automatically drive the syringe in a cycle in which the syringe needle is seated in the patient's body, the syringe

plunger is depressed to expel the charge from the syringe and the syringe needle is automatically withdrawn from the patient. The system may be operated to include an aspirating step between the needle seating and the plunger depressing steps, one embodiment of the invention providing for automatic timing of the aspiration step while another embodiment placing control of the duration of aspiration in the user. The system, in one form, may further provide for adjusting the rate at which the plunger is depressed, to thereby control the rate of injection.

### 3,720,212

#### ABSORBENT PANTY

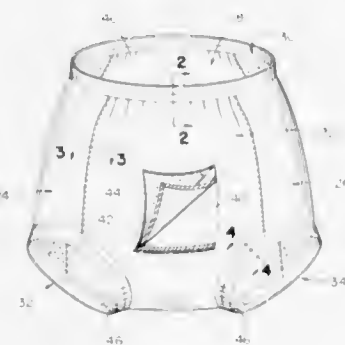
William B. Kaupin, Westwood, Mass., assignor to the William Carter Company, Needham Heights, Mass.

Filed Sept. 9, 1971, Ser. No. 179,125

Int. Cl. A61f 13/16

U.S. Cl. 128—288

4 Claims



An absorbent panty has good resistance to discoloration and great retention of absorbency over a life of washings by utilizing a crotch insert or interliner fabricated of hydrophilic fibers needle punched into a non-woven spunbonded inelastic hydrophobic fiber sheet.

### 3,720,213

#### LASER PHOTOCOAGULATOR

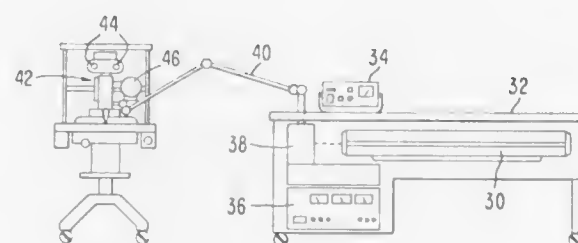
James L. Hobart, Palo Alto, and Steven M. Jarrett, Los Altos, Calif., assignors to Coherent Radiation, Palo Alto, Calif.

Filed Feb. 5, 1971, Ser. No. 113,026

Int. Cl. A61n 5/06

U.S. Cl. 128—395

8 Claims



A laser photocoagulator for treating a patient's eye comprises a laser, optical means for delivering the output beam from the laser to the desired location in the eye of the patient, and wherein the laser is operated to provide a multi-mode output beam. The use of the multi-mode output laser beam enables the treatment of certain eye diseases while insuring that damage to the cornea and other parts of the eye resulting from the passage of the laser beam is prevented.

### 3,720,214

#### SMOKING COMPOSITION

Vello Norman, Chapel Hill, and Herman G. Bryant, Jr., and Thomas Blair Williams, Durham, N.C., assignors to Liggett & Myers Incorporated, New York, N.Y.

Filed Dec. 3, 1970, Ser. No. 94,949

Int. Cl. A24b 13/00, 15/02

U.S. Cl. 131—17

11 Claims

A smoking composition comprising tobacco and a catalytic agent for causing a decrease in the yield of polycyclic aromatic compounds arising from pyrolytic reactions of the composition, the agent consisting essentially of finely divided zinc oxide and being associated with the tobacco in the composition.

### 3,720,215

#### HOOD STYLE DISHWASHER

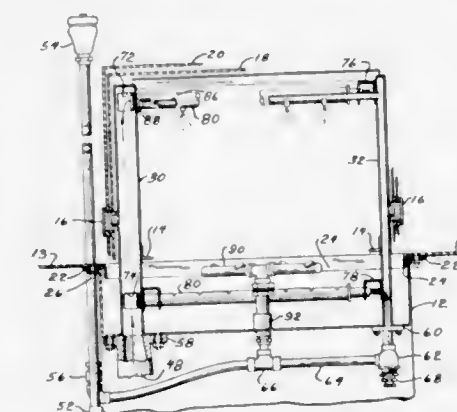
Arthur W. Haas, Elgin, Ill., assignor to McGraw-Edison Company, Elgin, Ill.

Filed Nov. 4, 1971, Ser. No. 195,628

Int. Cl. B08b 3/02

U.S. Cl. 134—165

6 Claims



A hood style dishwasher having a tank and upstanding manifolds united thereto, whereby the tank can be easily secured in place relative to a countertop or the like and rinse or wash water connections made with the manifolds and whereby telescoping curved hoods pivoted together on bearings in turn can be supported on the upstanding manifolds without additional fabrication of the countertop other than for mounting the tank itself.

In restaurants, hospitals, or like institutions it is common to have a sheet metal specialist fabricate a counter for the kitchen area and to mount in an opening in this counter a dishwasher manufactured at a separate location. The installation obviously has to be reliable and according to all safety and sanitation codes. In prior commercial hood style dishwashers, the tank would be mounted from the underside of the counter in line under the counter opening and would be completely sealed to the counter. The telescoping inner and outer hoods each curved over approximately 90° and adapted to cover the tank would then be typically mounted on bearings secured to the topside of the counter. The hoods can be individually opened to provide loading and unloading access of racks from either side of the dishwasher.

### 3,720,216

#### METHOD FOR REDUCING THE DYNAMIC DRAG OF A TURBULENT AQUEOUS STREAM

Lloyd H. Wartman, Westport, Conn., and Paul A. King, Tucson, Ariz., assignors to Union Carbide Corporation, New York, N.Y.

Filed Sept. 27, 1971, Ser. No. 184,241

Int. Cl. F17d 1/16

U.S. Cl. 137—13

16 Claims

A method for reducing the dynamic drag of a turbulent aqueous stream which comprises contacting said aqueous stream with a solid mass of finely divided material containing

an ethylene oxide polymer and a water-soluble organic or inorganic material.

### 3,720,217

#### FLUIDIC SYSTEMS

Robert B. Matthews, Chandler's Ford, and Charles M. Fitzmaurice, Fareham, both of England, assignors to The Plessey Company Limited, Essex, England

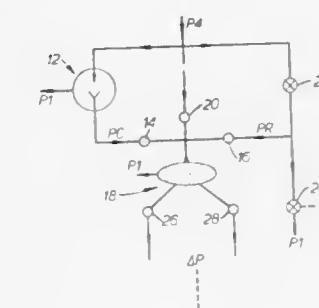
Filed March 25, 1970, Ser. No. 22,453

Claims priority, application Great Britain, March 25, 1969, 15,475/69

Int. Cl. F15c 1/12, 1/16

U.S. Cl. 137—81.5

7 Claims



A fluidic control system includes a pair of fluid restrictors connected in series whereby a tapping between them provides an output pressure which is a fraction of the input pressure. A planar jet collector gives an output which is a non-linear function of the input pressure. Thus, when both the jet collector and the orifices or restrictors are supplied with fluid from the same source then their difference in output pressures will vary as a function of input pressure. The output pressure difference is communicated to a fluidic proportional amplifier whose output pressure can be used to control the bleed valve or inlet guide vane of a gas turbine whence the input fluid pressure is derived.

### 3,720,218

#### HIGH SPEED DECOUPLED FLUIDIC SWITCHING DEVICE

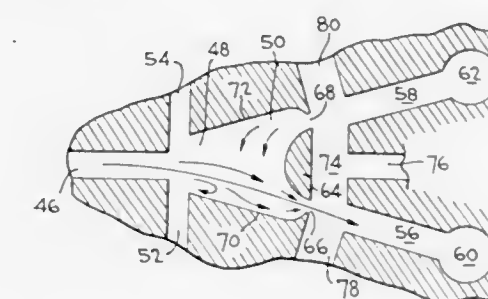
Tadeusz M. Drzewiecki, Gaithersburg, Md., assignor to The United States of America as represented by the Secretary of the Army

Filed Dec. 7, 1971, Ser. No. 205,642

Int. Cl. F15c 1/04

U.S. Cl. 137—839

5 Claims



A novel construction of a fluidic switching device is disclosed, the construction effecting high speed decoupled operation. In the preferred inventive embodiment, the novel construction comprises a modification of a conventional fluidic switching device of the type including an input nozzle, a wall-attachment interaction chamber, and a plurality of output receiver lines, wherein a splitter of rounded convex shape is disposed downstream in the interaction chamber between the plurality of output receiver lines, wherein constrictions are provided to either side of the splitter between the interaction chamber and each respective output receiver line, wherein vent channel means are disposed behind and downstream of



the splitter and the constrictions communicating with each output receiver line and coupling each output receiver line to a common vent, and wherein additional decoupling vents are disposed downstream of the constrictions in each output receiver line. This novel construction has the effect of eliminating the receiver line and downstream impedance to switching and specifically removes the vortex in the attachment region and the receiver line inductance.

3,720,219

## FLUID LOGIC ARRANGEMENTS

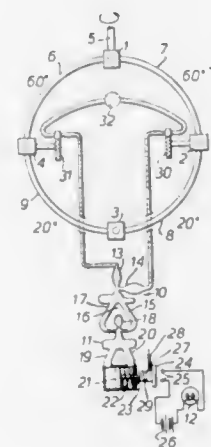
Guy Edward Davies, Fareham, England, assignor to Plessey Handel und Investments A.G., Gartenstrasse, Switzerland  
Filed Dec. 2, 1970, Ser. No. 94,328

Claims priority, application Great Britain, Dec. 4, 1969, 59,170/69

Int. Cl. F15c 1/12

U.S. Cl. 137—804

10 Claims



A fluid monitoring arrangement for giving a warning of deterioration or failure in a drive system which will maintain a required drive in spite of said deterioration or failure. The deterioration or failure is indicated by relative movement between two parts of the drive system, each part having associated with it an intermittent supply of fluid. The fluid is supplied to fluid logic means and the fluid logic means provides an output indicative of the relative movement of the two parts and hence of any failure or deterioration in the system.

3,720,220

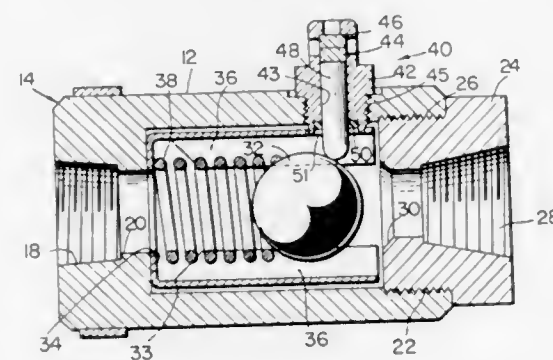
## SAFETY VALVE

Jack A. McMath, Fort Thomas, Ky., assignor to Dover Corporation, Cincinnati, Ohio  
Filed March 17, 1971, Ser. No. 125,261

Int. Cl. F16k 17/38

U.S. Cl. 137—75

2 Claims



A safety valve for preventing the flow of materials therethrough in the presence of a predetermined external temperature condition is disclosed. A fusible plug maintains a spring-biased closure member out of contact with a seat in the

outlet path. Upon melting of the fusible material, the closure member is released and urged into contact with the seat in the outlet path to prevent any further flow of material therethrough.

3,720,221

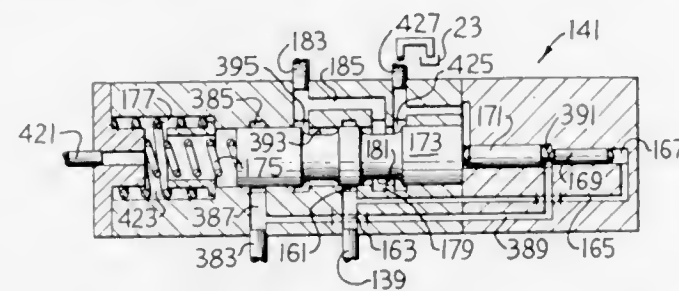
## HIGH PRESSURE IMPLEMENT HYDRAULIC CIRCUIT

John L. Hufeld, Peoria; Donald J. Larson, Joliet; Howard A. Marsden, Pekin; James P. Mueller, East Peoria, and William B. Norick, Joliet, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 868,964, Oct. 21, 1969, Pat. No. 3,575,000. This application Jan. 4, 1971, Ser. No. 103,869

Int. Cl. F16k 31/12

4 Claims



A relatively low pressure hydraulic control system for a high pressure work output system in which a control valve is selectively actuated to position a variable displacement axial piston pump to control the flow in the work output system and to position a directional valve which controls the direction of work output. In such a system wherein two work outputs are provided, thereby requiring two control valves, a priority valve may be utilized in the low pressure system so that a signal from one of the control valves will always override a signal from the other control valve in controlling the axial piston pump.

3,720,222

## FLUID PRESSURE REGULATING AND CONTROL DEVICE

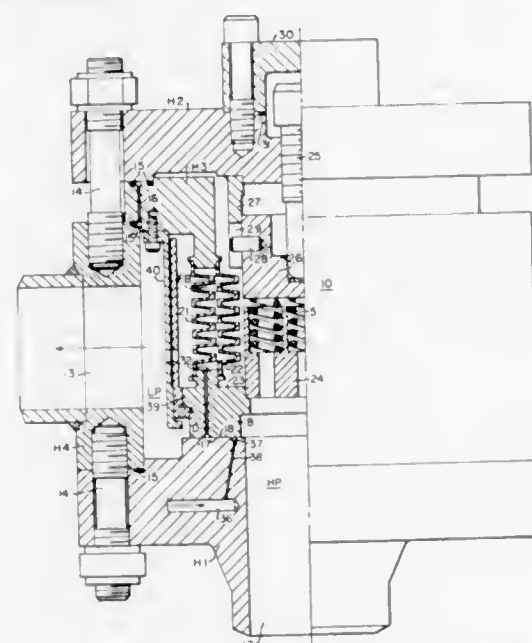
Harry N. Andrews, Export; Erling Frisch; Norman R. Singleton, both of Pittsburgh, and Phillip C. Stein, Lansdowne, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 27, 1971, Ser. No. 193,114

Int. Cl. F16k 33/36

U.S. Cl. 137—154

20 Claims



A controlled leakage device is provided which can control the flow of fluid out of a chamber over a wide range of fluid conditions, i.e., from subcooled liquid to superheated vapors. A hydrostatic balancing system is utilized to cause the seating

force on a pressure barrier member to be related to the lifting force on the barrier member. Thus, the device can be constructed to remain in balance over the large change in lifting force that results when the fluid changes phase. Possible applications for the device include safety and relief valves for pressurizers, steam generators and boilers, and shaft seals.

3,720,223

## SEAL CONSTRUCTION FOR STEAM TRAPS

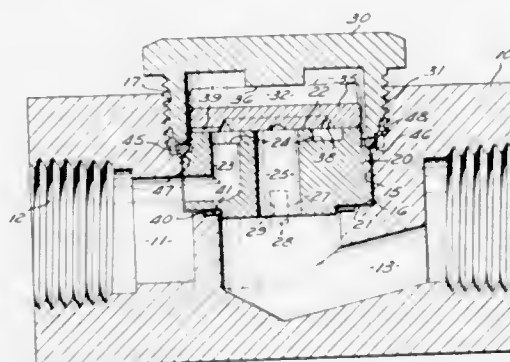
Allan R. Goellner, Parma Heights, Ohio, assignor to The Clark-Reliance Corp., Cleveland, Ohio

Filed April 12, 1971, Ser. No. 133,201

Int. Cl. F16t 1/16

U.S. Cl. 137—183

6 Claims



A steam trap having an improved means for sealing a control chamber within the body of the trap, particularly with respect to the inlet and outlet passages. The body of the trap has a bore with a threaded counterbore and the bore receives a cylindrical valve seat element. A beveled annular shoulder is formed between the bore and the counterbore and an adjacent beveled annular shoulder is formed in the seat so that the two shoulders together form a V-shaped annular groove that receives a radially expandable annular metal sealing gasket with a convexly curved bottom surface. The bottom surface of the gasket bears initially, when unflexed, against only the shoulder in the seating element. However, when the gasket is forced downward and outward during assembly of the trap, it is rolled and radially expanded into continuous sealing engagement with the shoulder formed between the bore and counterbore as well as with the shoulder of the valve seat element.

3,720,224

## TIRE PRESSURE INDICATOR AND INFLATION DEVICE

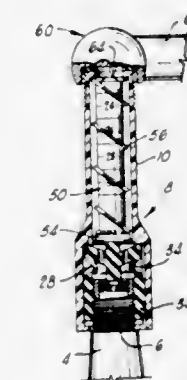
Ollie C. Foxhall, Bethany, Okla., assignor to Joco Incorporated, Oklahoma City, Okla.

Filed Dec. 18, 1970, Ser. No. 99,631

Int. Cl. B60c 23/04; F16k 37/00

U.S. Cl. 137—227

3 Claims



A tire pressure indicator and inflation device which includes an outer housing having a bore and counterbore formed therein, and an internal housing positioned in the bore of the

outer housing. The internal housing is constructed of resilient material, and has an internally threaded hollow interior for connecting the internal housing to the stem of the valve of a pneumatic tire. The internal housing is generally cylindrical in shape and is resiliently collapsible in an axial direction. The internal housing has an end plate which extends across and closes one end thereof and which carries a valve core depressor element. An elongated pressure indicator element carrying a piston at one end thereof is slidably mounted within the bore of the outer housing so that the piston seals against the internal wall of the outer housing in the bore. The piston and associated pressure indicator element are biased by a spring positioned between the piston and an internal shoulder on the outer housing to a position adjacent the internal housing.

3,720,225

## FULL OPENING WAFFER VALVE

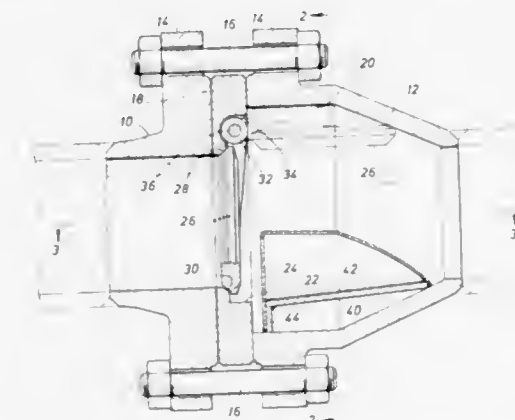
Thomas Wheatley, Jr., 3717 Pinemont, Houston, Tex.

Continuation-in-part of Ser. No. 23,818, March 30, 1970, abandoned. This application March 8, 1971, Ser. No. 121,877

Int. Cl. F16k 15/03

U.S. Cl. 137—268

6 Claims



A full opening valve of the swinging disk type having a valve housing or casing formed with an internal recess into which the disk is movable when the valve is opened to provide full opening of the flowway, the valve housing having internal means providing a guiding surface for balls, pipeline pigs, or the like, to eliminate internal projections in the flowway and to allow such objects to pass freely through the valve without becoming stuck in the valve. The valve is constructed with support means for the disk which takes the form of a ring or wafer, and the valve housing is formed in two parts adapted to be releasably secured together and between which the wafer is removably disposed, the disk being pivotally mounted on the wafer for removal therewith. Means is also provided for operating the valve manually from the exterior of the housing.

3,720,226

## VEHICULAR MOUNTED WASH APPARATUS

Paul R. Minich, Jr., Washington, D.C., and Donald E. Shaver, Fort Worth, Tex., assignors to C & M Manufacturing Company, Inc., Bethesda, Md.

Filed Aug. 6, 1970, Ser. No. 61,576

Int. Cl. F16k 49/00

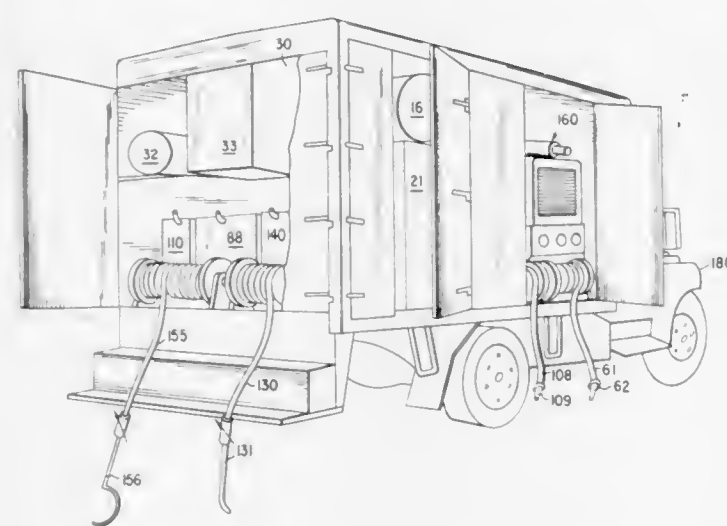
U.S. Cl. 137—334

7 Claims

A wash apparatus suitable for vehicular mounting has a water tank from which water is directed to a main for distribution to duplexed wash channels, duplexed rinse channels, a brightener channel, and a steam channel. A pump propels water in the main through a heater and a



bypass and delivers hot or cold water to any or all of the channels. The wash channels are capable of discharging hot wash fluid while the rinse channels simultaneously discharge cold rinse fluid. Detergent, wax, and acid are



supplied to the several channels at rates proportional to the respective water flows. Pressure pumps further increase pressure in the wash channels for discharging wash fluid at high pressures. The fluid in each channel is discharged through a separate nozzle.

### 3,720,227 VALVE BONNET COOLING SYSTEM

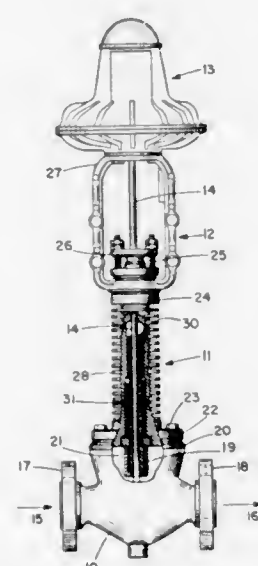
John R. Curran, Attleboro, Mass., assignor to The Foxboro Company, Foxboro, Mass.

Continuation of Ser. No. 42,426, June 1, 1970, Pat. No. 3,648,718. This application Jan. 24, 1972, Ser. No. 220,272

Int. Cl. F16k 49/00

U.S. Cl. 137—339

19 Claims



A valve bonnet cooling system for protecting valve stem packing therein and actuating equipment mounted on the bonnet from damage or excessive wear caused by heat transfer along and around the stem and bonnet when the valve is used to control high temperature high pressure fluids such as superheated steam.

### 3,720,228 FULL-BORE PIPELINE CHECK VALVES ADAPTED FOR REARRANGEMENT INTO ALTERNATIVE BODY STYLES

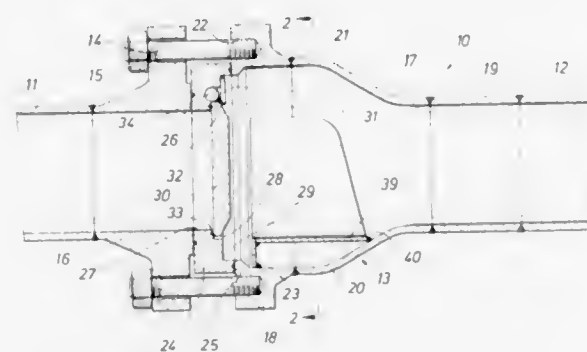
Thomas Wheatley, Jr., 8015 Meadowglen, Houston, Tex.

Continuation-in-part of Ser. No. 121,877, March 8, 1971, which is a continuation-in-part of Ser. No. 23,818, March 30, 1970, abandoned. This application Nov. 19, 1971, Ser. No. 200,480

Int. Cl. F16k 15/03

U.S. Cl. 137—454.2

17 Claims



As a representative embodiment of the new and improved full-opening pipeline valve disclosed herein, a tubular valve body is formed of three separable full-bore members adapted to pass pipeline pigs and having a combined axial length corresponding to the standard overall length established by industry for both flanged and weld-end valves of that pipe size and pressure rating. The body members can be alternatively arranged into either of two body styles to enable the full-opening valve to be either welded into a pipeline or bolted into position between a spaced pair of opposed pipeline flanges. The body members include an annular member carrying a pivoted valve disc, with this body member being uniquely adapted to be clamped between a flanged body member and either another flanged body member or a pipeline flange depending upon which body style is required for mounting the full-bore valve in a given pipeline. In either of these body styles, the unique annular body member is wholly confined within the flange bolts so that this body member can be conveniently removed or the pivotally-supported valve disc may be selectively oriented to different angular positions as required to assure the passage of pipeline pigs by simply loosening the flange bolts and rotating the annular body member in relation to the other body members.

### 3,720,229 VALVE ASSEMBLY

Narinder Masson, Jersey City; William John Korenicki, Linden, and Walter Ludwig Lechner, New Providence, all of N.J., assignors to Gamon-Camet Industries of Inc., Newark, N.J.

Division of Ser. No. 23,355, March 27, 1970, Pat. No. 3,677,084. This application May 10, 1971, Ser. No. 142,345

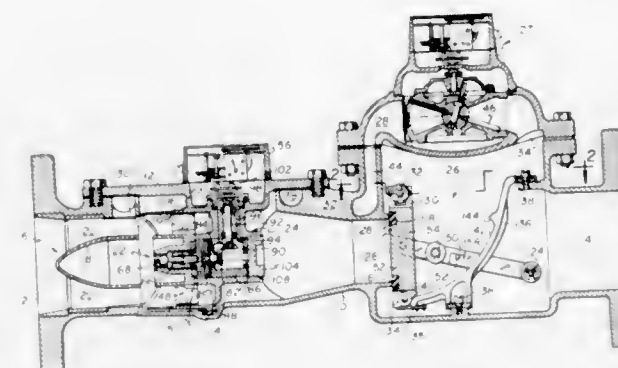
Int. Cl. F16k 17/12, 31/44

U.S. Cl. 137—527.8

19 Claims

A valve assembly, for controlling fluid flow through a conduit having a valve seat therein through which flow to the outlet end of the conduit must pass, comprising: a valve member for sealing said valve seat, toggle action means mounting said valve member in said conduit for toggle action movement between a closed valve seat sealing position and an open valve seat non-obstructing fluid flow position and, guide means for positively guiding said valve member through its valve seat opening and closing movements. The guide means comprises cam follower means mounted on said valve member and stationary cam means cooperating with said cam follower means for guiding said valve member through its said valve seat opening and closing movements. The cam means comprises a

generally vertically disposed ramp-like member including an initial vertical portion defining the fully closed position of said



valve member and permitting limited vertical movement of said valve member while in its fully closed position.

### 3,720,230 APPARATUS FOR ADMIXING LIQUIDS IN PREDETERMINED RATIO

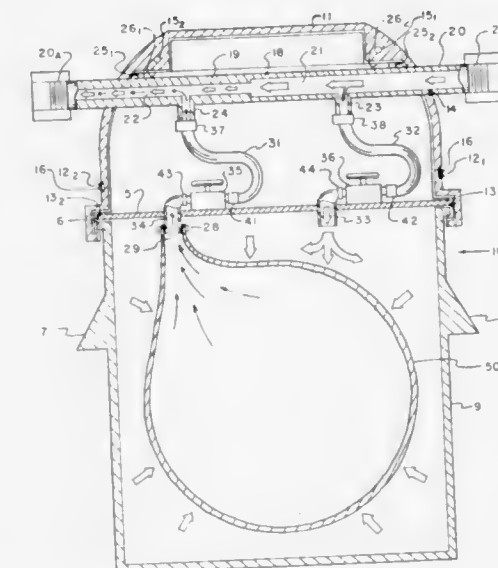
Perry H. Miller, Mehdi Sabbaghian, Calvin A. Stockstill, all of Baton Rouge, La., assignor to Coronet Manufacturing Company, Inc., Baton Rouge, La.

Filed April 14, 1971, Ser. No. 134,005

Int. Cl. E03b 7/07

U.S. Cl. 137—564.5

10 Claims



Apparatus for adding measured quantities of concentrates or solutions, e.g., particularly fluoride salt solutions, to a second liquid, e.g., fresh water as supplied by municipalities to ordinary residences. The apparatus is particularly adapted to be fitted into a conduit carrying a supply of fresh water to a source to be supplied with fluorinated water, e.g., a residence. It is constituted generally of an outer vessel within which a tubular flow nozzle is enclosed. The nozzle is provided with high pressure and low pressure sides, and lateral outlets from such high and low pressure sides. A flexible bag containing, e.g., a fluoride solution for injection into the fresh water, can be operatively connected to the low pressure outlet, while the external portion of the bag is placed under the influence of the high pressure outlet such that when fresh water is passed through the nozzle the differential pressure causes solution to be metered via the low pressure outlet into the axial opening within the tubular flow nozzle where it is picked up, admixed or dissolved within the fresh water, and dispensed through the conduit as fluorinated drinking water.

### 3,720,231 ADD-ON OIL-FUEL METERING DEVICE

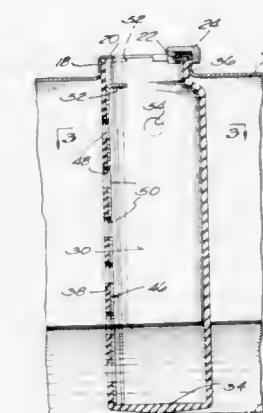
Fortunato S. Ajero, 521 S. Rawson Court, South Milwaukee, Wis. 53217

Filed Dec. 20, 1971, Ser. No. 209,822

Int. Cl. F16k 3/24

U.S. Cl. 137—576

9 Claims



This application relates to an accessory for a gasoline tank, for a two stroke cycle engine of a type which uses a mixture of gasoline and oil. The accessory is a flexible chamber inserted through the filler neck of the tank. The ratio of the areas of the chamber and the tank in a horizontal plane is equal to (or a whole number quotient of) the proportion of oil to gasoline required by the engine. The chamber is flexible enough to permit it to be folded and inserted into the filler neck of the can despite the fact that the conventional filler neck has a much smaller area than the required area of the chamber for proper metering. The chamber also has a simplified structure and a vertically operating valve insertable through the neck which utilizes the flange of the filler neck as a stop and which assists in supporting the chamber. The chamber is desirably made of neoprene or a similar flexible substance impervious to gasoline and oil.

### 3,720,232 FLUID PRESSURE RESPONSIVE VALVE CONTROLLER

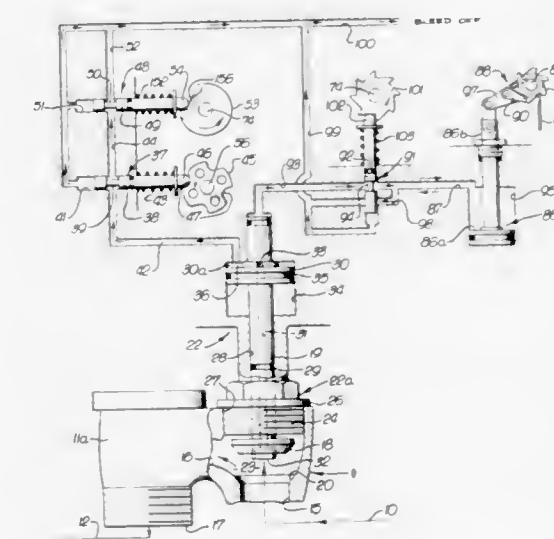
Robert F. Corliss, Hacienda Heights, and Frank Wilkinson, Chatsworth, both of Calif., assignors to said Corliss, by said Wilkinson

Filed April 20, 1971, Ser. No. 135,729

Int. Cl. F16k 31/36

U.S. Cl. 137—624.14

13 Claims



A water pressure energized controller for a main valve through the body of which system water supply is to be controlled, comprises:

- a housing attached to said body,
- valving means projecting from the housing for installation



and movement within the body to control water flow in the system, and

c. control means carried by the housing and responsive to system water pressure to cycle the movement of said valving means at predetermined time intervals.

3,720,233

## COMBINATION PURGE AND REGULATING VALVE

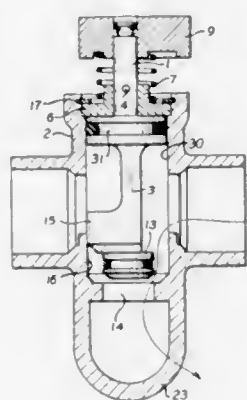
Ira Shur, Rockville Center, and Theodore Mülle, Jr., Huntington, both of N.Y., assignors to Flair Manufacturing Corporation, Hauppauge, N.Y.

Filed Sept. 17, 1970, Ser. No. 72,939

Int. Cl. F16k 11/02

U.S. Cl. 137—625.17

8 Claims



A purge and balancing valve having a valve body with a purge opening and a vane type valve member adapted to rotate in a balancing position between fully open and fully closed and when closed being adapted to move to a purging position where communication between the purge opening and one side of the valve is established. The valve is capable of purging in either direction and is designed to prevent inadvertent movement to the purging position.

3,720,234

## DOUBLE SEATED REGULATING VALVE

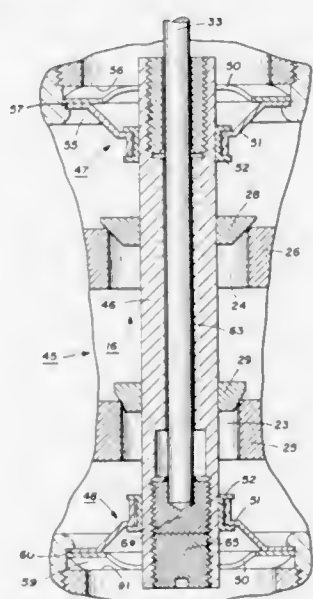
Joseph E. Gorgens, Trumbull, and Robert D. Bissell, Orange, Conn., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Feb. 24, 1971, Ser. No. 118,262

Int. Cl. F16k 1/44

U.S. Cl. 137—625.36

15 Claims



A double seated valve having an axially moveable tubular disc stem. The stem supports two pre-spaced closure discs opposite the respective valve seat with which each disc is to cooperate in the regulation of fluid flow. A coaxially mounted regulator operating rod extends

from without the valve bonnet to a stem connection within the tube thereof. Radial clearance between the tube wall and rod for their coextensive length from the point of connection flexibly accommodates relative axial offset therebetween.

3,720,235

## COMPOSITE TUBING

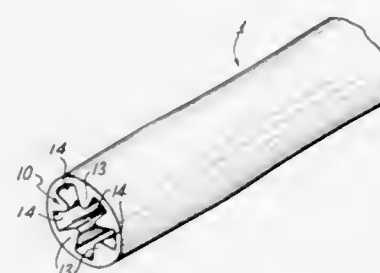
James Douglas Schrock, Ravenna, Ohio, assignor to Samuel Moore & Company, Mantua, Ohio

Filed Sept. 30, 1970, Ser. No. 76,766

Int. Cl. F16l 11/04

U.S. Cl. 138—137

3 Claims



A tube adapted to convey fluids under pressure and to be distorted without kinking and blocking of fluid flow therethrough has a resinous core tubing provided with internal longitudinal ribs. The tube is provided with a fibrous reinforcing member disposed about the core tube and an outer sheath if it is to convey fluids under pressure of 500 p.s.i. or more.

3,720,236

## ARRANGEMENT FOR FORMING A SELVAGE FOR USE ON A LOOM

Edgar Strauss, Ruti/ZH, Switzerland, assignor to Ruti Machinery Works Ltd., formerly Caspar Honegger, Ruti/ZH, Switzerland

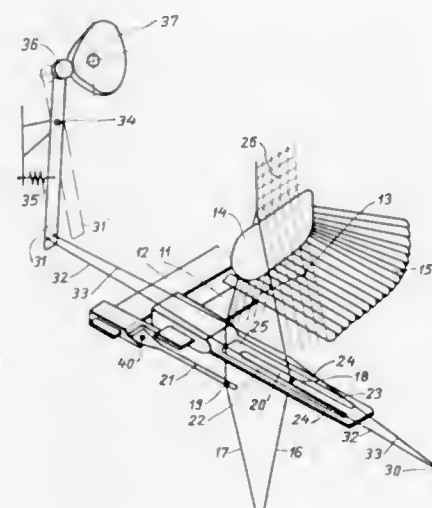
Filed May 28, 1971, Ser. No. 147,748

Claims priority, application Switzerland, June 4, 1970, 8362/70

Int. Cl. D03d 47/40

U.S. Cl. 139—54

12 Claims



A selvage forming arrangement for use on a loom, wherein two selvage threads of a fabric warp are guided in eyelet means during weaving to produce shed forming movements in which the threads pass one another and are periodically crossed one over another by movement imparting means having thin, elongate thread positioning elements that extend transversely of at least one of the selvage threads, these elements being movable transversely, i.e., laterally of the shed forming movement of the eyelet means, with the first of the

selvage threads being alternately movable into register with one and the other of a pair of guide slots disposed one on each side of the second of the two selvage threads, so that these threads provide a selvage when woven up with successive weft thread insertions into the sheds.

3,720,237

## ARRANGEMENT FOR HOLDING WEFT THREADS

Rachid Keldany, Egg, Zurich, Switzerland, assignor to Ruti Machinery Works Ltd., formerly Caspar Honegger, Zurich, Switzerland

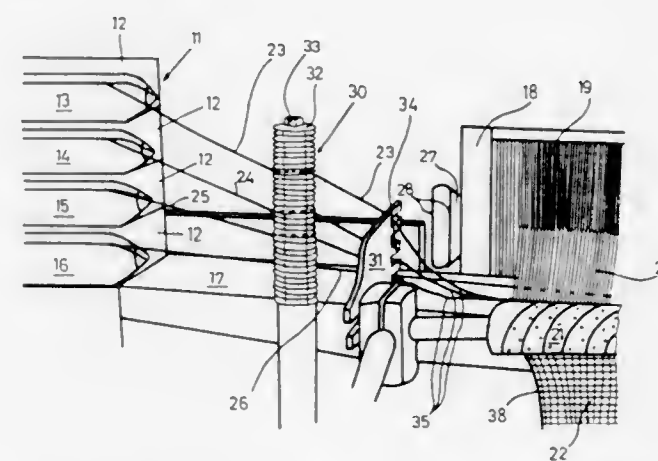
Filed June 10, 1971, Ser. No. 151,855

Claims priority, application Switzerland, June 19, 1970, 9,313/70

Int. Cl. D03d 43/10

U.S. Cl. 139—170.3

7 Claims



An arrangement to be used in a loom for holding the weft threads that extend between an edge of the fabric and shuttles contained in a drop box of the loom, wherein first and second retaining members are positioned on one side of the sley between the drop box and the edge of the fabric with the retaining members extended transversely of the weft threads and provided with a ribbed profile so that a stream of air can be directed towards the weft threads from a blower nozzle positioned on the other side of the sley, so as continuously to force the weft threads against the retaining members and tension them whereby the threads are held apart in an orderly manner.

3,720,238

## ARRANGEMENT FOR MONITORING WEFT THREADS

Edgar Strauss, Widenweg, Switzerland, assignor to Ruti Machinery Works, Ltd., formerly Caspar Honegger, Zurich, Switzerland

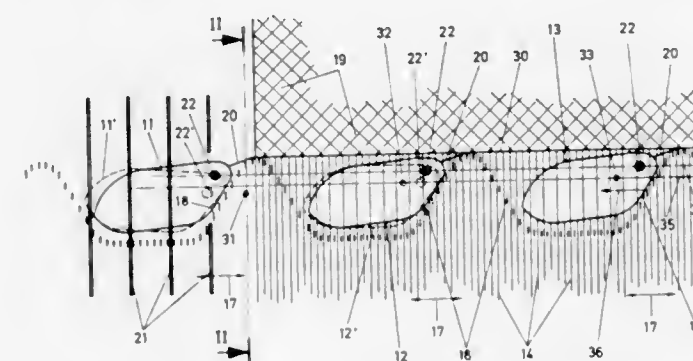
Filed June 3, 1971, Ser. No. 149,700

Claims priority, application Switzerland, June 12, 1970, 8,883/70

Int. Cl. D03d 51/34

U.S. Cl. 139—12

7 Claims



An arrangement for monitoring the weft threads during their insertion into a shed of a wave-like shed loom by means of a weft-thread inserting element which, dur-

ing its insertion movement is guided loosely in a guide means in which the difference occurring at a monitoring point between the position of said inserting element when the thread is loose or broken, and the position of said inserting element when operations are proceeding in the proper manner, serves as a criterion for the detection of the presence of a loose or broken weft thread carried by a weft thread inserting element.

3,720,239

## ADJUSTABLE GATE FOR BUTT WELDING MACHINE

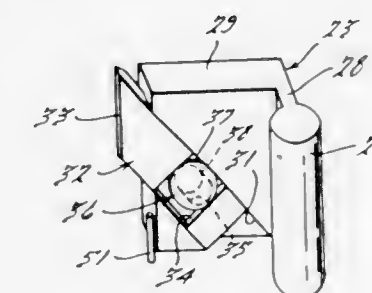
Walter J. Rozmus, Hubbardville, N.Y., assignor to Kelsey-Hayes Company, Romulus, Mich.

Division of Ser. No. 794,171, Jan. 27, 1969, Pat. No. 3,613,984. This application Jan. 29, 1971, Ser. No. 110,894

Int. Cl. B21f 23/00

U.S. Cl. 140—2

2 Claims



A multiple upset pressure welding apparatus particularly adapted for cold welding wire ends together. The mechanism includes pairs of dies that are supported for relative movement toward and away from each other with the dies of the pairs also being relatively movable toward and away from each other. Gates or restraining devices are juxtaposed to each of the pairs of dies for permitting movement of the wires toward each other during the welding process and for precluding reverse movement of the wires when the pairs of dies are retracted. The restraining gates are adjustable so as to accommodate different size wires and to permit gripping of the wires adjacent the respective dies.

3,720,240

## METHOD OF PREPARING INTRAVENOUS FEEDING CONTAINERS

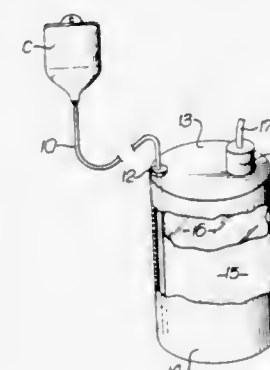
Newell John Gardner, 11661 San Vicente Boulevard, Los Angeles, Calif.

Division of Ser. No. 846,777, Aug. 1, 1969, Pat. No. 3,648,697. This application Sept. 7, 1971, Ser. No. 178,008

Int. Cl. B65b 1/04, 3/04

U.S. Cl. 141—9

4 Claims



Sterile water in a drum communicates through a tube with a flexible container body in which a dry water soluble intravenous feeding material has been placed, the interior of an initially deflated flexible bag in the drum being subjected to air pressure to force sterile water in the drum and externally of



the flexible bag through the tube into the flexible container body to contact the water soluble material and form an intravenous feeding solution in the container body.

3,720,241

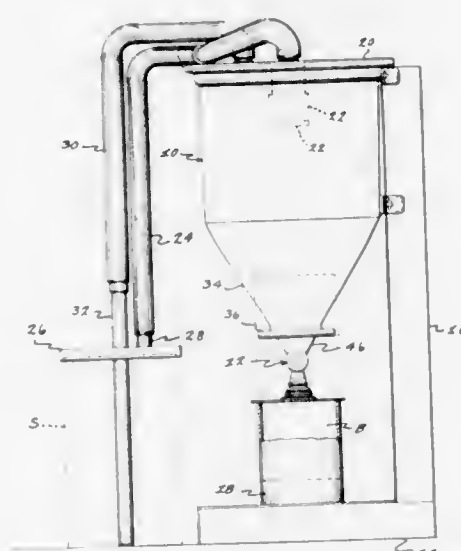
# MEANS FOR FEEDING FLOWABLE PARTICULATE MATERIAL

John C. Bryant, Fort Mill, S.C.; James Keith Turner, Lincoln; James R. Riley, Stanley, both of N.C., and Christoph W. Aurich, Clemon, S.C., assignors to Gaston County Dyeing Machine Co., Stanley, N.C.

Filed Sept. 21, 1970, Ser. No. 73,902  
Int. Cl. B65b 1/04; B65g 53/04

U.S. Cl. 141-25

7 Claims



A feeding means for handling flowable particulate material, and particularly adapted for dealing with textile processing chemicals of powder, crystalline or pellet form. The feeding means is of the type which includes a hopper for loading with the material to be fed and a feed mechanism for receiving such material from the hopper and feeding the same, and the arrangement features a closed system for loading the hopper from a supply of the material to be fed that employs a first conduit through which air is drawn from the hopper to a material supply enclosure and a second conduit that is projectable within the enclosure to reach the material supply therein and that leads therefrom to the interior of the hopper.

3,720,242

# CONTAINER FILLING APPARATUS

Kenneth F. M. Friendship, Hinsdale, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Oct. 15, 1970, Ser. No. 80,895

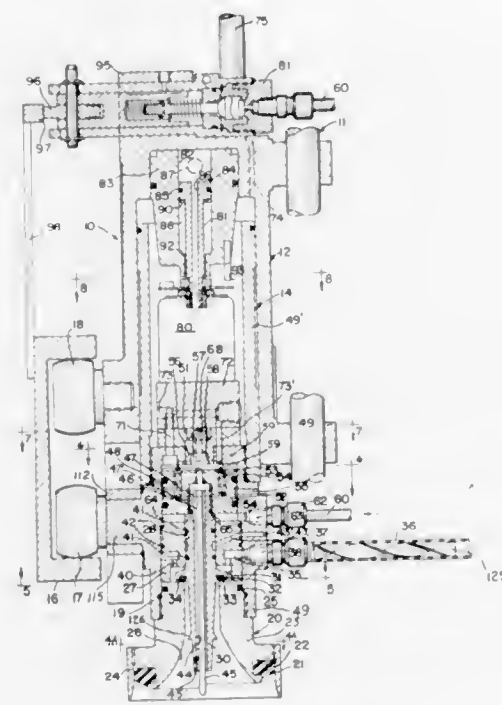
Int. Cl. B67c 3/06

U.S. Cl. 141-6

24 Claims

An apparatus for filling carbonated liquids into containers which is characterized by a tubular housing with a downwardly opening upper member in which a lower member is mounted in slidably telescoping relation. The lower member has a container top engaging and sealing bell on the bottom end and houses a hollow fluid product distributor in which there is a product control valve depending from an air operated piston which is slidable in the lower housing member above said product distributor. A valve controlled counter-pressure line is connected to a side wall inlet port which leads to a space between the piston and the product distributor and which connects with passageways leading through the product control valve and into the container. A cam operated valve controlled product supply line is connected to an inlet port in

the lower housing member and through a passageway in the product distributor to a recess in which the product control valve operates. A light compression spring normally holds the product valve closed and the product also exerts closing pressure on the valve when the product line is opened until counterpressure operating on the valve piston overcomes the combined pressure of the spring and product and opens the valve.



A probe associated with the valve operates a relay circuit when a predetermined level of fill is reached and opens the air pressure line for closing the product valve while the counter-pressure line is closed by cam operation of its control valve. A flow restrictor device is placed in the product supply line immediately adjacent the inlet port for producing extreme turbulence and high pressure drop in the liquid which minimizes foaming.

3,720,243

# CONTOUR-COPYING APPARATUS

Erich Schmidt, Vienna, Austria, assignor to Maschinfabrik Zuckermann Komm. Bes., Vienna, Austria

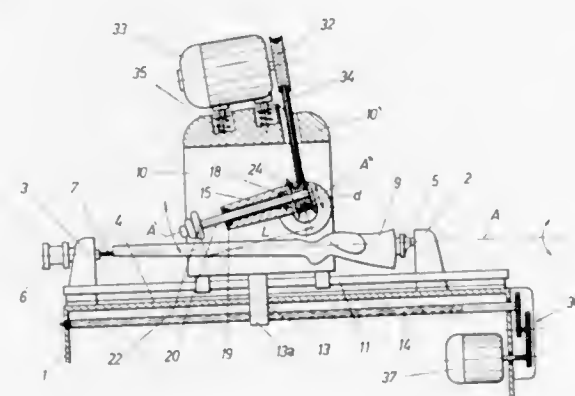
Filed June 21, 1971, Ser. No. 154,791

Claims priority, application Austria, July 8, 1970, A6184/70

Int. Cl. B23b 3/28

U.S. Cl. 142-7

8 Claims



A contour-copying apparatus has a lathelike arrangement for turning at least one workpiece and a model or pattern about parallel axes. A carriage on which is pivotally mounted a support having an arm arranged above each of the turning bodies is displaceable along the bodies in the direction of their rotation axes. Journaled in each arm is a longitudinally fixed but rotatable spindle with the spindle over the model carrying a feeler and the arm over the workpiece carrying a cutting tool. The tool-carrying arm or arms has on its other end a

driven pulley over which is spanned a V-belt also engaged over a drive pulley on a motor mounted on the carriage. The V-belt engages the driven pulley over a contact arc, and the support is pivotal on the carriage about an axis which lies in a plane defined by this arc while extending orthogonally to the body axes and through the belt. Thus, only the weight of the spindle and its arm is effective against the workpiece and model since the drive forces are applied directly and only at the pivot axis.

3,720,244

# SAWMILL CARRIAGE NETWORKS

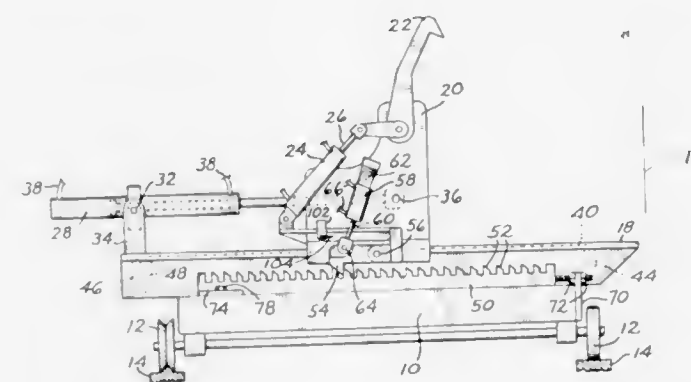
Mark E. Lawrence, Oswego, and William C. Beecroft, Springfield, Oreg., assignors to Mark 50 Machinery Sales, Inc., Aurora, Oreg.

Filed Jan. 20, 1971, Ser. No. 107,973

Int. Cl. B27b 29/10

U.S. Cl. 83-523

6 Claims



A sawmill carriage, mounted for reciprocation parallel to the plane of a saw, supports a plurality of knees for reciprocation perpendicular to the plane of the saw each by means of an elongated fluid pressure piston-cylinder unit. Each knee is secured in selected positions of adjustment releasably by a fluid pressure powered pawl mounted on the knee and engageable with the teeth of an elongated rack extending parallel to the line of movement of the knee. Operation of the carriage, knees and pawls is controlled from a position remote from the carriage.

3,720,245

# TREE HARVESTING VEHICLE

Erich Puna, Gavle, Sweden, assignor to Brundell Och Jonsson AB, Gavle, Sweden

Filed Nov. 26, 1969, Ser. No. 880,180

Claims priority, application Sweden, Dec. 16, 1968, 6817202

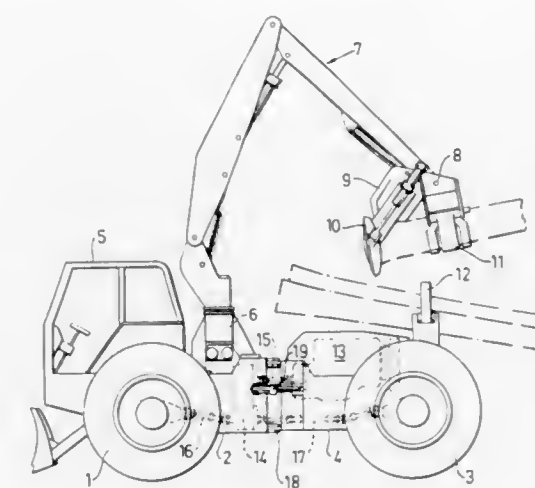
Int. Cl. A01g 23/08

U.S. Cl. 144-3 D

2 Claims

An articulated tree harvesting vehicle having a tree cutting and hoisting crane mounted on the front section thereof behind the cab of the vehicle, the crane being horizontally rotatable to tree cutting positions, at least forward and rearward of the vehicle, the crane having a first member rotatably mounted behind the cab on the front section for horizontal swinging, a second member pivoted to the first member for movement in a vertical plane about an axis located above the level of the cab roof, a third member pivotally coupled to the second member and a tree cutting and gripping means pivotally coupled to the free end of the third member to provide pivotal movement of the cutting and gripping means in a vertical plane. Further provided is operating means for relatively moving the crane members to cutting positions whereby the cutting means cuts in a substantial horizontal plane below the gripping means, the gripping means maintaining the tree in a substantially vertical direction during the cutting operation

and carrying the tree to a loading position in a bunk which is in the rear section behind the motor of the vehicle. The uppermost extremity of the motor is approximately at, or below, the level of the lowermost load engaging portion of the bunk, so



that the load carried by the bunk can extend over the motor. At least a major portion of the bunk is within the horizontal diameter of the rear wheel on the rear frame section. Steering and carden shaft means is provided for transmitting motor power to the wheels of the vehicle.

3,720,246

# METHOD AND APPARATUS FOR HANDLING TREES

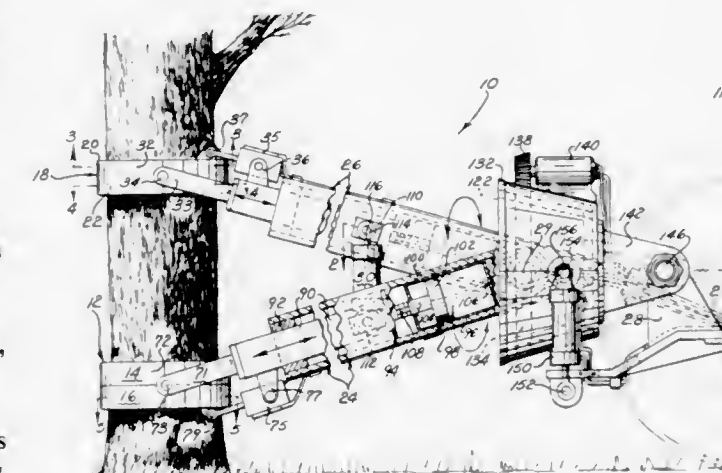
Emil J. David, Woodstock, Ontario, Canada, assignor to Eaton Yale & Towne Canada Limited, London, Ontario, Canada

Filed May 3, 1971, Ser. No. 139,625

Int. Cl. A01g 23/08

U.S. Cl. 144-3 D

9 Claims



A method and apparatus for harvesting trees includes provision for removing the limbs from a tree and cutting the delimbed tree into logs. The method and apparatus can operate on standing trees or felled trees. In the performance of the delimbing and cutting operation, the tree is gripped at one end with a gripper-shear mechanism. If the tree is standing, the shear cuts the tree at the base of the tree. In both operations, namely, where the apparatus is working on a standing or on a felled tree, a delimbing mechanism is moved along a first length of the tree to delimb that first length of the tree while the tree is supported by the gripper-shear mechanism and the delimbing mechanism. The gripper-shear mechanism is subsequently moved to a position adjacent to the delimbing mechanism so that the gripper-shear mechanism is positioned



a predetermined length from one end of the tree. The gripper-shear mechanism is then actuated to cut the tree so that a log having a predetermined length is produced thereby.

**3,720,247**  
**ARRANGEMENT FOR MEASURING THE LENGTH OF OBLONG OBJECTS**

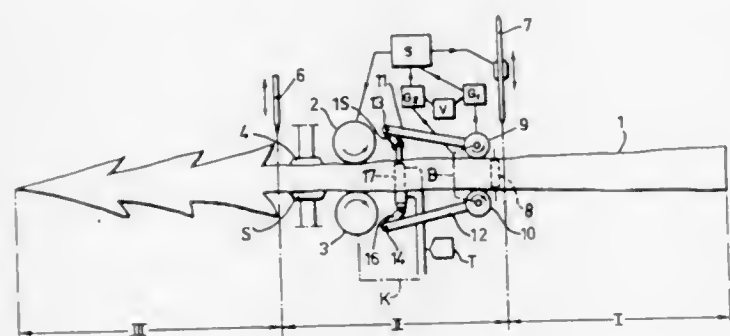
Karl Thore Lindblom, Alfta, Sweden, assignor to Ostbergs Fabriks AB, Alfta, Sweden  
Filed Nov. 1, 1971, Ser. No. 194,364

Claims priority, application Sweden, Nov. 6, 1970, 15034/70

Int. Cl. B27b 25/02, 31/00

U.S. Cl. 144—3 D

5 Claims



This invention relates to the measuring and cross-cutting of tree stems advanced by feed rolls. Upstream of the cross-cutting member two measuring rollers are pressed resiliently against the stem in diametrically opposed places. One of the measuring rollers is connected to a transmitter for signaling the stem length corresponding to the rotation of the measuring roller to a control unit. When a desired stem length has been achieved, the control unit stops the feed rolls and starts the movement of the cross-cutting member against the stem.

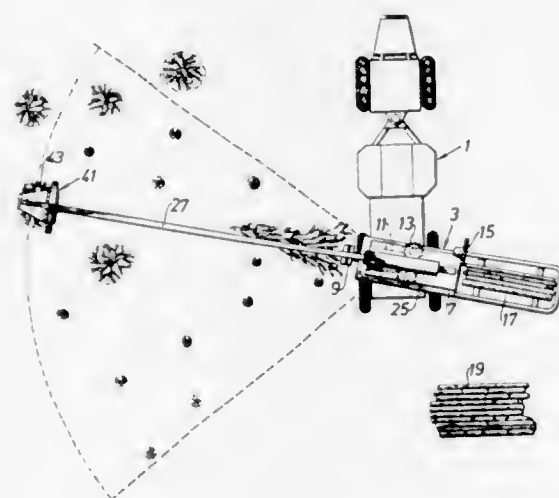
**3,720,248**  
**APPARATUS FOR FELLING TREES**

Per Gustaf Mellgren, Soderhamn, Sweden, assignor to Kockum Soderhamn Aktiebolag, Soderhamn, Sweden  
Filed Jan. 21, 1971, Ser. No. 108,385

Int. Cl. B27b 11/12

U.S. Cl. 144—34R

11 Claims



An apparatus for felling trees has an elongated beam carrying a saw-blade, a means for moving the beam back and forth with respect to the tree, and a counter-piece adapted to be moved to compress a tree trunk between it and the saw-blade.

**3,720,249**  
**TREE HARVESTING SHEAR**

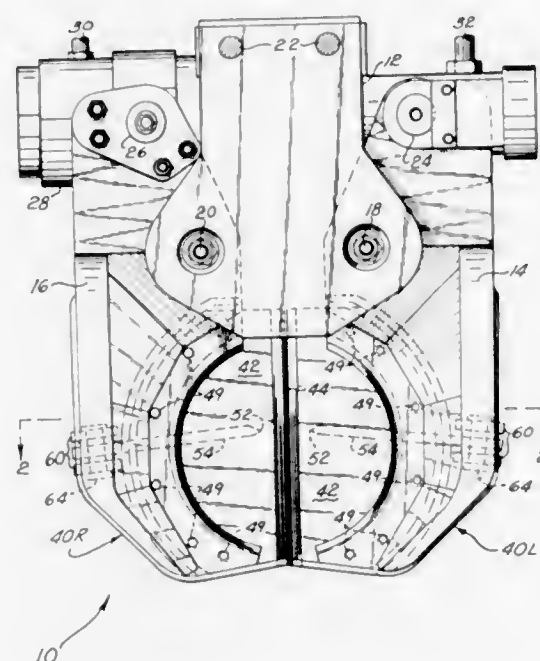
Ahti Peltonen, Reesor, Ontario, Canada, assignor to Eaton Yale & Towne Canada Limited, London, Ontario, Canada

Filed Mar. 12, 1971, Ser. No. 123,649

Int. Cl. A01g 23/08

U.S. Cl. 144—309 AC

7 Claims



A blade for a tree harvesting mechanism includes a first cutting edge disposed in a generally horizontal plane and a second cutting edge disposed in generally vertical plane immediately below said first cutting edge. The second cutting edge thereby being effective to split the stump of said tree simultaneously as said first cutting edge shears the trunk of said tree.

**3,720,250**  
**SAFETY DEVICE WHEN OPENING AMPOULES**

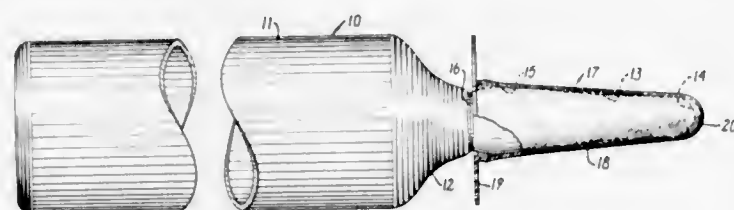
Raymond Goldberg, East Meadow, and Irving F. Shaw, East Rockaway, both of N.Y., assignors to West Laboratories, Inc., Long Island City, N.Y.

Filed Nov. 2, 1970, Ser. No. 86,132

Int. Cl. B65d 65/02

U.S. Cl. 150—52 R

6 Claims



Safety device in the form of a finger protector for grasping the removable end of flame-sealed ampoules and the like in the opening thereof comprising an elongated body of essentially conical contour having at one end thereof an outwardly extending circumferential flange, and at the other end thereof a rounded portion at least partially closing said end, said first named end having on the inner surface thereof, closely spaced from said outwardly extending flange, a plurality of circumferentially spaced projections collectively defining a discontinuous circumferential rib of reduced diameter, said conical body and the flange and discontinuous rib thereof being integrally formed of yieldable material, and the size and proportions of said conical portion being such as to accommodate

the protruding portion of an ampoule tip when said discontinuous rib has passed over the characteristic enlargement adjacent the ampoule and tip juncture. The discontinuous rib, by reason of its inward protrusion and location, provides a pressure point or fulcrum which facilitates clean severance of an ampoule tip. The rounded end of the conical body is preferably closed when the device is intended as a one use, throw-away, device and may suitably have a small axial opening to facilitate removal of a severed ampoule tip, when the device is intended for repeated usage.

**3,720,251**  
**SHEET METAL NUT**

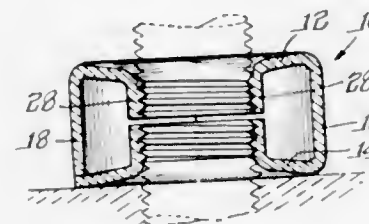
Henry A. Sygnator, Chicago, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Sept. 7, 1971, Ser. No. 178,196

Int. Cl. F16b 39/28

U.S. Cl. 151—21 R

6 Claims



The present invention relates generally to improvements in sheet metal nut members and particularly to sheet metal nut members in which the opposite end faces thereof are adapted to accommodate a screw member. The nut member disclosed herein is of one-piece construction and is adapted to be stamped and formed from a single piece of sheet metal stock. Axially aligned and spaced end plate sections are separated by side plate sections which provide a plurality of adjacently positioned external wrench accommodating nut surfaces. Internally threaded aligned annular extrusions extend axially inwardly from each end plate section.

**3,720,252**  
**TIRE WITH FOLDED STABILIZER PLIES**

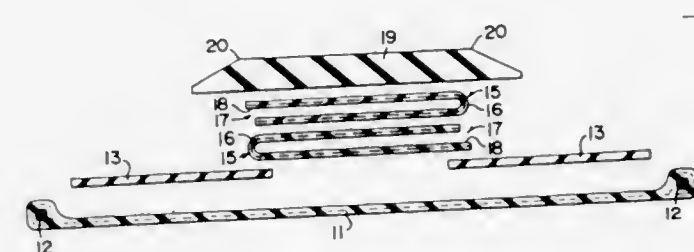
Thomas Allen Batten, and Stephen Thomas Griebing, both of Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Oct. 12, 1970, Ser. No. 79,835

Int. Cl. B61c 9/18

U.S. Cl. 152—361

9 Claims



A vehicle tire and a method for building it, wherein a folded stabilizer structure having cords inclined to the rotational axis of the tire is located under the tire tread, such that, in the expanded tire, the cord angle in the stabilizer structure increases toward the folded margins.

**3,720,253**

**EGG WHITE SPRAY DRYING APPARATUS AND METHOD**

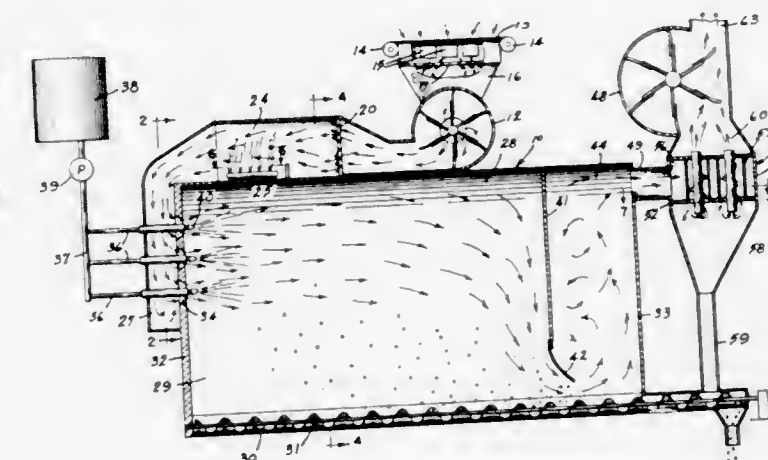
Max Ballas and Marvin R. Painter, Zanesville, Ohio, assignors to Ballas Egg Products Corporation, Zanesville, Ohio

Filed Apr. 2, 1971, Ser. No. 130,696

Int. Cl. B01d 1/24

U.S. Cl. 159—4 F

7 Claims



Apparatus for spray drying egg whites in a moving stream of air and recovering substantially all of the product from the air stream. The apparatus includes drying and separating chambers in communication with each other and in which a differential air pressure is employed to assist in drying the egg whites, as well as separating substantially all of the dried egg whites from the air stream.

**3,720,254**

**DOOR CONTROL SYSTEM FOR FOLDING DOORS**

Jay A. Smart, Salt Lake City, Utah, assignor to Won-Door Corporation, Salt Lake City, Utah

Filed Sept. 24, 1970, Ser. No. 75,144

Int. Cl. E05f 15/06

U.S. Cl. 160—193

4 Claims



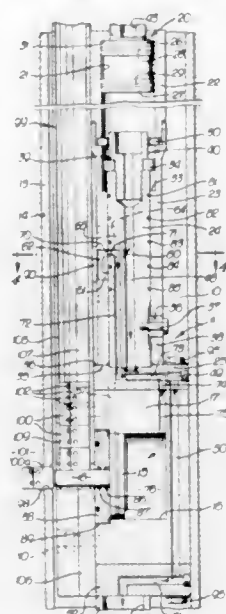
Folding door construction including a sinuous overhead track and means for moving a folding door therealong. The moving means includes a power driven pulley mounted cable laid out to define two elongated runs guided over a series of spools which maintain a generally centralized orientation of the cable throughout the oppositely directed track curvings. The lead post of the door is secured to one of the cable runs for movement thereby through a thin vertical cable clamp projecting upwardly from the lead post support assembly.







lengthwise of the bore hole to selected location by running of a pipe string carrying the tool, and fluid pressure is transmitted within the string and its application to the actuator is controlled to effect lateral displacement of the plunger toward the



structure outwardly of the tool, with resultant deformation of the structure. Flow beams may be selectively placed in the structure, as for example punched through well casing, by operation of the tool; and other deformation operations may be performed at selected locations in a well.

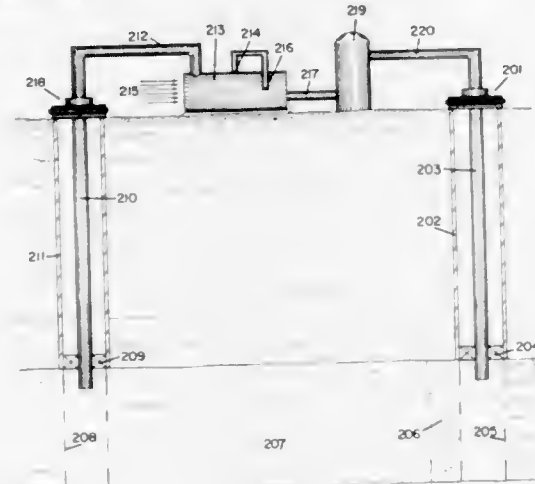
#### 3,720,263 GAS WELL STIMULATION

Bob G. Murphy, Houston, Tex., and J. O. Scott, Tulsa, Okla., assignors to Cities Service Oil Company, Tulsa, Okla.

Filed Oct. 13, 1970, Ser. No. 80,361

Int. Cl. E21b 43/20

U.S. Cl. 166—303



The problem of reduction in productivity in gas wells due to connate water reducing gas permeability about the wellbore is overcome. Dry gas is injected into the production well in sufficient quantities to remove the majority of the water which restricts gas flow about the well. The dry gas is obtained from gas produced from a well completed in the formation at some distance from the well being dried and stimulated. Gas produced is passed over a drying agent, compressed and injected into the production well so that the wellbore in the vicinity of the formation is rendered free of water with a high permeability to gas resulting.

#### 3,720,264 HIGH PRESSURE JET WELL CLEANING

Stanley O. Hutchison, Bakersfield, Calif., assignor to Chevron Research Company, San Francisco, Calif.

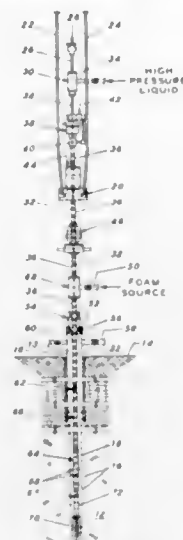
Filed June 7, 1971, Ser. No. 150,536

Int. Cl. E21b 21/00

U.S. Cl. 166—311

Method and apparatus for directionally applying high pressure jets to well liners to clean openings which are plugged

with foreign matter. High velocity jets of liquid having a velocity in excess of 700 feet per second are jetted from jet orifices having a standoff distance between 5 and 10 diameters of the orifice from the openings to remove substantially all



plugging material from the openings. Apparatus for circulating foam is provided in combination with apparatus for delivering high pressure jets. New swivels and check valves permit rotation and reciprocation of the jet tool and tubing string while maintaining high pressure in the apparatus.

#### 3,720,265 METHOD FOR STIMULATING WELL PRODUCTION

Jack F. Tate, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed June 21, 1971, Ser. No. 155,312

Int. Cl. E21b 43/26, 43/27

U.S. Cl. 166—307

13 Claims

The production of hydrocarbons from a subterranean hydrocarbon-bearing formation containing acid-soluble components, such as one composed at least in part of dolomite or limestone, is stimulated by injecting into the formation a composition comprising an aqueous solution of a mineral acid having dissolved therein a phosphate ester of prescribed formula. The elimination of plugging of capillary openings within the formation and mineral scale deposition on production equipment due to post-precipitation of dissolved salts subsequent to acidization by means of the said phosphate ester results in a substantial improvement in hydrocarbon recovery.

#### 3,720,266 METHOD OF DEEP WELL CEMENTING

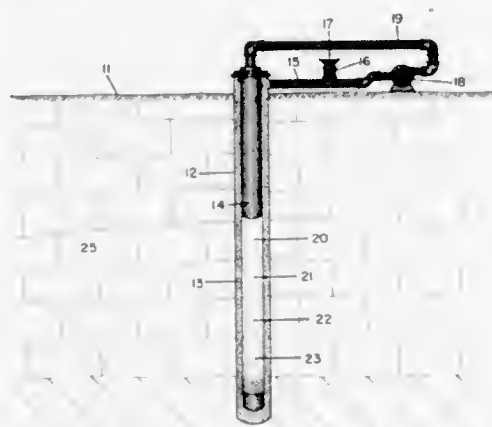
Ottis G. Byrd, Jackson, Miss., assignor to Cities Service Oil Company, Tulsa, Okla.

Filed April 7, 1971, Ser. No. 131,962

Int. Cl. E21b 37/00

U.S. Cl. 166—312

7 Claims



A method utilizing a sequential injection of ever-decreasing weight drilling muds into wells for the total displacement of

high density drilling mud from the wellbore. Wellbore cementing is accomplished through the introduction of a wellbore cement having substantially the same weight as the drilling mud remaining within the wellbore after displacement of the high density drilling mud. The cement introduced easily displaces the drilling mud present in the well so that adequate contacting of the casing, cement and wellbore walls is achieved with no residual high density drilling mud remaining within the casing completion.

#### 3,720,267 WELL PRODUCTION METHOD FOR PERMAFROST ZONES

William G. Allen, James A. Le Velle, and Frank J. Schuh, all of Dallas, Tex., assignor to Atlantic Richfield Company, New York, N.Y.

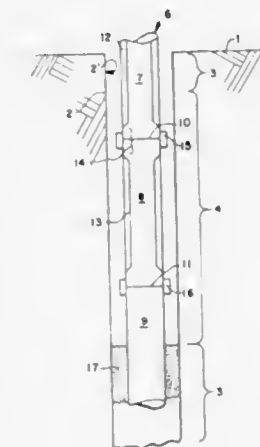
Division of Ser. No. 77,647, Oct. 2, 1970, Pat. No. 3,680,631.

This application April 5, 1972, Ser. No. 241,131

Int. Cl. E21b 43/00

U.S. Cl. 166—314

4 Claims



A method and apparatus for producing a warm fluid from a well through casing, the casing passing through a permafrost zone, wherein the permafrost is insulated from melting by the combined use of vacuum and solid thermal insulation.

#### 3,720,268 FIRE RESISTANT STORAGE STRUCTURE

Edward A. Seiz, 136 East Third Street, Lansdale, Pa.

Continuation-in-part of Ser. No. 15,998, March 3, 1970, Pat.

No. 3,626,487, which is a continuation-in-part of Ser. No.

728,182, May 10, 1968, Pat. No. 3,545,626. This application

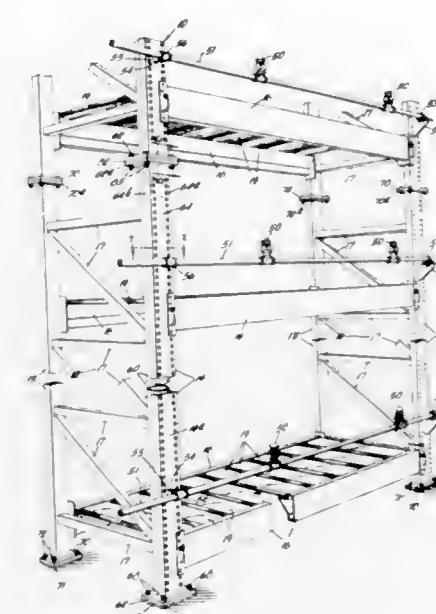
April 16, 1971, Ser. No. 134,618

Int. Cl. A62c 35/00

U.S. Cl. 169—2 R

9 Claims

A free-standing storage structure comprising uprights, beams releasably secured to the uprights by means of locking assemblies on the ends of the beams, and load-carrying members spanning between the beams, is provided with fire protection apparatus for the structure. The fire protection apparatus includes a wet upright having a conduit which contains a fire-retardant substance and which forms a structural component of the upright, the conduit being connected to pipes extending across the back of the structure for discharging the fire-retardant substance in response to a fire. Coupling means is provided to interconnect the conduits of aligned uprights when the structures are stacked vertically and to connect the uppermost end of the conduit to a source of fire-retardant substance. In order to promote dispersion of the fire-retardant



beams which are deformed during assembly of the structure into interlocking engagement with flanges on the members.

#### 3,720,269 PORTABLE TORQUE AND IMPULSE TRANSMITTING MACHINE

Karl Wanner, Echterdingen, Wolfgang Schmid, Plattenhardt, Manfred Bleicher and Horst Sigg, Stuttgart, Werner Lehmann, Leinfelden-Unterach, and Max Bürklin, Waldenbuch, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

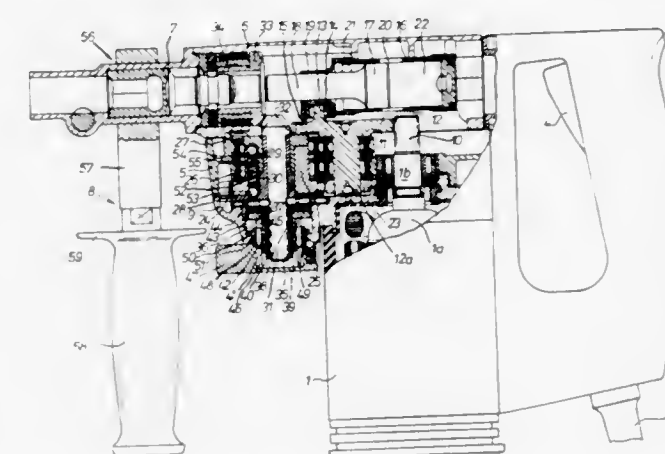
Filed Dec. 21, 1970, Ser. No. 99,931

Claims priority, application Germany, Dec. 22, 1969, P 19 64 083.6

Int. Cl. E02d 7/02; B25d 11/00

U.S. Cl. 173—48

13 Claims



A portable torque and impulse transmitting machine wherein the power train between the output shaft of the electric motor and the tool in the tool holder contains a safety clutch in series with a disengageable coupling. The clutch is operative at all times so that the tool ceases to rotate when it encounters a predetermined resistance to rotation while the motor continues to operate the assembly which transmits to the tool axially oriented impulses to drive it into a rock or the like. The coupling is controlled by a switching member which is placed so close to an auxiliary handle that the hand which grips the auxiliary handle can reach the switching member

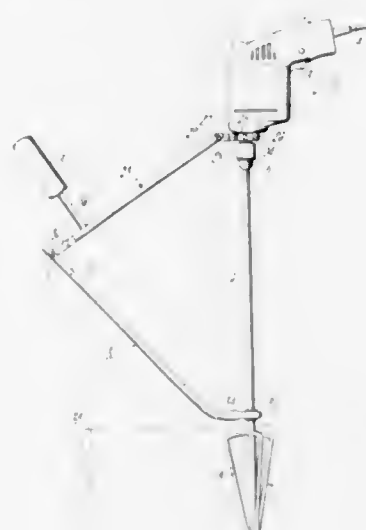


without appreciably relaxing the grip on the handle. The auxiliary handle can be coupled to the switching member in such a way that the hand which grips the handle can engage or disengage the coupling in response to rotation of the handle.

3,720,270

**GUIDING AND SUPPORTING MEANS FOR A BEATER**  
Michael J. Pasquale, 115 Grove St., Middletown, Conn.  
Filed Sept. 20, 1971, Ser. No. 181,951  
Int. Cl. B01f 15/00  
U.S. Cl. 173-163

8 Claims

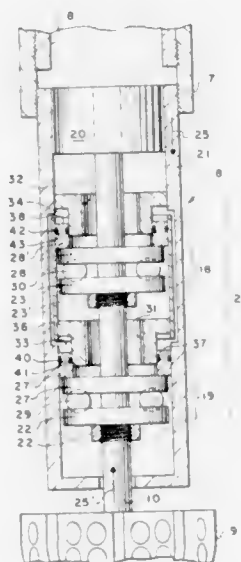


A beater of the type having a motor and beater element with an elongated shank rotatably driven by the motor, is provided with auxiliary or additional guiding and supporting means including a handle grip for manual manipulation of the tool which is supported on a linkage pivotally attached at one end to the motor housing and mounting a bearing for the shank of the beater element which is movable axially of the shank.

3,720,271

**BEARING DEVICE AND METHOD FOR USING SAME**  
Lloyd R. Kern, Irving, Tex., assignor to Atlantic Richfield Company, New York, N.Y.  
Filed March 10, 1971, Ser. No. 122,904  
Int. Cl. E21b 7/00, 3/08  
U.S. Cl. 175-57

15 Claims



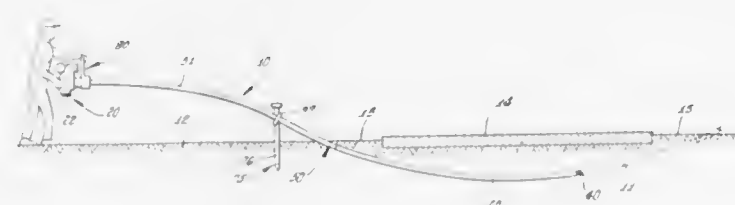
A self-adjusting bearing device employing multiple bearing means wherein each bearing means being in contact with a

piston means which is in movable communication within a chamber. The chamber of each bearing means is in open communication with the chambers of other bearing means by way of conduit means so that movement of one piston means is reflected by movement of the other piston means in the other chambers by way of a liquid in the chambers and conduit means. A method for adjusting a plurality of bearing means so that each carries a predetermined proportion of the total load imposed on the bearing device by employing a movable piston with each bearing means and effecting communication from one movable piston to the rest of the movable pistons in the bearing device so that a movement of one piston is reflected in movement of the remaining pistons thereby distributing the total load among all the bearing means.

3,720,272

**APPARATUS AND METHOD FOR DRILLING AN ARCUATE BORE FROM GROUND SURFACE UNDER AN OBSTRUCTION TO GROUND SURFACE**  
Edwin J. Hunter, Riverside, Calif., assignor to Toro Manufacturing Corporation, Riverside, Calif.  
Filed June 7, 1971, Ser. No. 150,506  
Int. Cl. E21b 7/08  
U.S. Cl. 175-61

8 Claims

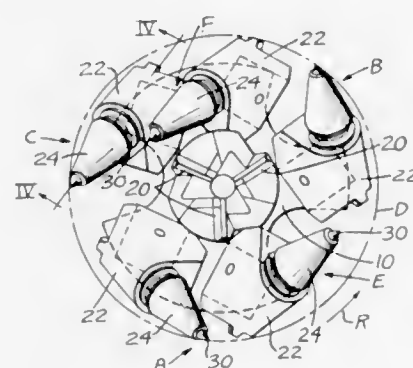


The earth boring apparatus has a motor driving a flexible drive shaft assembly located in a flexible tubular casing including a rear straight portion and a forward curved portion which guides a drill bit mounted on the end of the drive shaft assembly to, upon rotation of the drill bit, automatically drill an arcuate bore from the ground surface on an adjacent side of an obstruction, thereunder, to the ground surface on the opposite side of the obstruction while a water housing adapter around the rear end of the casing receives water from a hose for manually controlled intermittent feeding of the water down the casing to pass out the drill bit.

3,720,273

**MINING TOOL**  
Robert J. McKenry, Windber, and Seibert S. Oaks, Everett, both of Pa., assignors to Kennametal Inc., Latrobe, Pa.  
Continuation-in-part of Ser. No. 796,032, Feb. 3, 1969, abandoned. This application March 3, 1971, Ser. No. 120,406  
Int. Cl. E21b 9/12  
U.S. Cl. 175-335

22 Claims



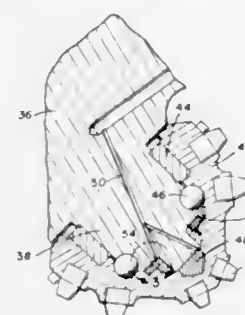
The invention concerns a mining tool having a body and having distributed about the body and projecting from the

front side thereof a plurality of pick type bits, each rotatable in a respective bore. The tool preferably has a central pilot cutter disposed at least slightly in advance of the pick type bits. The tool may be made to various sizes by mounting rings on the body with the rings having pick type bits rotatably mounted thereon.

3,720,274

**EARTH BORING BIT THRUST BEARING**  
Hugh F. McCallum, Hibbing, Minn., assignor to Dresser Industries, Inc., Dallas, Tex.  
Filed May 21, 1971, Ser. No. 145,651  
Int. Cl. E21b 9/10  
U.S. Cl. 175-372

9 Claims

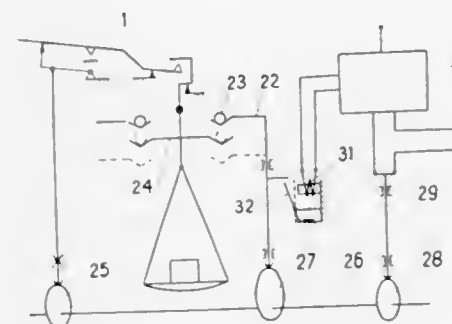


Intermediate thrust elements are positioned between the cutters and the bearing pins of an earth boring bit. Each intermediate thrust element is located between a thrust surface on a bearing pin and a thrust surface on the associated cutter. The intermediate thrust elements aid stabilization of the rotating cutter, promote cutter rotation and extend the lifetime of the bit.

3,720,275

**DEVICE FOR READING PENDULUM-CAM SCALES**  
BEAM POSITIONS AND FOR PLACING AND REMOVING WEIGHTS  
Andrzej Chmielewski, ul. Msciwoja 6, Gdansk-Oliwa; Eligiusz Czerniak, ul. Mickiewicza 1/3m1, Gdansk-Wrzeszcz, and Tadeusz Kibort, ul. Piastowska 100d m69, Gdansk-Oliwa, all of Poland  
Continuation-in-part of Ser. No. 784,356, Dec. 23, 1968, abandoned. This application Aug. 4, 1971, Ser. No. 168,884  
Int. Cl. G01g 1/28, 23/36, 23/37  
U.S. Cl. 177-3

16 Claims



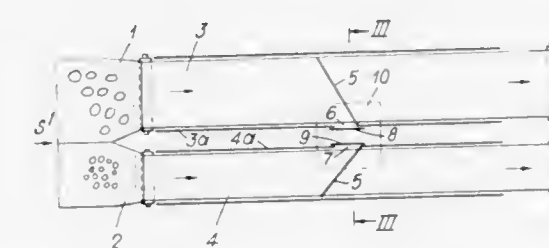
A pendulum scale has a scale beam carrying an optical microscale and a sample pan assembly including plural weight hangers. Weights are provided, and are carried by either the weight hangers or weight retaining elements. A light source illuminates the optical microscale, and portions of the light are received by photocells, the signals from which are representative of the scale beam position; these signals are supplied to a decoder which controls which weights are carried by the weight hangers and which weights are carried by the retaining elements. Preferably, a first lesser sensitive scale beam and a second greater sensitive scale beam are cumulatively engaged

3,720,276

WEIGHING MACHINES

Clayton Hatton Banks, Whitham-on-the-Hill, Bourne, England  
Filed March 19, 1971, Ser. No. 125,953  
Claims priority, application Great Britain, March 23, 1970, 13,977/70  
Int. Cl. G01g 13/02  
U.S. Cl. 177-122

22 Claims



Apparatus for weighing and delivering quantities of potatoes to a delivery point comprises two conveyor belts feeding potatoes to a plurality of weighing devices. One of the conveyors carries small potatoes and the other large potatoes, and openings are formed in the walls of the conveyors, the potatoes being fed through the openings into weighing pans of the weighing devices. Doors are provided over the openings so that the flow of potatoes to the pans may be controlled, and a sensor associated with each weighing device is operable to tip the pan of the weighing device when the weight of potatoes in the pan exceeds a predetermined final weight, the sensor also being operable to direct the tipped potatoes to a reject conveyor or a delivery conveyor depending on the final weight of the potatoes in the pan.

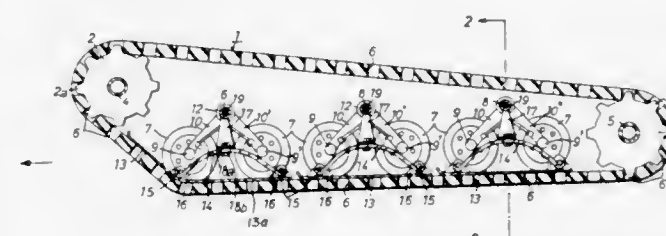
ERRATUM

For Class 177-81 see:  
Patent No. 3,720,286

3,720,277

**DRIVING DEVICE FOR MOTOR DRIVEN VEHICLES**  
Yutaka Masaoka, Hamakita, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Shizuoka-ken, Japan  
Filed Sept. 24, 1970, Ser. No. 74,984  
Claims priority, application Japan, Sept. 29, 1969, 44/92428  
Int. Cl. B62m 27/02  
U.S. Cl. 180-5 R

6 Claims



A driving device for motor driven vehicles having an endless track with meshing holes, front and rear sprocket wheels meshing with the endless track, either of said sprocket wheels driven by the engine of the vehicle to drive in turn the endless track, a plurality of suspension wheel means and closing means for shutting the meshing holes of the endless track, the



closing means held by the suspension wheel means, thereby, preventing snow from getting inside the endless track to render safe and smooth operation of the device.

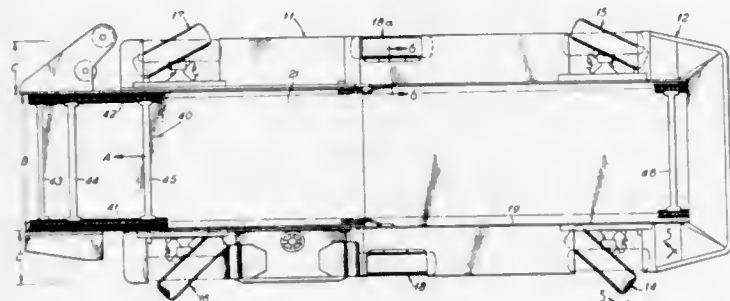
3,720,278

## MINE HAULAGE VEHICLE

William G. Bunchak, Chicago Ridge, and Reynold J. Krizek, Oak Forest, Ill., assignors to Westinghouse Air Brake Company, Pittsburgh, Pa.  
Filed June 18, 1970, Ser. No. 47,354  
Int. Cl. B60r 7/00, 17/30

U.S. Cl. 180—24

5 Claims



A self-powered mine haulage vehicle having a body which is articulated generally at its midpoint and having a pair of supporting wheels at each end of the body and intermediately located supporting wheels at the midpoint. The end supporting wheels are motorized wheel units with steering and braking means therefor.

3,720,279

## COMBUSTION AIR INTAKE SYSTEM FOR AN OFF-THE-ROAD VEHICLE

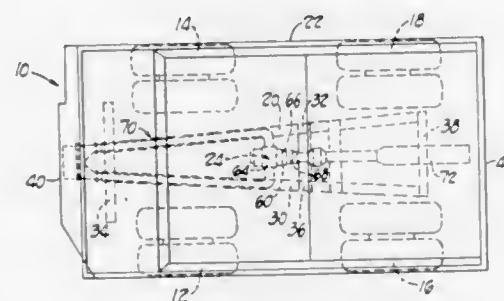
Henry Edward Vincenty, Willoughby Hills, Ohio, assignor to Euclid, Inc., Cleveland, Ohio

Filed Feb. 17, 1971, Ser. No. 115,987

Int. Cl. B60k 13/02

U.S. Cl. 180—54 A

11 Claims



An off-the-road dump truck is disclosed having a gas turbine engine located remote from the forward end of the truck and combustion air delivery ducts extending to the engine from the front of the truck. Each duct is supported and protected by a truck frame member and each duct is connected to an engine inlet port via a flexible connection between the duct and the engine.

3,720,280

## MULTI-AXLED VEHICLE CHASSIS

Peter Eller, Langenfeld, Germany, assignor to Leo Gottwald K.G., Dusseldorf, Germany

Filed July 15, 1970, Ser. No. 55,085

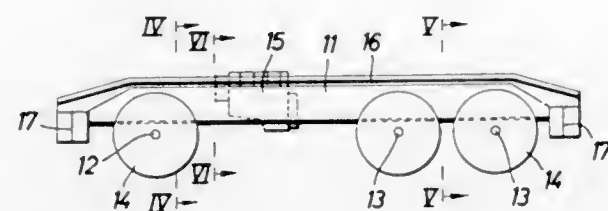
Claims priority, application Germany, July 19, 1969, P 19 36 919.8

Int. Cl. B62d 21/02

U.S. Cl. 180—64 R

8 Claims

A mobile crane chassis has a driving motor mounted between the front and rear axles substantially below the upper



and lower plates, the motor being mounted between the longitudinal webs.

3,720,281

## REMOTELY CONTROLLED VEHICLE

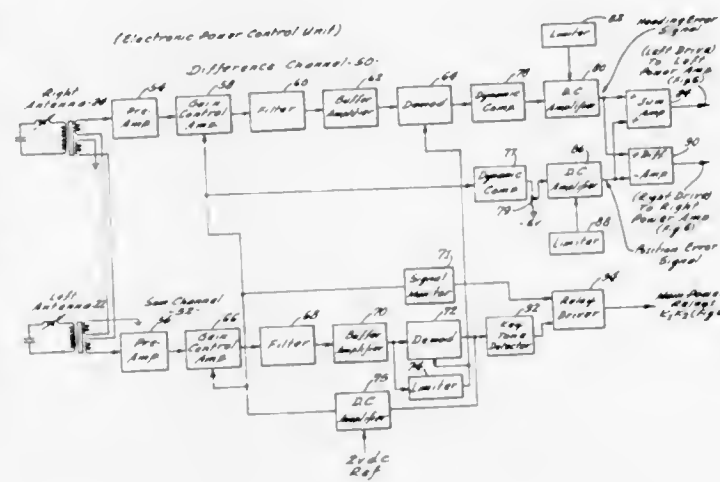
Jerald L. Frownfelter, 17237 Minnehaha Street, Granada Hills, Calif.

Filed Feb. 16, 1971, Ser. No. 115,176

Int. Cl. B60k 27/06, 31/00; B62d 1/24

U.S. Cl. 180—6.5

10 Claims



A three-wheeled remotely controlled vehicle is provided whose direction, speed and braking are automatically controlled by a remote transmitter. The signal from the transmitter is radiated to an electronic power control unit on the vehicle, and the power control unit causes a control to be exerted on the rear wheels of the vehicle. The front wheel of the vehicle is swivelly mounted to be freely rotatable about a vertical axis. The direction, speed and braking of the vehicle are controlled by individually controlling the rotation and direction of rotation of the rear wheels of the vehicle independently of one another.

3,720,282

## HYDRAULIC STEERING SYSTEM

Donald L. Blanchetta, Coal City; Richard L. M. Sears, Washington; Orcenth D. McWilliams, Morris, and James E. Scheldt, Joliet, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 15, 1971, Ser. No. 180,750

Int. Cl. B62d 5/08

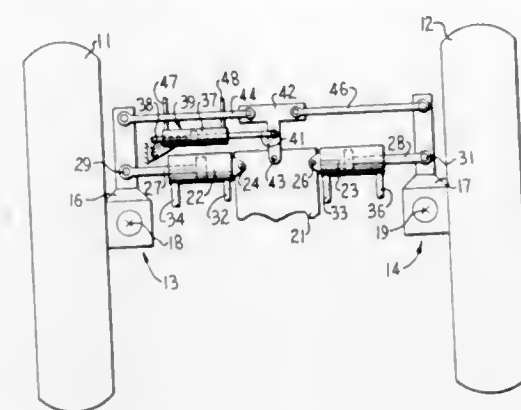
U.S. Cl. 180—79.2 R

16 Claims

An all-hydraulic steering system for wheeled vehicles incorporating a differential valve that maintains a predetermined, constant-pressure differential in the system so that the effort required by the operator to steer is a constant value. The

system also includes a hydraulic follow-up mechanism having means in association with the differential valve for automati-

tional ignition system and a plurality of normally closed switches located throughout the system whereby the vehicle is disabled. A multi-contact switch assembly contains the normally open and normally closed switches and includes a mobile electrically insulating plate which must be inserted into the switch assembly to permit operation of the vehicle.



cally bleeding the follow-up circuit during operation of the vehicle.

3,720,283

## STEERED, HIGH SPEED VEHICLE

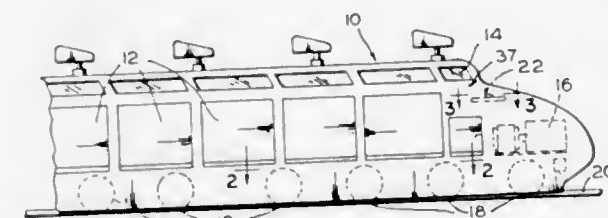
George D. Weaver, Weaver Road, Myrtle Creek, Oreg.

Filed June 22, 1971, Ser. No. 155,452

Int. Cl. B62d 5/04

U.S. Cl. 180—79.1

14 Claims



Pairs of wheels of an elongated vehicle are turned and held in turned positions by pairs of racks on cross bars driven by reversible electric motors which brake when de-energized. The electric motors are energized in directions and for durations corresponding to directions and angles of movement of castored follower rolls which are turned by movement of a disc moved from a centered position by a manually steered drive roll. The drive roll and the follower rolls may be lifted from the disc to permit the disc to return to its start position, and support rolls opposite to the drive roll are turned with the drive roll.

3,720,284

## THEFT-PREVENTION IGNITION SYSTEM

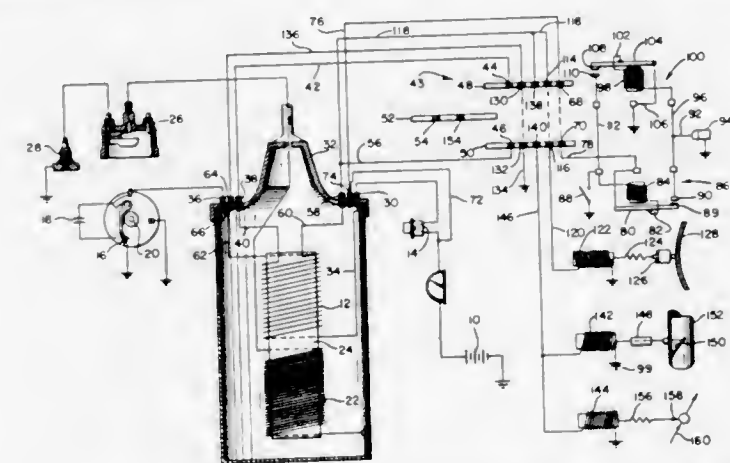
Philip Myers, 18 de Julio, Montevideo, Uruguay

Filed Oct. 26, 1970, Ser. No. 84,506

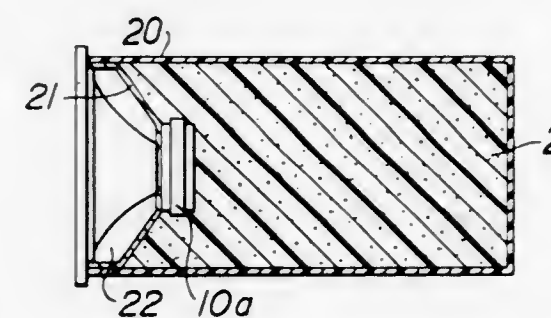
Int. Cl. B60r 25/04, 25/08, 25/10

U.S. Cl. 180—114

14 Claims



A theft-prevention ignition system having a plurality of normally open switches selectively located throughout a conven-



An electro-acoustic transducer such as a loudspeaker is housed in an enclosure having a filling comprising a rigid body of, for example, foamed polyurethane which is capable of transmitting pressure changes caused by operation of the transducer. The body may have an air-impermeable surface to form a sealed enclosure.

3,720,286

## WEIGHING AND DELIVERY APPARATUS WITH INITIAL VOLUMETRIC DOSE AND DRIBBLE FEED

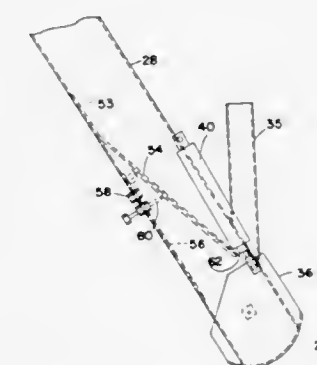
David P. Clark, Columbus, Ohio, assignor to The Exact Weight Scale Company, Inc., Columbus, Ohio

Filed March 2, 1972, Ser. No. 231,259

Int. Cl. G01g 13/04

U.S. Cl. 177—81

5 Claims



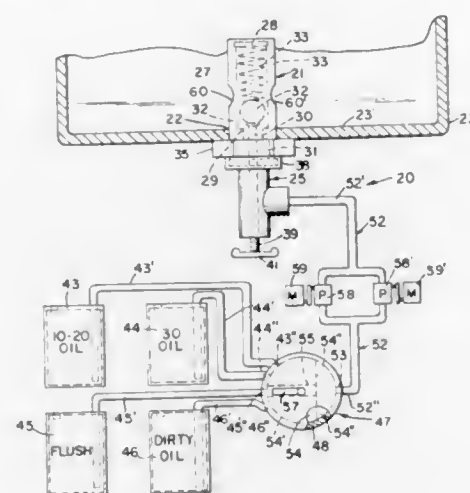
An apparatus for successive delivery of bulk material characterized by a novel feed chute construction which incorporates a fine feed flow control baffle associated with the rapid delivery of a bulk amount of material. The baffle plate is situated in the feed chute to define an initial bulk delivery volume which is delivered at a fast rate and which is followed immediately by a finer rate of flow as controlled by the restriction in the chute formed by the baffle plate and the inner wall of the chute.



### 3,720,287 CRANKCASE SERVICE

Marvin L. Martel, Fargo, N. Dak.  
Filed April 1, 1970, Ser. No. 24,521  
Int. Cl. F01m 11/04  
U.S. Cl. 184—1.5

1 Claim

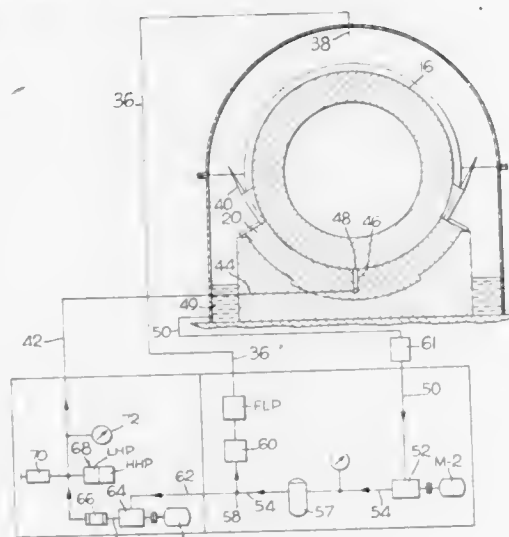


An engine pump valve apparatus having a plug adapted to be threaded into the bottom of the engine. The plug has a check valve. The apparatus also has a pump valve adapted to be threaded into the plug, with fluid lines connecting the drain valve with a fresh oil can, flush can, and an empty oil can. The pump valve also has a handle means for opening the check valve in the plug and pump means and selector valve means for selectively pumping out oil in the engine into the empty can, flushing the engine with flushing fluid from a flush can and pumping fresh oil into the engine from the fresh oil into the engine from the fresh oil can.

### 3,720,288 LUBRICATION SYSTEM FOR GRINDING MILL OR THE LIKE

Donald F. Tschabold, West Allis, Wis., assignor to Allis Chalmers Corporation, Milwaukee, Wis.  
Filed Aug. 9, 1971, Ser. No. 170,089  
Int. Cl. F16n 29/02  
U.S. Cl. 184—6.4

8 Claims

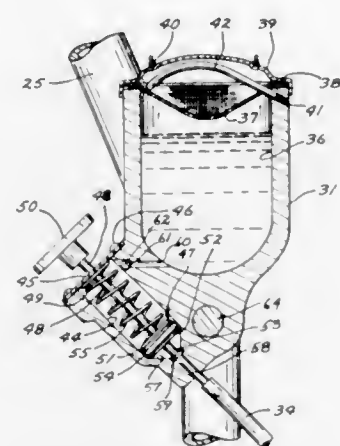


In combination with a grinding mill or the like having a trunnion supported by a stationary bearing structure to define a "free bearing" which permits axial contraction of the grinding mill during the cooling-off period after mill shutdown, a high pressure lubrication system including a high pressure pump for applying hydrostatic pressure to the "free bearing" during the mill cooling-off period whereby to "float" the trunnion in the stationary bearing structure, and timing means activated upon shutdown of the grinding mill to automatically provide "on-off" cycling of the high pressure lubricating pump.

### 3,720,289 MOTORCYCLE CHAIN OILER

Charles L. Moldenhauer, 6A Saratoga Lane North, Plymouth, Minn.  
Filed June 1, 1971, Ser. No. 148,461  
Int. Cl. F16n 13/08  
U.S. Cl. 184—15 A

4 Claims

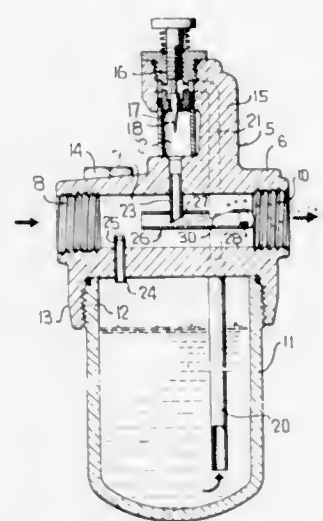


A chain oiler for motorcycles having a reservoir and pump independent of the motorcycle engine adapted to be mounted on the cycle frame in a position conveniently accessible to the rider. A jet nozzle also adapted to be mounted on the frame and directed at the point of meeting of the lower run of the rear cycle chain and rear sprocket and a flexible line connecting the pump to the jet nozzle.

### 3,720,290 SUPERSONIC LUBRICATOR

Zdenek J. Lansky, Solon, Ohio, and Lester W. Malinowski, Kalamazoo, Mich., assignors to Parker Hannifin Corporation, Cleveland, Ohio  
Filed Jan. 5, 1971, Ser. No. 104,010  
Int. Cl. F16n 7/34  
U.S. Cl. 184—55 A

17 Claims



This disclosure relates to an air line lubricator wherein liquid lubricant supplied to an air passage thereof is broken up into fine particles so as to form a mist by passing the lubricant through a supersonic whistle positioned within the air passage.

### 3,720,291 APPARATUS FOR AND METHOD OF REPLACING CABLES IN MULTICABLE LIFTING DEVICES

Ivan Dachev Ivanov, 24 Gogol Str., Sofia, Bulgaria  
Continuation-in-part of application Ser. No. 739,080, June 21, 1968. This application Aug. 27, 1970, Ser. No. 67,544  
Int. Cl. B66b 11/04

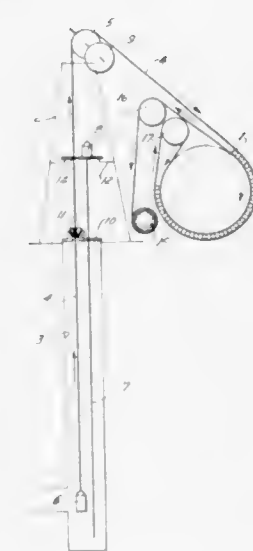
U.S. Cl. 187—20  
Apparatus for and method of replacing cables in multicable lifting devices, such devices having a lifting ma-

2 Claims

### 3,720,293 DISC BRAKE ANTI SQUEAL MEANS

Ryotaro Hikida, and Takeo Ogasawara, both of Nagoya, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Showa-ku, Nagoya-shi, Aichi-ken, Japan  
Filed Aug. 21, 1970, Ser. No. 66,007  
Claims priority, application Japan, Sept. 1, 1969, 44/69271  
Int. Cl. F16d 65/00  
U.S. Cl. 188—73.5

12 Claims

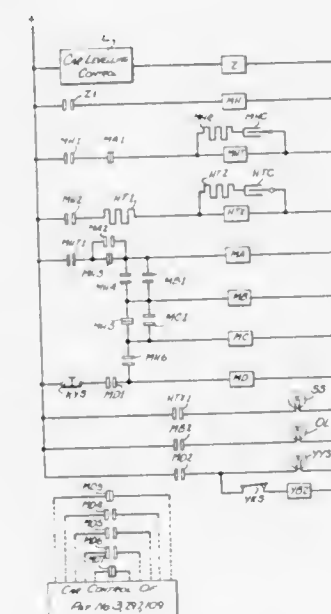


A disc brake of simple construction wherein a supporting member of elastic material is disposed between the cylinder and piston in such manner as to allow the piston to move axially along the cylinder and to vibrate synchronously with the cylinder in the radial direction of the piston, thereby to prevent coupled vibration of the piston and the brake friction pad and to eliminate brake squeal.

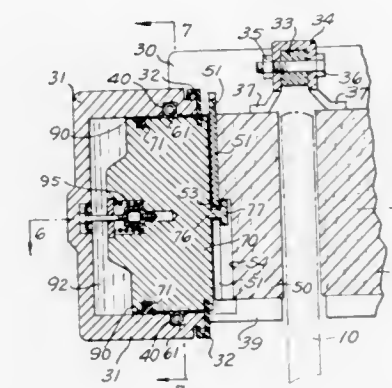
### 3,720,292 AUTOMATIC ELEVATOR CAR POSITIONING MONITOR

John E. Magee, 191 Forest Boulevard, Greenburgh, N.Y.  
Filed Oct. 29, 1970, Ser. No. 85,039  
Int. Cl. B66b 5/02  
U.S. Cl. 187—29 R

13 Claims



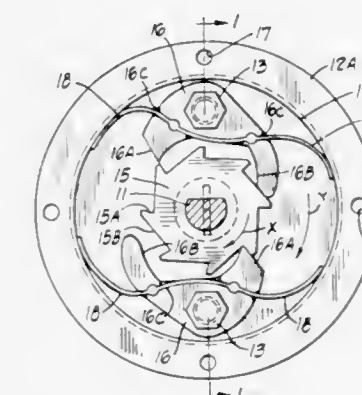
Circuits responsive to the levelling operations of an elevator car indicate defective levelling by operating a remote signal and may be used to provide express movement of the car which levels improperly to a predetermined landing.



### 3,720,294 PAWL AND RATCHET MECHANISM

Gunter F. Plamper, Lakewood, Ohio, assignor to MTD Products Inc., Cleveland, Ohio  
Filed July 7, 1971, Ser. No. 160,370  
Int. Cl. F16d 41/12  
U.S. Cl. 192—46

8 Claims

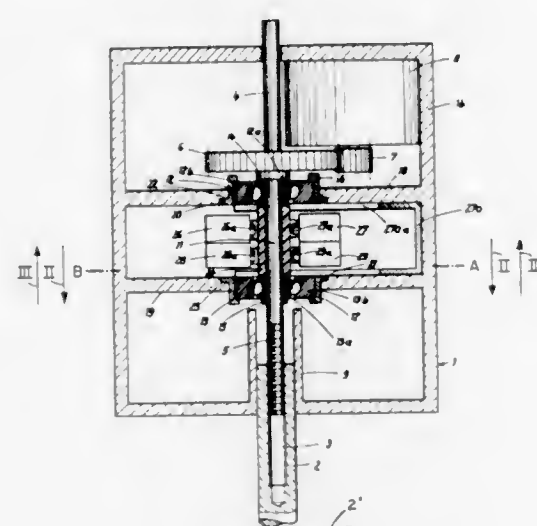


A pawl and ratchet mechanism for providing driving engagement between a driving member such as a tractor axle and a driven member such as a tractor wheel, wherein there is driving engagement upon rotation of the driving member in one circumferential direction and driving disengagement upon rotation of the driving member in an opposite circumferential direction. This is an abstract only of the specific illustration of the invention given by way of example, and is not to be used in the interpretation of the claims nor as a limitation on the scope of the invention.



# 3,720,295 POWER POSITIONING APPARATUS WITH FORCE DEPENDENT SHUT-OFF

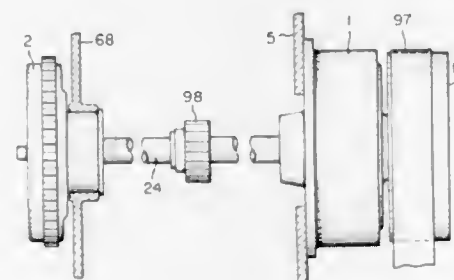
Jurgen Balz, Heilbronn, Germany, assignor to Firma  
Helmut Balz G.m.b.H., Heilbronn (Neckar), Germany  
Filed Nov. 19, 1971, Ser. No. 200,549  
Claims priority, application Germany, May 19, 1971,  
P 21 24 841.9  
Int. Cl. F16d 71/00  
U.S. Cl. 192—141 6 Claims



A housing defines therein a chamber through which a motor driven spindle passes which, when an element connected thereto strikes an abutment with predetermined force, causes the motor to shut off. The spindle is held in the housing in axially movable ball bearings which are spread apart by a spring. A sleeve surrounds the spindle, the sleeve having at least one cam thereon. If the spindle is subject to excursion, an axially moving ball bearing (against the force of the spring) will frictionally engage the sleeve, causing its rotation, and the cam to engage a shut off switch.

# 3,720,296 INCHING AND TWO SPEED PLANETARY GEAR DRIVES FOR PRESSES

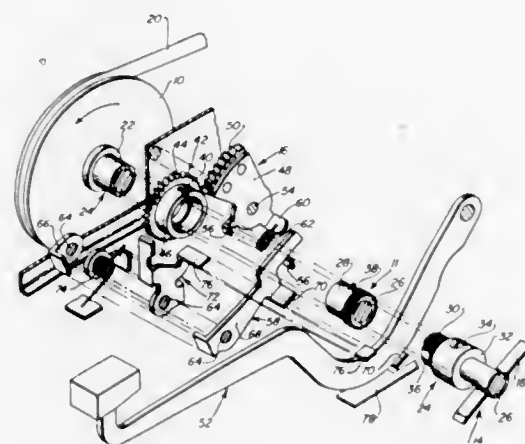
Eiji Ohno, Komatsu, Japan, assignor to Kabushiki Kaisha  
Komatsu Seisakusho, Tokyo-to, Japan  
Filed May 3, 1971, Ser. No. 139,609  
Int. Cl. F16d 67/00  
U.S. Cl. 192—3.52 3 Claims



In a driving system of mechanical presses, a driving device for presses comprising a clutch section and a brake section for affording to rotate the driving shaft at a high speed or at low speed or for stopping the driving shaft.

# 3,720,297 ACTION AND SHIFT JAM RESET MECHANISM

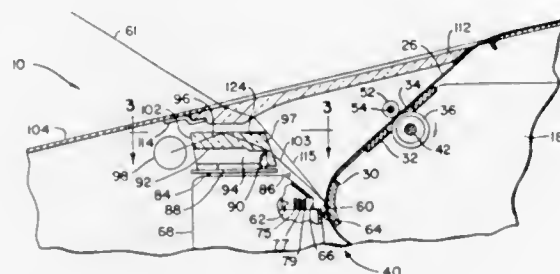
Thomas E. Frechette, Windsor Locks, Conn., assignor to Litton  
Business Systems, Inc., New York, N.Y.  
Filed April 21, 1971, Ser. No. 136,036  
Int. Cl. B41j 23/08  
U.S. Cl. 197—17 4 Claims



A jam reset mechanism for an electric typewriter disengages a wrap spring clutch to uncouple a power source from a power roll when type bars or other driven mechanisms jam. The jam reset mechanism also imparts a rotational movement to the power roll in a direction counter to its normal direction of rotation to allow the drive pawls of the jammed type bars or other driven mechanisms to return to their inactive positions.

# 3,720,298 PRISM ALIGNMENT MEANS FOR A CHARACTER AT A TIME PRINTER

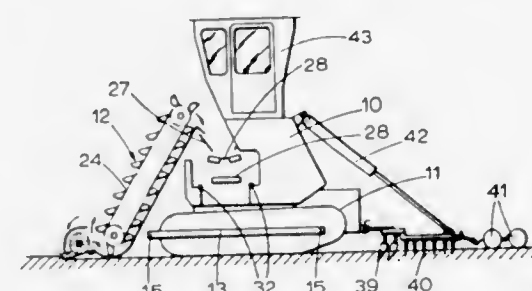
Kay Alonas, Skokie; Valentine R. Engelman, Niles, and Nor-  
man A. Jacobs, Arlington Heights, all of Ill., assignors to  
Teletype Corporation, Skokie, Ill.  
Filed Nov. 16, 1970, Ser. No. 89,788  
Int. Cl. B41j 29/18  
U.S. Cl. 197—182 2 Claims



To enable aligned printed web-carried symbols, which are out of the line of sight, to be seen from a regular position adjacent the keyboard of said printer, a prism bends source light to illuminate the symbols. Another prism, which is mounted in a cover of the printer housing, bends the source light reflected from the web into the line of sight. A bank of aligned lamps is supported in a position aligned with the printing stations on the web, and each thereof is adapted to be illuminated in succession by means which is responsive to completion of the formation of a symbol. A double image of each lamp can be seen through one of the prisms. Parallax of the lamp is prevented by aligning a selected double image with a pair of station designating marks on a pair of parallel scales carried adjacent the web and on said first named prism.

# 3,720,299 MACHINE FOR REMOVING SEDIMENTARY MATERIAL FROM FILTER BEDS

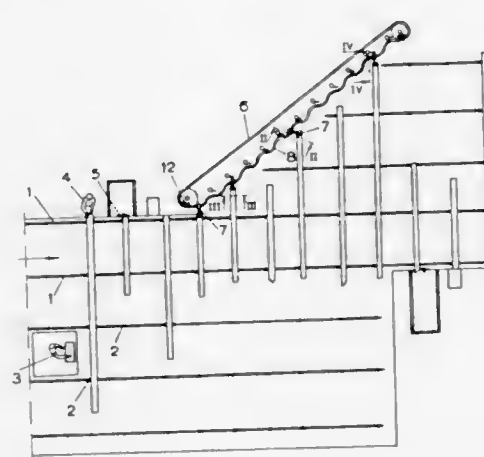
Horst Wegmann, Essen; Karl Ulrich Smula, Vinnun; Lothar  
Bartz, Bochum-Gerthe, and Wilhelm Stotefuss, Heeren-  
Werve, all of Germany, assignors to Gewerkschaft Eisen-  
hutte, Westfalia, Germany  
Filed April 23, 1971, Ser. No. 136,818  
Claims priority, application Germany, Aug. 22, 1970, P 20  
41 803.5  
Int. Cl. B65g 65/06  
U.S. Cl. 198—9 13 Claims



A machine for removing sedimentary material from filter beds of water supply installations. The machine has a chassis running on endless tracks and supporting a displaceable front frame carrying an inclined elevated conveyor arrangement with a plurality of circulated buckets. A rotatable drum with projecting paddles or bars serves to project material in a trough which feeds the buckets of the inclined conveyor arrangement. An inclined plate also carried by the frame serves to skim a layer of material from the bed as the machine advances and the drum picks up the material from the plate. A further conveyor extends transversally of the chassis and receives material from the inclined conveyor for subsequent discharge from the machine.

# 3,720,300 TIMBER CONVEYOR

Alpo Rysti, Frisantsintie 22, Frisans, Finland  
Filed Dec. 15, 1970, Ser. No. 98,322  
Int. Cl. B65g 47/64  
U.S. Cl. 198—20 R 2 Claims

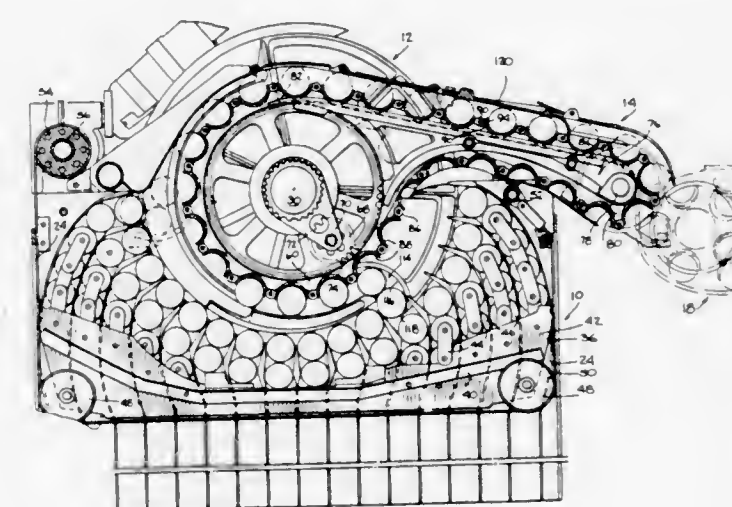


Timber conveyor, comprising a conveyor which moves the timber forward in a transverse position and in its continuation an oblique conveyor, on which the timber has both a velocity component in the original transporting direction and a velocity component parallel to the longitudinal direction of each piece of timber. The invention is particularly charac-

terized in that the oblique conveyor has been provided with elements acting upon the ends of the pieces of timber, which elements in the oblique conveyor travel along a curved path so that at the moment when the piece of timber is released the piece of timber has a non-existent or at least nearly non-existent velocity component in its longitudinal direction.

# 3,720,301 AMMUNITION HANDLING SYSTEM

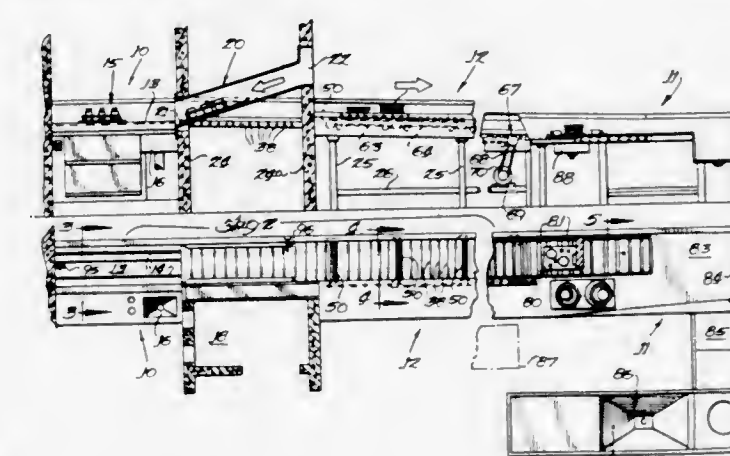
Newton C. Garland; James D. Scanlon, both of Burlington;  
Otto H. Meier, Shelburne; Douglas P. Tassie; Burton P.  
Clark, both of St. George, and Lester F. Backus, Charlotte,  
all of Vt., assignors to General Electric Company, Burling-  
ton, Vt.  
Filed Oct. 13, 1971, Ser. No. 188,831  
Int. Cl. B65g 47/26; F41c 9/22  
U.S. Cl. 198—32 21 Claims



A cartridge storage and feed system is provided including a magazine having a plurality of channels in a planar array, each channel for storing a column of cartridges, and an annular scoop for withdrawing the leading cartridge from each of said channels serially for providing a train of cartridges.

# 3,720,302 CONVEYOR SYSTEM FOR TRAYS

Cyril L. Kegler, Cedar Rapids, Iowa, assignor to Bishop  
Buffets, Inc., Cedar Rapids, Iowa  
Filed Sept. 4, 1970, Ser. No. 69,819  
Int. Cl. B65g 13/02  
U.S. Cl. 198—127 7 Claims



A conveyor system for use, for example, in transporting trays containing variable loads of dishware, silverware, glasses, etc., in a food service establishment, includes a



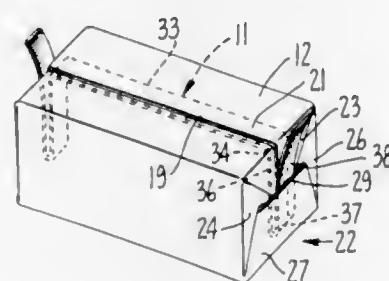
plurality of freely rotatable support rollers spaced along the conveyor track at a predetermined pitch for supporting the trays as they move under force of gravity. A series of powered rollers rotating at constant speed and provided with a surface of low friction material are also spaced along the conveyor track at the same pitch as the support rollers but at a greater interval. Adjacent ones of the powered rollers are preferably spaced at a little less than about twice the length of a tray. With this arrangement, loaded trays may accumulate along the conveyor track with the powered rollers slipping against the bottom surfaces of the trays when blocked by the accumulating trays ahead. Yet when trays are removed from the discharge end, the remaining trays are urged forward by the powered rollers. The powered rollers also regulate the speed of the traveling trays, for example, in arresting the speed of a heavily loaded tray and increasing the speed of a lightly loaded tray. A water-tight pan forms a trough beneath the track, and the support rollers are easily removed for cleaning and sanitizing the conveyor pan.

3,720,303

**DEVICE FOR OPENING WRAPPERS OF FOODSTUFFS**  
Harrie A. Giaque, 5826 Broadway, Oakland, Calif.  
Filed April 14, 1971, Ser. No. 133,855  
Int. Cl. B65d 85/74

U.S. Cl. 206—46 F

3 Claims



In a folded wrapper, an elongated strip is positioned beneath the overlapping side seam and end flaps of the wrapper and extends exterior of the end flaps thereof. Pulling outwardly on the exposed ends of the strip unfolds the end flaps and lifting of the strip opens the side seam of the wrapper to expose the contents for use. For storage, the strip is repositioned and the wrapper refolded in position for the next opening.

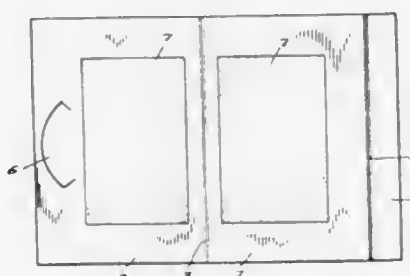
3,720,304

**DISPOSABLE FOOTPRINTER**  
Lorene Laugherty and James R. Laugherty, Knoxville, Tenn., assignors to Avls Research, Inc., Knoxville, Tenn.

Filed June 22, 1971, Ser. No. 155,453  
Int. Cl. B65d 85/00

U.S. Cl. 206—46 R

6 Claims



A disposable footprinter having inked surfaces to receive portions of the feet of an infant to enable prints or impressions thereof to be transferred onto a suitable receptive medium such as paper. The device is formed of a sheet of folded paperboard having opposite sides

which may have inked surfaces applied to one or both of the inner surface thereof. The sides are folded one over the other with means at an edge of one of the sides to confine the two in folded relation. The sides are so proportioned that one of them will be bowed with respect to the other so as to hold the inked surface spaced from each other and against rubbing engagement with the inner surfaces of the folded sheet, thus maintaining the medium in condition for proper impression and transfer of the marking onto the receptive surface.

3,720,305

**VEHICLE WINDSHIELD LIQUID CONCENTRATE PACKAGE**

Frederic D. Barton, 47736 Ahumanu Loop, Kaneohe, Hawaii  
Filed June 9, 1971, Ser. No. 151,355  
Int. Cl. B65d 77/08, 75/42, 31/12

U.S. Cl. 206—47 R

1 Claim



A vehicle windshield liquid concentrate package is disclosed comprising double containers of flexible sheet material separately containing, respectively, an anti-freeze concentrate in liquid form and an aqueous windshield washer concentrate in liquid form, and means joining said containers together during storage and shipment which can be torn apart at the time of use to separate the two containers to facilitate opening them so that the content of use the two concentrates may be freshly admixed and added to the vehicle windshield cleaner container, said containers two isosceles triangular sided tetrahedrons joined along one pair of corresponding unequal length sides.

3,720,306

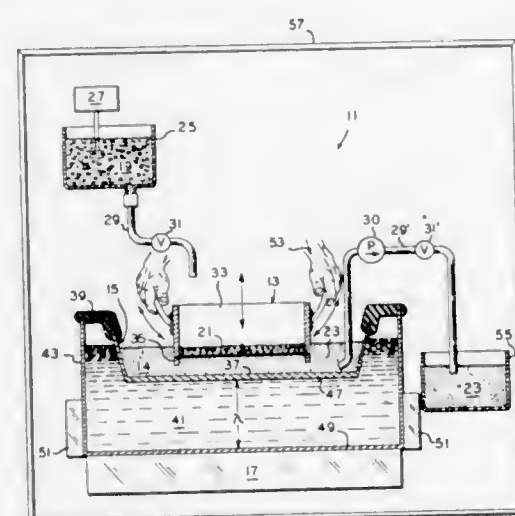
**MEANS AND PROCESS FOR ACHIEVING A CONTROLLED PARTICLE SIZE RANGE OF CATHODE RAY TUBE PHOSPHORS**

Robert A. Hedler, Seneca Falls, N.Y., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed Jan. 7, 1971, Ser. No. 104,572  
Int. Cl. B07b 1/28

U.S. Cl. 209—1

8 Claims



An efficient means and process for achieving a cathodoluminescent phosphor suspension of predeterminedly controlled particle size for use in a cathode ray tube screening formulation to realize a high resolution type screen. A portion of a first liquid suspension formed of incoming phosphor materi-

al is transferred to sieve means oriented in a shallow quantity of collector liquid agitated by ultrasonic energy. The sieve is discreetly moved in the agitated collector liquid to effect a gentle pumping action to expedite an exchange of liquid and particles therethrough and form a second suspension of sieved phosphor particles which is adjusted for use in the screening operation.

3,720,307

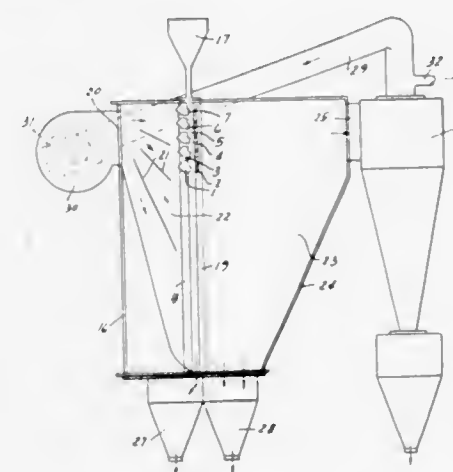
**PNEUMATIC CLASSIFIER WITH GRATING**  
Risto Hukki, Otaniemi, Finland, assignor to Kennedy Nan Saum Corporation, Danville, Pa.

Filed April 29, 1970, Ser. No. 33,010

Int. Cl. B07b 9/02

U.S. Cl. 209—10

3 Claims



An improved apparatus for pneumatic classification of finely divided solids, including primary separation of the material by directing a curtain of finely ground falling solids in a zig-zag course through a gas stream of relatively high velocity and a second separation step of the finer fractions by similar treatment in a lower velocity gas stream.

3,720,308

**HEAVY LIQUID SEPARATION OF BRUCITE FROM ASSOCIATED MINERALS OF BRUCITIC ORES**  
Tage L. B. Jepsen, Gabb, Nev., assignor to Basic Incorporated, Cleveland, Ohio

Filed April 20, 1970, Ser. No. 30,266

Int. Cl. B03b 1/02; B03d 1/00

U.S. Cl. 209—11

4 Claims

Brucite in finely divided condition is collected as a high grade concentrate of brucitic ores and other magnesium hydroxides by selective temperature control of heavy liquid media during continuous treatment. Ore is initially assayed to determine the specific gravity of its brucite content and methylene bromide as heavy liquid media will be used at its usual specific gravity of 2.48 at ambient temperature. If higher grade product is desired, changes in temperature of media are developed to obtain density drop to 2.40, for example. To change back to normal production media temperature is adjusted and no change in media composition is required.

3,720,309

**METHOD AND APPARATUS FOR SORTING SEMICONDUCTOR DICE**  
Basil Weir, San Jose, Calif., assignor to Teledyne, Inc., Mountain View, Calif.

Filed Dec. 7, 1971, Ser. No. 205,502

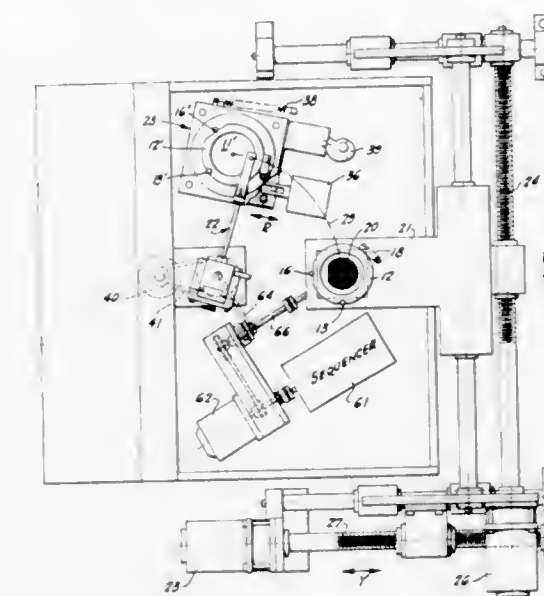
Int. Cl. B07c 5/344

U.S. Cl. 209—73

6 Claims

A method and apparatus therefor for sorting semiconductor dice from a monolithic wafer where after being data logged the wafer is placed on sticky tape located on an X,Y indexing table and a vacuum probe picks a single selected die from the

wafer to a receiving table also having sticky tape. The receiving table is rotatable and also indexed along a radial line to allow matched pairs of semiconductor dice to be formed in ad-



3,720,310

**APPARATUS FOR SEPARATING SELECTED CIGARETTES OR ANALOGOUS ROD-SHAPED ARTICLES FROM A SERIES OF RAPIDLY MOVING EQUIDISTANT ARTICLES**

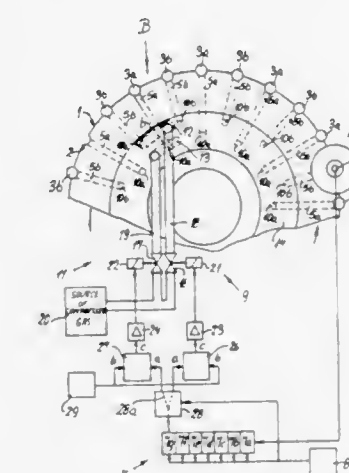
Frank-Dieter Lehmann, Wentorf, Germany, assignor to Hauni-Werke Korber & Co., KG, Hamburg, Germany  
Filed March 2, 1971, Ser. No. 120,293

Claims priority, application Germany, March 5, 1970, P 20 10 392.8

Int. Cl. B07c 3/04

U.S. Cl. 209—74

37 Claims



Cigarettes or like rod-shaped articles are conveyed sideways in equidistant flutes of a rotary drum at a speed of at least one thousand articles per minute and along an ejecting station having a width which substantially exceeds and can be a multiple of the distance between a pair of neighboring flutes. Selected articles are ejected from their flutes in response to electric or pneumatic signals by being subjected to the action of a mechanical force and/or to the action of a force produced by a stream of gaseous fluid whereby the point of application of the force moves with the flute which contains the respective selected article while such flute travels through the ejecting



station. The articles can be held in their flutes by suction or by mechanical means, and the suction or the mechanical retaining action is terminated when a selected article reaches the ejecting station so that the selected articles are separated under the action of gravity and/or under the action of centrifugal force. The action of gravity and/or centrifugal force can be assisted by directing against selected articles in the ejecting station one or more streams of a compressed gaseous fluid which are caused to move with the respective flutes at the same speed and in the same direction while such flutes travel along the ejecting station.

3,720,311

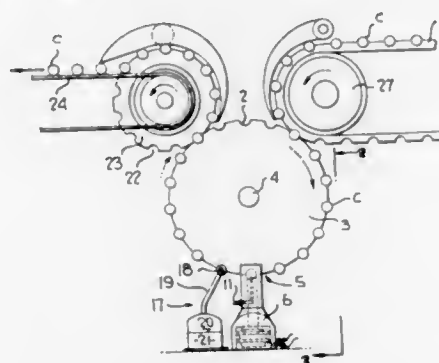
# **METHOD AND APPARATUS FOR DETECTING LOOSE ENDS AND MISSING FILTERS IN CIGARETTES**

Edmund Harrison, Jr., Richmond, Va., assignor to Molins Machine Company, Inc., Richmond, Va.  
Filed Jan. 26, 1971, Ser. No. 109,859

Int. Cl. B07c 5/34; G01b 5/28

U.S. Cl. 209—79

61 Claims



A method and apparatus for detecting irregular surfaces of articles and particularly loose ends and missing filters in cigarettes provides for the impingement of an air stream against at least one end of each cigarette. If the tobacco filler at the end of the cigarette is loose or pitted or if the filter plug is missing resulting in a cavity at the end of the cigarette, an air turbulence is created by the air stream resulting in a distinctive sound which can be detected by a transducer and utilized to reject defective cigarettes.

3,720,312

# **SEPARATION OF PARTICULATE MATERIAL BY THE APPLICATION OF ELECTRIC FIELDS**

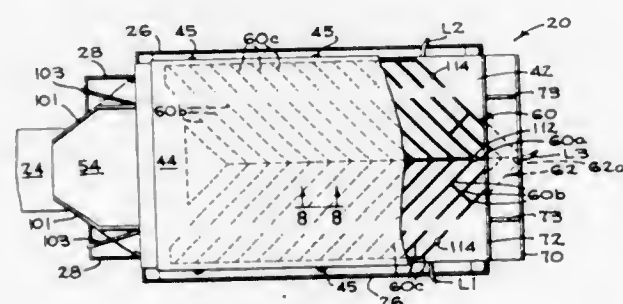
Paul R. Shook, Colorado Springs; Earl G. Sweeney, Boulder, and Ralph E. Duncan, Colorado Springs, all of Colo., assignors to FMC Corporation, San Jose, Calif.

Filed July 9, 1970, Ser. No. 53,518

Int. Cl. B03c 7/04

U.S. Cl. 209—130

28 Claims



A separator of particulate material by the use of electric fields is comprised of a pair of spaced plates of a dielectric material between which particulate material is arranged to be

fed, the material being propelled in a given direction by a vibratory feeder attached to the lowermost plate. A set of parallel spaced electrodes are provided on each of said plates out of contact with the material and extending in a direction laterally of said given direction, and an AC voltage is applied between the sets of electrodes so that alternating electrical fields are set up at spaced locations along said plates in said given direction. Certain of said particulate material is caused to be repelled by said electrical fields and deflected thereby to move in said direction laterally of said given direction while the remainder of said material moves generally in said given direction.

3,720,313

# **CENTRIFUGAL CLASSIFIER**

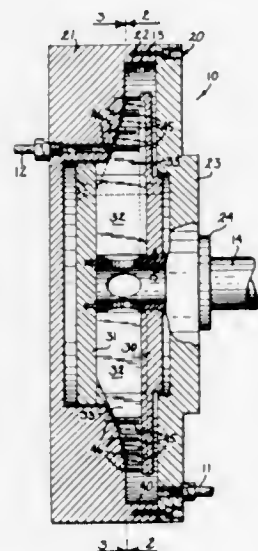
Charles E. Lapple, Los Altos Hills, Calif., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Filed July 10, 1970, Ser. No. 53,845

Int. Cl. B07b 7/083

U.S. Cl. 209—144

20 Claims



A housing having a cylindrical cavity therein with a rotor coaxially mounted for rotation relative thereto and passageways for providing a flow of air from the outer circumference to the axis of the rotor. A plurality of radially oriented longitudinally extending fins are affixed to the rotor for producing a forced vortex in the flow of air and a plurality of radially spaced slots in each of the fins coinciding with longitudinally extending rods affixed to the housing for producing shear forces tending to disperse solids carried by the air into discrete particles which can be separated into coarse and fine fractions by centrifugal force within the vortex.

3,720,314

# **CLASSIFIER FOR FINE SOLIDS**

Hohn F. Phillippi, Cleveland, Ohio, assignor to Aerodyne Development Corporation, Cleveland, Ohio

Filed Nov. 9, 1970, Ser. No. 87,993

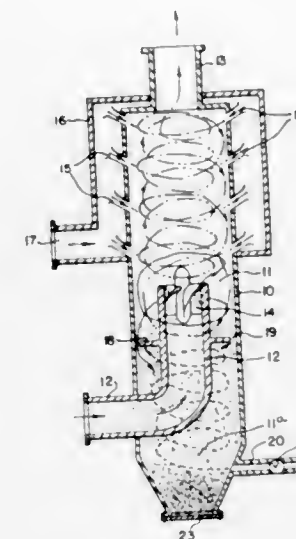
Int. Cl. B04c 3/00

U.S. Cl. 209—144

9 Claims

A modification of apparatus for separating fine particles from a gaseous fluid secondary provide means for classifying the fine particles is presented. The apparatus for separating particles from fluid is like that disclosed and claimed in U.S. Pat. No. 3,199,268 granted Aug. 10, 1965 to Karl-Heinz Oehrich et al. This prior invention involves a primary flow of particles entrained in a fluid medium generally axially of a cylindrical processing chamber from an inlet duct near one end to an outlet duct at the other axis. A solid ground closes a portion of the chamber near the inlet duct save for an annular open

space next to the wall of the chamber. A secondary circulatory flow is imparted to the fluid medium above the solid ground which causes the solid particles to be separated from the medium and to fall through the annular space into a collecting hopper. The modification provides a fluid inlet to the hopper



to cause a stream of controlled velocity to pass upwardly through the annular space counter current to the falling stream of particles so as to drive particles of a predetermined size to be classified from the rest of the particles and to be carried through the outlet duct.

3,820,315

# **STABILIZING PAPERMAKING SYSTEM CLEANER OPERATION**

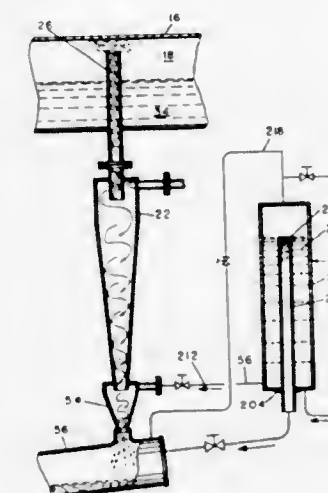
Robert George Kaiser, Hohokus, N.J., assignor to Clark & Vicario Corporation, North Tarrytown, N.Y.

Filed Jan. 18, 1971, Ser. No. 107,157

Int. Cl. B04c 5/18

U.S. Cl. 209—211

18 Claims



Cleaning efficiency in papermaking system cleaners is enhanced by fitting elutriation units on the rejects ends of system cleaners to further dilute cleaner rejects portions and thereby recover more useable fiber in the accepts portion, the dilution being effected by means of a stream of elutriation water admitted to the elutriation unit at relatively low but constant pressure, the accepts and rejects portions from such cleaners being discharged freely into spaces of zones of vacuum of substantially the same condition of vacuum provided by an unobstructed liquid-free core interconnecting such spaces.

3,720,316

# **FLOW CONTROLLER FOR A MATERIAL SEPARATOR**

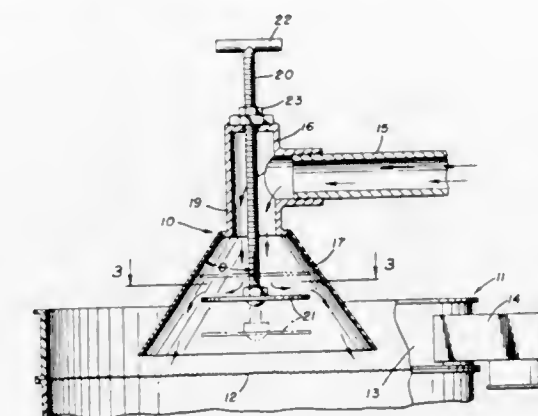
Laverne J. Riesbeck, and Willis A. Blackwell, both of Canton, Ohio, assignors to Midwestern Industries, Inc., Massillon, Ohio

Filed Nov. 25, 1970, Ser. No. 92,610

Int. Cl. B07b 1/00

U.S. Cl. 209—254

5 Claims



A device for controlling the flow of a fluid material as it is presented to a screen of a conventional material separator to isolate any solids carried therein consists generally of an adjustable baffle plate within a conical hood member. The input fluid is directed against the baffle plate and is thereby deflected against the hood member which is suspended over the screen. The fluid then follows along the hood member and falls to the screen, being presented thereto as an annular sheet of fluid material. The precise configuration of the sheet of fluid material is controlled by adjusting the axial location of the baffle plate, moving it toward and away from the direction of the flow of the input material. The solids which are unable to pass through the screen are transmitted to a discharge chute located at the periphery of the screen.

3,720,317

# **AQUARIUM FILTER**

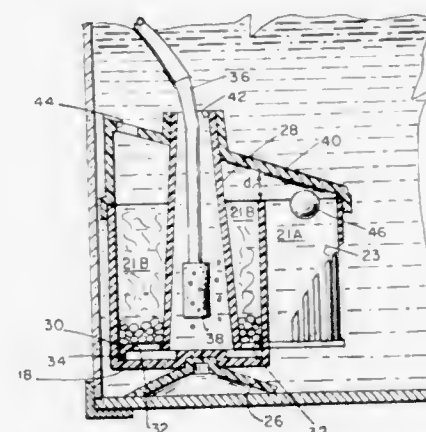
Allan H. Willinger, New Rochelle, N.J., assignor to Metaframe Corporation, Maywood, N.J.

Continuation-in-part of Ser. No. 832,172, June 11, 1969, Pat. No. 3,630,367. This application May 3, 1971, Ser. No. 139,666

Int. Cl. B01d 35/14

U.S. Cl. 210—94

11 Claims



A filtering device comprising a housing in which is provided a partition for separating the housing into first and second chambers in communicating relation. The housing is provided with at least one opening through which water may enter into the first chamber from an external water-carrying source. The second chamber includes a filtering assembly for cleansing water which has entered the first chamber and which thereafter flows into the second chamber. An air conduit is provided for directing air into the second chamber for urging the filtering assembly.



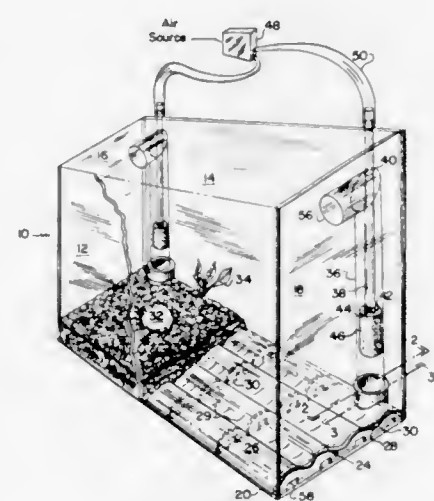
water through the filtering assembly. Likewise, a conduit is provided for directing both air and cleansed water out of the second chamber after the water has been cleansed by the filtering assembly. An indicator is provided for signalling inflow of water into the first chamber and outflow from the latter into the second chamber.

3,720,318

**FILTER AND WATER RECIRCULATION SYSTEM**  
Harvey K. Cohen, Brooklyn, N.Y., assignor to Bernice G. Conn, Brooklyn, N.Y., a part interest  
Filed March 23, 1971, Ser. No. 127,292  
Int. Cl. E04h 3/16, 3/20

U.S. Cl. 210-169

16 Claims



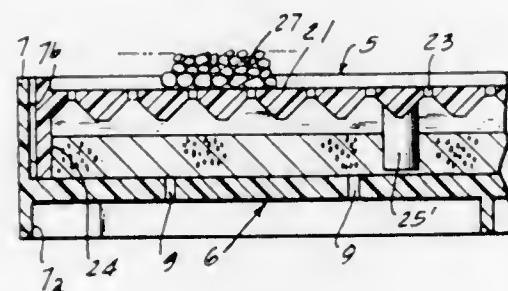
An aquarium filter water recirculation system comprises a water-carrying and an inner air-carrying member attached to a base member which is supported above the floor of an aquarium. Air is passed through the inner cylindrical tube, diffused, and mixed with the water in the water-carrying member. The base member is made of polyvinyl chloride and is provided with a corrugated regular contour above which rests the gravel bed of the aquarium.

3,720,319

**REVERSE FLOW AQUARIUM FILTER DEVICE**  
Eugene B. White, Oak Park, Ill., assignor to Filters International, Inc., Chicago, Ill.  
Continuation-in-part of Ser. No. 67,648, July 31, 1970, abandoned, which is a division of Ser. No. 805,274, March 7, 1969, Pat. No. 3,578,169. This application May 10, 1971, Ser. No. 141,680. The portion of this patent subsequent to May 11, 1988, has been disclaimed.  
Int. Cl. E04h 3/20

U.S. Cl. 210-169

18 Claims

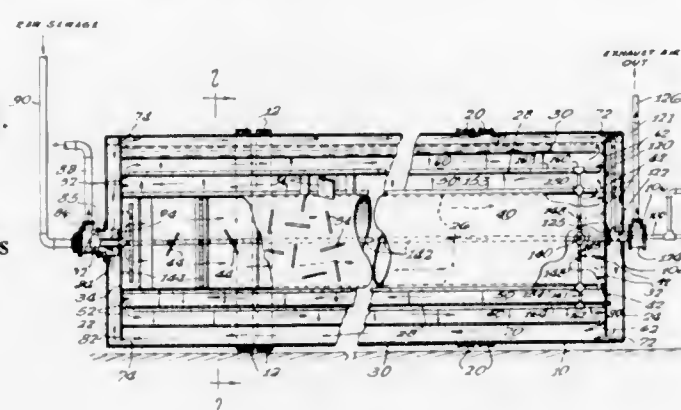


A filter device in the form of a gravel supporting tray structure for use, particularly in an aquarium water purification system employing a tertiary filter cycle utilizing a shallow gravel trickling filter with underwater aeration and sedimentation followed by anaerobic action and final tertiary cycle.

3,720,320  
**APPARATUS FOR HANDLING SEWAGE**  
Robert I. Fletcher, 620 Highwood Avenue, Greencastle, Ind.  
Filed July 13, 1971, Ser. No. 162,181  
Int. Cl. B01f 9/02; C02c 1/04

U.S. Cl. 210-199

11 Claims



A multi-pass, horizontal-rotating, continuous feed digester provides an effective, efficient aerobic digestion process for handling sewage which reduces pollution and promotes improved ecology.

3,720,321  
**RADIATION CROSSLINKED, SWELLED SEMIPERMEABLE MEMBRANES**

Robert W. Coughlin, Bethlehem, Pa., and Richard D. Siegel, Waltham, Mass., assignors to Research Corporation, New York, N.Y.

Filed March 11, 1970, Ser. No. 18,705  
Int. Cl. B07b 1/00; C08d 1/00; C08f 1/16

U.S. Cl. 210-500

4 Claims

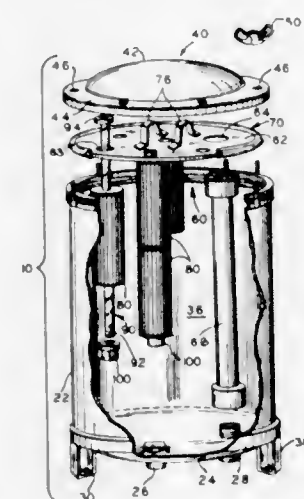
A semipermeable membrane of enhanced permeability or permselectivity which is formed by swelling a cross-linkable polymer film in a non-reactive, non-polymerizable swelling agent for a time sufficient to uniformly penetrate and swell the film, and thereafter subjecting the swollen film to high-energy ionizing radiation for a period of time and at a dose rate sufficient to cause cross-linking of the polymer.

3,720,322

**UPFLOW CARTRIDGE FILTER APPARATUS**  
John F. Harms, 705 Waterway Drive, North Palm Beach, Fla.  
Filed Dec. 31, 1970, Ser. No. 103,165  
Int. Cl. B01d 29/30

U.S. Cl. 210-238

4 Claims



A pressure filter having a pressure vessel comprising an open top lower tank section adapted to be closed by a removable dome-shaped upper cover section, and an apertured filter support plate therebetween which divides the lower and upper sections into two chambers. A continuous rim gasket of sub-

stantially V-shaped cross-section mounted on the peripheral margin of the aperture plate seals the two chambers. The upper face of the apertured plate is provided with a handle means which cooperates with the domed cover section to press an outlet opening therein into a sealed engagement with the upper open end of an outlet pipe which passes through the lower chamber. A plurality of filter elements are individually and sealingly supported through the other openings or apertures in the apertured plate.

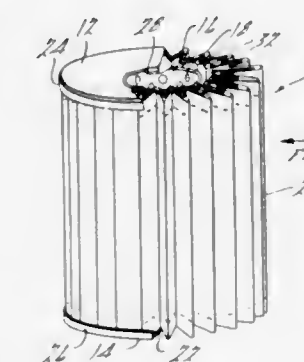
3,720,323

**DEPTH-TYPE FILTER FOR OPERATION WITH HIGH DIFFERENTIAL PRESSURES ACROSS THE FILTER**  
Raymond L. Landree, Madison Heights, Mich., assignor to The Bendix Corporation

Filed Nov. 10, 1969, Ser. No. 875,134  
Int. Cl. B01d 27/06

U.S. Cl. 210-493

14 Claims



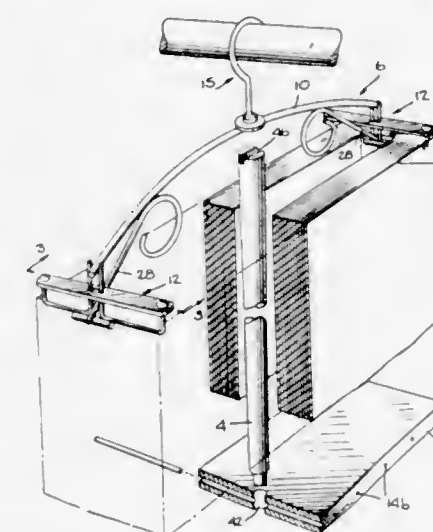
A filter assembly having a pleated depth-type filter element bonded at each end portion to metallic end caps by a thermosetting bonding agent being improved by having a flexible reinforcing strip bonded to the downstream side of the end portions of the pleated filter media continuously along the pleats thereof such that the reinforcing strip and the area of bonding to the filter media extends substantially above the bonding agent. The reinforcing strip has a substantially greater shear strength than the filter material and a porosity not greater than the filter material.

3,720,324

**HANGER FOR FABRIC AND SUPPORTING ASSEMBLY THEREFOR**  
Milton Berkowitz, 500 East 85th Street, New York, N.Y.  
Filed Jan. 6, 1971, Ser. No. 104,362  
Int. Cl. A47f 5/00, 9/14

U.S. Cl. 211-45

8 Claims



A hanger intended for use to support fabric lengths in pendant, vertical roll form. The hanger includes a main member,

3,720,325

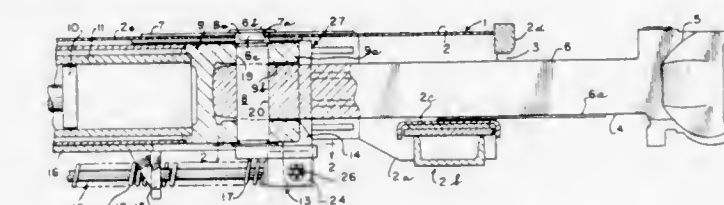
**END-OF-RAILWAY-CAR CUSHIONED DRAFT ASSEMBLY**

Leopold S. Sitko, South Holland, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed Dec. 14, 1970, Ser. No. 97,743  
Int. Cl. B61g 9/02, 7/10

U.S. Cl. 213-8

6 Claims



An end-of-railway-car cushioned draft assembly reciprocally mounted on the end of the center sill arrangement of a flat deck railroad car which arrangement includes a coupler pivotally connected to a slidable cushioning unit for pivotal horizontal movement of the coupler wherein the cushioning unit is retained in a vertical position at the end of the cushioning unit housing and retained from falling therefrom by a coupler pin retainer assembly including a horizontal plate mounted on a bracket arrangement connected to the cushioning housing return spring lug used to connect the return spring unit of the cushioning assembly to the housing.

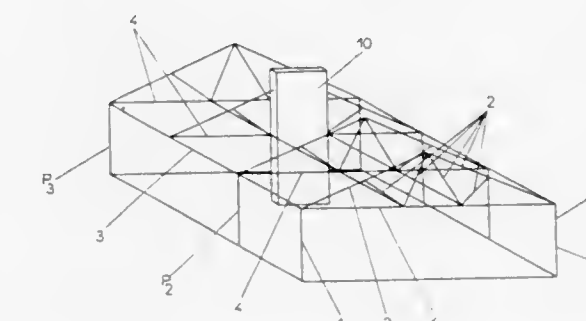
3,720,326

**PROCESS AND INSTALLATION FOR CONSTRUCTING BUILDINGS PARTICULARLY DWELLINGS**

Hubert Michel Henri Auguste Payraudeau, and Henri Andre Charles Joseph Payraudeau, both of Les Brouzils, France, assignors to Technab, Les Brouzils (Vendee), France  
Filed July 6, 1970, Ser. No. 52,266  
Int. Cl. B65g 7/04

U.S. Cl. 214-1 H

14 Claims



This invention relates to a process and installation for constructing dwellings, in which a framework is made of rails, the outer walls and partitions being brought on to the site in a lorry or container, connecting parts being fitted between the framework and the lorry or container, the partitions and walls being slid between them and fixed permanently on the spot, allowing very advanced factory finishing of walls and partitions.



**3,720,327**  
**AUTOMATIC STORAGE SYSTEM ORDER PICKER CAB CONSTRUCTION**

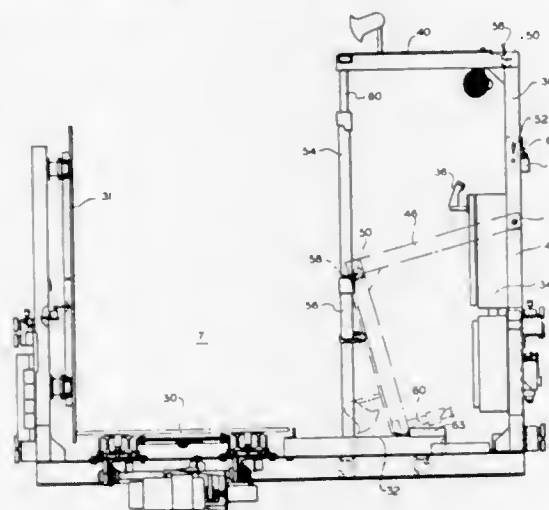
James H. Snyder, and William E. Riedner, both of Battle Creek, Mich., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Nov. 10, 1971, Ser. No. 197,424

Int. Cl. B65g 43/00

U.S. Cl. 214—16.4 A

6 Claims



This is a storage system having a stacker which may be operated in remote full automatic control or in manually permitted automatic control from the cab on the stacker. The stacker has a pivotal overhead shield to protect the person operating the stacker manually. In the raised position a limit switch is closed which permits stacker moves only when the order picker is on board and holding closed two foot switches and two hand switches. Shuttle operation is restricted to specific off load points for removal of picked loads. The overhead shield when folded down permits full automatic operation with maximum vertical travel of the stacker and when in the upright position provides means under control of the operator to permit automatic operation of the stacker and protects the operator on the stacker from overhead falling objects.

**3,720,328**  
**DISCRETE MATERIAL TRANSPORTING AND DUMPING APPARATUS**

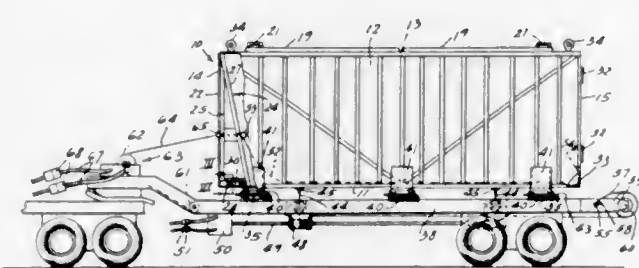
Harold B. Mackenzie, 330 Naperville Rd., Wheaton, Ill.

Filed Feb. 9, 1971, Ser. No. 114,005

Int. Cl. B65g 67/02

U.S. Cl. 214—38 D

17 Claims



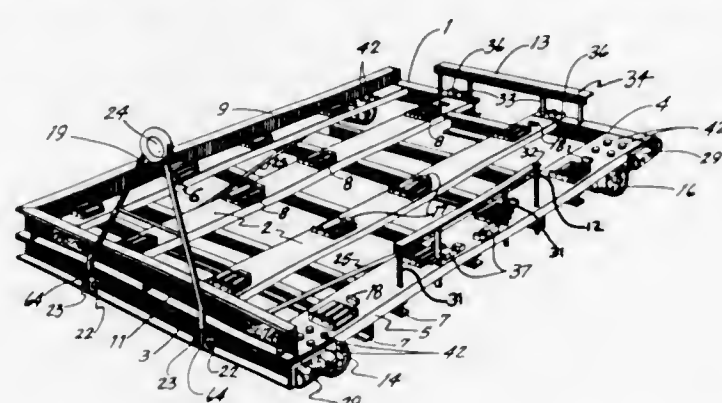
Discrete material transporting and dumping apparatus and method involve a container having an open top closed by hopper doors, a normally closed rear end through which, when open, contents of the container are adapted to be dumped by a pusher structure in the container chamber activated rearwardly by conveyance motivated means such as a hydraulic piston, a drive screw or a cable the end of which is accessible when the rear doors are opened for connection to a transporting conveyance-carried winch cable. The pusher structure is returned to the front end of the container after the dumping operation. The conveyance is adapted to be a flatbed

truck trailer having tracks thereon receptive of bottom rollers on the container, whereby the container is adapted to be brought adjacent to a dump site on a railroad flatcar, transferred to the trailer, taken to the dump site, the pusher structure operated to unload the container, and the container then returned to the railroad car. The pusher may serve as a compacting ram.

**3,720,329**  
**PALLETIZED CARGO TRAILER**  
Edward R. Gamble, Clayton, Mo., assignor to American Air Filter Company, Inc., Louisville, Ky.  
Filed Mar. 16, 1971, Ser. No. 124,850  
Int. Cl. B60p 1/52

U.S. Cl. 214—84

10 Claims

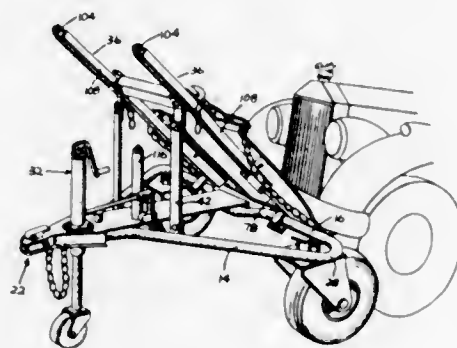


A cargo trailer usable for pallets, and the like, having a platform mounted on wheels. The front end is provided with a tow bar as means for coupling to transporting means for the cargo trailer and actuating wheel brake means. The cargo trailer further provides for track members which fit fork lifts so that said cargo trailers may also be transported by said fork lifts.

**3,720,330**  
**VEHICLE LIFTING AND TOWING TRAILER**  
Harry D. Forse, Anderson and C. Butz, Noblesville, both of Ind., assignors to Cleanamation, Inc., Anderson, Ind.  
Filed Oct. 6, 1971, Ser. No. 187,030  
Int. Cl. B60p 3/12

U.S. Cl. 214—86 A

12 Claims



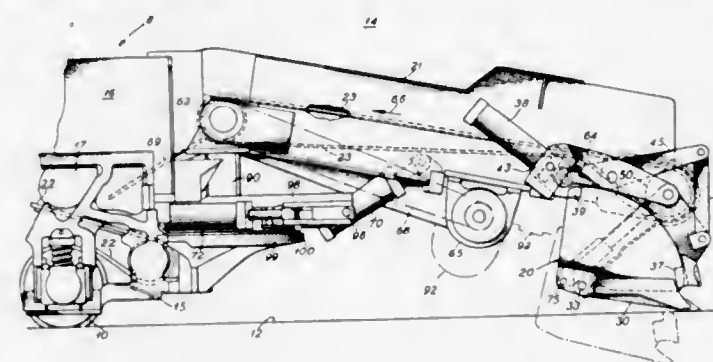
A vehicle lifting and towing trailer having a horizontal main frame with forward and rear ends. A pair of transversely-spaced wheels are pivotally mounted on the main frame adjacent its rear end and a towing hitch is provided adjacent its forward end. A lifting frame is provided having a pair of elongated, transversely-spaced, parallel rails between the wheels and having forward and rear ends, the rails being secured to the main frame adjacent its rear end and being inclined forwardly and upwardly from their rear to their forward ends, and a support structure intermediate the ends of the main frame for supporting the rails adjacent their forward ends. A pair of lifting carriages is slidably mounted on the rails for

movement between their ends, and means are provided for removably connecting a part of a vehicle to be lifted and towed to the carriages. A pair of hydraulic rams is provided respectively independently acting upon the carriages for moving the same toward the forward ends of the rails thereby to lift a vehicle, the rams being actuated by a common hydraulic pump thereby equalizing the load on the carriages.

**3,720,331**  
**LOADING MACHINE**  
Haim J. Kamner, Palatine, Ill., assignor to Westinghouse Air Brake Company, Pittsburgh, Pa.  
Filed Jan. 12, 1971, Ser. No. 105,904  
Int. Cl. B66b 17/00

U.S. Cl. 214—90 R

13 Claims

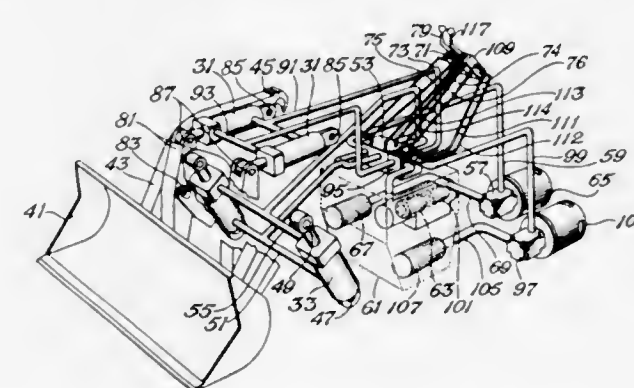


A loose rock loading machine having an improved two section bucket or dipper arranged to respond to suitable power and control means to automatically provide an initial, generally horizontal forward loading movement followed by an elevating dumping movement of the bucket onto a conveyor or storage hopper. During shovelling movements a shovel element extends from the bucket to capture large amounts of rock. During the dumping operation the shovel element retracts relative to the bucket. During downward return movement of the bucket to ground level the shovel element stays retracted in the bucket to clear the rock pile.

**3,720,332**  
**HYDRAULIC SYSTEMS**  
Lloyd A. Molby, Longview, Tex., assignor to R. G. Le Tourneau Inc., Longview, Tex.  
Filed Apr. 27, 1971, Ser. No. 137,881  
Int. Cl. B66f 9/00

U.S. Cl. 214—140

14 Claims



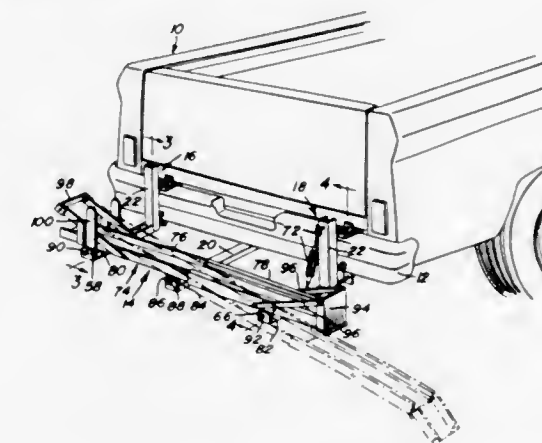
In a vehicle having a plurality of work performing means that are powered by hydraulic fluid the improvement characterized by a plurality of individual and separately operable hydraulic systems for operating the respective work performing means; the respective motors and pumps, preferably, being positioned relatively closely adjacent the work performing means for which they supply hydraulic fluid under pressure. Also disclosed are (1) a type of control valve that is operable to start a motor

driving a respective pump simultaneously with directing the high pressure hydraulic fluid output of the pump to operate the work performing means; (2) other specific structural features; and (3) advantages.

**3,720,333**  
**MOTORCYCLE CARRIER**  
Jacard M. Vaughn, 1709 Lynn Grove Dr., Manhattan Beach, Calif.  
Filed Dec. 29, 1970, Ser. No. 102,334  
Int. Cl. B60r 9/00

U.S. Cl. 214—450

11 Claims

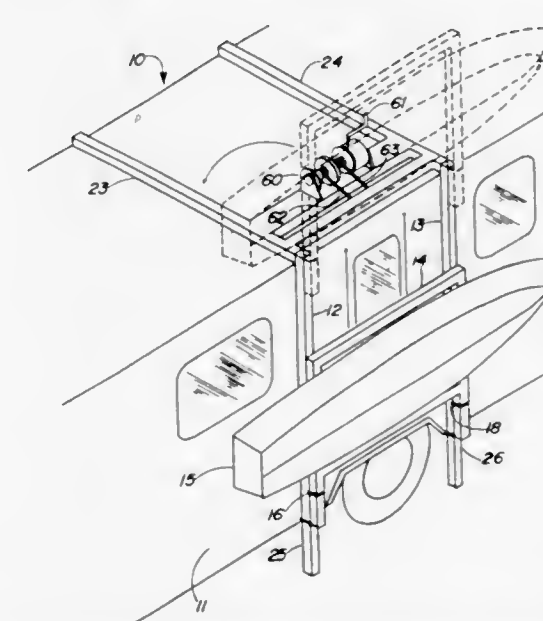


A support, loading and unloading ramp and trailer combination for mounting on the rear or other peripheral portion of a motor vehicle and operable to support a two wheeled vehicle therefrom in elevated position above the ground, load and unload a two wheeled vehicle relative to the supporting vehicle and couple to the rear of the two wheeled vehicle for towing therebehind. The support includes three mounting brackets for semipermanent support from points spaced along a peripheral portion of a supporting vehicle and a ramp removably anchored at its opposite ends to the remote supports and pivotally supported from the intermediate support for oscillation about a horizontal transverse axis.

**3,720,334**  
**BOAT AND EQUIPMENT LOADING SYSTEMS**  
Albert A. Permut, and Ronald M. Permut, both of 11718 Greenlane Drive, Potomac, Md.  
Filed May 17, 1971, Ser. No. 143,865  
Int. Cl. B60r 9/00

U.S. Cl. 214—450

7 Claims



A boat and equipment loading system is disclosed in which a single individual may manipulate, position, load and stow a

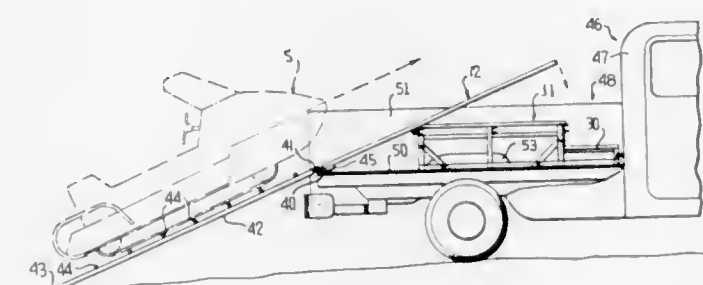


boat and other equipments at elevated heights on structures or vehicles classified as recreational vehicles inexpensively with ease and precision.

to their ends to help contain items carried on the bed, and to serve as a ramp means during loading and unloading of the trailer.

**3,720,335**  
**SNOWMOBILE LOADING AND UNLOADING**  
**DEVICE FOR PICKUP TRUCKS**  
Sonne G. Ward, P.O. Box 117, Newdale, Idaho  
Filed Nov. 5, 1971, Ser. No. 196,103  
Int. Cl. B60p 1/28  
U.S. Cl. 214—505

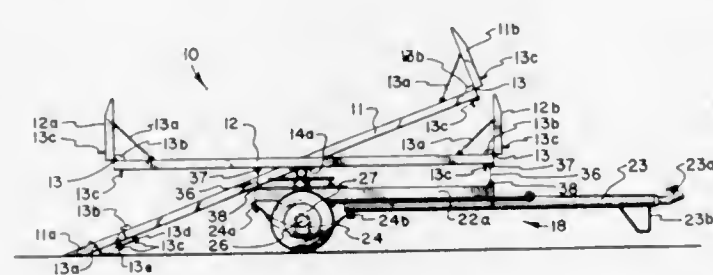
13 Claims



This disclosure relates to a device which may be readily mounted within conventional pickup trucks for the transport of snowmobiles and like vehicles and wherein the device includes a base having a platform pivotally mounted thereon, the platform engaging the rear portion of the truck bed in the tilted position thereof and having associated therewith ramp means which are connected directly to the platform and forming generally a planar extension thereof. The device provides for a relatively flat loading and unloading angle and at the same time assures full support of the vehicle at all times during the loading and unloading thereof.

**3,720,336**  
**ROTATING AND TILTING DOUBLE BED TRAILER**  
Glen W. Murray, 1519 West 4180 South, Salt Lake City, and Donald C. Coy, 1021 North 400 West, Bountiful, both of Utah  
Filed Oct. 29, 1971, Ser. No. 193,795  
Int. Cl. B60p 1/28  
U.S. Cl. 214—505

7 Claims

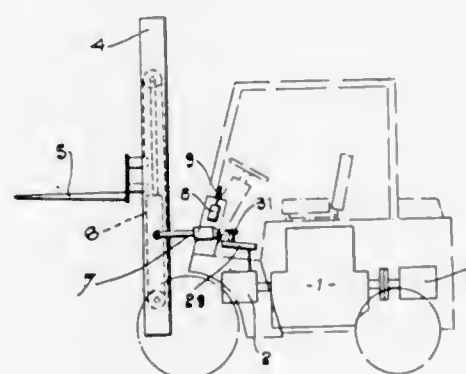


A rotating and tilting double bed trailer for use with lightweight off-the-road vehicles, such as snowmobiles, motorcycles, all terrain wheeled vehicles and the like. The trailer has a double bed that is capable of full circle rotation, and each bed tilts individually to load or unload an off-the-road vehicle. A positive locking of the tiltable beds in either a forward position or a reversed position is accomplished by a locking turntable plate on which the tiltable beds are mounted. The tiltable beds have fold-up front and rear bed extensions hinged

A vehicle having one end of a boom pivoted on a support between raised and lowered positions with an implement pivoted on the free end of the boom. First and second fluid motors respectively have first elements pivoted on the implement and the support and second elements pivoted on a link which is supported on the boom intermediate the ends. In one embodiment, the fluid rams are both located on the same side of the boom and in the second embodiment, the fluid rams are located on opposite sides of the boom.

**3,720,337**  
**LOAD HANDLING VEHICLES**  
John Warrender Franklin, Coventry, England, assignor to Total (Power Hydraulics) Limited, Pontardawe, Glamorgan, England  
Filed Mar. 19, 1971, Ser. No. 126,085  
Int. Cl. B66f 9/20  
U.S. Cl. 214—674

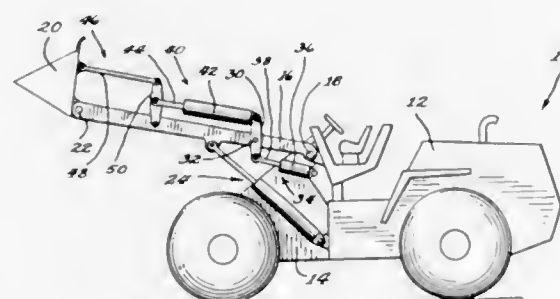
9 Claims



In a load handling vehicle, for example a fork lift truck, having a prime mover, hydraulically actuated load handling means, and a pump drivingly connected with the prime mover for supplying hydraulic fluid to the load handling means, a throttle or other power output control means of the prime mover is linked with a valve controlling actuation of the load handling means so that the power output of the prime mover is automatically increased when the load handling means is actuated.

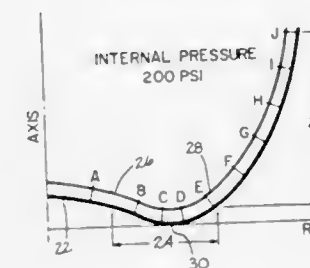
**3,720,338**  
**EARTH WORKING IMPLEMENT**  
Don R. Stout, and Jorge Klein, both of Bettendorf, Iowa, assignors to J. I. Case Company, Racine, Wis.  
Filed Oct. 26, 1970, Ser. No. 83,877  
Int. Cl. E02f 3/00  
U.S. Cl. 214—776

2 Claims



**3,720,339**  
**PLASTIC CONTAINER FOR PRESSURIZED MATERIALS-**  
**A**  
Bhupendra N. Khetani, Vernon, Conn., assignor to Monsanto Company, St. Louis, Mo.  
Filed Sept. 24, 1970, Ser. No. 75,094  
Int. Cl. B65d 1/02  
U.S. Cl. 215—1 C

6 Claims



A plastic container such as a bottle for pressurized fluent materials having a specially designed lower body portion which minimizes areas of high stress concentration generated as a result of the pressure of the contents, yet is configured such that the container is self supporting on a horizontal surface without an auxiliary part. The shape of the lower body portion is that of a modified hemisphere wherein a segmented hemispherical surface tangentially blends into an intermediate portion, the center of which defines a seating ring for the container, the radius of curvature of the intermediate portion being such that the diameter of the seating ring is between 25 to 80 percent of the diameter of the container body immediately adjacent the lower body portion. A convex central base portion is tangential to the other end of the intermediate portion. The container is preferably formed from a high tensile strength polymer, the major component of which is polymerized from a monomer having one or more nitrile groups in its molecular structure.

**3,720,340**  
**BOTTLE CONSTRUCTED OF A BLEND OF POLYMERS FROM METHACRYLONITRILE, MONO-VINYLDENE AND RUBBER COMPOUNDS**  
Yoon Chal Lee and Quirino A. Tremontozzi, Springfield, Mass., assignors to Monsanto Company, St. Louis, Mo.  
No Drawing. Continuation-in-part of application Ser. No. 776,250, Nov. 15, 1968, now Patent No. 3,615,710.  
This application Feb. 11, 1971, Ser. No. 114,690  
The portion of the term of the patent subsequent to June 24, 1986, has been disclaimed  
Int. Cl. B32b 27/30, 27/32; B65d 23/00  
U.S. Cl. 215—1 C

Disclosed herein are packaging materials having oxygen permeability of no more than 3.0 cc./100 sq. in./24 hr./atoms/mil at 73° F. and water permeability of no more than 3.0 gms./24 hr./100 sq. in./mil at 73° F. The materials are based upon interpolymers of methacrylonitrile with at least one monovinylidene aromatic compound wherein the methacrylonitrile constitutes 70-98% by weight of the interpolymer.

**3,720,341**  
**RESEALABLE HERMETICALLY SEALED AMPULES AND CLOSURE THEREOF**  
Walter Greenfield, Ardsley, and Raymond Berg, Mount Vernon, both of N.Y., assignors to Cooper Laboratories, Bedford, N.Y.  
Filed Aug. 2, 1971, Ser. No. 168,204  
Int. Cl. B65d 23/00  
U.S. Cl. 215—6

4 Claims

A resealable hermetically sealed ampule construction, and a closure adapted for use therewith, are provided. The ampule is a hollow cylindrical glass body having hermetically sealed

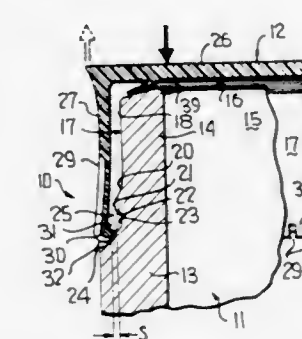
ends, and provided with scoring to facilitate opening of the ampule by breaking at the score line. The ampule is fitted with a first friction fitted cylindrical sleeve of a semirigid plastic material, such as nylon, polyethylene, or the like, provided with an annular, inwardly projecting shoulder adapted to engage with the scoring on the ampule. There is also provided a second sleeve, slidably engaged and friction fitted to the said first sleeve which serves, when slightly deformed by the user, to transmit force through the shoulder of the first sleeve to the scoring of the ampule. Such force serves to break open the ampule at the score without shattering the structure and endangering the user. The second sleeve is provided with the



means to engage the upper portion of the ampule above the score line so that the second sleeve and the ampule cap can be withdrawn by slidably removing the second sleeve from engagement with the first. Once opened the ampule can be resealed by replacing the second sleeve in engagement with the first sleeve. An optional additional feature of the ampule is the provision in the upper part of the second sleeve, above the ampule cap, of at least one additional breakable ampule. In such a fashion, analytical testing procedures and the like are greatly facilitated by the employment of hermetically sealed, precisely measured quantities of reagents, which can be employed in sequential fashion in a single, resealable ampule construction.

**3,720,342**  
**SAFETY CLOSURE**  
Peter A. Vercillo, Chicago, Ill., assignor to Continental Can Company, Inc., New York, N.Y.  
Filed Feb. 8, 1971, Ser. No. 113,559  
Int. Cl. B65d 55/02  
U.S. Cl. 215—9

11 Claims



This disclosure relates to a safety closure associated with a container having a normally open upper end portion, the closure having a peripheral skirt in telescopic relationship to the container end portion with cooperative means therebetween for normally interlocking securing the container and safety closure to each other, the periphery skirt being constructed from material having a slow rate of resilient return, and means



for temporarily radially outwardly deflecting the peripheral skirt to disengage the interlocking means whereby removal of the safety closure from the container may take place during such time as is required for the peripheral skirt to return to its normal nondeflected interlocked condition.

3,720,343

## TAMPER PROOF BOTTLE CAP

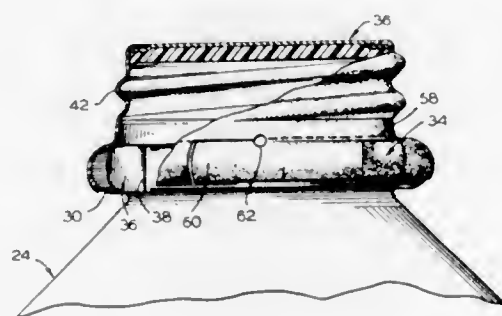
Edwin M. Irish, Jr., St. Dorids, Pa., assignor to Erin Industries, Inc., Villanova, Pa.

Filed Nov. 19, 1971, Ser. No. 200,397

Int. Cl. B65d 55/02

U.S. Cl. 215—38 A

9 Claims



A milk bottle cap, apparatus and method, especially adapted as tamperproof closures for plastic milk bottles and the like. The bottle cap comprises a laminated disc structure containing a top layer of a rigid material, preferably an impervious plastic material, an intermediate layer which can be aluminum foil or the like, and a plastic foam disc for contact with the bottle opening. The disc, when placed on the bottle opening, is then sealed in place over the bottle opening and maintained in place by a heat shrink tube which is heat shrunk around and partially over the closure disc, and sealed thereto, and having a depending skirt in intimate sealing contact with the threads on the neck of the bottle. A tear strip is provided to initially break the seal to permit removal. The heat shrink material has sufficient strength and rigidity whereby the cap can be re-engaged, after removal, on the bottle threads for reclosure of the bottle.

3,720,344

## TITLE MOLDED TRAYS WITH MEANS TO PREVENT JAMMING

Marcus de Vries, Leeuwarden, Netherlands, assignor to N. V. Leeuwarder Papierwaren Fabriek, Leeuwarden, Netherlands

Continuation of Ser. No. 795,000, Jan. 29, 1969. This application Oct. 26, 1970, Ser. No. 84,190

Int. Cl. B65d 81/16, 85/32

U.S. Cl. 217—26.5

1 Claim



A tray in the shape of a plate manufactured from fiber pulp or a similar material, particularly an egg tray is provided with means for preventing the walls of recessed portions from being jammed one on the other when stacking the plates. Between a number of recessed portions, a number of ridges or dams, disposed higher than the dams or ridges between the other recessed portions are provided. The higher dams or ridges are so distributed all over the plate surface and according to such a pattern that mutually equally designed plates, only when

turned at an angle of 180°, can be so placed one on top of the other that then only the higher ridges or dams serve as supports between two successive plates.

3,720,345

## TELEVISION BULB WITH IMPROVED STRENGTH

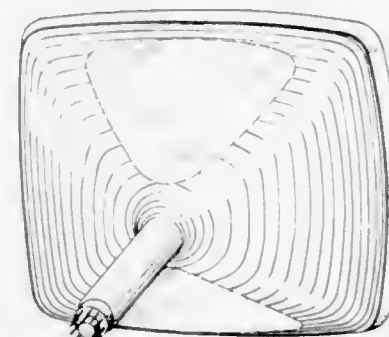
James A. Logue, Columbus, Ohio, assignor to Owens-Illinois, Inc.

Filed June 8, 1970, Ser. No. 44,016

Int. Cl. H01j 61/30

U.S. Cl. 220—2.1 A

5 Claims



A wide-angle color television picture bulb comprising a generally rectangular glass faceplate having horizontal and vertical axes, said horizontal axis being longer than the vertical axis, a substantially wide-angle hollow glass funnel having a generally tubular neck at one end, a generally tubular flaring yoke area extending from the said neck, and side walls joined to and diverging from said yoke area to a portion joined to said faceplate. The funnel side walls which extend generally parallel to the horizontal axis of the faceplate have a central portion thereof which is substantially flat in all cross sections thereof and is smoothly interconnected with the remaining portions of said side walls. The funnel side walls which extend generally parallel to the vertical axis of the faceplate have portions thereof which are substantially bowed outwardly relative to the vertical axis and side walls which extend generally parallel to the horizontal axis of the faceplate.

3,720,346

## COMPARTMENTED TRASH RECEPTACLE

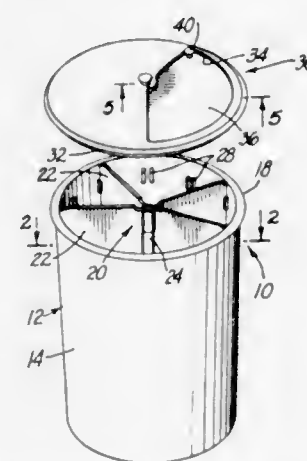
David T. Cypher, 451 East Rowland Apt. 22, Covina, Calif.

Filed Jan. 18, 1971, Ser. No. 107,132

Int. Cl. B65d 11/08, 25/06

U.S. Cl. 220—22.3

1 Claim



A compartmented trash receptacle for segregating different types of trash, such as paper, cans, glass, and so forth. The receptacle has a container with inner partitions which define separate trash compartments for the different trash materials and are adjustable to vary the sizes of the compartments. The receptacle has a cover which may be removed when the receptacle is in use in the home and has a shuttered opening which

may be aligned with each trash compartment by rotation of the cover relative to the container to permit emptying of the contents from the different compartments into different trash receivers.

3,720,347

## PACKAGING CONTAINER

Karl Heinz Stoffregen, Braunschweig, Germany, assignor to Schmalback-Lubeca-Werke Aktiengesellschaft, Braunschweig, Germany

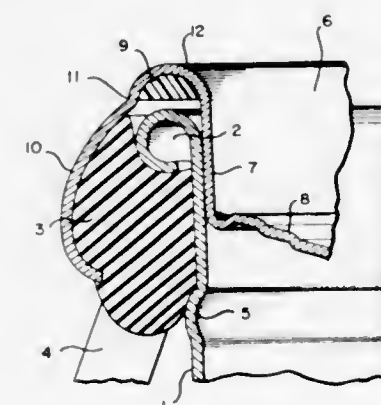
Filed Dec. 13, 1971, Ser. No. 207,316

Claims priority, application Germany, Dec. 18, 1970, P 20 62 412.8

Int. Cl. B65d 53/00

U.S. Cl. 220—46 R

9 Claims



A container of the type wherein a removable sealing ring is positioned between a container body and a closure member and forms a seal therebetween. The container has been improved to prevent leaking during cooling following heating to sterilize at which time a vacuum exists within the container by providing a second seal which is effective only when there is axial telescoping displacement of the closure member relative to the container body as may occur when a vacuum exists.

3,720,348

## OPENING DEVICE FOR CANS

Kjell Mossvoll Jakobsen, Ronnbackegatan 81, Malmo, Sweden

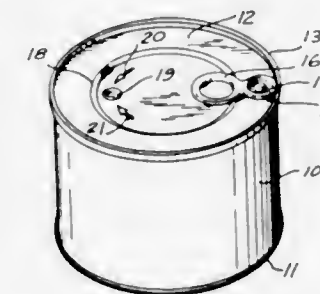
Filed June 29, 1970, Ser. No. 50,477

Claims priority, application Sweden, July 1, 1969, 9314/69

Int. Cl. B65d 17/24

U.S. Cl. 220—54

16 Claims



A vacuum sealed can which has in its top a scored area that can be pulled open by means of a pull tab and particularly a can of the type which is filled with powdered material such as coffee or dried milk, has spaced apart from the scored area a weakened preferably depressed wall portion. Piercing of this latter area prior to pulling the tab gradually releases the vacuum in the can thereby avoiding scattering of at least part of the contents of the can by abrupt release of the vacuum upon pulling of the tab.

3,720,349

## EASY OPENING CONTAINER WALL

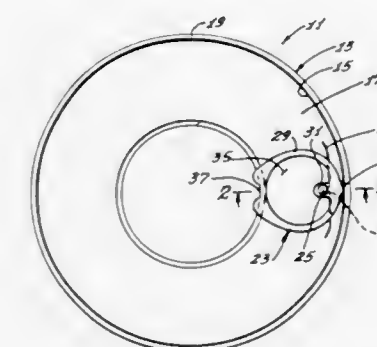
Omar L. Brown, Dayton, Ohio, assignor to Ermal C. Frazee, Dayton, Ohio

Filed Aug. 17, 1970, Ser. No. 64,291

Int. Cl. B65d 17/20

U.S. Cl. 220—54

18 Claims



An easy opening container wall including a container wall having a line of weakness therein defining a tear portion at least partially removable from the container wall and a tab affixed to the tear portion to initiate severance thereof from the container wall. The tab has a rupturing portion which overlies a location on the container wall closely adjacent the line of weakness. The tab has a hinge line which extends between said location and the region of attachment of the tab to the tear portion so that by manipulating the tab, a segment of the tear portion is forced inwardly generally about a bend line. The tear portion has a weakened region therein positioned to facilitate the inward bending of the segment about the bend line. Although various kinds of tabs may be used, the tab preferably includes a lever portion and an attachment portion joined by a connecting wall. A marginal portion of the tab is bent inwardly to form a curl having a double layer portion which is engageable with the connecting wall to support the latter. According to another feature of the present invention, the tab is made in a strip of sheet material and the carrying strip therefor is positioned at the lifting end of the tab.

3,720,350

## VENDING MACHINE

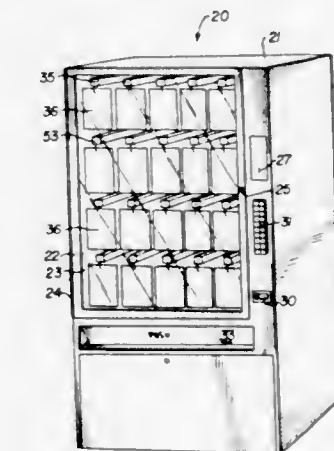
William A. Patrick, Mayflower, Ark., assignor to Polyvend, Inc., Conway, Ark.

Filed June 19, 1970, Ser. No. 47,257

Int. Cl. G07f 11/00

U.S. Cl. 221—14

7 Claims



An improved vending or dispensing machine having individually driven panel mounted replaceable dispensing modules with theft-proof merchandise supporting and dispensing means in the form of an endless carrier belt or chain having article dispensing projections.



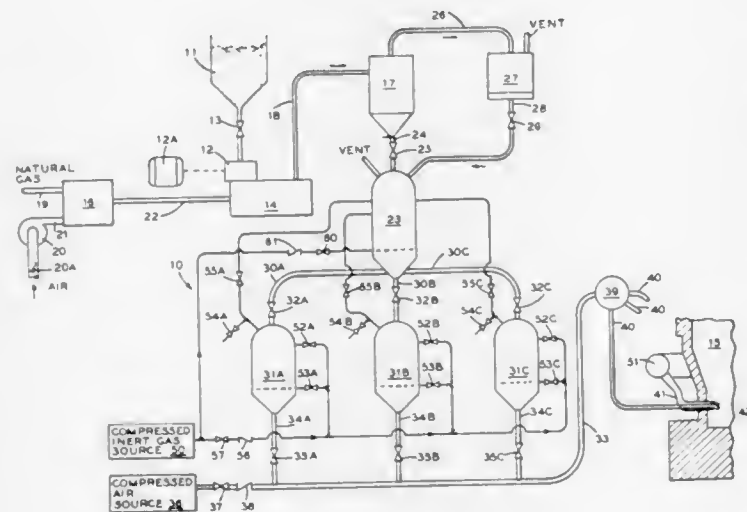
3,720,351

**PULVERIZED FUEL DELIVERY SYSTEM FOR A BLAST FURNACE**

Earl E. Coulter, Akron; Fritz L. Hemker, Wadsworth, and Elias A. Kazmierski, Akron, all of Ohio, assignors to The Babcock & Wilcox Company, New York, N.Y.  
Division of Ser. No. 799,773, Feb. 17, 1969, abandoned. This application May 6, 1971, Ser. No. 140,905  
Int. Cl. B67b 7/00

U.S. Cl. 222-1

9 Claims



A pulverized fuel delivery system for a blast furnace in which pulverized coal is delivered in dense phase fluidized form into the blast furnace from gas pressurized tanks that are placed in communication, one at a time, in cyclical sequence with a pneumatic transport means. The tank gas pressure is regulated in accordance with the blast furnace wind rate to control the weight flow rate of pulverized coal into the furnace and the transport gas flow rate is regulated in accordance with the fuel weight flow rate to maintain a prescribed transport gas flow rate per pound of coal delivered to the furnace.

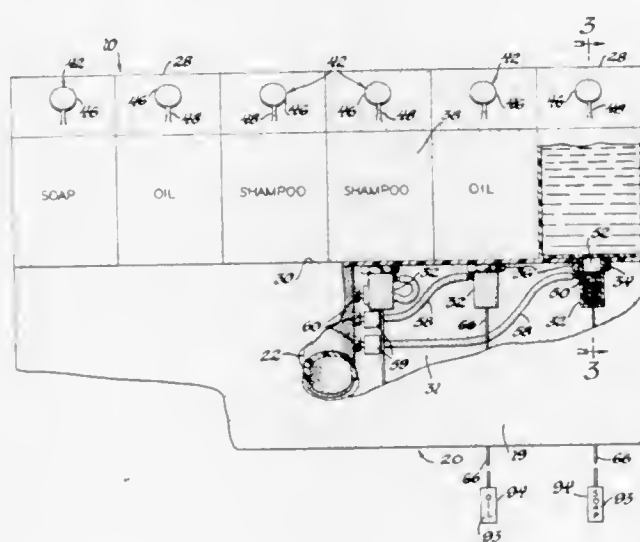
3,720,352

**DEVICE FOR SELECTIVELY DISPENSING LIQUIDS**

Robert L. Kozlowski, 29984 Woodhaven Lane, Southfield, Mich.  
Filed Oct. 15, 1970, Ser. No. 80,966  
Int. Cl. B67d 5/60

U.S. Cl. 222-132

11 Claims



A device adapted to be operated in conjunction with a shower fixture for selectively dispensing one or a plurality of

liquids into the water stream discharged by the shower nozzle. The device has a plurality of containers, each adapted to store a quantity of liquid, such as, but not limited to, a perfume, a soap, a detergent, a deodorant, an antiseptic, or other chemical substances desired by the user of the shower. Each container has a valve which is manually operated by the user to selectively dispense a predetermined amount of one or more of the liquids from their associated containers to the water stream. The containers are preferably constructed of a transparent material, such as transparent plastic, to permit the user of the shower to visually determine the amount of the liquid remaining within each container.

In one example of the invention, an even number of containers are mounted on a support member which, in turn, is carried by the shower fixture. Each of half of the containers is filled with a different liquid, such as for example, soap, oil and a perfume, while each of the remaining half of the containers duplicates the contents of each of the first containers, so that the user may, by manually operating one of the valves, dispense a defined amount of the desired liquid into the water stream and, if the user desires to double that quantity, the valve of the second container containing the same liquid may be simultaneously operated to dispense twice the quantity of the liquid.

3,720,353

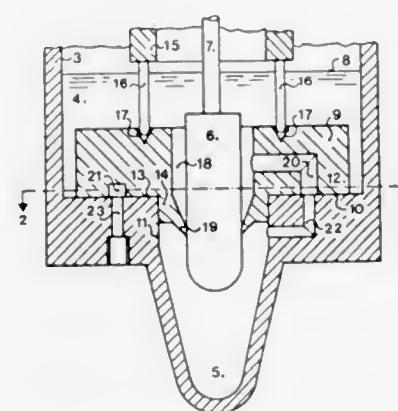
**FLUID METERING PUMP**

Christian Stettler, Lotzwil, Switzerland, assignor to Greiner Electronic AG, Langenthal, Switzerland  
Filed Jan. 19, 1972, Ser. No. 219,014

Claims priority, application Switzerland, Apr. 22, 1971, 5,873/71  
Int. Cl. B67d 5/40

U.S. Cl. 222-380

9 Claims



A fluid metering pump, including a housing containing a fluid storage chamber, a metering chamber and an outlet, reversing valve means operable between filling and dispensing positions for connecting said metering chamber alternately with said storage chamber and with said outlet, respectively, and plunger means operable in one direction to draw fluid from said storage chamber into said metering chamber and in the opposite direction to force fluid from said metering chamber outwardly of said housing via said outlet. In the preferred embodiment, the reversing valve means includes a valve body that is rotatably connected with said housing for displacement between said filling and dispensing positions, said storage and metering chambers being arranged on opposite sides of said valve body and said plunger means being axially slidable in a central through bore contained in, and coincident with the axis of rotation of, said valve body.

3,720,354

**DISPENSING MICROPIPETTE APPARATUS HAVING DISPOSABLE PARTS**

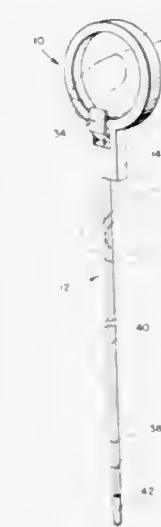
Michael E. Drummond, West Chester, and John E. Robinson, Springfield, both of Pa., assignors to Drummond Instrument Company, Broomall, Pa.

Filed Sept. 24, 1970, Ser. No. 75,203

Int. Cl. G01f 11/00

U.S. Cl. 222-386

10 Claims



This invention is a dispensing micropipette apparatus having disposable parts, which apparatus includes a capillary tube into which fluid is drawn in the desired amount by a wire plunger. The upper end of the wire plunger is releasably secured by spring means to a holder which includes a finger loop for operating the wire plunger axially within the capillary tube, for drawing fluid into, and dispensing fluid from, the apparatus in a one-handed operation. The tube and plunger contaminated by the fluid may then be dropped from the holder by operation of the spring means.

3,720,355

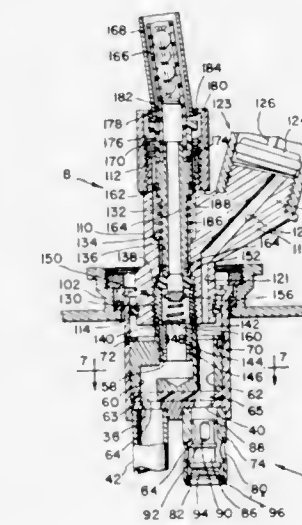
**PORTABLE BEER SIPHON DEVICE**

Mack S. Johnston, Rolling Hills, Calif., assignor to Draft Systems, Inc., Northridge, Calif.

Continuation-in-part of Ser. No. 889,485, Dec. 31, 1969, Pat. No. 3,608,790, which is a continuation-in-part of Ser. No. 819,706, April 28, 1969, Pat. No. 3,610,478. This application June 29, 1970, Ser. No. 50,822  
Int. Cl. B65d 83/00

U.S. Cl. 222-400.7

6 Claims



The device includes a keg adapter mounted within a 1 1/2 inch keg opening and a dispenser coupler secured to the keg

adapter, the adapter and coupler having gas and liquid passages for permitting ingress of gas into the keg and outflow of beer from the keg. The gas passage receives gas from a hand operated portable plunger type pump with the beer dispensing outlet including a spout. The coupler is secured to the adapter by rotating the former relative to the latter which, in turn, opens normally closed gas and liquid valves in the adapter. A liquid valve is disposed in the coupler and displacement of the spout opens the valve to permit outflow of beer therefrom.

3,720,356

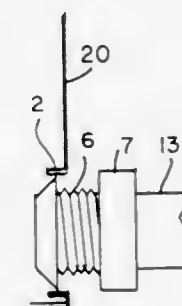
**TAPPING AND DISPENSING DEVICE FOR FLUID FILLED CONTAINERS**

Archie W. Mills, 2941 S. Michigan Ave., Apt. 514, Chicago, Ill.  
Filed Dec. 29, 1969, Ser. No. 888,334

Int. Cl. B65d 5/74

U.S. Cl. 222-569

3 Claims



This invention provides a fluid container adapted to easily and detachably mount a dispensing means in a liquid-tight relation, the container having a wall with an opening and an overlying retractable cover portion which is larger in area than the opening and sealing the opening prior to the insulation of the dispensing means, and a series of flaps integral with the wall surrounding the periphery of the opening and adapted to be deflected by the dispensing means to permit entry of the dispensing means into the container and returned to their initial position in sealing engagement with the dispensing means.

3,720,357

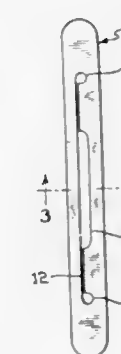
**WIRE HANGER ATTACHMENT**

Richard J. Bushon, 113 Palo Verde, Superior, Ariz. 85273  
Filed Feb. 17, 1971, Ser. No. 115,986

Int. Cl. A47j 51/08

U.S. Cl. 223-85

1 Claim



An attachment is provided to be utilized in pairs, one on each side of a conventional coat hanger, to function as a stop means for each shoulder strap of a garment. Each attachment comprises an elongated strip of thin, flexible material that can be used to secure the garment to the hanger.



flexible material with first and second circular holes disposed near opposite ends of the strip with a cut running parallel to the strip side between the two holes entering each approximately tangentially. Intermediate along the length of the cut, a widened portion is provided to facilitate introduction of the attachment onto the hanger. Each of the pair of attachments is pushed onto one hanger corner and slid inwardly until the horizontal and angled wire portions snap into place in the two holes.

3,720,358

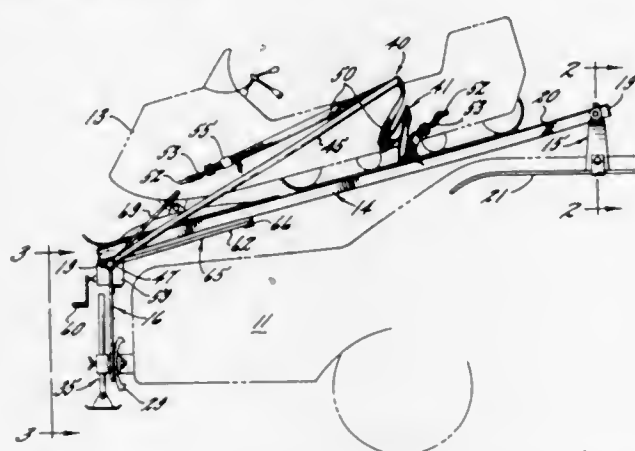
# CAR TOP CARRIER FOR SNOWMOBILES AND THE LIKE

Owen F. McIntire, P. O. Box 230, Highway 51, Mercer, Wis.  
Filed April 23, 1971, Ser. No. 136,885

Int. Cl. B60r 19/02

U.S. Cl. 224—42.08

10 Claims



A carrier for transporting a snowmobile on top of an automobile includes a support deck which is mounted on a slant generally over the trunk of the automobile and is supported pivotally at its front end by a bracket attached to the rain gutters. The back end of the deck rests over the trunk and upon an upstanding support attached to the rear bumper. A loading boom is mounted on the support to pivot between pickup and load positions by means of an actuator and includes a sling for carrying the snowmobile up onto the deck as the boom is pivoted from the pickup position to the load position. A lifter also mounted pivotally on the support is positioned to engage the underside of the deck and is operable to raise the latter into a substantially level position in order to gain access to the trunk.

3,720,359

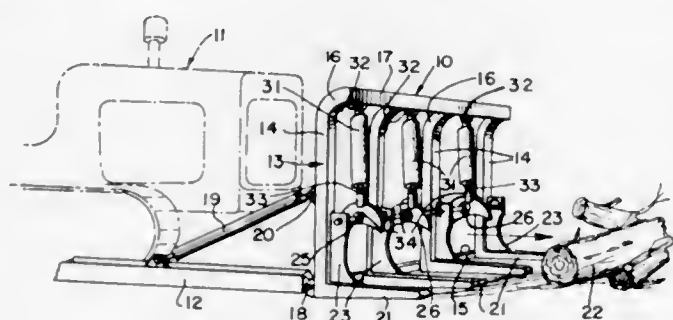
# TRACTOR-MOUNTED WOOD WASTE BREAKING APPARATUS

Ernest P. Cox, P.O. Box 154, Lolo, Mont. 59847  
Filed Oct. 14, 1971, Ser. No. 189,170

Int. Cl. B26f 3/00

U.S. Cl. 225—97

11 Claims



A mounting frame attaches directly to the customary C-frame which supports a bulldozer blade on a tractor. The mounting frame has forwardly projecting tines at its bottom and fixed vertical wood breaking teeth rise from

the tines. Cooperating vertically swingable teeth arranged between pairs of the fixed teeth are powered by overhead hydraulic rams on the mounting frame which derive power from the hydraulic system of the tractor.

3,720,360

# METHOD AND APPARATUS FOR CORRECTING THE ZIGZAG MOVEMENT OF A FLEXIBLE STRIP

Sigeru Tezuka, Shinichi Tanaka, and Seichi Taguchi,  
Asaka, Japan, assignors to Fuji Photo Film Co., Ltd.,  
Kanagawa, Japan

Filed Nov. 29, 1971, Ser. No. 202,922

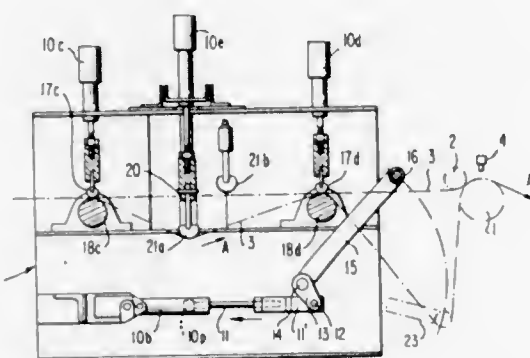
Claims priority, application Japan, Dec. 28, 1970,

46/120,324

Int. Cl. B65h 23/02

U.S. Cl. 226—3

4 Claims



A method of correcting the zigzag movement of a flexible strip as it is being transported in a longitudinal direction, which comprises the steps of forming a loop at the flexible strip supply side of the zigzag moving portion of the strip when the zigzag movement of the strip takes place while the strip is transported, tentatively stopping the transportation of the flexible strip before entering the loop, extending one side of the end of the strip in zigzag direction, and thereafter feeding the zigzag portion of the strip so as to correct the zigzag movement of the flexible strip at the zigzag moving portion while moving the zigzag moving portion of the strip. This method is performed by apparatus for correcting the zigzag movement of a flexible strip, which has a detecting portion for detecting the displacement of the position of the strip during transportation of the flexible strip, a control portion for selecting either the plus or minus of the detected signal upon receipt, and a strip extending portion for stopping the transportation of the strip for a predetermined section after forming a loop of the flexible strip at the entering side of the portion displaced at the position by the order of the control portion and for extending one side of the end of the stopped portion of the flexible strip, thereby correcting the zigzag movement of the flexible strip at the zigzag moving portion while transporting the flexible strip in a longitudinal direction at the portion displaced at the position.

3,720,361

# PROCESS AND DEVICE FOR THE PREPARATION OF A PLASTIC FIBER FLEECE

Johan P. Nommensen, Stein, Netherlands, assignor to Stam-  
icarbon N.V., Heerlen, Netherlands

Filed March 26, 1971, Ser. No. 128,401

Claims priority, application Netherlands, March 26, 1970,  
7004349

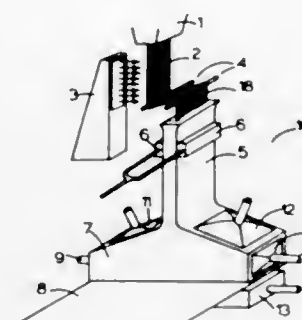
Int. Cl. B65h 17/32

U.S. Cl. 226—7

5 Claims

Process and apparatus for the preparation of a plastics fiber fleece, wherein filaments are moved towards a conveying

plane and, prior to their lying down on the conveying plane, are zigzagged by means of air flows slanting upwards which past the transducer, drive means for reversibly driving the capstan whereby to move the tape past the transducer



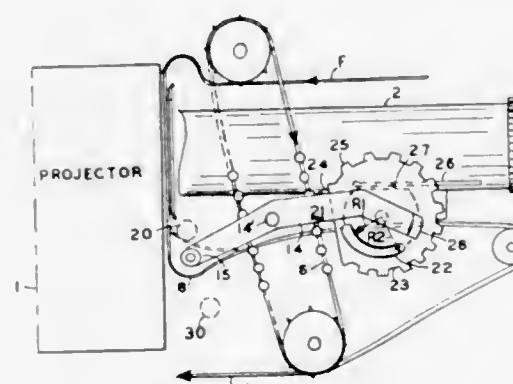
# LOOP SETTING MEANS FOR A MOTION PICTURE PROJECTOR

Robert M. Kongelka, 315 Allison Ave., Houston, Pa.  
Filed June 7, 1971, Ser. No. 150,507

Int. Cl. B65h 23/16

U.S. Cl. 226—36

3 Claims



Automatic loop setting and restoring means to restore the loop in the motion picture film on either side of the film gate. If the loop is lost and the film is pulled tight, a lever is triggered which in turn triggers a gear drive mechanism which rotates the lever to restore the loop.

3,720,363

# APPARATUS FOR OPERATING ON TAPE IN TAPE CARTRIDGES

William C. Bennett, Menlo Park, Calif., assignor to  
Novar Corporation

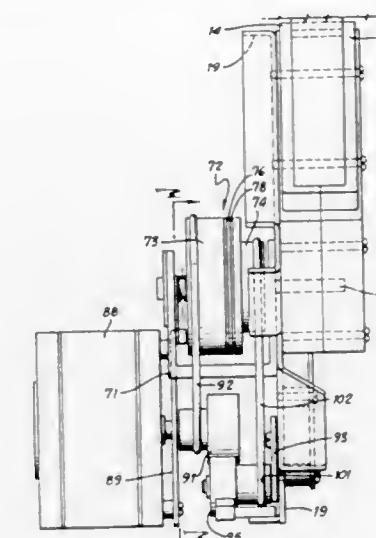
Original application Mar. 25, 1970, Ser. No. 22,619.  
Divided and this application Feb. 22, 1972, Ser.  
No. 227,757

Int. Cl. B65h 17/20

U.S. Cl. 226—51

4 Claims

An apparatus including a transducer and a capstan for operating on tape in a tape cartridge having means for receiving the cartridge and positioning the transducer with respect to the cartridge, guide means for guiding the tape



3,720,364

# TOOL FOR DRIVING AND SETTING HEADLESS NAILS OR METAL TACKS

Bruno Maestri, Via Vincenzo Toppa 26, Milan, Italy  
Continuation-in-part of Ser. No. 856,001, Sept. 8, 1969,  
abandoned. This application March 24, 1971, Ser. No.

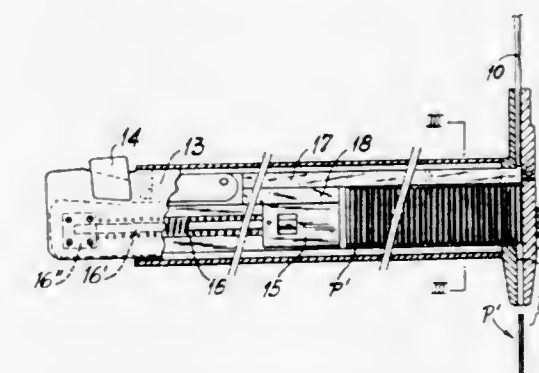
127,634

Claims priority, application Italy, Sept. 18, 1968, 21372  
A/68; Feb. 20, 1969, 13102 A/69

Int. Cl. B27f 7/14

U.S. Cl. 227—109

10 Claims



An improved tool for driving and setting headless nails or metal tacks is disclosed, comprising a driving device which is associated with a novel magazine essentially consisting of a casing closed by a slidable member, both defining therein a passage for housing and guiding a plurality of headless nails which are elastically pushed into a T-contoured ejection passage where they are driven by a ribbed and pointed ejector connected to the driving device. Moveable parts inside the magazine can partially take up or fill the passage for housing and guiding headless nails of different lengths.

3,720,365

# EMBOSSSED CONTAINER

Steve A. Unger, Chicago, Ill., assignor to Standard Oil Com-  
pany, Chicago, Ill.

Filed Sept. 21, 1970, Ser. No. 75,654

Int. Cl. B65d 1/34

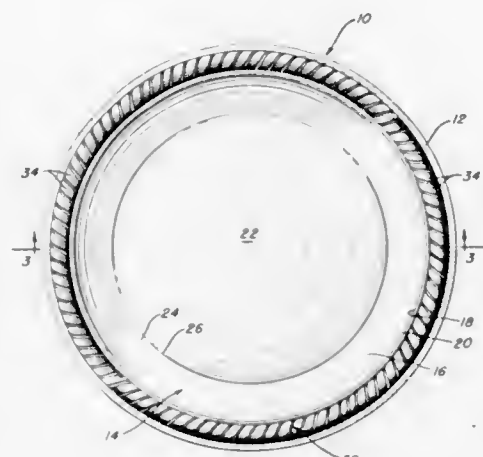
U.S. Cl. 229—2.5

11 Claims

A container made of foam plastic and having improved strength and appearance includes a rim embossed to accept



printing thereon, a sidewall integral with the inner edge of the rim at the uppermost portion of the sidewall, said sidewall the back of the bag and which has a length such that the bag can be closed by folding the flap over the pouch and pushing it



tapering inwardly and bowing outwardly slightly, and a bottom integral with the lowermost portion of the sidewall, said bottom bowing inwardly slightly.

3,720,366

BOOK FOLDER

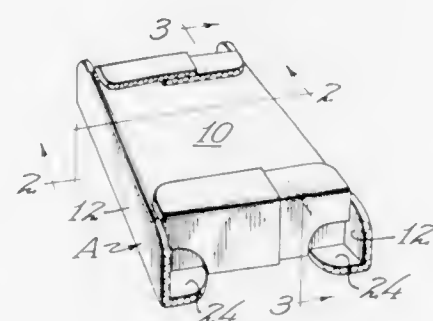
Daryl T. Martin, St. Paul, Minn., assignor to Hoerner Waldorf Corporation, St. Paul, Minn.

Filed Feb. 16, 1971, Ser. No. 115,503

Int. Cl. B65d 5/02

U.S. Cl. 229—37 E

7 Claims



A folder for books and the like includes a sleeve having top and bottom panels connected by side wall panels. Closure panels are connected to at least one of the top and bottom panels. The ends of the side wall panels and tabs connected to the top panel form right angular projections extending beyond the end closure.

3,720,367

CONTAINERS

Adrien Patrick Rayner, Alperston, England, and Bryan Gordon Howell, Willowdale, Ontario, Canada, assignors to The Metal Box Company Limited, London, England

Filed July 21, 1970, Ser. No. 56,855

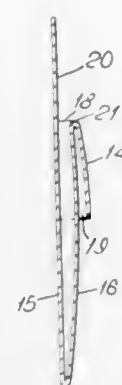
Claims priority, application Great Britain, July 23, 1969, 36,957/69

Int. Cl. B65d 33/16, 77/10

U.S. Cl. 229—62

2 Claims

A bag, particularly for coins, is made from heat-sealable film material and has a pouch adjacent to the open end of the bag and extending across the front of the bag with the mouth of the pouch directed towards the bottom of the bag. The novel feature is the provision of a free flap which extends from



indiscriminately without flattening into the pouch so that the bulk of the flap, together with the contents of the bag, retains the bag in the closed condition.

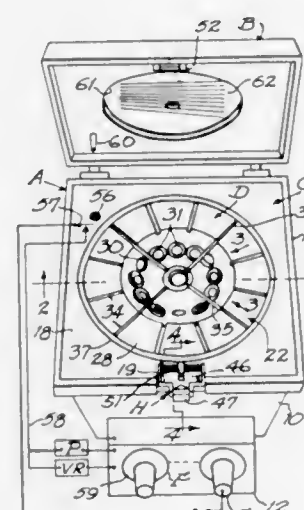
3,720,368

CENTRIFUGE WITH BLOOD SAMPLE HOLDING MEANS

Derek R. Allen, Corona del Mar, Calif., assignor to Bio-Dynamics, Inc., Santa Ana, Calif.  
Filed July 15, 1971, Ser. No. 162,829  
Int. Cl. B04b 9/12

U.S. Cl. 233—26

12 Claims



A centrifuge with a rotor adapted to simultaneously hold and centrifuge a plurality of blood separation tubes and hematocrit tubes; also provided with speed control over a wide range, from 4,000 r.p.m. for urine specimen centrifugation, up to 10,000 r.p.m. for rapid hematocrit preparation; also provided with a protective lid latch correlated with a combined brake actuator and circuit-opening switch to cut off power when the lid is lifted.

3,720,369

SOIL ANALYSIS AND DEVICE THEREFOR

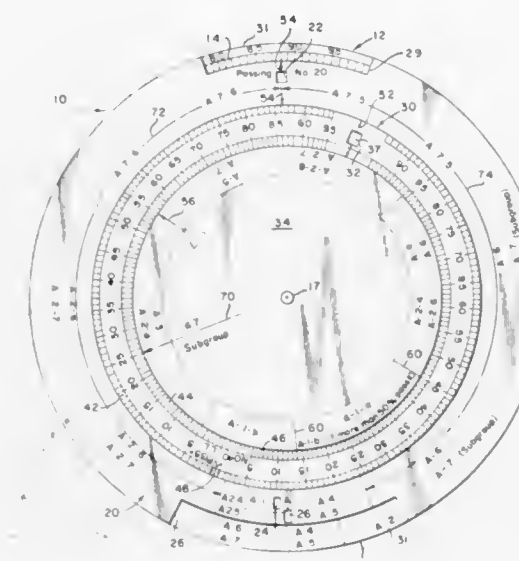
Samuel Laboy Alvarado, Esparta St. No. 60, Guaynabo, P.R.  
Filed March 24, 1971, Ser. No. 127,546  
Int. Cl. G06c 1/00

U.S. Cl. 235—78

9 Claims

A method of determining soil classification characteristics according to known grading systems to facilitate construction

of highways, airfields and the like. A computer device correlated thereto to eliminate the necessity of complex tables and



3,720,370

REMOTELY OPERABLE REGISTER RESETTNG MECHANISM

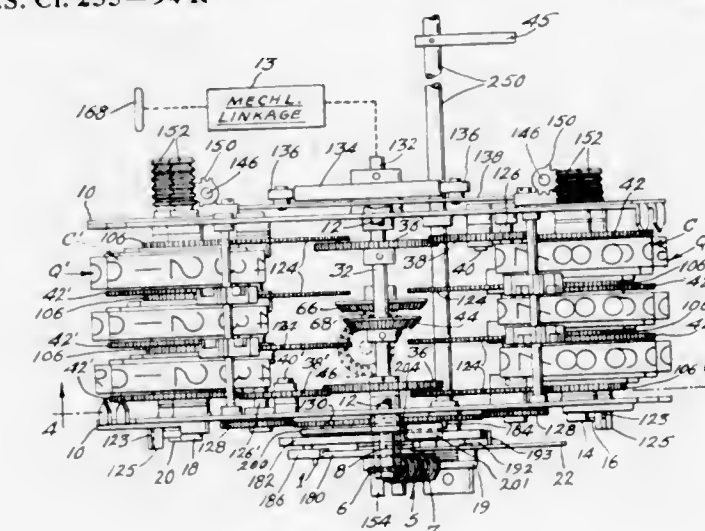
Einar T. Young, Newtown Square, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

Filed March 28, 1972, Ser. No. 238,782

Int. Cl. B67d 5/26

U.S. Cl. 235—94 R

13 Claims



A register has a plurality of groups of decimally relate number wheels which are driven during a dispensing operation to indicate the quantity and cost of a separable commodity (e.g., gasoline) being dispensed. A motorized mechanism, driven by a motor in the housing of the dispensing apparatus (which motor is energizable from a remote point), is utilized for resetting the number wheels to zero after the completion of a dispensing operation. The motor drives a shaft whose rotation releases a latch and also effects the resetting of the number wheels.

3,720,371

PILOTE SELECTOR ASSEMBLY

Gary E. Richards, Lockport, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 9, 1971, Ser. No. 206,262

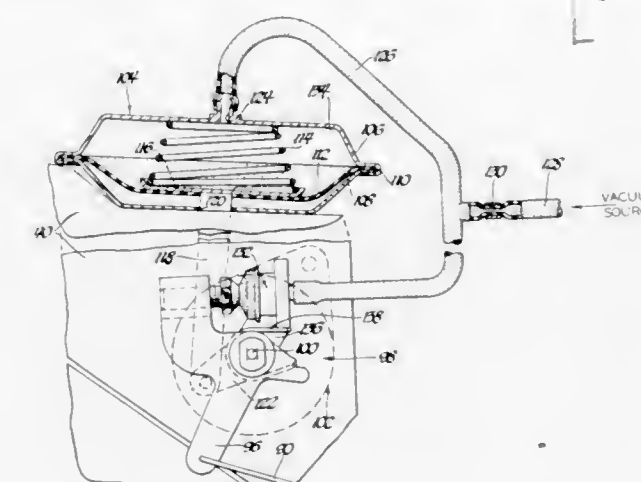
Int. Cl. F25b 29/00

U.S. Cl. 237—2 A

3 Claims

A piloted mode selector assembly for an automobile air conditioning system for remotely setting a rotary vacuum

selector valve by the movement of a dashboard control member. The control member and an air bleed valve of the mode selector are linked by a Bowden type wire. Movement of the Bowden wire corresponding to a new mode setting of the



control member opens and closes the air bleed valve which is fluidly connected to a vacuum and spring operated actuator. This varies the vacuum pressure in the actuator which rotates the vacuum selector valve and repositions the air bleed valve so as to maintain the new selector position.

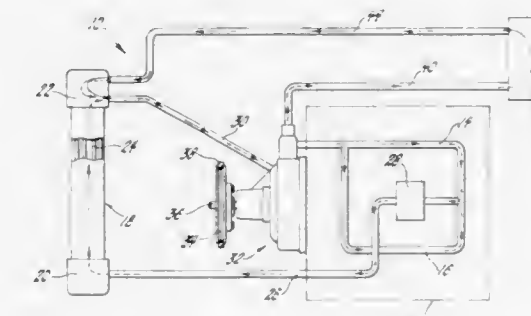
3,720,372

MEANS FOR RAPIDLY HEATING INTERIOR OF A MOTOR VEHICLE

James W. Jacobs, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.  
Filed Dec. 9, 1971, Ser. No. 206,333  
Int. Cl. B60h 1/02

U.S. Cl. 237—12.3 B

3 Claims



A heating system for an automobile passenger compartment which includes a turbine type coolant pump driven by the automobile engine to warm engine coolant and pump it through a heater in the passenger compartment. The turbine pump has a housing which defines an annular fluid passage between the pump inlet and pump outlet. Turbine buckets formed along the peripheral edge of a rotatable impeller within the pump housing move through the annular channel to heat coolant therein by means of impact of the turbine buckets upon the coolant.

3,720,373

RECIRCULATING PAINT SYSTEM OR THE LIKE

Gustave S. Levey, Houston, Tex., assignor to Gustave S. Levey, trustee, Houston, Tex.

Filed Aug. 30, 1971, Ser. No. 176,226

Int. Cl. B05b 9/00

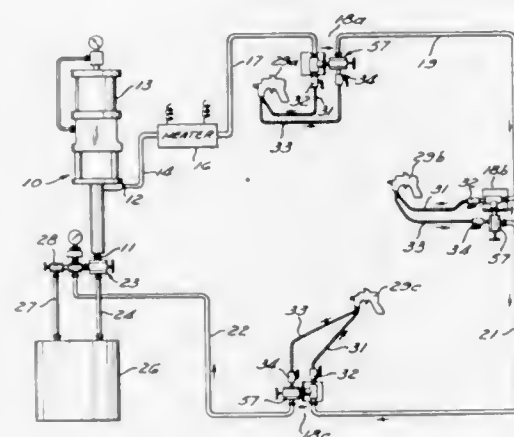
U.S. Cl. 239—127

15 Claims

A recirculating pressure system for supplying a plurality of spray guns or the like is disclosed. A single pump supplies pressurized liquid to one end of a single recirculating loop, and the recirculating liquid, after passing through the loop, returns to the pump intake. A plurality of spraying stations are



located in the loop and are connected in series. Each spraying station includes an adjustable automatic flow restriction which operates to produce a pressure drop at the associated station. A spray gun is connected to the loop at each station in parallel with the associated flow restriction. The supply line is con-



nected upstream from the flow restriction, and the return line is connected downstream thereof. The flow restrictions function to produce sufficient-pressure drop to insure recirculating flow to the associated gun while permitting a major portion of the liquid to bypass the associated gun.

3,720,374

## IRRIGATION LINE MOVE

Warren N. Ross, 2123 N. First St., Hermiston, Oreg.  
Continuation of Ser. No. 836,739, June 26, 1969, abandoned.  
This application Feb. 25, 1971, Ser. No. 119,025  
Int. Cl. B05b 3/00

U.S. Cl. 239—177

13 Claims



An irrigation line move has a pipe supported by carriages with flexible, tapered trusses below the pipe extending between the carriages with the central portions of the trusses rotatable on and slidable along the pipe. Control boxes over the carriages mount switches which are actuated by bars attached to the pipe to stop the carriages when excessive misalignment is approached. A center pivot water supply device has a flushing exit, and a slip ring connector for electrical power to electric motor drives of the carriages. The carriages have adjustable wheel supports to provide toe-in.

3,720,375

## AUTOMATIC SPRINKLING APPARATUS

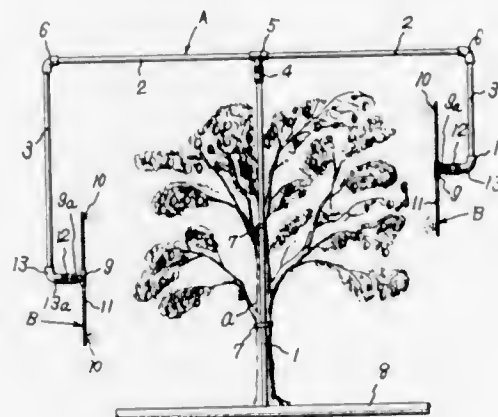
Hiromu Kumaoka, 227 Tokuda, Kibi-cho,  
Arita-gun, Wakayama-ken, Japan  
Filed Apr. 23, 1971, Ser. No. 136,893  
Int. Cl. B05b 3/00

U.S. Cl. 239—210

2 Claims

An apparatus comprising a vertical tube connected at its lower end to a source for supplying a liquid to be sprinkled, at least one horizontal tube connected to the upper end of the vertical tube and adapted to be rotated about the axis of the vertical tube so as to conduct the liquid from the vertical tube in a horizontal direction, at least one downward tube connected to the distal end

of the horizontal tube for conducting the liquid downward and jet means mounted on the lower end of the downward tube for forcing out the liquid from the downward tube while being automatically rotated or pivotally moved by the energy of the discharged liquid and causing



the reaction force of the discharged liquid to act on the horizontal tube as a torque therefor. The jets of liquid are sent out from the apparatus in highly three-dimensional manner for uniform application of the liquid to fruit trees.

3,720,376

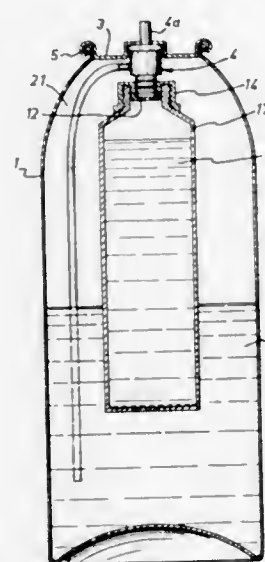
## METHOD OF ATTACHING INNERMOST OF TWO CONTAINERS TO A DISPENSING VALVE CARRIED BY THE OUTERMOST CONTAINER

Bruno P. Morane, and Pierre E. Alexandre, both of Paris, France, assignors to L'Oreal, Paris, France  
Filed June 18, 1971, Ser. No. 154,417  
Claims priority, application France, June 24, 1970, 7023382

Int. Cl. A62c 13/34

U.S. Cl. 239—308

9 Claims



Valve in outer jacket carries depending cup having bottom with annular projection and lateral projection on its side walls. This cup is ultrasonically welded to a connecting member having an annular seat into which the neck of the inner container is screwed and cemented.

3,720,377

## SPRAY GUN

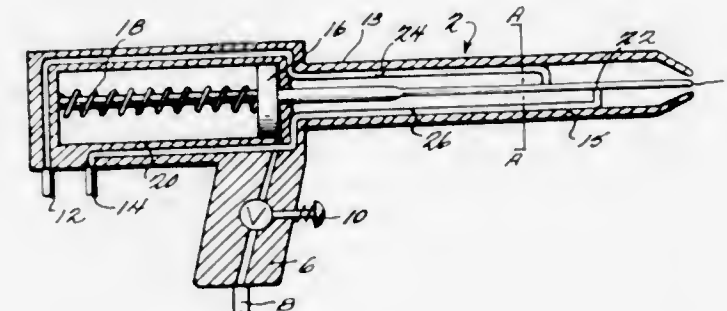
Milburn L. Hart, Tulsa, Okla., and Kerwin E. Meinert, Kansas City, Mo., assignors to Cook Paint & Varnish Company, Kansas City, Mo.

Filed Aug. 26, 1971, Ser. No. 175,161

Int. Cl. B05b 7/14

U.S. Cl. 239—336

2 Claims



A foam spray gun comprising a mixing chamber, means for supplying foam-forming components to the chamber and a discharge end for discharging a blend of foam-forming components, a fiber chopper mounted on the gun, adjacent the discharge end thereof, the chopper including an inlet for fibers and a downwardly opening discharge for chopped fibers, a cap member attached to the discharge end and forming an annular, cone-shaped passage around the discharge end, the passage being adapted to receive chopped fibers discharged from the chopper, and means for supplying air into the passage at a point beneath the discharge of fibers thereinto where by the fibers are introduced essentially annularly into the foam-forming components.

3,720,378

## QUICK CHANGE MULTI-FUEL BURNER FEED ASSEMBLY

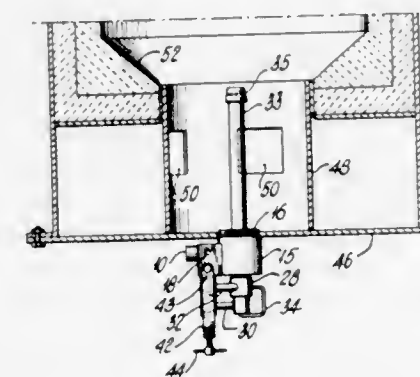
Lester W. Davis, Jr., Dover, N.J., assignor to Esso Research and Engineering Company

Filed April 2, 1971, Ser. No. 130,670

Int. Cl. A62c 31/02

U.S. Cl. 239—397

4 Claims



A quick change multi-fuel burner feed assembly comprising a manifold and adapters which permit a rapid change of fuels. The manifold is connected permanently to the burner and to the fuel and utility supplies while the adapters engage with the manifold to permit rapid change of fuel guns.

3,720,379

## TREATMENT OF DISPERSIONS

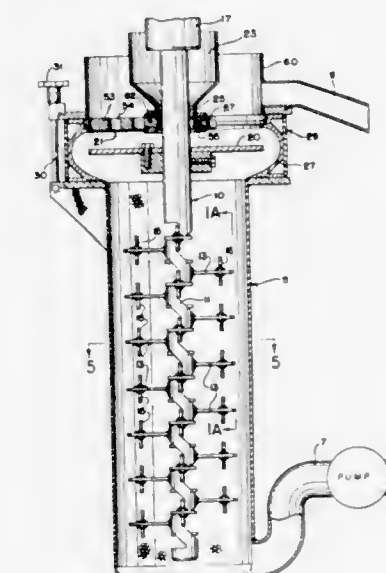
Andrew Szegvari, 201 Castle Blvd.,  
Akron, Ohio 44313

Application Jan. 19, 1966, Ser. No. 534,934, which is a continuation-in-part of abandoned application Ser. No. 407,716, Oct. 30, 1964. Divided and this application Jan. 31, 1969, Ser. No. 871,227  
Claims priority, application Netherlands, Oct. 29, 1965, 6514055

Int. Cl. B02c 17/16

U.S. Cl. 241—20

6 Claims



Material is ground to a fine slurry in a liquid by kinetically activated grinding media. The liquid flows up through the vessel containing the grinding media and then through a screen at the top. The invention relates to preventing the grinding media from collecting on the surface of the screen which separates the grinding media from the slurry of ground material. Different embodiments of the apparatus are disclosed.

3,720,380

## RECOVERY OF SALVAGEABLE COMPONENTS FROM SOLID WASTE MATERIAL

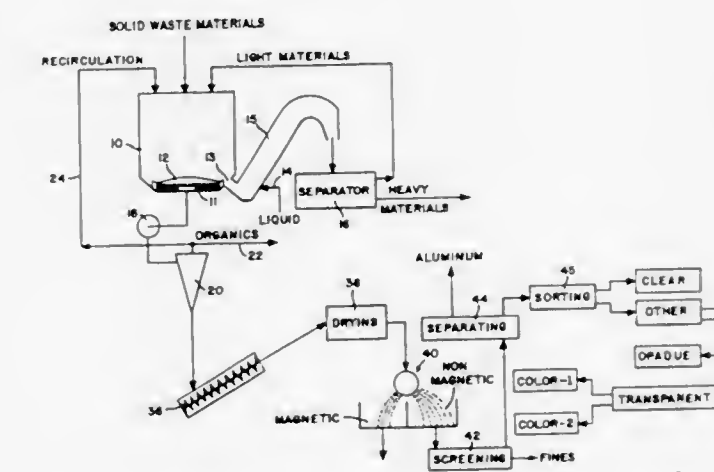
Paul G. Marsh, Hamilton, Ohio, assignor to The Black Clawson Company, Hamilton, Ohio

Filed Dec. 21, 1970, Ser. No. 99,986

Int. Cl. B02c 21/00

U.S. Cl. 241—20

8 Claims



Glass and aluminum are recovered from a mixture of solid waste, such as municipal waste, by reducing the frangible portions of the waste to a size less than a preselected maximum size, centrifugally treating the reduced portions to divide the



glass, aluminum and other inorganics from the fibrous and other organic components, separating the aluminum from the glass and other inorganics, and segregating the colorless glass from the remaining, relatively opaque inorganics.

3,720,381

## CENTERLESS WINDING OF A ROLL OF FOIL

Hans Rehme, Kirchdorf; Manfred Dienst, Misburg, and Horst Muller, Hannover, all of Germany, assignors to Hermann Berstorff Maschinenbau GmbH, Hannover-Kleefeld, Germany

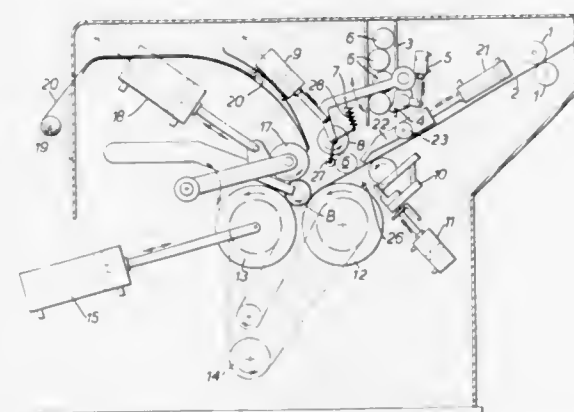
Filed Feb. 18, 1971, Ser. No. 116,475

Claims priority, application Germany, Feb. 19, 1970, P 20 07 543.8

Int. Cl. B65h 19/26

U.S. Cl. 242—56 R

2 Claims



Apparatus for the centerless winding of a roll of foil comprises a pressure roller which urges a core and the foil against a rotating contact roller to cause preliminary winding of the foil on the core. The partially wound core is then transferred to a final winding position for completion of the winding followed by wrapping.

3,720,382

## PROCESS AND APPARATUS FOR THE CONTINUOUS PRODUCTION OF SYNTHETIC THREADS

Karl Lehner, Essen, Germany, assignor to Vickers-Zimmer Aktiengesellschaft Planung und Bau von Industrieanlagen, Frankfurt am Main, Germany

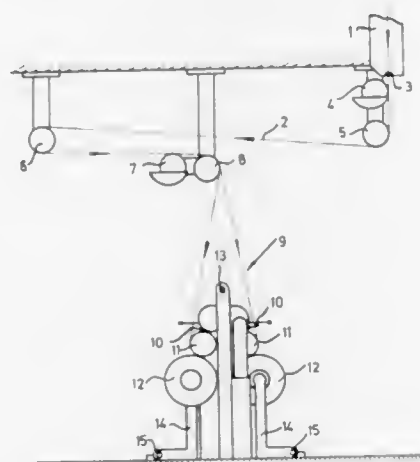
Filed Aug. 19, 1970, Ser. No. 65,007

Claims priority, application Germany, Aug. 28, 1969, P 19 43 658.9

Int. Cl. B65h 54/02, 57/00; D01d 11/04

U.S. Cl. 242—35.5 R

11 Claims



A process for the continuous production of a large number of synthetic threads wherein the thread path after leaving the spinning shaft up to the preparation godet extends horizontally. Moreover, the thread path from the moistening godet to the winding spool preferably extends

more than five meters. Apparatus for carrying out the process is also described.

3,720,383

## TIMED SUPPLY ROLL BRAKING

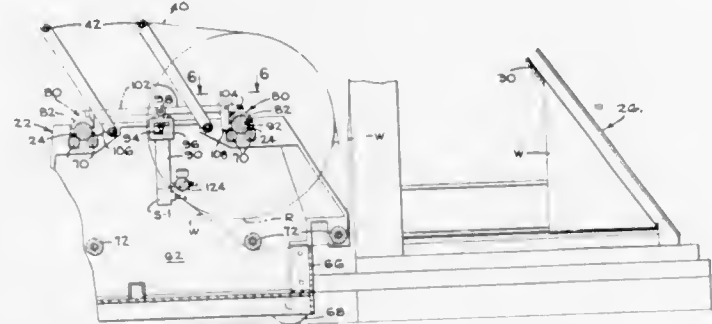
Donald C. Crawford, Green Bay, Wis., assignor to FMC Corporation, San Jose, Calif.

Filed Feb. 18, 1971, Ser. No. 116,324

Int. Cl. B65h 25/22, 25/04

U.S. Cl. 242—75.44

9 Claims



Apparatus for controlling the web tension in an intermittent motion web handling machine, and including a timed-controlled brake for the web supply roll to prevent inertia override of the supply roll when the web demand ceases during a temporary interruption of the operating cycle or when the machine is shut down. Web tension between web draw rolls and the supply roll is controlled during machine operation by a supply roll drag brake system. A dancer roll assembly regulates the speed of the web draw rolls, and also serves to accumulate and pay out the web according to web demand at a downstream processing station where the web is intermittently driven. The timed braking action is provided to assure that the web accumulated during cycle interruption or shutdown is sufficiently tensioned to enable a normal resumption of the production cycle.

3,720,384

## YARN CONTROL DEVICE

Karl Isac Rosen, Villa Haga, Ulricehamn, Sweden

Continuation-in-part of Ser. No. 734,956, June 6, 1968,

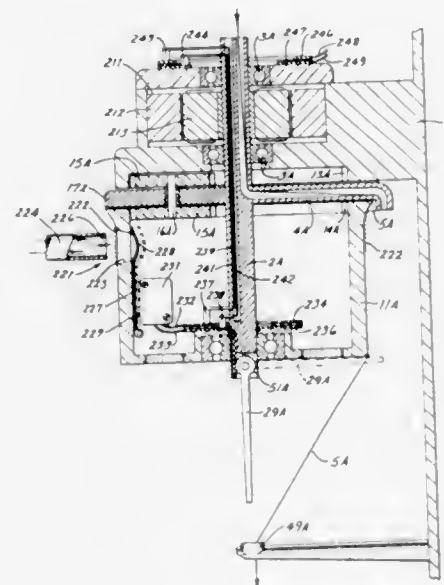
abandoned. This application May 27, 1971, Ser. No. 147,587

Claims priority, application Sweden, Oct. 20, 1967, 14374/67

Int. Cl. B65h 51/02

U.S. Cl. 242—47.01

9 Claims



A yarn feeder having a slotted spool body on which yarn is wound for forming a yarn reserve. Winding means associated

with the spool body selectively permits further windings of yarn to be wound onto said spool body. The yarn feeder includes sensing means associated with the yarn reserve and the slots for causing further yarn windings to be wound on the spool body whenever the yarn reserve falls below a predetermined minimum size. The sensing means includes a nozzle disposed adjacent the spool body for directing an air stream through the slots, which slots are partially covered by the windings of the yarn reserve so that the magnitude of the air stream passing through the slots is related to the number of windings contained in the yarn reserve. The sensing means also includes a device disposed adjacent the other end of the slots and responsive to the magnitude of the air stream flowing through the slots for controlling the winding means. The responsive device, in the disclosed embodiment, includes an operating member responsive to the air stream and connected to a switch for controlling the operation thereof, which in turn controls the relative rotation between the spool body and the winding means.

3,720,385

## CONSTANT TENSION WINDING APPARATUS

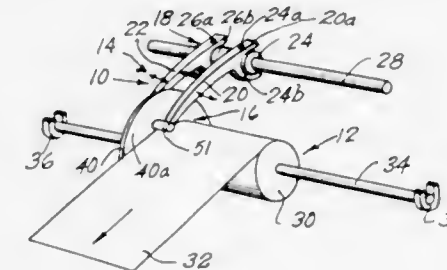
Henry N. Staats, Deerfield, Ill., assignor to General Binding Corporation, Northbrook, Ill.

Filed Nov. 9, 1970, Ser. No. 87,797

Int. Cl. B65h 25/28

U.S. Cl. 242—75.45

3 Claims



A simple, inexpensive, all-mechanical apparatus which provides a varying force relationship on a roll means that automatically and exactly compensates for the depletion or increase of the material wound on a roll comprises a web roll means, a web tensioning means for applying tension to the web, and a sensing means coupled with the web tensioning means on a movable follower arm means. The web tensioning means includes a brake disc and a brake means contacting the disc and applying a braking force to the disc at a point generally along a radius thereof as determined by the movement of the sensing means in contact with the outer peripheral surface of the roll. The follower arm means is generally tangentially oriented with respect to the roll and is arranged so the brake friction moves the sensing means against the roll outer surface. In the embodiments shown the brake means and sensing means may be on the same or opposite ends of the follower arm means.

3,720,386

## FISHING REEL WITH CLUTCH

Bengt O. J. S. Morner, Ryetvagen 9, Hovas, Sweden

Filed May 26, 1970, Ser. No. 40,637

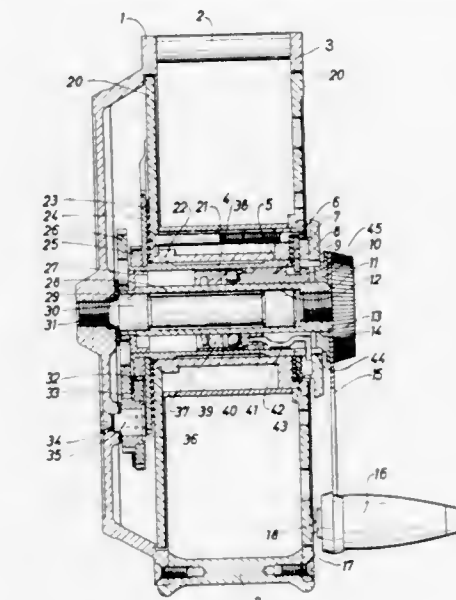
Int. Cl. A01k 89/02

U.S. Cl. 242—217

4 Claims

The present invention relates to a fishing reel comprising a frame, a drive shaft rotatably journaled in said frame, a crank for rotating said drive shaft, a line spool rotatably journaled in said frame and for receiving a line to be wound up in a predetermined direction, a

drag clutch providing drive connection between said drive shaft and said line spool, said drag clutch comprising a first clutch element in driving connection with said drive shaft, a second clutch element in driving connection with said drive shaft and axially displaceable relative to the first clutch element, spring means for forcing said second



clutch element towards said first clutch element, and friction surfaces provided on said line spool between said first and second clutch elements, means provided for displacing said displaceable second clutch element against the action of said spring means when the drive shaft rotates in a direction opposite to the predetermined direction in which the line is wound up.

3,720,387

## ROTARY WING SYSTEM

Robert E. Foote, Lake Dallas, Tex., assignor to Viking Aircraft Corporation, Irving, Tex.

Division of Ser. No. 776,111, Nov. 15, 1968, Pat. No.

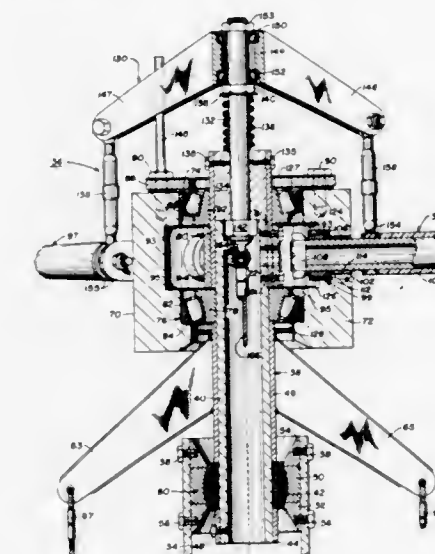
3,556,674, which is a continuation-in-part of Ser. No. 578,695, Sept. 12, 1966, abandoned. This application Aug. 28, 1970,

Ser. No. 67,701

Int. Cl. B64c 27/52

U.S. Cl. 244—17.25

13 Claims



A rotary wing system for aircraft which comprises a rotatably mounted hub, and a plurality of blades each connected to the hub for rotation therewith by a respective ball joint to permit movement about three coordinate axes including the longitudinal axis of the blade. Blade pitch control means rotatable with the hub is connected to the blades to



hold each blade in predetermined position with respect to its longitudinal axis as the blades are rotated. The blade pitch control means is longitudinally spaced from the hub and mounted for reciprocable movement in a plane parallel to the longitudinal axis of the hub. The blade pitch control means includes a linkage connected to each blade at a point spaced from the blade's ball joint connection to the hub and spaced from the longitudinal axis of the blade.

3,720,388

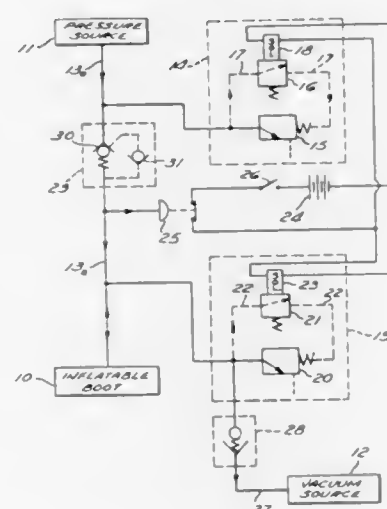
# METHOD OF AND APPARATUS FOR CONTROLLING A DEICER BOOT SYSTEM

Herbert W. Kaatz; Charles B. Small, and Arthur G. Branch, all of Elyria, Ohio, assignors to Airborne Mfg. Co., Elyria, Ohio

Filed March 6, 1970, Ser. No. 17,129  
Int. Cl. B64d 15/18

U.S. Cl. 244—134 A

14 Claims



A method of and apparatus for controlling an inflatable aircraft deicer boot and a boot system. A principal feature involves inflating the boot until a predetermined boot pressure is reached normally independently of the time required. Pneumatic control apparatus disclosed involves self-energizing, fast-acting valves adapted to be controlled by electrically actuated means. The method and apparatus of the invention disclosed are suitable for use in connection with conventional deicer boots and engine-driven pressure and vacuum sources.

3,720,389

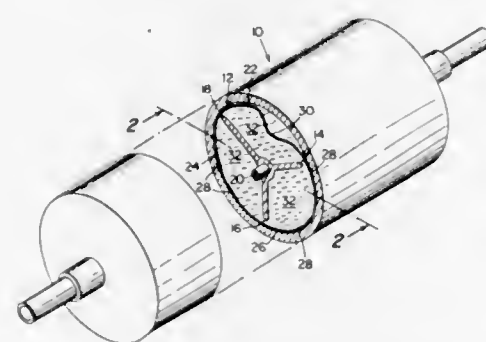
# EXPULSION BLADDER

Delacy F. Ferris, Van Nuys, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Oct. 22, 1970, Ser. No. 83,056  
Int. Cl. B64d 37/24

U.S. Cl. 244—135 B

3 Claims



A missile fuel tank having a three lobed bladder supported by an internal structural framework with two lobes of the bladder bonded to the fuel tank wall. This arrangement

prevents flexing of the bladder upon acceleration of the vehicle and aids in maintaining missile stability.

3,720,390

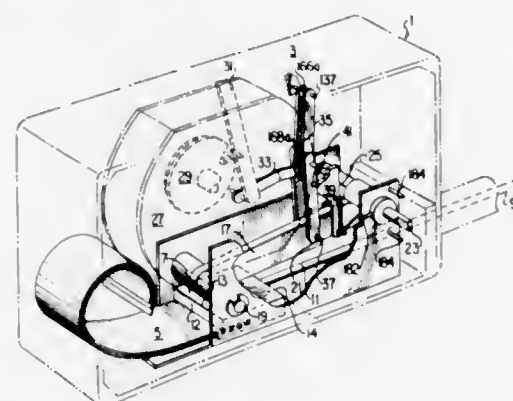
# PARACHUTE RELEASE DEVICE AND METHOD

Arthur R. Kurle, McLean, Va., assignor to Halliburton Company, Duncan, Okla.

Filed Feb. 12, 1971, Ser. No. 114,896  
Int. Cl. B64d 17/54

U.S. Cl. 244—149

24 Claims



A parachute release device with a delayed releasing means for selectively providing a release initiating stroke through a substantially constant force power spring acting on a parachute ripcord. A housing contains a function control assembly for providing various release initiating conditions, the control assembly allowing the cocking of the power spring provided the delayed releasing means is preset to its proper condition. The function control assembly contains two cam sections for both selectively preventing the cocking of the power spring and for controlling release of the spring. A slide block permanently attached to the spring and having a cam engageable retaining edge cooperates with a sear having a locking edge, which selectively holds the spring in a cocked position, and with a blocking mechanism having a blocking edge for selectively preventing cocking of the spring. A safe condition is provided wherein the sear is cammed into a locked condition to prevent release regardless of the position of the delayed releasing means. An additional safety feature comprising a pull-pin assembly is provided to selectively stop the operation of the delayed releasing means, at the option of the parachutist. The entire assembly is mounted on the parachutist's harness with its operating end being connected to the parachute ripcord.

3,720,391

# BAND OF PARALLEL, OPPOSITELY CURBED CHAINS SOLDERED TOGETHER AT THE LINK SOLDER JOINTS

Hans Gustav Erik Wahlbeck, Stallarholmen, Sweden, assignor to Firma Erik H. Wahlbeck, Stallarholmen, Sweden

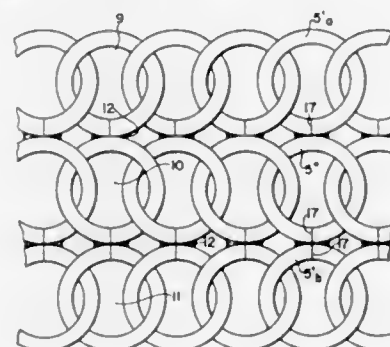
Filed June 15, 1971, Ser. No. 153,351

Claims priority, application Sweden, June 15, 1970, 8275/70

Int. Cl. B21f 31/00

U.S. Cl. 245—4

3 Claims



Bracelets, necklaces, etc., are composed of rows of flattened link chains adjacent to each other in parallel formation,

adjacent links of adjacent chains being soldered together at their abutting edges, the links of each chain being screwed, or curved in opposite directions relative to the links of each adjacent chain such that the adjacent circumferential portions in the abutting edge areas of soldered links in adjacent chains are of corresponding screw bends relative to the plane of the band, the links contained in the chains being formed of bent pieces of wire the ends of which are soldered together to form closed links, the soldered end joints in each of said links being located adjacent the link of an adjacent chain such that the soldered end joint of each link is within a soldered connection between adjacent links of adjacent chains.

3,720,392

# VIBRATION-DAMPENING DEVICE FOR A FLOOR-MOUNTED VIBRATING MECHANISM

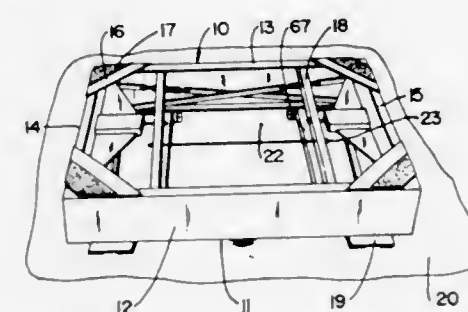
Carl J. Kulander, P.O. Box 2144, Concord, Calif. 94521

Filed Apr. 30, 1971, Ser. No. 138,958

Int. Cl. F16f 15/06

U.S. Cl. 248—20

10 Claims



A vibration-dampening device for a floor-mounted vibrating mechanism is provided including an outer frame member adapted to rest on the floor and support the vibrating mechanism thereon. The device includes an inner leveling vibration and impact shock-absorbing mechanism for absorbing vibration and impact on the frame member. Means are provided for transmitting vibration from the vibrating mechanism mounted on the frame member to the shock-absorbing mechanism.

3,720,393

# ENERGY ABSORBER FOR ARRESTING MOVEMENT OF LOADS

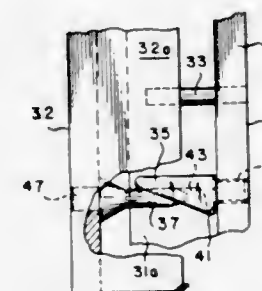
John P. Hanlon, Jr., Scott Road, Concordville, Pa.

Filed July 7, 1971, Ser. No. 160,350

Int. Cl. B45j 1/22

U.S. Cl. 248—361 A

8 Claims



The device is designed to provide a hold down for cargo, seats, vehicle components, and the like subject to inertial forces due to sudden changes in velocity of the vehicle in which the cargo, etc., is being transported; parallel rails define a tie down attaching cargo, seat, vehicle body or the like, to the basic structure; the rails being secured in relative positions by shear pins or rail anchors permitting relative movement within specified limits. Upon a sudden velocity change of the carrier, for example in a crash, the inertia of the load creates a force vector which moves one rail with respect to the other,

when this occurs the movement of the rails is arrested by a deformable energy absorbing cup and pin structure to a predetermined limit after.

3,720,394

# REDEYE MISSILE GUNNER STANCHION

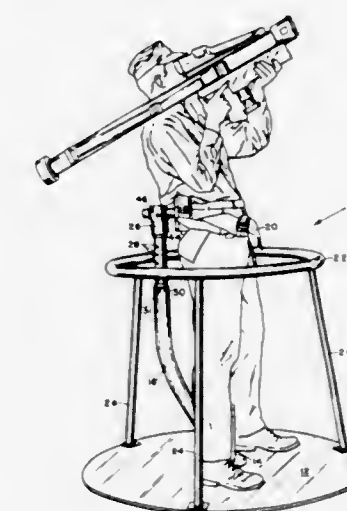
Frederick B. Barrett, Camarillo; Peter A. Nielsen, Ventura, and Delmer W. Hrabec, Thousand Oaks, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed May 24, 1971, Ser. No. 146,259

Int. Cl. A47g 29/00

U.S. Cl. 248—125

3 Claims



A rotatable gunner's support including a pedestal mounted on a ship's deck and having an upright bearing from which extends an offset vertical standard. A back rest is connected to the upper end of the standard and is equipped with a safety belt.

3,720,395

# CLIP FOR SECURING CONDUIT BOXES TO METAL DRY WALL STUDS

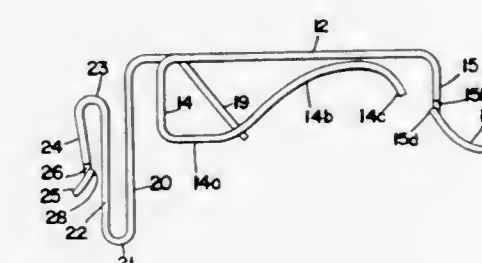
Jerome T. Schuplin, Parma Heights, Ohio, assignor to Fastway Fasteners, Inc., Lorain, Ohio

Filed Aug. 18, 1971, Ser. No. 172,842

Int. Cl. H02g 3/08

U.S. Cl. 248—205 R

12 Claims



A one-piece clip is provided which can be quickly and easily secured to the flange of a channel stud and to a conduit box without the aid of fastening means other than that which is an integral part of the clip. The clip has incorporated therein means for compensating for dimensional differences in parts of the stud, and barb-like means for engaging the web of the stud and the side walls of the conduit box to aid in preventing displacement of the clip relatively to the stud and box.



3,720,396

**TILT MECHANISM FOR CHAIRS OR THE LIKE**

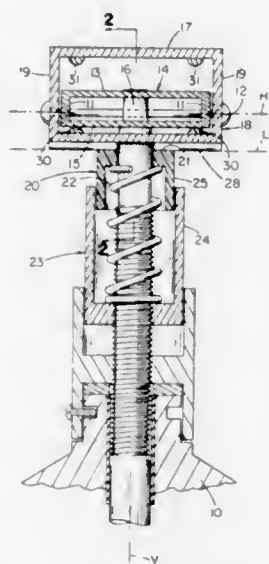
Roy O. Gilbert, Gardner, Mass., assignor to Collier-Keyworth Company, Gardner, Mass.

Filed Sept. 27, 1971, Ser. No. 183,976

Int. Cl. A47c 3/026

U.S. Cl. 248—378

7 Claims



A tilt mechanism for a chair or the like including an upright spindle having a headpiece and a supporting member surrounding the headpiece, pivotally mounted thereon for rearward rocking movement. The bottom of the supporting member has a curved cam surface and there is provided a nylon operating member axially slideable on the spindle and having a generally flat upper cam surface in contact with the curved cam surface of the supporting member. A bushing is threadably mounted on the spindle below the operating member for adjustable movement therealong and a compression spring surrounds the spindle interposed between the bushing and the operating member urging the supporting member into its normal position.

3,720,397

**MOLDING STRUCTURE FOR CASTING ARTICLES HAVING A NEGATIVE DRAFT PORTION**

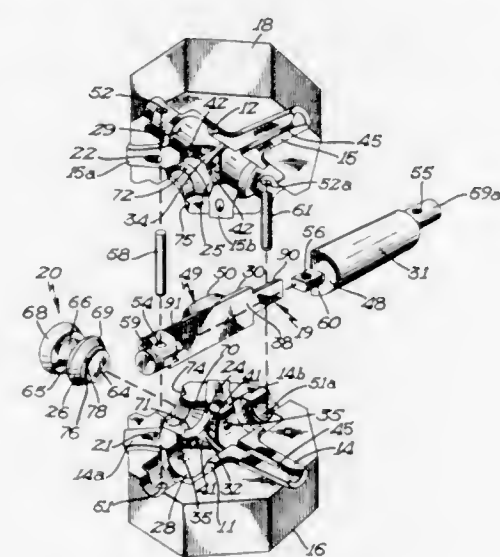
Lawrence R. Voegelé, Owatonna, Minn., assignor to Jostens, Inc., Owatonna, Minn.

Filed Mar. 1, 1971, Ser. No. 122,623

Int. Cl. B22c 9/24

U.S. Cl. 249—57

4 Claims



An improved molding structure which includes a molding surface comprised partially of a rigid material and partially of a flexible, resilient material, facilitating the molding of articles having surfaces with a negative draft

and the removal of the same from said molding structure without the destruction or permanent distortion of either the article molded or the molding structure which utilizes the desired characteristics of both a rigid material and a flexible material mold.

3,720,398

**UNIFORM TENSION LOAD BINDER**

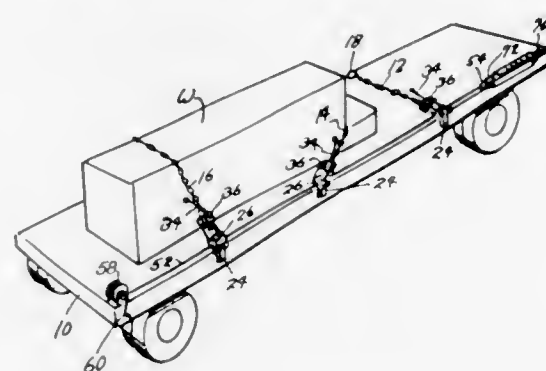
Frederick G. J. Grise, West Brookfield, Mass., assignor to Pioneer Coveralls, Inc., North Oxford, Mass.

Filed April 15, 1971, Ser. No. 134,385

Int. Cl. B66f 1/00; B66d 1/00

U.S. Cl. 254—51

9 Claims



A series of load binders arranged to be operated by a single cable and including means, i.e., pulleys, for applying equal tension to all of the load binders which are arranged in series along a support upon which articles to be held down are arranged.

3,720,399

**GROUNDING DEVICE FOR BUNDLE CONDUCTOR STRINGING BLOCKS**

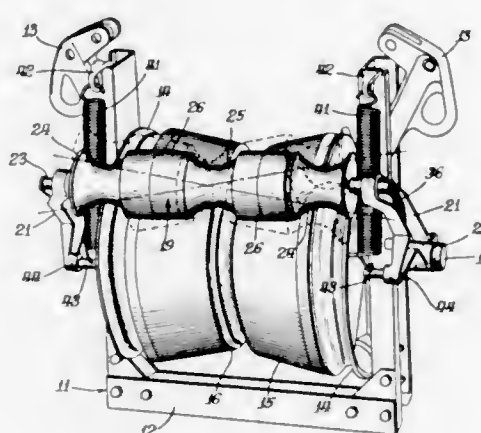
Hoyt W. Bozeman, Jr., Chattanooga, Tenn., assignor to Sherman &amp; Reilly, Inc., Chattanooga, Tenn.

Filed Oct. 27, 1970, Ser. No. 84,372

Int. Cl. B24b 5/00

U.S. Cl. 254—134.3 PA

5 Claims



Grounding device for a bundle stringing block having a plurality of coaxial sheaves rotatably supported by a frame which comprises a metal grounding roller spaced from the periphery and aligned with each sheave, a laterally extending shaft rotatably supporting the grounding rollers, an arm articulately connected with each end of the roller shaft and pivoted on the frame coaxially with the sheaves, springs connected at their upper ends to the frame and at their lower ends to each arm at a point between its pivot and the roller shaft and offset downwardly to provide a moment arm about the roller pivot variable in length in response to roller arm movement to maintain substantially constant the lifting force on each grounding roller despite relative variations in conductor ten-

sions, and means for electrically connecting a roller arm with the roller shaft.

3,720,400

**CABLE DRUM GEAR APPARATUS**

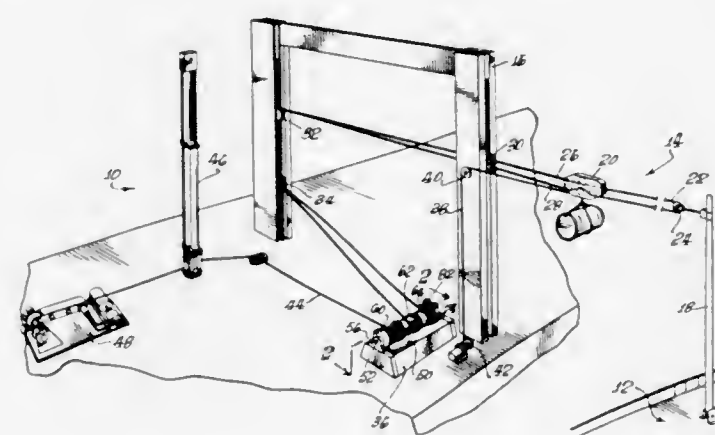
Harold L. Potts, Toronto, Ontario, Canada, assignor to The Garrett Corp., Los Angeles, Calif.

Filed Nov. 25, 1970, Ser. No. 92,739

Int. Cl. B66d 1/48

U.S. Cl. 254—172

9 Claims



A self-propelled load-carrying vehicle traverses between supply and receiving vessels at sea, on a closed loop highline of two cable whips terminating at one of the vessels on a pair of drums mechanically interconnected by a differential gear assembly whose spider is coupled to a third drum having a cable coupled to a ram tensioner. In one vehicle docking mode rotation of one of the drums may be restrained by a brake mechanism, leaving the other drum to take in or pay out its cable whip in accordance with relative motion between the two vessels. In a second docking mode both drums take in or pay out both cable whips equally in accordance with relative motion between the two vessels.

3,720,401

**PLASTIC FENCE POST**

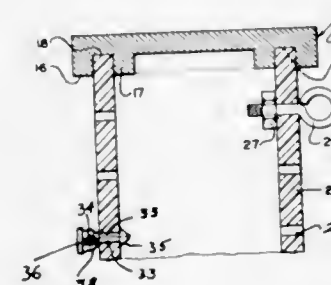
George N. Loch, Box 14, Glendon, Alberta, and Alphonse Loch, R.R. 2, Tofield, Alberta, both of Canada

Filed Dec. 29, 1970, Ser. No. 102,358

Int. Cl. E04h 17/24

U.S. Cl. 256—19

1 Claim



A hollow plastic fence post has a detachable steel driving cap and a detachable decorative cap used after driving. Corrugations around the lower end prevent displacement of the post after driving and apertures through the walls permit attachment of wire or wood straps to which fence rails may be nailed.

3,720,402

**ULTRASONIC CLEANING DEVICE FOR FRAGILE HEAT-SENSITIVE ARTICLES**

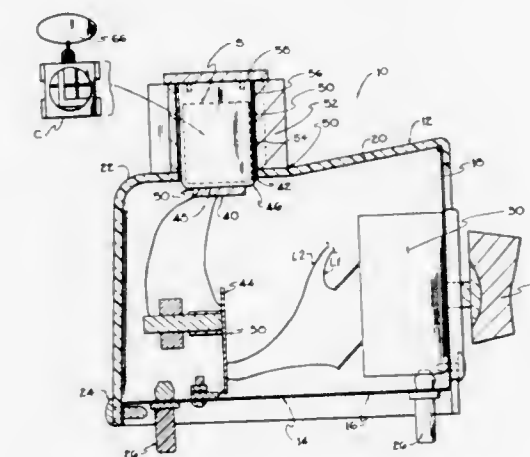
Millard M. Cummins; Thomas E. Hankins; Robert Best, and Frederick Biesecker, all of Columbus, Ohio, assignors to Sonics, Inc., Columbus, Ohio

Filed July 9, 1971, Ser. No. 161,050

Int. Cl. B01f 11/02; B08b 11/02

U.S. Cl. 259—72

7 Claims



The described device includes a glass receptacle for the articles to be cleaned, e.g. soft contact lenses. A piezoelectric crystal is secured to the bottom of the receptacle. An annular heat sink, e.g. of aluminum, surrounds the receptacle. The circuitry for operating the crystal, and an automatic timer for turning off the device after completion of an established cleaning time are disposed in a housing upon which the receptacle is mounted. The receptacle is normally filled with a cleansing solution such as saline solution, and the articles to be cleaned may be placed in a foraminous container to permit their easy retrieval from the receptacle.

3,720,403

**FUEL-INJECTION CARBURETORS HAVING FUEL REGULATOR**

Knut Ludvig Winquist and Sture Anders Backman, Orebro, Sweden, assignors to Johan H. Graffman, Villa Sollmar, Benicasim, Castellon, Spain

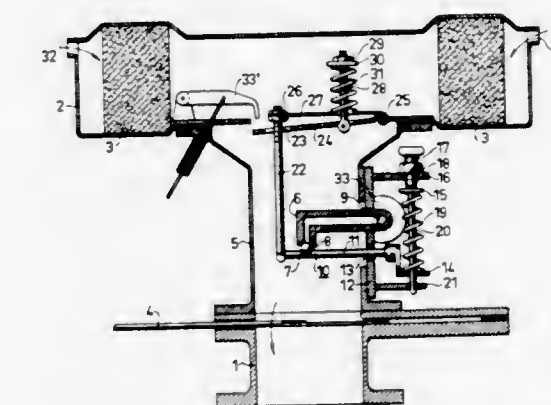
Continuation-in-part of application Ser. No. 615,994, Feb. 14, 1967. This application Feb. 5, 1969, Ser. No. 796,877

Claims priority, application Sweden, July 3, 1968, 9,179/68

Int. Cl. F02m 9/08

U.S. Cl. 261—50 A

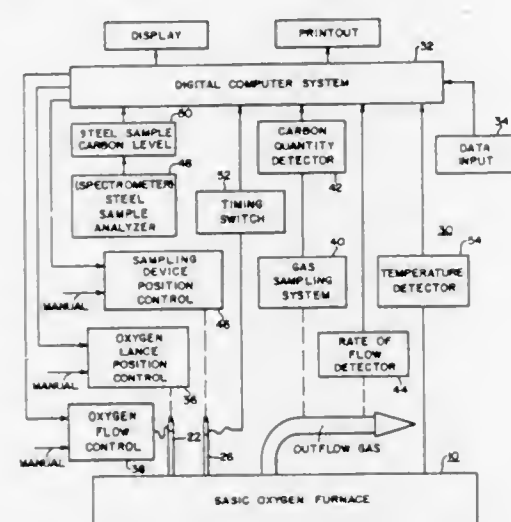
32 Claims



A fuel-injection type carburetor having a fuel injection valve arranged to open relative to the fuel inlet nozzle to a varying extent as a function of the rate of air flow through the carburetor and including flexible guide means for maintaining the valve aligned with the nozzle while permitting it to reciprocate relative thereto.

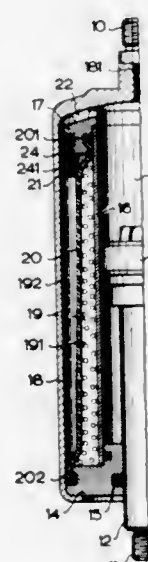


**3,720,404**  
**SYSTEM FOR CONTROLLING CARBON REMOVAL IN A BASIC OXYGEN FURNACE**  
 Norman R. Carlson, Export; Richard E. J. Putman, Penn Hills, and James T. Carleton, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.  
 Division of Ser. No. 649,236, June 27, 1967, Pat. No. 3,565,606. This application Dec. 22, 1970, Ser. No. 100,666  
 Int. Cl. C21c 5/30  
 U.S. Cl. 266—34 R **2 Claims**



Both low and high carbon steels are produced in a basic oxygen furnace controlled by a system which employs a direct sampler operated at an adequately early predetermined time during the oxygen blow. Endpoint carbon level is controlled as a result of calculations made from the sample carbon level and waste gas measurements of post sample time carbon removal. The carbon control is made compatible with other endpoint controls.

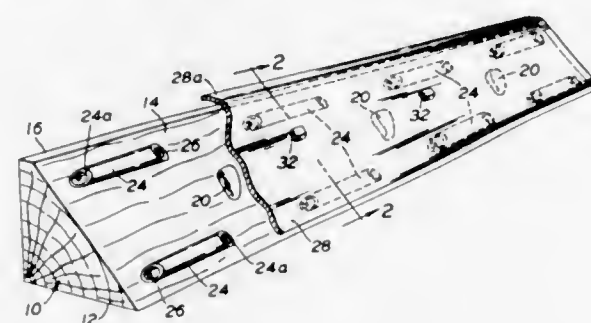
**3,720,405**  
**HYDRO-PNEUMATIC SPRING**  
 Manfred Lohr, Letmathe, Germany, assignor to Hoesch Aktiengesellschaft, Dortmund, Germany  
 Filed Feb. 24, 1971, Ser. No. 118,301  
 Claims priority, application Germany, March 5, 1970, P 20 10 339.3  
 Int. Cl. F16f 9/10  
 U.S. Cl. 267—64 R **9 Claims**



A hydro-pneumatic spring for use in automobiles has an internal chamber one end of which is open. A cover closes the open end and an annular supporting element is accommodated in the chamber at the other end. A tubular flexible divider is accommodated in the chamber extending longitudinally thereof and having a smaller diameter than the

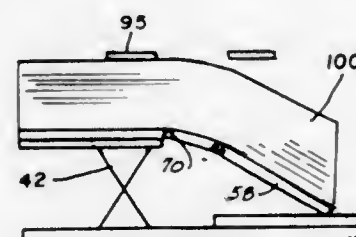
chamber to subdivide the same into an inner and an outer compartment. Mounting beads at opposite ends of the flexible divider are connected to the inner side of the annular supporting element and to the cover, respectively. A piston is displaceably accommodated in the inner compartment and an annular supporting ring of synthetic plastic material is accommodated between the annular supporting element and the inner surface bounding the chamber and projects in part axially beyond the annular supporting element in the direction towards the cover.

**3,720,406**  
**SHOCK-ABSORBING ABUTMENT BLOCK FOR VEHICLE PARKING AREAS**  
 Leo Artz, 3666 Bucyrus Road, Marion, Ohio  
 Filed Feb. 24, 1971, Ser. No. 118,403  
 Int. Cl. F16f 1/42  
 U.S. Cl. 267—139 **1 Claim**



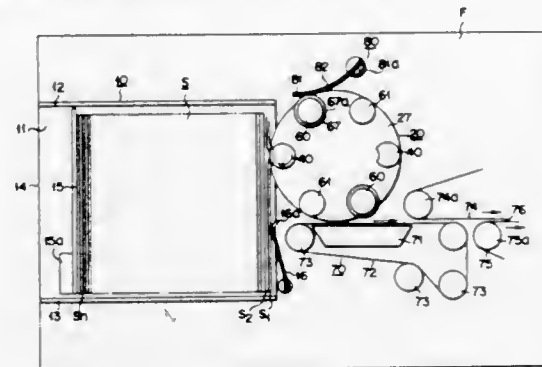
An impact-cushioning, wheel abutment block for vehicle parking areas which includes a wood base member formed with an oblique surface inclined to face upwardly toward the wheels of a parked vehicle and rigidly anchored to the parking surface with spikes extending obliquely through the base member in the general direction of wheel impact force vectors, the base member being provided on its oblique surface with resiliently displaceable impact-cushioning means.

**3,720,407**  
**AUTOMATIC SHEET WINDING APPARATUS AND METHOD OF WINDING A SKID OF SHEET MATERIAL**  
 Cyril H. T. Woodward, 160 Howard Avenue, Rochelle Park, N.J.  
 Filed Dec. 30, 1971, Ser. No. 213,877  
 Int. Cl. B65h 3/62  
 U.S. Cl. 271—18 R **15 Claims**



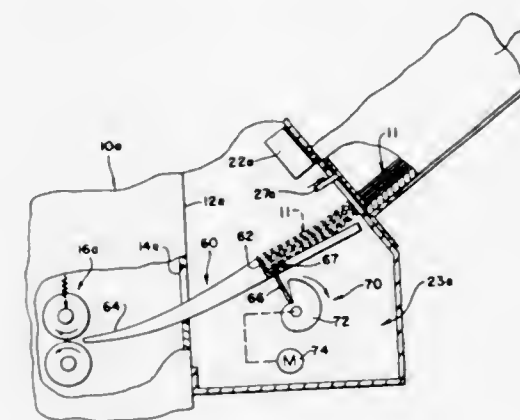
In a preferred embodiment automatically controlled winding apparatus is provided wherein a skid load of paper, cardboard or the like is carried by a hinged skid and is raised by two lift tables to a determined elevation. In the elevated condition a pair of pressure pads is moved downwardly to clamp the load of sheets to the skid. After the load has been brought to a clamped condition the winding of the load is accomplished by bowing the sheets then realigning them. In the apparatus using two lift tables, the winding operation includes the following steps; elevating the skid load by means of the lift tables to an elevated condition; clamping this load to the hinged skid; lowering a first lift table to its lowest condition so that at least one-half of the skid load of sheet material is caused to drop

downwardly transcribing an arc while the lesser portion of the skid load remains in a clamped elevated condition; again raising the lowered skid portion to its elevated clamped condition; lowering the second or other one-half of the skid load is caused to drop downwardly transcribing an arc like the other just wound portion of the skid which remains in a clamped elevated condition; again raising this lowered skid portion to its elevated condition and then lowering both lift tables, the supported hinged skid and the load of paper to a lowered condition whereat said skid load of sheet material is removed from the winding apparatus. In an alternate embodiment three lift tables are used with a like-mannered hinged skid. The skid and load are alternately raised by their ends and then at their middle portion to wind the sheets by alternate bowing. In yet another embodiment a skid load of paper is engaged by pivoted end plates. These plates are alternately swung in arcs so that the load is skewed first to one side and then the other to cause the sheets to be displaced on each other.



stack and suction conveyor means is disposed close to the locus of revolution of the suction head to suck and convey the sheet of paper sucked and separated by the suction head away from the stack.

**3,720,408**  
**APPARATUS FOR SEPARATING AND FEEDING EXPOSED FILM SHEETS FROM A MAGAZINE INTO A FILM PROCESSOR**  
 Robert F. Horn, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.  
 Filed June 10, 1971, Ser. No. 151,675  
 Int. Cl. B65h 3/00  
 U.S. Cl. 271—18 R **8 Claims**

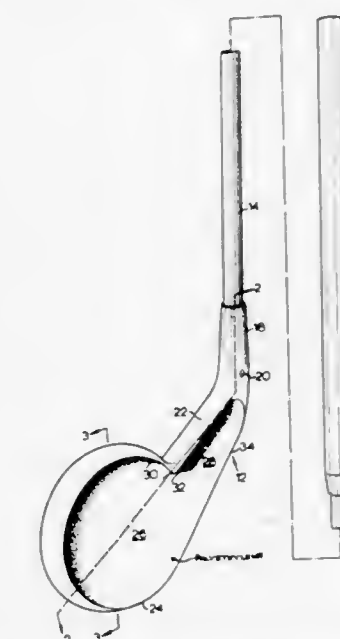


Apparatus for separating and singly delivering exposed film sheets from a film magazine into a film processor includes means for coupling the film magazine to the processor in a substantially light-proof manner, a guide for feeding the film sheets from the film magazine along a predetermined path to the processor, an abutment disposed to be engaged by the bottommost sheet of film while allowing the top sheet to move toward the processor, and a lift member for raising the engaged film sheet above the abutment for gravity feed to the processor.

**3,720,409**  
**APPARATUS FOR SUCCESSIVELY TAKING OUT PAPERS FROM A STACK THEREOF**  
 Mitsuo Kubo, Tokyo, and Shunichi Nakajima, Yokohama, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan  
 Filed April 7, 1971, Ser. No. 132,079  
 Int. Cl. B65h 3/08  
 U.S. Cl. 271—29 **17 Claims**

Sheet feeding apparatus comprises paper supply means including means for progressively advancing a stack of papers, a rotary member positioned on the output side of the paper supply means, and a suction head supported by the rotary member so as to be rotatable about its own axis and to rotate

**3,720,410**  
**BALL HOCKEY STICK WITH CURVILINEAR STRIKING FACES**  
 Andrew Saytar, 140 Glenview Drive, Port Credit, Ontario, Canada  
 Continuation-in-part of Ser. No. 810,177, March 25, 1969, abandoned. This application Jan. 4, 1971, Ser. No. 103,927  
 Int. Cl. A63b 59/12 **5 Claims**



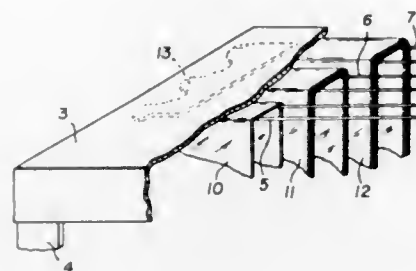
The ball hockey stick of this invention includes an elongate shaft having a blade, preferably molded from a rigid plastic, affixed at one end thereof. The blade is provided with concave ball-contacting faces to substantially eliminate the tendency for the ball to bounce or roll over the top edge. The concavity adjacent the heel of the blade is of a parabolic form which merges into the generally spherical concavity of the forward end.

**3,720,411**  
**PORTABLE TARGET TO RECEIVE, CONTAIN, AND PREVENT SPLASHBACK OF MEDIUM VELOCITY PROJECTILES**  
 George E. DeVogelaere, 594 Landing Road North, Rochester, N.Y.  
 Filed March 8, 1971, Ser. No. 122,027  
 Int. Cl. F41j 1/14 **3 Claims**

A portable target for receiving and containing projectiles built in a conventional rectangular box shape but substantially



thicker to contain in back of the target image paper, a plurality of penetratable resilient arrestor sheets of sufficient size to fill the target to accept and arrest a projectile entering its open face by penetrating a number of the arrestor sheets without



splashing out of the target. A single arrestor sheet is used between the target paper and the rest of the arrestor sheets to eliminate splash back from the projectile that can either tear the target paper or come out of the target.

3,720,412

## ARTICLE TRANSPORTING GAME APPARATUS

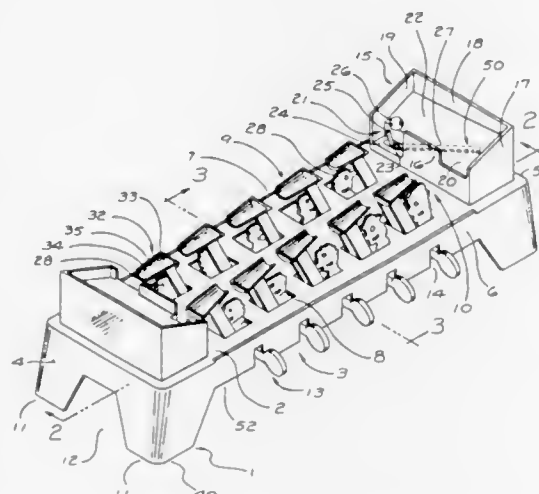
Carlos M. Ramirez, Brooklyn, N.Y., assignor to Steven Manufacturing Company, Hermann, Mo.

Filed April 14, 1971, Ser. No. 133,808

Int. Cl. A63f 9/14

U.S. Cl. 273-86 R

13 Claims



A game has two rows of scoop-shaped buckets on arms pivotally mounted on a base below the buckets. Each of the buckets may be rotated manually independently of the others. The arrangement of the bucket in each row and their construction allow an article to be passed to the next adjoining bucket in the row, or, in the case of the last bucket in the row, to a hopper; and the buckets are disposed oppositely in the two rows. A hopper at each end of the base plate receives articles from the last bucket of one row and feeds them to the first bucket of the oppositely directed row.

3,720,413

## GAME TARGET

Arthur William Ready, 25 St. Nicholas Grove, Ingrave, Brentwood, England

Filed March 29, 1971, Ser. No. 128,850

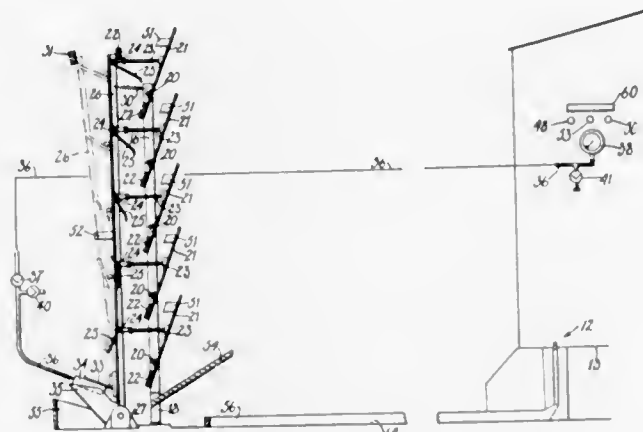
Int. Cl. A63b 69/36

U.S. Cl. 273-182 R

16 Claims

A forwardly inclined target board is rotationally mounted on each of five horizontally extending pivot shafts which are vertically spaced from each other. Each lower board extends

upward to a position forward of the lower portion of the board immediately thereabove. An upright member positioned rearwardly of the target boards is mounted so as to be pivoted rearwardly about a pivot axis at its lower end in response to rearward movement of any of the target boards about its associated pivot shaft. The rearward movement of the upright member actuates a hydraulic system which provides the golfer at the tee area with an indication of the probable distance the ball would have been driven had it not hit one of the target



boards. If a driven ball hits a narrow central zone of any target board with a force that would have enabled the ball to reach the cup in a putting green, suitable electrical components are provided to indicate that a hole-in-one has been scored. Additional boards and electrical components may be provided on opposite sides of the above mentioned five boards to indicate that a ball has been driven into a bunker or the rough. Golf balls are deflected downward from the target boards into a trough for being returned to the tee area.

3,720,414

## RECORD-CHANGER SPINDLE

Toyonori Igata, Iwata, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

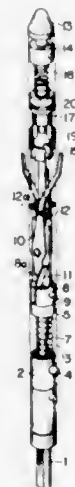
Filed Dec. 14, 1971, Ser. No. 207,943

Claims priority, application Japan, Dec. 17, 1970, 45/133340

Int. Cl. G11b 17/04

U.S. Cl. 274-10 S

8 Claims



A record-changer spindle has a drive shaft which, when moved downward, opens a set of upper pawls to support a plu-

rality of record disks, and when rotated in one direction closes a set of normally open, lower pawls to thereby allow one disk to move downwardly.

3,720,415

## DISC DRIVE

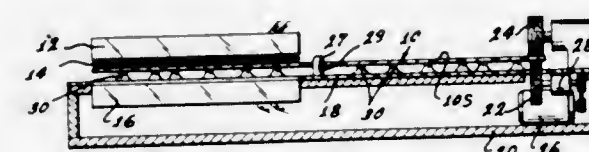
Charles J. Daniels, Terminal Island, and Harvey W. La Branche, Palos Verdes Peninsula, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed June 8, 1970, Ser. No. 44,349

Int. Cl. G11b 3/00

U.S. Cl. 274-39 A

6 Claims



Apparatus for driving optical disc while light passes through it to photocells, in a manner that reduces noise to a minimum, by eliminating the need for a transparent turntable to support the disc. The apparatus includes a stationary plate of electrically conductive material with protuberances thereon which support the disc as it is rotated by a motor, the protuberances having a small area in contact with the disc to minimize the area over which static electricity can accumulate that tends to make the disc stick to the plate.

3,720,416

## ADJUSTABLE WORK STOP FOR TURNING MACHINE

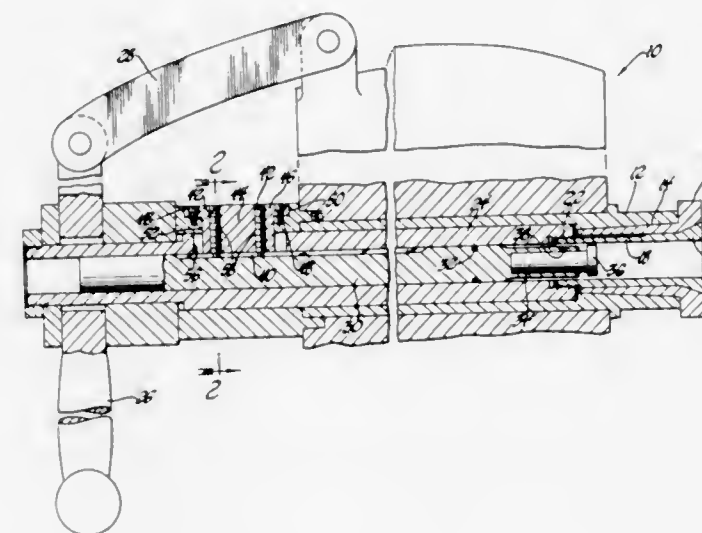
Vernon F. Blanchard, 25916 W. Seven Mile Road, Detroit, Mich. 48084

Filed Oct. 8, 1971, Ser. No. 187,709

Int. Cl. B23b 31/20

U.S. Cl. 279-1 S

6 Claims



A work stop for the collet of a turning machine takes the form of an elongated rod rotatably supported internally of the draw bar. The rod is fixed to the spindle by three removable keys, retained on an annular housing fixed to the spindle which project inward radially through elongated slots in the draw bar to engage longitudinal keyways formed in a surface of the stop rod. Set screws threaded in the keys bear against the surfaces of the

3,720,417

## QUICK CHANGE SPINDLE ADAPTER OR CHUCK

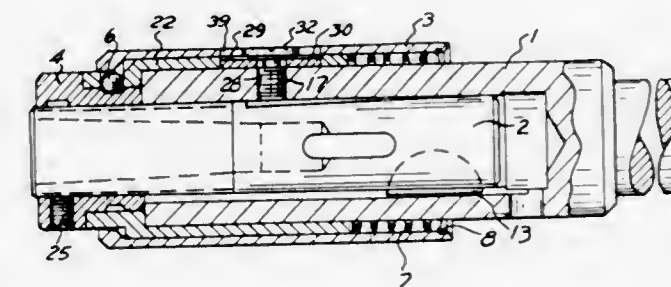
Theodore M. Smith, 14750 Puritan, Detroit, Mich.

Filed July 19, 1971, Ser. No. 163,946

Int. Cl. B23b 31/04

U.S. Cl. 279-82

1 Claim



A quick holding chuck, generally according to the device shown in FIGS. 4 and 5 of the U.S. Patent to Bilz No. 3,473,815 of Oct. 21, 1969, but improved in the provision of a spring holding plate between an enlarged head of the side set screw and the chuck shank.

3,720,418

## SEAL ASSEMBLY AND METHOD FOR MAKING SAME

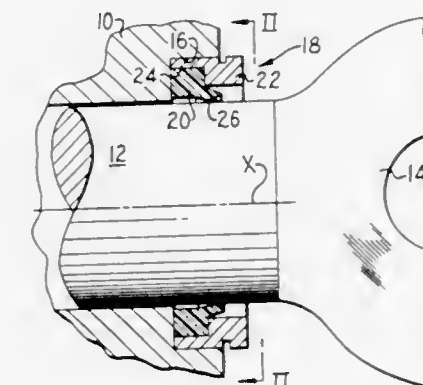
Lawrence F. Berg, Lockport, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed March 29, 1971, Ser. No. 128,820

Int. Cl. F16j 15/00, 15/16

U.S. Cl. 277-9

8 Claims



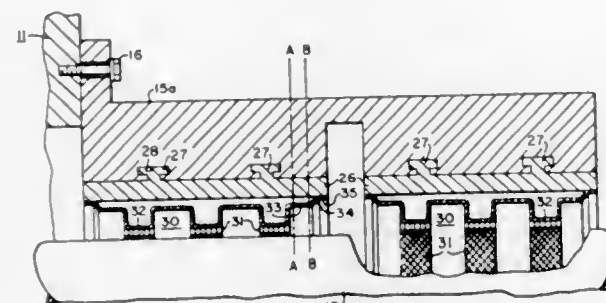
A seal assembly, located in a seat provided in a housing or end cap of a hydraulic motor, for example, comprises an elastomeric seal member and a rigid, ring-like retaining member. The seal assembly serves a wiper function to clean a rod reciprocally movable through a bore in the housing or end cap. The elastomeric member is split in one place for easy placement around the rod and the retaining member is fractured into two or more pieces for easy placement around the elastomeric member and the rod. The retaining member includes means for easy removal of the seal assembly from the housing when it is replaced.



3,720,419

**FABRICATED LABYRINTH SEAL STRUCTURE**  
 Richard S. Adelizzi, Marlton, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.  
 Filed Jan. 21, 1971, Ser. No. 108,428  
 Int. Cl. F02t 11/00; F01d 11/08  
 U.S. Cl. 277—53

4 Claims

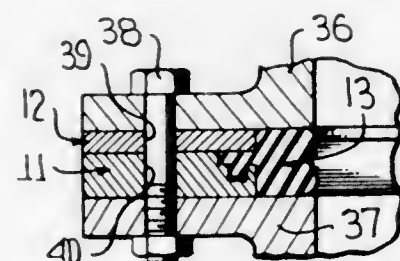


Inherent flexibility is incorporated in a labyrinth seal structure for a rotatable member by providing a relatively thin arcuately segmented corrugated metal sheet having honeycomb metal seals secured to the ridges of the corrugated metal sheet, thereby precluding the need for the spring-backed grooved seal rings previously utilized in labyrinth seals.

3,720,420  
GASKET

Jerry G. Jelinek, Whittier, and Edward Reinsch, Palos Verdes, both of Calif., assignors to Parker-Hannifin Corporation, Cleveland, Ohio  
 Filed March 19, 1971, Ser. No. 126,192  
 Int. Cl. F16j 15/00, 15/08, 15/10  
 U.S. Cl. 277—180

9 Claims



A gasket comprising a set of rigid cover sections overlying a set of rigid base sections, the sections carrying a resilient sealing element, the cover sections having endwise joints therebetween that are offset from endwise joints between the base sections and each cover section being attached to two base sections that it overlies so as to form a unitary gasket assembly.

## ERRATA

For Classes 279—1 and 279—82 see:  
 Patents Nos. 3,720,416 and 3,720,417

3,720,421

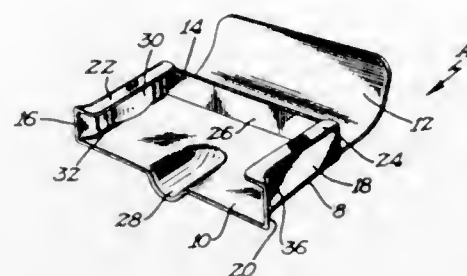
**AUXILIARY TIP FOR THE REAR END OF A SKI RUNNER OF A SNOWMOBILE**  
 Michael G. Clemmer, Box 224, Babbitt, Minn.  
 Filed March 19, 1971, Ser. No. 126,071  
 Int. Cl. A63c 11/14; B62b 17/00

U.S. Cl. 280—28

2 Claims

An auxiliary tip for the rear end of a ski runner of a snowmobile including a body having a bottom with spaced

sidewalls with a flange on each sidewall overlying the bottom and an arcuate upturned end extending from the bottom



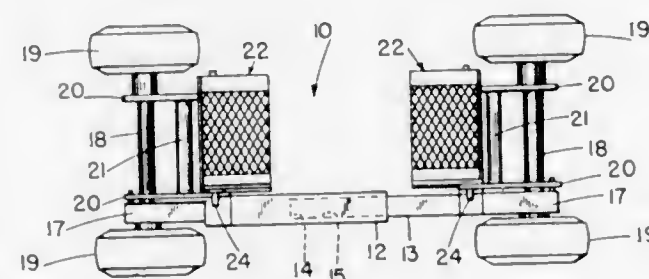
together with a spring mounted on at least one of the side walls for gripping engagement of a ski runner positioned between the walls.

3,720,422

**MINI-DOLLY FOR TRANSPORTING VEHICLES**  
 Arthur W. Nelson, 180 Bayview Ave., East Islip, N.Y.  
 Filed Feb. 3, 1971, Ser. No. 112,262  
 Int. Cl. B62b 11/00

U.S. Cl. 280—35

8 Claims



A mini-dolly for transporting vehicles comprising an elongate frame, the latter including a pair of opposite wheel-carrying portions longitudinally spaced from one another. The elongate frame includes a pair of cooperating receptacle members connected thereto, the receptacle members having an adjustable configuration relative to one another for cooperatively receiving a vehicular member such as the wheel of a disabled vehicle. The elongate frame is telescopically adjustable for adjusting both the longitudinal extent thereof and the effective vehicular member receiving configuration of the receptacle members relative to one another. The elongate frame includes two mutually interfitting portions one in the other between the wheel-carrying portion thereof for constituting the telescopic arrangement thereof. The receptacle members are pivotally arranged at the opposite wheel-carrying portions of the frame respectively and may be inclined relative to one another pivotally to support the wheel of the disabled vehicle.

3,720,423

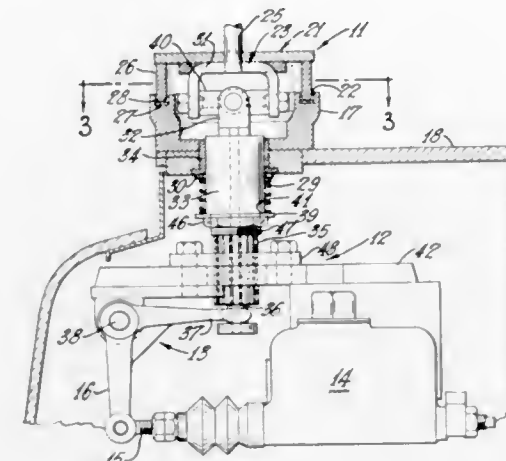
**VEHICLE CONTROL MECHANISM**  
 Errick G. Morris, Southampton, Pa., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio  
 Filed Mar. 8, 1971, Ser. No. 121,634  
 Int. Cl. B62d 11/14, 11/18

U.S. Cl. 280—87 A

8 Claims

A brake and steering mechanism for a material handling vehicle which permits actuation of the brake by tilting the steering column of the vehicle. A steering shaft within the steering column effects steering when rotated and braking when tilted by means of a novel universal

joint assembly including a rotatable and tiltable platform supporting the shaft which converts tilting movement of the upper portion of the shaft into axial motion of the



lower portion of the shaft. The brake is actuated through a crank arm assembly by said axial movement of the steering shaft.

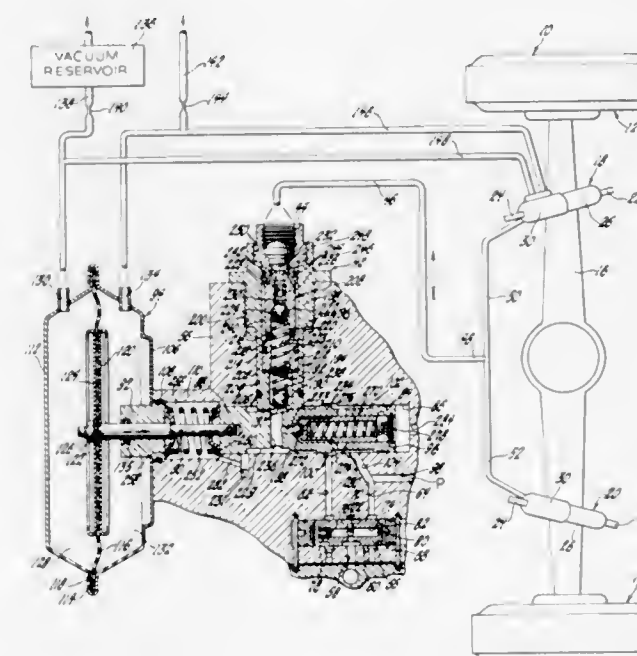
3,720,424

**VACUUM SERVO VEHICLE LEVELING SYSTEM**  
 Albert R. Tilford, Sterling Heights, Harold E. Boettger, Pontiac, and Ming-Chih Yew, Sterling Heights, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 23, 1971, Ser. No. 211,365  
 Int. Cl. B60g 17/02

U.S. Cl. 280—124 F

5 Claims



A vehicle leveling system has a vacuum servo operated hydraulic height control valve for automatically leveling a vehicle. The valve fills and exhausts hydraulic leveler units from a central hydraulic system on the vehicle in response to vehicle load changes. Undamped height responsive air bleed valves are positioned by load changes to cause a pressure difference in opposed chambers of the vacuum servo both of which are bled down through a vehicle engine vacuum system.

908 O.G.—15

3,720,425

**PROCESS AND APPARATUS FOR THE ADJUSTMENT OF THE HEIGHT OF THE CHASSIS OF A WHEELED VEHICLE**

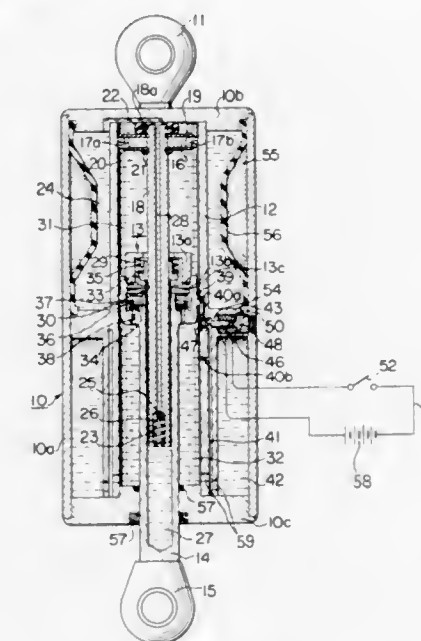
Tadao Asano; Noboru Murakami; Toru Akashi, and Naoji Sakakibara, all of Kariya, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya City, Japan

Filed Aug. 4, 1970, Ser. No. 60,880

Claims priority, application Japan, Aug. 5, 1969, 44/61826; Aug. 6, 1969, 44/62571; Aug. 8, 1969, 44/62993  
 Int. Cl. B60g 17/00

U.S. Cl. 280—124 F

16 Claims



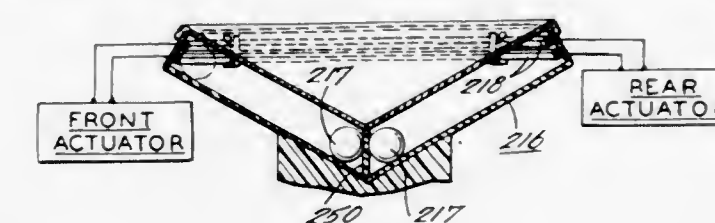
A pneumatic and hydraulic suspension device for vehicles is provided with a working cylinder having a plurality of communication or chassis level adjusting openings extending therethrough at different positions along the length thereof. A piston member is slidably received within the working cylinder to define two variable volume chambers on opposite sides thereof. Valve means are provided for controlling fluid communication between the two chambers the chassis level adjusting openings whereby the chassis height may be selectively adjusted through the automatic or manual control of the valve means.

3,720,426

**APPARATUS FOR SELECTIVELY ACTUATING PASSENGER SAFETY DEVICES IN VEHICLES**  
 Harry R. Johnston, 110 Seltzer Avenue, Coatesville, Pa.  
 Filed June 28, 1971, Ser. No. 157,569  
 Int. Cl. B60r 21/08

U.S. Cl. 280—150 AB

6 Claims



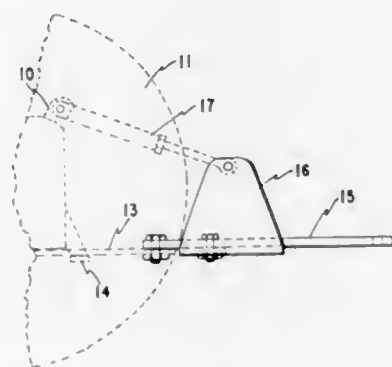
An automobile having a series of passenger-restraint devices including electrically-actuated inflatable air bags mounted at preselected locations in the passenger compartment is provided with apparatus which operates to actuate selected ones of the restraint-devices in response to front, rear or side collisions. The apparatus comprises an inverted hollow conical housing which contains a free ball and which is divided into quadrants by separate arcuate electrical contacts mounted inside and along the rim of the housing. The contacts



are connected by means of circuits to the restraint devices so that in a collision the ball rolls up the conical wall of the housing and engages the contacts to close the circuits and thereby to actuate the devices. In one embodiment, the housing is divided by a diametrically-extending partition which bisects opposed ones of the contacts and a ball is mounted on each side of the partition so that when the apparatus is mounted in an automobile with the partition extending sideward of the vehicle, each ball is capable of engaging contacts corresponding either to the left or the right and the front or rear bags.

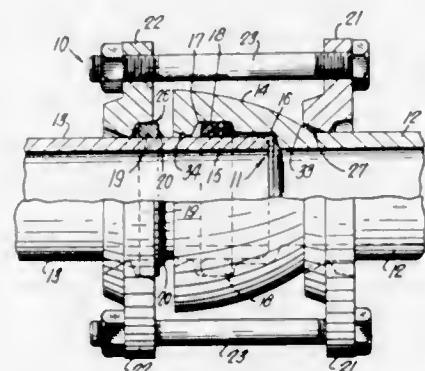
**3,720,427**  
**TRACTOR DRAWBAR EXTENSION**  
Harlan E. Steffe, Boyden, Iowa 51234  
Filed July 14, 1971, Ser. No. 162,530  
Int. Cl. B60d 1/00

U.S. Cl. 280—405 R 3 Claims



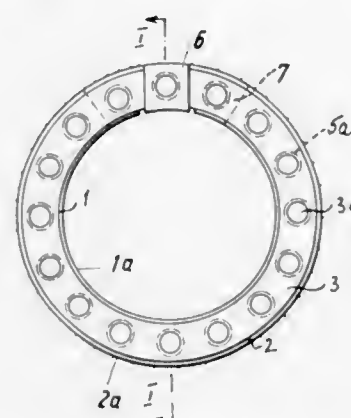
A tractor drawbar extender adapted for use with a lifting hitch and including side members extended upward for attachment to the upper member of the lifting hitch and extended downward to embrace a regular drawbar to hold the extender in alignment.

**3,720,428**  
**PIPE COUPLING**  
Jaroslaw Zastawny, Weston, 626 Ontario, Canada, assignor to Canron Limited, Rexdale, Ontario, Canada  
Filed Jan. 25, 1971, Ser. No. 109,384  
Int. Cl. F16l 21/02  
U.S. Cl. 285—368 6 Claims



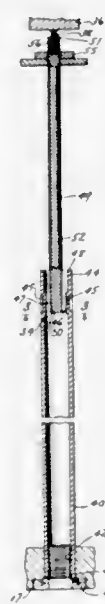
A pipe coupling to restrain a pipe joint between a bell end type pipe and a spigot end type pipe having stop means close to the end thereof. The coupling includes two interchangeable flanges interconnected and each defining a circular bore therein to define a first and second annular recess. The first annular recess is adapted to bear uniformly on the surface of the pipe bell while the second annular recess is adapted to exert a downward pressure on the pipe stop means. The joint is restrained by adjustable fastening means interconnecting the two flanges in spaced apart relationship over the pipes one on each side of the joint.

**3,720,429**  
**COUPLING**  
Josef Friedrichs, Krefeld-Bockum, Karl Heinrich Schropfer, Krefeld-Urdingen, and Ulrich Klören, Krefeld, Germany, assignors to Ringfeder G.m.b.H., Krefeld-Urdingen, Germany  
Filed Mar. 8, 1971, Ser. No. 121,927  
Claims priority, application Germany, Mar. 9, 1970, P 20 11 012.7  
Int. Cl. F16d 1/06  
U.S. Cl. 287—52.06 8 Claims



An outer elastic split ring concentrically and with clearance surrounds an inner elastic split ring. The rings each have an axial gap and the axial gaps are radially aligned with one another. The rings defined with one another two axial clearances which taper in opposite axial directions inwardly towards one another and in each of which an intermediate split ring of wedge-shaped cross-section is received. These split rings can be drawn axially together by suitable bolts which connect them, to thereby radially expand the outer elastic split ring and radially contract the inner elastic split ring. In the radially aligned axial gaps of these four rings there is located a torque-transmitting member which at least substantially fills these gaps and is connected with the remainder of the coupling so as to be retained in its selected position relative thereto.

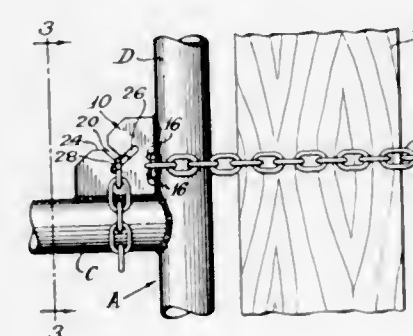
**3,720,430**  
**ADJUSTABLE ROD CONSTRUCTION FOR TROPHIES AND SIMILAR ARTICLES**  
Peter St. Paul, 530 E. 72nd Street, Manhattan, N.Y.  
Filed Dec. 13, 1971, Ser. No. 207,445  
Int. Cl. F16b 7/20  
U.S. Cl. 287—62 3 Claims



An adjustable length rod construction for assembling trophies from selected interchangeable components, permitting

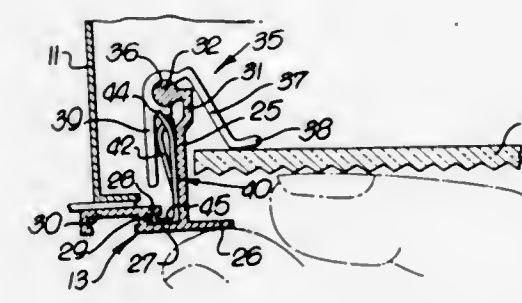
the use of a single size of rod in conjunction with trophies of varying heights. The rod includes a first member having a hollow bore, an upper end of which is provided with a series of discontinuous oppositely disposed thread segments defining an interstice therebetween, and a second rod member of non-circular cross section corresponding to said interstice, and having corresponding discontinuous threads thereon so as to be longitudinally insertable therein to a degree determining the overall length of the rod, and subsequently rotatable to cause mutual engagement of the thread segments on the first and second rod members, and create a frictionally reached retained adjustment therebetween.

**3,720,431**  
**LATCH FOR FARM GATES**  
Norman J. Oliver, Virgil Hardle, both of Sioux Falls, and Ludwig Camp, Worthing, all of S. Dak., assignors to Sioux Steel Company, Sioux Falls, S. Dak.  
Filed June 1, 1971, Ser. No. 148,795  
Int. Cl. E05c 17/36  
U.S. Cl. 292—264 3 Claims



A latch plate, for mounting on the free end of a farm gate or the like, having a slot for the reception of a link of a section of link chain, with the chain surrounding a gate post, for detachably securing the gate in closed position.

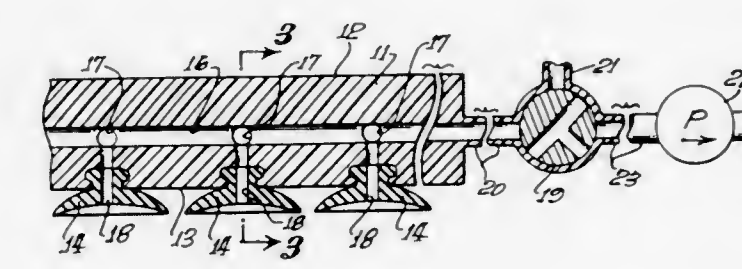
**3,720,432**  
**LATCH MECHANISM**  
Morris Chudler, Van Nuys, Calif., assignor to Prudential Lighting Corporation, Los Angeles, Calif.  
Filed June 14, 1971, Ser. No. 152,871  
Int. Cl. E05c 3/08  
U.S. Cl. 292—220 6 Claims



A latch mechanism for use in releasably supporting one side or end of a hinged mounted frame which may be disposed in a suspended ceiling below a utility device such as a light fixture, air vent, or the like. The suspended ceiling generally comprises a grid of inverted T-shaped beams defining a plurality of generally rectangular openings in which ceiling tiles are disposed and, at selected locations, the utility device may be positioned above the rectangular opening with the frame disposed in the opening and with the frame supporting a panel such as a light fixture lens, grill, or the like. Access to the utility device requires removal of the frame and the panel it supports, and the latch mechanism disclosed herein provides a quick and convenient means by which a person standing

below the utility device may obtain access thereto by simply elevating the panel relative to the frame so as to actuate the mechanism effecting release and permitting the end of the frame to swing downwardly about its hinged opposite side or end. The latch is biased to the operative supporting position so that the frame and panel may be returned to the latched position by simply swinging the free end of the frame and panel upwardly to automatically effect the latching.

**3,720,433**  
**MANIPULATOR APPARATUS FOR GRIPPING SUBMERGED OBJECTS**  
Andre M. Rosfelder, La Jolla, Calif., assignor to the United States of America as represented by the Secretary of the Navy  
Filed Sept. 29, 1970, Ser. No. 76,345  
Int. Cl. B66c 1/02  
U.S. Cl. 294—64 R 5 Claims



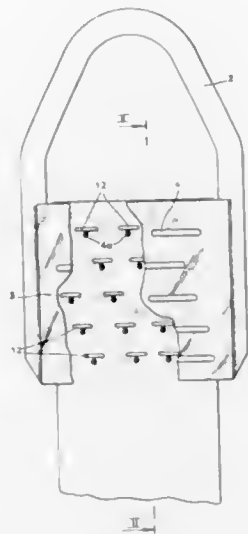
A resilient, plate-like body member is secured to an articulated manipulator frame in position to be moved by the frame into a pressurized, gripping contact with the object to be manipulated. The body member carries a plurality of closely spaced suction cups which directly engage and grip the object and, to augment the gripping action as well as permit release of the suction grip of the cups, the body member is provided interiorly with a main hydraulic circuit extending in network fashion into relatively close proximity with each suction cup. A separate hydraulic conduit communicates the central portion of each cup with the hydraulic circuit and the circuit leads to a valve movable from a closed to an open position in which the hydraulic circuit as well as the cups which it serves are exposed to the sea water environment. The suction grip is achieved by pressing the body member into engagement with the object. Release of the object is achieved by opening the valve to admit environmental water which relieves the suction grip. A pump also may be coupled to the main hydraulic circuit through the valve to increase the gripping action. To accommodate irregularly shaped objects, the resilient body member can be made to conform by using a plurality of cells that can be expanded or contracted by pressurized fluid to produce a desired bend. To avoid the loss of suction from cups not in contact with the object, the cups each may be provided with an automatic valve having a balanced piston actuated by a pin only when the cup engages the object.

**3,720,434**  
**CARGO SLING**  
Jean-Francois Archer, La Celle Saint-Cloud, France, assignor to Societe Technique d'Accessoires Speciales, Asnieres (Hauts de Seine), France  
Filed Feb. 2, 1971, Ser. No. 111,846  
Claims priority, application France, Feb. 3, 1970, 703639; April 23, 1970, 7014726  
Int. Cl. B66c 1/18  
U.S. Cl. 294—74 7 Claims

A strap for a cargo sling has an extremity sandwiched between at least one pair of perforated anchor plates traversed by staples whose shanks pass through their perforations with a



clearance decreasing progressively toward the free end of a coupling member fixedly or hingedly secured to the anchor



plates. The strap is reinforced by auxiliary clips upon which the staple shanks come to bear under load.

3,720,435

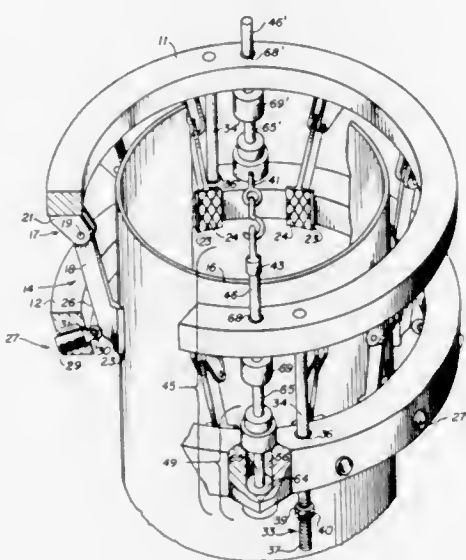
## SPUD CLAMPING DEVICE

Harold F. Leyn, 2719 Calhoun Street, Alameda, Calif.  
Continuation-in-part of Ser. No. 777,272, Nov. 20, 1968. This application Feb. 2, 1970, Ser. No. 7,803

Int. Cl. B66c 1/00

U.S. Cl. 294—88

18 Claims



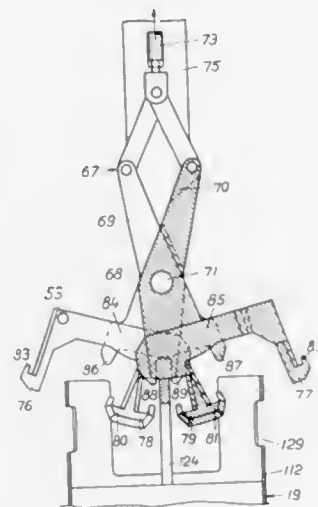
An upper ring or frame having two or more gripping members hingedly depending therefrom encircles a spud. A lower ring or frame also encircles the spud and bears inwardly against the gripping members through a means for multiplying and changing the vertical force to a horizontal force so that axially raising the lower ring relative to the upper ring causes the gripping members to frictionally engage the spud. Self-clamping is achieved by connecting the lifting means to the lower ring. Release of the gripping members is effectuated by transferring the lifting force point of attachment from the lower ring to the upper ring.

3,720,436  
**MANIPULATING TOOL FOR A NUCLEAR REACTOR COMPONENT PROVIDED WITH A HANDLE**  
Antti Suvanto and Hilding Nilsson, Vasteras, Sweden, assignors to Aktiebolaget Asea-Atom, Vasteras, Sweden  
Filed Apr. 20, 1970, Ser. No. 30,196  
Claims priority, application Sweden, Apr. 21, 1969, 5,576/69

Int. Cl. B66c 1/28

U.S. Cl. 294—88

3 Claims



A manipulating tool for a nuclear reactor component, such as a shroud tube having holes in its upper end, a fuel rod bundle or a control rod provided at its upper end with a handle, or a complete fuel assembly having said bundle in said shroud tube. The tool is formed of two crossing legs pivoted together and connected at their upper end to an operating member. The legs have first and second hooks for simultaneous engagement in the holes and in the handle respectively, and oppositely directed third hooks for engaging in the handle only.

3,720,437

## TRANSPORTER VEHICLES

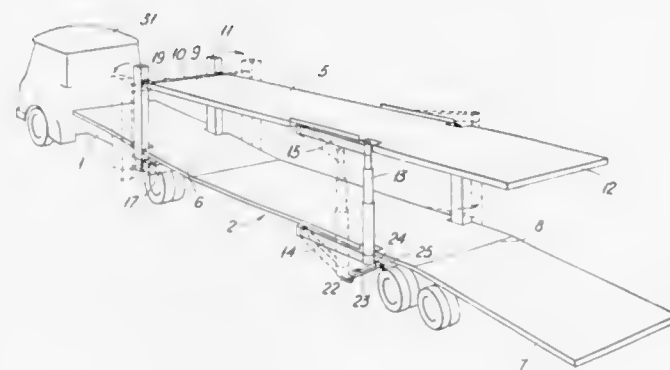
John Robert Lambert, Birch, near Colchester, England, assignor to Redment Engineering Company Limited, Essex, England

Filed May 21, 1971, Ser. No. 145,769

Int. Cl. B60p 3/06

U.S. Cl. 296—1 A

12 Claims



A load carrying vehicle for transporting loads on two vertically spaced decks the upper of which may be raised and lowered at least at its lower end, comprising a wheeled chassis, self-propelled or semi-trailer, supporting a lower deck, an upper deck supported at its front and rear end

portions above the lower deck on supports, the upper deck supports at least at the rear end being variable in height and mounted on members pivoted to the vehicle structure, including the upper deck, about vertical axes to permit outwards sideward swinging of the supports for mounting loads on the upper and lower decks.

3,720,438

## AWNING FIXTURE

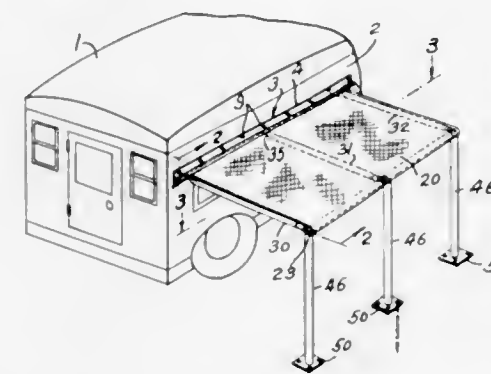
Wilbur D. Johnson, and Edna F. Johnson, both of 639 Sartori Avenue, Torrance, Calif.

Filed April 16, 1971, Ser. No. 134,758

Int. Cl. B60p 3/32

U.S. Cl. 296—23 R

3 Claims



The awning for a camper or trailer or similar vehicle is provided along one edge with a fixture for reception in a rail usually attached to this type of vehicle. The fixture comprises two tubular members joined by a webbing, one tubular member is receivable within the rail connected to the camper or trailer and the other tubular member is provided with a longitudinal slot adapted to receive the pocket formed on the awning along the upper edge thereof. This pocket usually receives a rope and the awning body extends outwardly through the slot in said tubular member of the fixture with the lower edge of said awning provided with a pocket to receive a bar or tube with supporting posts to maintain the awning in position of service. The construction allows a single workman to attach the awning to the rail or to disassemble the awning from the rail for storage purposes. When the awning is erected, winds will not effect the same in a manner to dislodge the awning from the rail and will likewise assure that rain and other inclement weather will not cause leakage between the awning and the rail.

3,720,439

## CONCRETE PAVING MACHINES

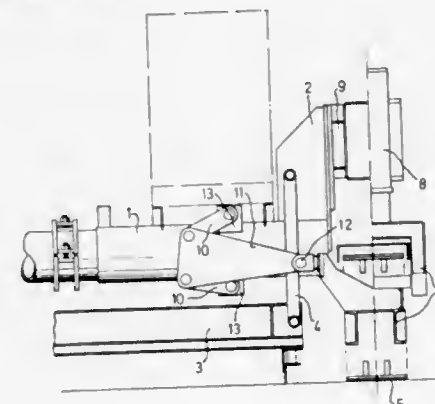
Alan Rimmington, Chesterfield, England, assignor to Robert McGregor & Sons Limited, Derbyshire, England  
Filed Sept. 3, 1970, Ser. No. 69,395

Claims priority, application Great Britain, Sept. 16, 1969, 45,615/69

Int. Cl. E01c 19/48

U.S. Cl. 296—28

4 Claims



A concrete paving machine comprises a main frame carrying a transversely-disposed conforming plate which,

as the machine advances, levels plastic concrete delivered ahead of the machine, sub-frames mounted on endless tracks and upon which the main frame is supported with vertical adjustment and, between the main frame and each sub-frame a system of parallel linkage operable to constrain the sub-frame to move in a vertical plane relative to the main frame.

3,720,440

## VEHICLE BODY RETRACTABLE TOP

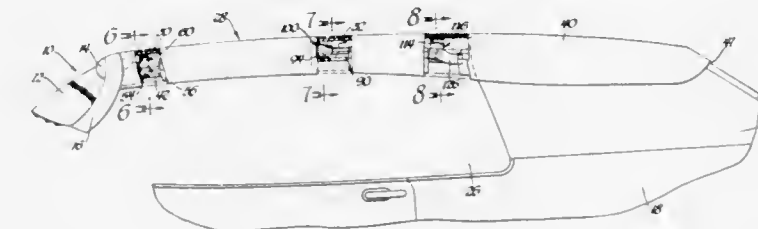
Edward G. Podolan, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 26, 1971, Ser. No. 202,259

Int. Cl. B60j 7/10

U.S. Cl. 296—137 B

7 Claims



A vehicle body retractable top includes front and rear movable roof panels supporting respective rollers. A strut extends between the vehicle body windshield header and a fixed roof panel that cooperatively define a roof opening. Channel members supported by the strut receive the rollers to mount the front and rear panels. A drive mechanism translates the front panel between a forward raised position engaging the windshield header and a rearward storage position below the fixed roof panel. A latch mechanism selectively connects the rear panel to the drive mechanism for translatory movement between a rearward storage position below the stored front panel and a forward raised position extending between the fixed panel and the raised front panel. A sheet of flexible material has one edge secured to the fixed panel and the opposite edge secured to the front panel such that the sheet covers and seals the junctures between the panels when the front and rear panels are in raised position. The sheet of flexible material assumes a generally out-of-sight folded position between the fixed panel and stored front panel. Control rollers engage control channel members and cam the rearward end of the rear panel upward into the plane of the fixed panel such that the roof surface is continuous when the front and rear panels are in raised position.

3,720,441

## DOUBLE CURVATURE PLYWOOD SHEET FOR BACK REST

Charles E. Corchran, Lake Hubert, Minn., assignor to Variety Products Inc., Waseca, Minn.  
Filed Apr. 7, 1971, Ser. No. 132,009

Int. Cl. A47c 3/00

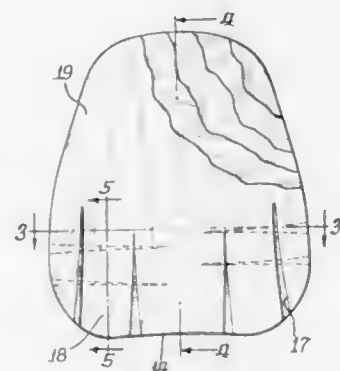
U.S. Cl. 297—284

5 Claims

The disclosure describes a rigid sheet of plywood formed to have a double curvature. One use described is as a portable back rest, padded with a soft material of uniform thickness, such as foam rubber, which is then provided with an over-cover of an upholstering material suited to the environment in which the back rest is to be used. In the forming of the double curvature the plywood plies are steamed and assembled progressively in



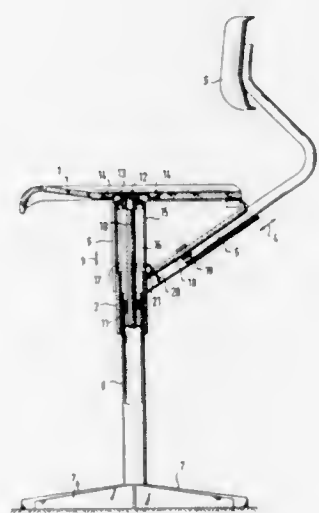
dies having curvatures shaped to conform to the double curvature of the user's lower back. To accomplish the double curvature in what is substantially non-stretchable plywood the plies are slit over the second curvature to allow the ply to spread thereover and conform to the



increased area of said second curvature. The outer covering may be a water-repellant plastic material for use outdoors, or it may be an upholstery material where the back rest is to be used indoors with overstuffed furniture or the like which is improperly contoured for properly supporting a user's back.

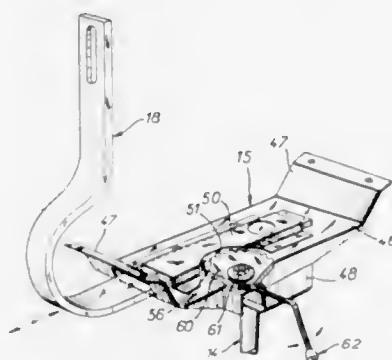
**3,720,442**  
**CHAIR**

Rainer Bergmann and Klaus Fleischmann, Dortmund-Mengede, Germany, assignors to Hohenloher Schulmobelfabrik Schaffitzel KG, Obring, Germany  
Filed Oct. 29, 1971, Ser. No. 193,843  
Claims priority, application Germany, Oct. 29, 1970, P 20 53 057.8; Apr. 8, 1971, P 21 17 417.4  
Int. Cl. A47c 3/20, 3/40  
U.S. Cl. 297—348 26 Claims



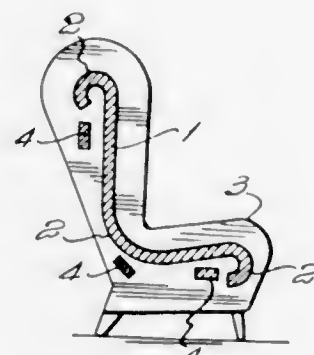
A chair having a base adapted to rest on the floor, a seat adjustable to different heights from the base, a back rest adjustable in an upwardly inclined direction from the rear side of the seat to different distances from the base and from the seat, and common means for adjusting the seat and back rest so as to increase or reduce their heights and positions simultaneously but differently from each other.

**3,720,443**  
**SEATS**  
Roger Mourgue, Joinville-le-Pont, France, assignor to Modern Tube Societe Anonyme, Montreuil, Seine, Saint Denis, France  
Filed Apr. 19, 1971, Ser. No. 135,010  
Claims priority, application France, Apr. 27, 1970, 7015247  
Int. Cl. A47c 3/24  
U.S. Cl. 297—383 9 Claims



A seat comprises a seating and a back interconnected by an upright which at one end supports the back and at the other end is slidably mounted in an inverted channel shaped plate and is connected by coupling means to an adjustment lever pivotally mounted on the plate.

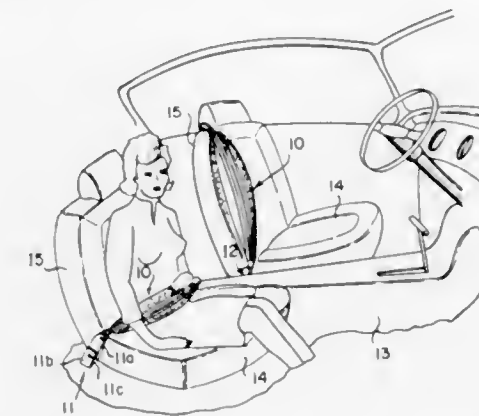
**3,720,444**  
**STRUCTURE FOR BUILDING FURNITURE**  
Juan B. Uthurriague, Calle 55, N° 1036, La Plata, Argentina  
Filed Sept. 24, 1970, Ser. No. 75,000  
Claims priority, application Argentina, Sept. 26, 1969, 224,350  
Int. Cl. A47c 15/00, 31/00  
U.S. Cl. 297—463 9 Claims



A structure for building furniture, comprising one or more sheets that are shaped to form a curved profile that may include one or more differently curved portions as well as straight portions, and end-mounted on reinforcing members that constitute also the supporting elements of the piece of furniture, while stringer members are provided as auxiliary structural elements.

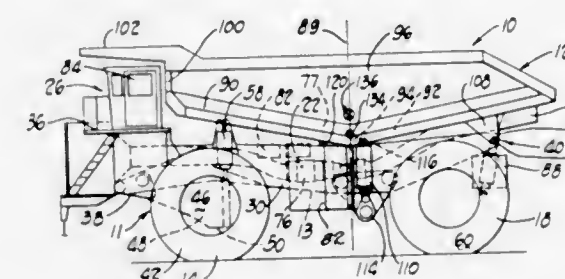
**3,720,445**  
**PASSENGER RESTRAINT BARRIER**  
Norman Bennett, 9900 E. Bexhill Drive, Kensington, Md. 20795  
Filed Nov. 3, 1971, Ser. No. 195,298  
Int. Cl. A62b 35/60 11 Claims  
U.S. Cl. 297—390  
Passenger injury on sudden stoppage of an automobile is prevented by a barrier placed horizontally across the passenger's seat, against which barrier the passenger's

body is forcibly projected by its momentum. The barrier has an impact cushion engageable by the passenger's body in a manner to cushion the initial shock and at the same time to decelerate progressively the momentum of the passenger's body, and to arrest its further forward motion at a point well short of contact with the windshield.



time to decelerate progressively the momentum of the passenger's body, and to arrest its further forward motion at a point well short of contact with the windshield.

**3,720,446**  
**REAR DUMPING VEHICLE**  
Douglas M. Kelley, Chesterland, Ohio, assignor to Euclid, Inc., Cleveland, Ohio  
Filed Feb. 16, 1971, Ser. No. 115,480  
Int. Cl. B60p 1/16  
U.S. Cl. 298—22 R 10 Claims

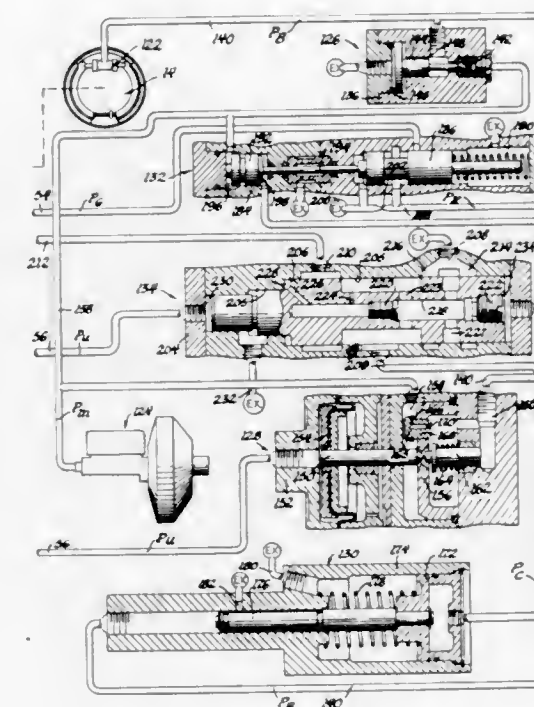


A four wheel rear dumping truck in which the center of gravity of the truck is located substantially along a vertical line between forward and rear truck wheels in both the loaded and unloaded conditions of the truck so that wheel loadings are proportionately the same whether the truck is loaded or unloaded.

Each wheel is independently driven by an electric motor. Electrical power is supplied by a prime mover located between the fore and aft wheels. The dump body is supported over the prime mover and is shaped so that the material forming the load has a center of gravity located above the location of the center of gravity of the unloaded truck.

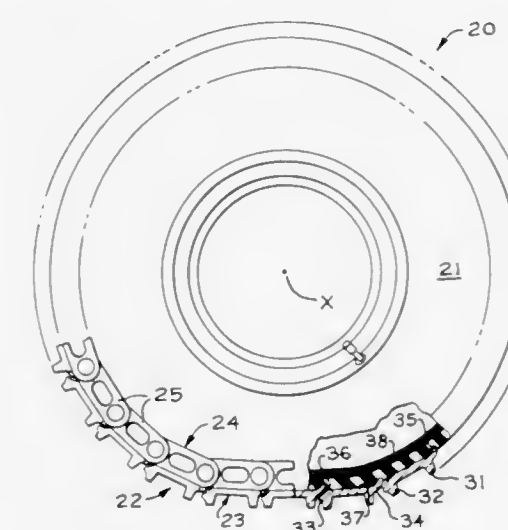
**3,720,447**  
**HYDRAULIC ANTI-LOCK BRAKE CONTROL SYSTEM**  
John L. Harned, Grosse Pointe Woods, and Laird E. Johnston, Birmingham, both of Mich., assignors to General Motors Corporation, Detroit, Mich.  
Filed Sept. 30, 1971, Ser. No. 185,088  
Int. Cl. B60t 8/06 3 Claims

The invention utilizes a wheel speed proportional pressure generated by a transmission governor or equivalent means and a vehicle ground speed pressure provided by a vehicle ground speed computer and provides a hydraulic anti-lock brake system including a fluid pressure operated wheel brake, an operator actuated master cylinder, a hydraulic actuator which determines the level of brake pressure at the wheel brake, a control valve which modulates the wheel speed pressure to



tuator. The servo valve also compares the regulated pressure with the vehicle ground speed pressure and varies the control pressure in response to the wheel slip condition so as to provide a nearly constant wheel slip.

**3,720,448**  
**CUSHIONED TRACK WITH ANTI-SLIPPAGE MEANS**  
Norman R. Allen, Washington; Roger L. Boggs, East Peoria, and Robert N. Stedman, Chillicothe, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.  
Filed Nov. 20, 1970, Ser. No. 91,488  
Int. Cl. B60c 27/20 12 Claims  
U.S. Cl. 305—19



A resilient spacer means, such as a pneumatic rubber tire, has an endless track assembly circumferentially mounted thereon to form a cushioned track. The track assembly comprises an annular, articulated link assembly positioned on each side of the spacer means to closely couple a plurality of ground-engaging track shoes together. Each shoe has anti-slip-



page means secured thereto to imbed into the tread of the spacer means to prevent slippage thereof, relative to the track assembly, during cushioned track operation.

3,720,449

## UNITARY RESILIENT GUIDE MEMBER

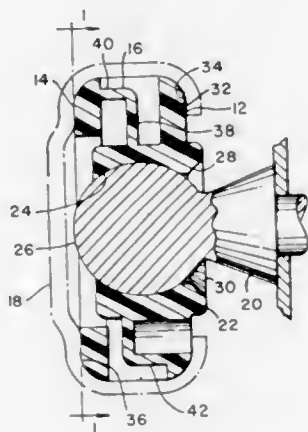
Edmund J. Godin, Detroit, Mich., assignor to Kedsell Company, Detroit, Mich.

Filed June 22, 1970, Ser. No. 48,272

Int. Cl. F16c 17/00

U.S. Cl. 308—3 R

7 Claims



A unitary resilient guide member including two transversely spaced apart portions connected together for resilient movement toward and away from each other is disclosed. One of the two transversely spaced apart portions includes a hub part for connection to a window regulator member and a radially extending flange part at one end of the hub part. The other of the two transversely spaced apart portions, which is annular, and the flange part of the one portion are connected together by angularly spaced apart double cantilever portions which permit the resilient movement of the flange part and annular portion toward and away from each other. In one embodiment the guide member is a roller and is adapted to fit within a window regulator track member having a C-shaped cross section, while in another configuration the guide member is a slide and is adapted to be slidably secured between a pair of T-shaped window regulator track cross sections.

3,720,450

## TAPERED ROLLER RETAINER AND METHOD OF BEARING ASSEMBLY

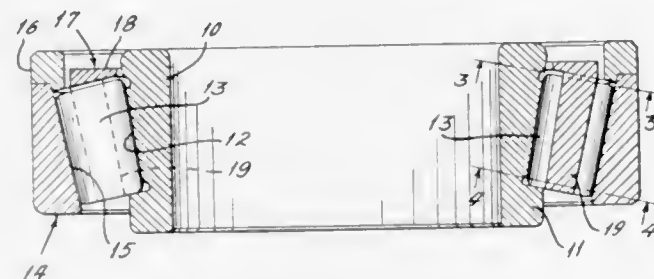
Erich Dietmar Dominik, Canton, Ohio, assignor to The Timken Company, Canton, Ohio

Filed April 5, 1971, Ser. No. 131,282

Int. Cl. F16c 33/00, 19/00

U.S. Cl. 308—214

4 Claims



A tapered roller retainer for tapered roller bearings in which the retainer is a one-piece molded body having a single flange supporting roller cage fingers. The roller cage fingers form reverse tapered pockets for the tapered rollers and the body of the retainer is sufficiently resilient to permit flexing of the cage fingers to facilitate insertion of the tapered rollers.

The flexing of the tapered roller retainer with the reverse tapered roller pockets improves and facilitates bearing assembly methods.

3,720,451

## POWER FILE CONSTRUCTION

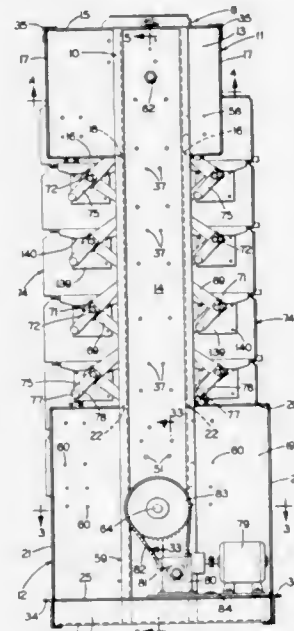
Walter G. Anders, Canton, Ohio, assignor to Diebold, Incorporated, Canton, Ohio

Filed June 21, 1971, Ser. No. 155,020

Int. Cl. A47f 3/08, 5/00; A47b 77/16

U.S. Cl. 312—268

12 Claims



A power file with a plurality of pans which are mounted on an endless conveyor for movement in a continuous orbit of travel. Side strut column members having upper and lower box members support the pans and conveyor mechanism. The pans each have a reinforced back wall with a plurality of gussets hung from the back wall which support a single thickness bottom wall eliminating bottom wall reinforcing members. A box trim bead is formed at the front edge of the bottom wall to provide stiffness for the bottom wall and to trap filed material. A plurality of slots in the back wall and front box trim bead hold removable dividers in the pans. Splicing members permit several file column sections to be mounted vertically upon one another forming a power file several stories high which can be shipped in knocked-down form and assembled at the installation site.

3,720,452

## MULTI-POSITION CHARACTER DISPLAY PANEL

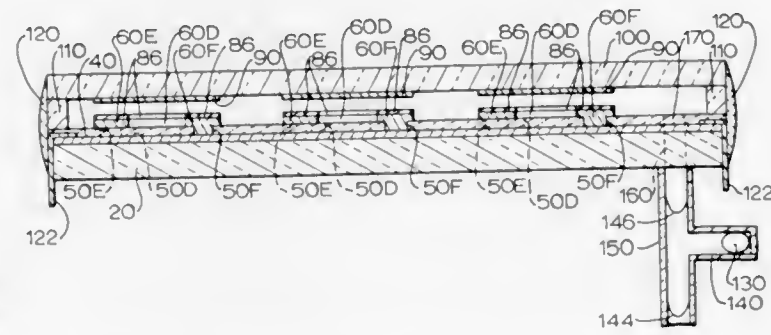
George A. Kupsky, Milford, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed Mar. 16, 1971, Ser. No. 124,681

Int. Cl. H01j 7/38

U.S. Cl. 316—24

2 Claims



The display panel is gas-filled and includes a plurality of character positions. The panel is of a sandwich con-

struction and includes a base plate on which a plurality of groups of cathodes and their conductors or leads are formed. The cathodes are in the form of bars or segments and can display a character. The cathodes are coated with a layer of mercury to prevent sputtering during normal operation. The panel also includes an anode electrode for each group of cathodes and a face plate, spaced from the base plate.

3,720,453

## DIFFERENTIAL READOUT HOLOGRAPHIC MEMORY

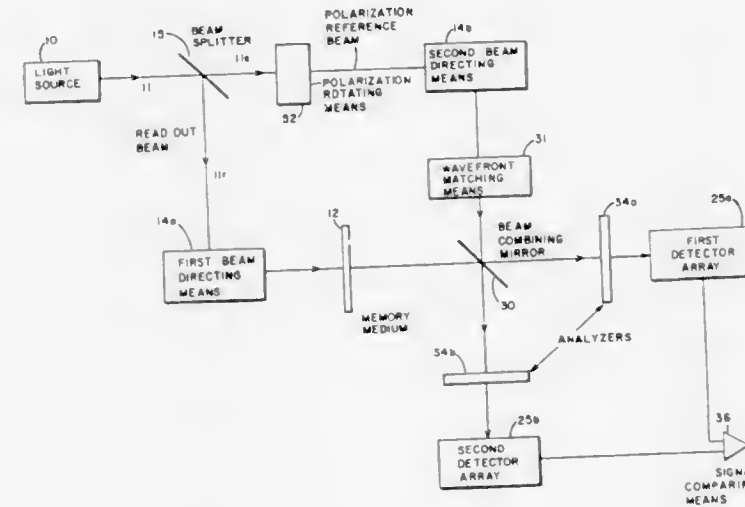
Tzuo-Chang Lee, Bloomington, and James David Zook, Burnsville, both of Minn., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed Sept. 20, 1971, Ser. No. 181,846

Int. Cl. G02b 27/22; G11b

U.S. Cl. 350—3.5

18 Claims



A holographic optical memory utilizes a differential technique to significantly increase the signal-to-noise ratio during the readout stage of operation.

3,720,454

## OPTICAL FIELD CURVATURE CORRECTOR

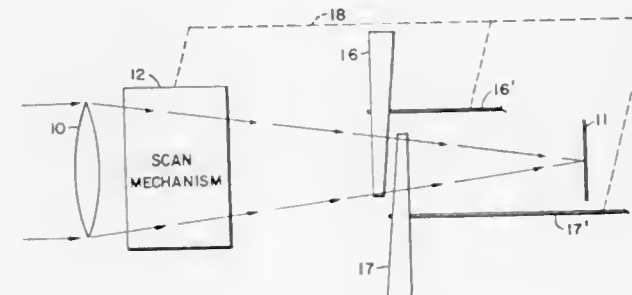
John A. Inderhees, Cincinnati, Ohio, assignor to Avco Corporation, Cincinnati, Ohio

Filed May 14, 1971, Ser. No. 143,533

Int. Cl. G02b 17/00

U.S. Cl. 350—7

1 Claim



The invention is a device utilizing one or more carefully oriented optical prisms to alter the optical path length of a converging radiant-energy-ray bundle between the lens and the image plane of an optical system and to effect a focal correction in the information which may be collected through sequential scanning of the image plane.

3,720,455  
PROJECTION SCREEN

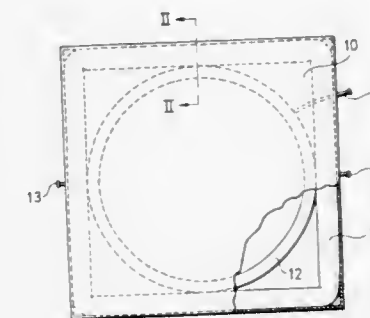
John Carl Erik Sahlin, Sergels vag 11 C, S-217 57 Malmo, Sweden

Filed Aug. 2, 1971, Ser. No. 168,027

Int. Cl. G03b 21/56

U.S. Cl. 350—117

5 Claims



A projection screen comprises a flexible covering forming the picture projecting surface which is stretched to a planar form by an inflatable stiffening structure of flexible material enclosed by the covering.

3,720,456

## METHOD FOR NARROWING THE BANDWIDTH OF AN OPTICAL SIGNAL

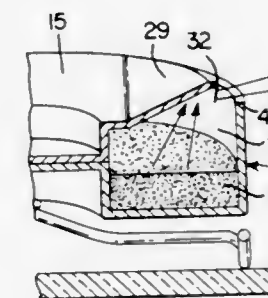
James E. Adams, Ontario, and Werner E. L. Haas, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed April 29, 1971, Ser. No. 138,506

Int. Cl. G02b 5/30

U.S. Cl. 350—157

11 Claims



A method for narrowing the bandwidth of an optical signal comprising directing a linearly polarized optical signal through an optically negative liquid crystal film and a linear analyzer arranged in tandem is disclosed. The optically negative liquid crystal film is chosen to have characteristics such that some of the light is extinguished whereas the remainder escapes extinction and is transmitted.

3,720,457

## SYSTEM FOR POLARIZING OPTICAL ENERGY AND TRANSMITTING THE SAME THROUGH MEDIA

Jerome Swartz, Stoneybrook, N.Y., and Donald K. Wilson, West Caldwell, N.J., assignors to Special Optics Inc., Cedar Grove, N.J.

Filed Nov. 18, 1970, Ser. No. 90,656

Int. Cl. G02b 5/30

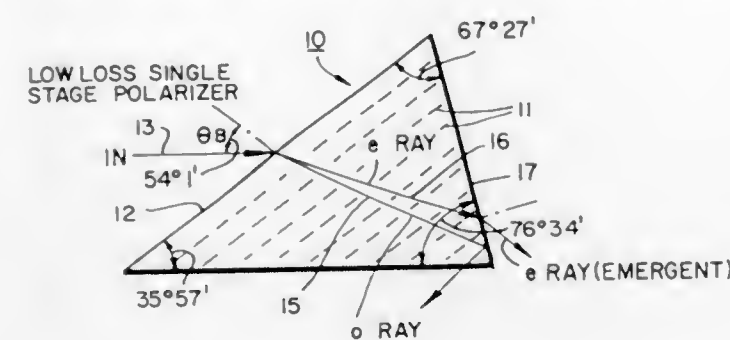
U.S. Cl. 350—157

40 Claims

The essence of the invention resides in a unique prism arrangement for polarizing a limited angular apertured beam and the minimum reflection loss transmission of the extraordinary ray of the beam through isotropic and/or anisotropic media. In a first stage uniaxial medium the extraordinary ray is



transmitted therethrough when the angular apertured beam strikes the entrance boundary at the Brewster angle with the optic axis of the uniaxial medium parallel to that boundary surface and the ordinary ray is totally reflected at the exit



boundary and a polarized parallel beam is obtained with the utilization of a second stage of isotropic or anisotropic material wherein the gap between the first and second stages may be uniform or tilted.

3,720,458

## SYMMETRICAL LENS

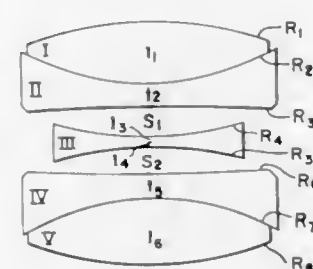
Lynn L. Van Orden, Holley, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Feb. 7, 1972, Ser. No. 224,046

Int. Cl. G02b 9/26, 17/08

U.S. Cl. 350-227

54 Claims



A family of symmetrical lenses having three components of which the outside two are doublets consisting of an outer biconvex and an inner biconcave lens while the interior lens is biconcave, has been designed primarily for photographic use at substantially unity magnification.

3,720,459

## OPTICAL SYSTEM WITH CONTINUOUS FILM TRANSPORT

Guy Roger Jules Bach, 58 Grande Rue, Neufmontiers-les-Meaux, France

Filed March 31, 1971, Ser. No. 129,917

Claims priority, application France, April 1, 1970, 7011696; March 5, 1971, 7107732

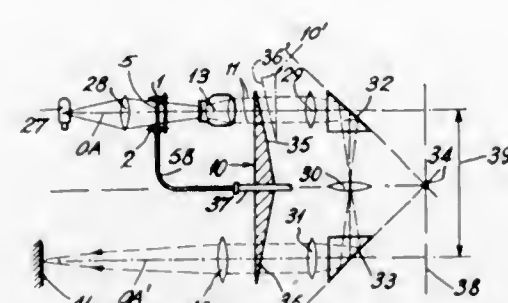
Int. Cl. G03b 41/04

U.S. Cl. 352-113

12 Claims

A motion-picture camera or projector has a continuously moving film transporter adjacent one or more light-ray deflectors operating in synchronism therewith, each deflector including at least one fully or partly transparent disk with mutually inclined sides generally perpendicular to the path of a beam transilluminating the film, advantageously in a zone where the rays of the beam are parallel. At the instant when a frame of the film is centered on the optical axis, the disk or disks are so positioned that the exciting beam section is in line with the entering beam section; at other instants the two beam sections are relatively deflected, in a direction parallel to the line of film movement, to compensate for the offset of the frame from the optical axis. With a single disk per deflector, the beam successively passes with intervening ray transposition through a pair of conjugate peripheral disk portions; al-

ternately, a deflector may consist of a pair of counterrotating disks with overlapping peripheral portions interposed in the beam path. The optically effective disk portions may form one



or more prismatic faces periodically intercepting the beam; with two or more deflectors positioned in cascade, their speeds or the number of their faces may be inversely related in a binary series.

3,720,460

## PROJECTION LIGHT SOURCE AND OPTICAL SYSTEM

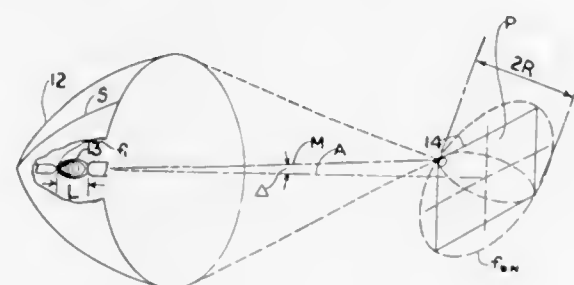
John N. Wilkinson, Durate, Calif., assignor to Optical Radiation Corporation, Monrovia, Calif.

Filed April 19, 1971, Ser. No. 134,956

Int. Cl. G03b 21/00

U.S. Cl. 352-198

13 Claims



Disclosed is a lamp and reflector system designed to produce maximum energy through an aperture at a pre-determined intensity distribution across an aperture, particularly the film gate aperture of a movie projection system. The invention involves a gaseous discharge lamp having an arc or light source region of varying radiance with the radiance at one electrode substantially higher than the other and a modified elliptical reflector generally axially aligned with respect to the discharge lamp and with the primary focus of the reflector along the axis of the lamp but with the secondary focus at the plane of the aperture on a line forming an angle  $\Delta$  with the axis of the lamp. Also disclosed is means for determining the optimum mirror or reflector length  $S$  in order to produce the maximum energy at a given intensity distribution across the film gate aperture of a projector system. The arc length, radiance distribution, the angle  $\Delta$ , the mirror or reflector length  $S$  and the aperture dimensions are correlated for a reasonable projection  $f$ /number in a manner that the image of the brightest portion of the arc is superimposed upon the extremities of the aperture from all points on segment  $S$  and the images of the arc at the aperture from various points on the ellipse segment form a family of images with the average size equal to approximately  $\frac{1}{4}$  of the diagonal dimension. In achieving this type of image, the highest radiance portion of the arc is placed at the first focus of the mirror.

3,720,461

## MOTION PICTURE PROJECTOR

Herbert Reinsch, Koengen, and Peter Korner, Reichenbach, Germany, assignors to Robert Bosch Photokino G.m.b.H., Stuttgart, Germany

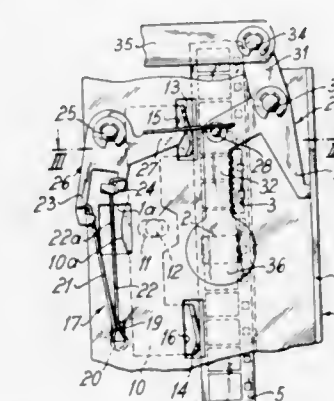
Filed Feb. 17, 1970, Ser. No. 12,075

Claims priority, application Germany, Feb. 27, 1969, P 19 09 790.6

Int. Cl. G03b 1/50

U.S. Cl. 352-224

7 Claims



The gate of a motion picture projector comprises a fixed guide and a movable guide with two pads which are biased toward the fixed guide by one leg of a hairpin spring so that each guide engages one marginal portion of the film during projection of images onto a screen. A system of links and levers is employed to disengage the spring from the movable guide so that the latter retains its position when the pressure plate is moved away from the film prior to rewinding. A mask is moved into registry with the window of the gate when the spring is disengaged from the movable guide.

3,720,462

## MICROFILM READER

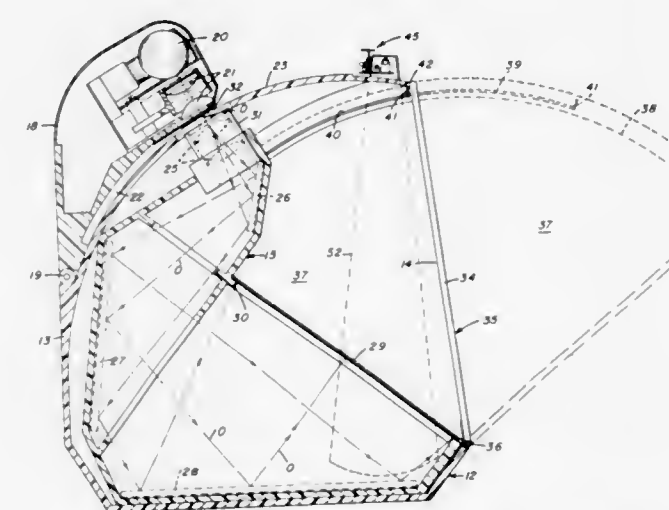
George J. Dall, and William E. White, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 21, 1970, Ser. No. 39,188

Int. Cl. G03b 23/08, 21/22

U.S. Cl. 353-27

12 Claims



A reader for microfilm transparencies having a plurality of images arranged thereon in an X-Y format comprises a housing in which a light-tight casing is arranged which carries a projection lens system, a mirror system and a viewing screen which encloses one side of the casing adjacent or facing an opening in the reader housing. The housing supports a lamp housing and a movable U-shaped member which carries a clamp means for engaging the transparency along an edge thereof. The U-shaped member moves the microfilm back and forth in one direction to intercept the optic axis and the clamp means moves the transparency in the other direction.

3,720,463

## MICROFICHE HOLDER

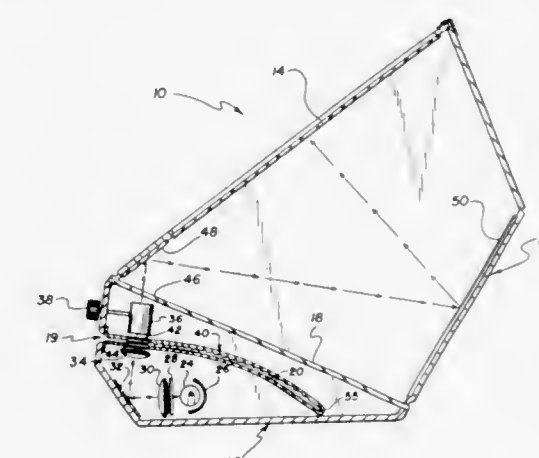
Clarence R. Taylor, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 2, 1970, Ser. No. 69,053

Int. Cl. G03b 21/14, 23/08, 21/22

U.S. Cl. 353-27

9 Claims



A microfiche holder for a microfiche reader includes a guide surface having a series of corrugations which provide a tactile reference to the operator as he inserts a microfiche into the holder.

3,720,464

## MICROFILM READER

Hans L. Ditscheid, Bonn-Ippendorf, Germany, assignor to Eastman Kodak Company, Rochester, N.Y.

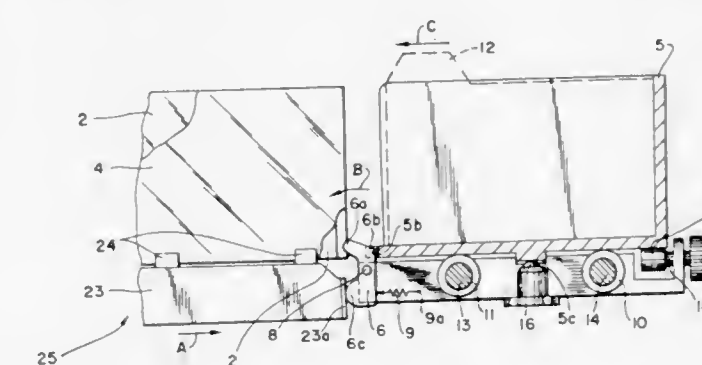
Filed Jan. 22, 1971, Ser. No. 108,829

Claims priority, application Germany, Feb. 20, 1970, G 70 06 080.9

U.S. Cl. 353-27

Int. Cl. G03b 23/08, 23/14

10 Claims



A microfilm reader having a film gate adapted to receive information carriers therein which can be selectively moved between and to projection and loading positions. The information carriers are individually accommodated in the compartments of a magazine which is movably mounted on the reader to allow indexing of the different compartments with respect to the loading position of the film gate. Each magazine compartment is provided with a recess by which a blocking member, located on the reader in the loading region of the film gate, holds the magazine and compartment from which the information carrier has been extracted in fixed alignment with the holding plates of the film gate when it is moved from its loading position. Blocking action is disenabled by move-



ment of the film gate to its loading position, the holding plates being synchronously opened by such movement and then closed about a selected information carrier when the film gate is moved away from its loading position.

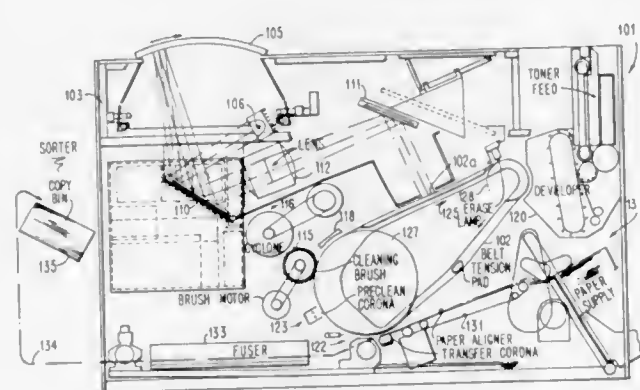
3,720,465

# ELECTROPHOTOGRAPHIC APPARATUS WITH SYNCHRONIZED DOCUMENT ILLUMINATION AND SCANNING FEATURE

George D. Bruce; Ronald V. Davidge; Raymond L. Fowler; George W. Hobgood, Jr.; Henry C. Locklar, Jr., and George W. Van Cleave, all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.  
Filed Nov. 20, 1970, Ser. No. 91,447  
Int. Cl. G03g 15/04

U.S. Cl. 355—8

2 Claims



The optical illumination and scanning system for document reproduction consists of two rotatable mirrors mounted in fixed side-by-side relationship. A light source illuminates the first mirror which reflects the light to a section of an original document. This light is reflected by the document to the second mirror which reflects this return beam through a lens system to a photoconductor surface. The mirror assembly oscillates across the entire original without changing the fixed relationship between the light beam reflected to the original and the return beam focused on the photoconductive surface.

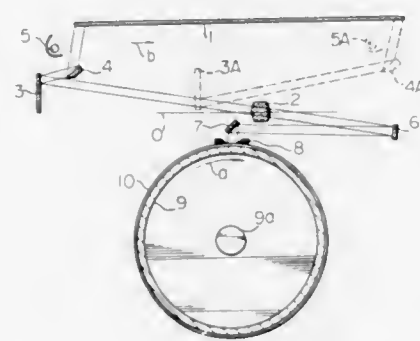
3,720,466

# SLIT EXPOSURE OPTICAL SYSTEM FOR REPRODUCING APPARATUS OR THE LIKE

Yutaka Koizumi, Kohoku-ku, Yokohama-shi, Kanagawa-ken, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan  
Claims priority, application Japan, May 16, 1969, 44/45773  
Filed April 30, 1970, Ser. No. 33,290  
Int. Cl. G03g 15/04

U.S. Cl. 355—8

5 Claims



A slit exposure optical system for use in a reproducing apparatus having a fixed projection lens for projecting a scanned image of the object on a photoreceptor and a mirror arrangement for scanning the object including only two movable mirrors disposed between the projection lens and the object. The first movable mirror is disposed transversely to the optical axis of the projection lens and the plane of the object and the

second movable mirror is disposed to face the first movable mirror and the object and is moved at twice the speed of the first movable mirror.

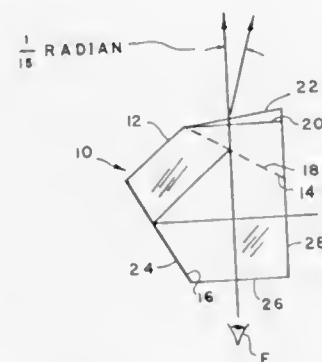
3,720,467

# INCONSPICUOUS RANGING DEVICE FOR GOLFERS

John D. Strong, 5 Chadwick Court, Amherst, Mass.  
Filed Nov. 20, 1970, Ser. No. 91,397  
Int. Cl. G01c 3/00

U.S. Cl. 356—3

19 Claims



An inconspicuous optical-triangulation ranging device for golfers typically comprising, in the various embodiments, a composite of a pentaprism and one or more simple prisms for observing and comparing three views, a view of the green, a reference view, normal to the first view, of a feature of the landscape, and a view, deviated by a known angle, of one of the first two views; structures for hinged attachment of the device to a cap brim and for rotation of the prism assembly to look to the right or left are disclosed.

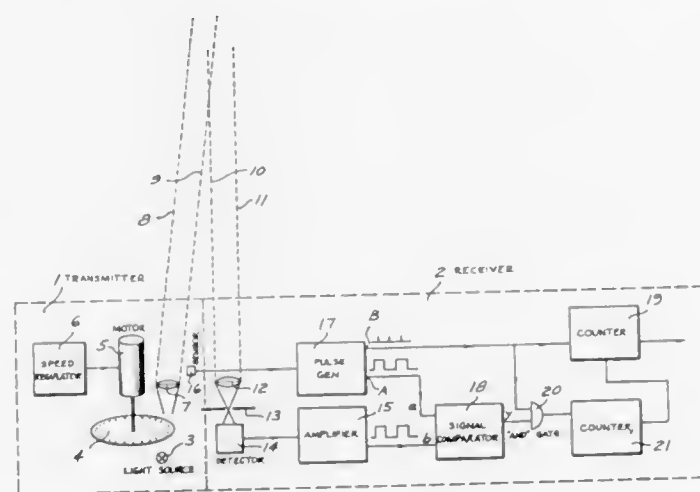
3,720,468

# DEVICE FOR A TRANSMITTER RECEIVER UNIT WHICH GIVES AN INDICATION WHEN AN OBJECT REFLECTS RADIATION TRANSMITTED FROM THE TRANSMITTER TO THE RECEIVER

Lars-Erik Skagerlund, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden  
Filed Feb. 23, 1971, Ser. No. 118,029  
Claims priority, application Sweden, March 2, 1970, 2702/70  
Int. Cl. G08b 13/00; G01s 9/00

U.S. Cl. 356—4

7 Claims



Apparatus for indicating reflected radiation from a remote object comprises a transmitter for transmitting amplitude-modulated radiation and a receiver for receiving the amplitude-modulated radiation reflected from the remote object. The receiver includes first means for receiving the reflected radiation and converting it to first pulse signals and second means for receiving the amplitude-modulated radiation

directly from the transmitter and converting it to second pulse signals. Means compare the first and second pulse signals for giving indications in accordance with the simultaneous phases of said first and second pulse signals.

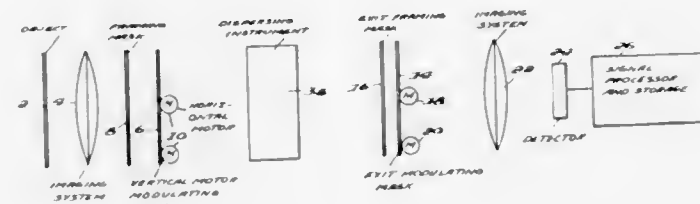
3,720,469

# SPECTROMETRIC IMAGER

Martin Harwit, Ithaca, N.Y., assignor to Spectral Imaging Inc., Concord, Mass.  
Filed Jan. 25, 1971, Ser. No. 109,432  
Int. Cl. G01j 3/02

U.S. Cl. 356—74

13 Claims



An optical device modulates radiation such as light from an extended object and focuses it onto a single detector in such a way that the modulation gives both spatial resolution of different points on the object and spectral resolution of light coming from each point on the object. The signal received by the detector can then be demodulated to reconstruct both the spatial and spectral properties of the initial extended object. A mask pattern is used, which can be variably exposed in successive steps to produce a cyclic encoding pattern in two dimensions. For an image resolved into  $p \times m$  elements, the mask need only have  $[2p-1][2m-1]$  elements, instead of  $p^2 \times m^2$  modulating elements.

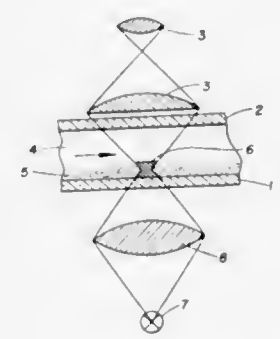
3,720,470

# APPARATUS AND METHOD FOR OPTICAL DETERMINATION OF PARTICLE CHARACTERISTICS

Ernst Berkhan, Göttingen, Germany, assignor to Phywe Aktiengesellschaft Göttingen, Göttingen, Germany  
Filed Aug. 16, 1971, Ser. No. 171,915  
Claims priority, application Germany, Oct. 15, 1970, P 20 50 672.3  
Int. Cl. G01n 15/02, 21/00; G01j 3/46

U.S. Cl. 356—102

8 Claims



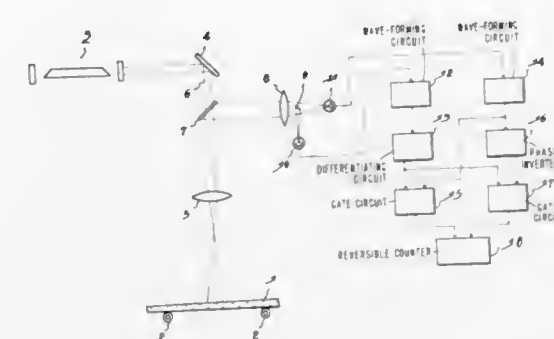
A shallow chamber is provided for passing through it a stream which envelopes a capillary stream of the particles, the characteristics of which are to be determined. The particles are in suspension in this capillary stream, which moves over the lower wall of the shallow chamber. At least one wall of the flow-through chamber is transparent and is arranged so that the focal area of the observing microscope coincides with the depth of the capillary stream.

3,720,471

# METHOD FOR MEASURING PLATE THICKNESS

Ichiro Kasahara, Mitaka-shi, Tokyo, and Hideki Yamaguchi, Toshima-ku, Tokyo, both of Japan, assignors to Nihon Den-ski Kabushiki Kaisha, Tokyo, Japan  
Filed Feb. 25, 1970, Ser. No. 13,976  
Int. Cl. G01b 9/02

6 Claims



A method for measuring an increase or decrease in the thickness of a transparent glass or plastic plate, by differential interference between the convergence and divergence of an interference fringe pattern caused by the increase or decrease in the thickness of the plate when it is moved passed a testing station. The interference fringe pattern is created by directing a non-parallel pencil or wedge of rays on the plate. The resulting two sets of rays being reflected by the front and rear surfaces of the plate are directed and focused to a light detector. By detecting the convergence or divergence of the fringe pattern and counting the fringe rings passing the detector, the change in thickness of the plate is measured.

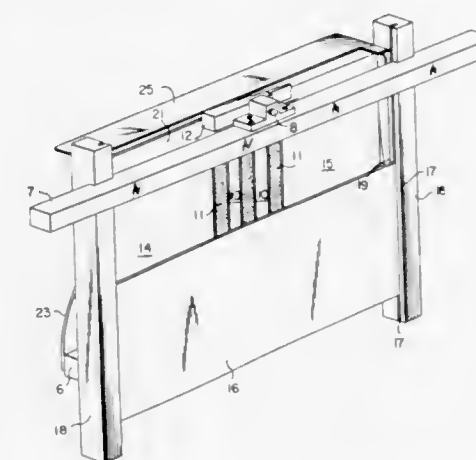
3,720,472

# VARIABLE-BAR RESOLUTION TARGET

Robert L. Denningham, Forest Heights, Md., assignor to the United States of America as represented by the Secretary of the Navy  
Filed Oct. 22, 1971, Ser. No. 191,696  
Int. Cl. G01b 9/00; A61b 3/00

U.S. Cl. 356—124

4 Claims



This disclosure is directed to a variable-bar resolution target for use in making resolution measurements on optical devices. The device includes a plurality of elongated flat bars which are secured at their ends to spacer supporting members by suitable pins for rotation relative to the securing pins. The spacer support members are constructed so that each bar is held in a vertical plane spaced from each other with adjacent plates overlapping each other. Therefore, rotation of the spacer support members increases or decreases the overlap of the plates thereby increasing or decreasing the overall width of the target.



3,720,473

**INK CARTRIDGE FOR A WRITING IMPLEMENT**

Toshihiro Nakata, Taito-ku, Tokyo, Japan, assignor to Platinum Pen Co., Ltd., Tokyo, Japan

Filed May 21, 1971, Ser. No. 145,838

Claims priority, application Japan, April 14, 1971, 46/23582

Int. Cl. B43k 5/08, 5/14

U.S. Cl. 401—40

6 Claims



An ink cartridge for a writing implement. The cartridge has a first cylinder defining an ink producing chamber, a first piston in the first cylinder axially movable to suck water into the ink producing chamber, a second cylinder in the first piston containing a concentrated ink, a second piston in the second cylinder axially movable to dispense a metered amount of the concentrated ink into the ink producing chamber whereby both liquids are mixed to produce an ink of desired thickness.

**3,720,474  
EXPANSION JOINT**

Wilhelm Stog, Waltrop, and August Krefter, Lunen, Germany, assignors to W. Stog KG, Industrie- und Rohrleitungsbau, Waltrop, Germany

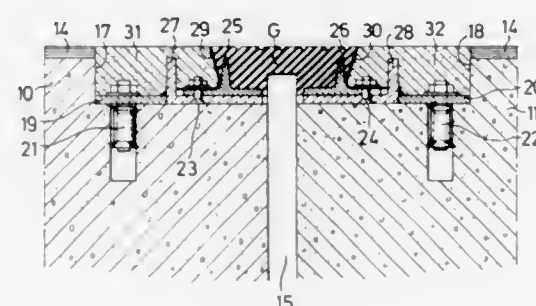
Filed Dec. 9, 1970, Ser. No. 96,321

Claims priority, application Germany, Dec. 20, 1969, P 69 49 269.9

Int. Cl. E01c 11/10

U.S. Cl. 404—47

5 Claims



An expansion joint for road sections joining with a bridge, or with another road section etc. forming a strip-like band from resilient materials, such as a rubber band having indentations at the lower surface thereof which are arranged parallel to the side joints and supports means including support ribs being arranged on supporting plates, said ribs lying in engagement with said indentations. The support means may comprise support shoulders having projections which engage with the resilient band as well as support ribs to secure the cast filling material used for the excisions of the drive way sections adjacent to the resilient band. Preferably the support shoulders rest on a

shock absorbing layer or plate of plastics material and the resilient band is provided with stabilizing cams being inserted into the lower side thereof.

**ERRATUM**For Class 404—47 see:  
Patent No. 3,720,142

3,720,475

**AUTOMATIC MACHINE TOOL**

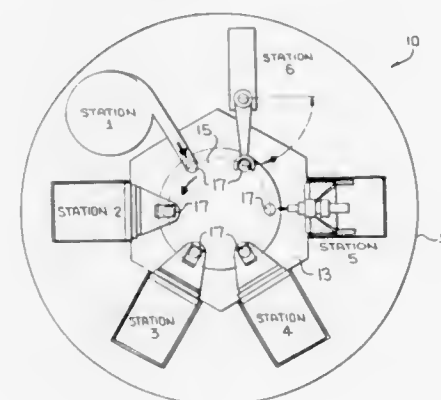
Ronald Leacock, 4719 Fielder St., Tampa, Fla.

Filed Dec. 22, 1970, Ser. No. 100,714

Int. Cl. B23b 39/20

U.S. Cl. 408—44

6 Claims



An automatic machine tool includes a head having a rotatable spindle and a head-mounted motor for directly driving the spindle. The head is slidably mounted on a main housing by means of a pair of parallel dovetail engagements, the position of one dovetail track member being selectively adjustable transversely along the housing. A main cam inside the housing translates a cam follower secured directly to the head to slide the head in opposition to a bias force exerted against the head by a fluid-operated piston. De-actuation of the piston permits translation of the head to an extreme position, providing front access to an opening in the housing which renders the cam accessible. Secondary cams are secured to the same shaft which drives the main cam and actuate control switches as the shaft rotates.

3,720,476

**REAMING APPARATUS**

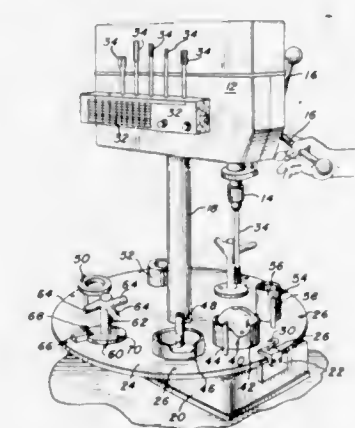
Clifford A. Taylor, 8315 S. Lockwood Ave., Oak Lawn, Ill. 60607

Filed Oct. 19, 1970, Ser. No. 81,836

Int. Cl. B23b 39/20

U.S. Cl. 408—71

1 Claim



A reaming apparatus is provided in which a circular rotatable turret member underlies a body member carrying an adjustable chuck for holding a reamer. The turret member carries a number of fixtures each of which is adapted for holding a workpiece to be reamed.

3,720,477

**DEBURRING TOOL**

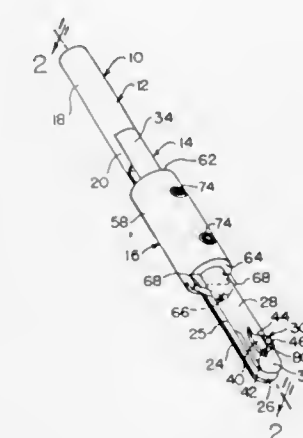
Dominic J. Rusin, 10041 Chatham Ave., Detroit, Mich. 48239

Filed July 12, 1971, Ser. No. 161,795

Int. Cl. B23b 51/16

U.S. Cl. 408—226

24 Claims



A deburring tool device having an adjustable tension control member embodying chamfer cutting edges and a removable readily-replaceable deburring tool insert, is disclosed. The tension on the tool insert is controlled by the position of the control member upon the tool arbor and the insert. The deburring cutter insert can be provided with a plurality of cutting edges for the face and backside of holes requiring such treatment, to materially increase the tool life of the insert.

3,720,478

**PUMP UNIT CONSISTING OF PRESSURE OIL PUMP AND OIL RESERVOIR, ESPECIALLY FOR SERVO-STEERING SYSTEMS**

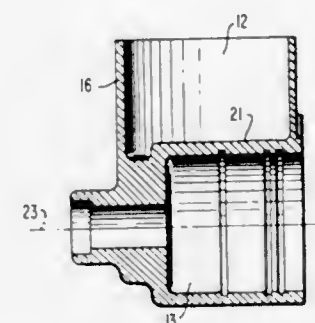
Hans-Joachim M. Furster, and Peter Elsen, both of Stuttgart, Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Untertuerkheim, Germany

Filed Sept. 22, 1971, Ser. No. 182,766

Int. Cl. F01d 25/24

U.S. Cl. 415—219

11 Claims



A pump unit consisting of an oil pump space and of an oil reservoir space, especially for servo-steering systems, in which a partition wall formed in one piece with the casting of the housing separates the pump space from the reservoir space; the housing opening of the reservoir space disposed at one housing in the direction of a reference axis extends over the entire housing cross section perpendicular to the reference axis while the housing wall portions of the reservoir space extending along the reference axis, are disposed parallel to the

reference axis or in such a manner relative to the reference axis that its wall sections disposed nearer to the housing opening do not have a smaller spacing from the reference axis than directly adjacent wall sections which are disposed further away from the housing opening.

3,720,479

**DEVOLATILIZER ROTOR ASSEMBLY**

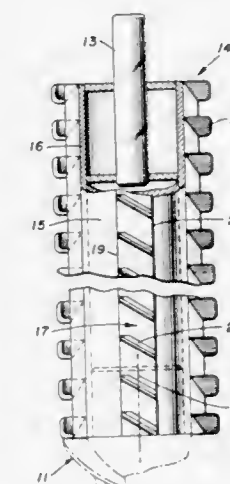
George A. Latinen, deceased, late of Springfield, Mass., by May V. Latinen, administratrix, Springfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 16, 1971, Ser. No. 172,058

Int. Cl. F04d 29/38

U.S. Cl. 416—198

5 Claims



A rotor assembly suitable for use in a devolatilizer for processing relatively viscous materials to separate volatiles therefrom is described. The rotor assembly increases vapor separation efficiency and utilizes on its circumferential shaft surfaces axially extending, radially raised flanged portions under a plurality of plow blades adapted to exert axial and circumferential force vectors on all points of cylindrical regions swept by the rotor assembly in operation.

3,720,480

**ROTOR CONSTRUCTION**

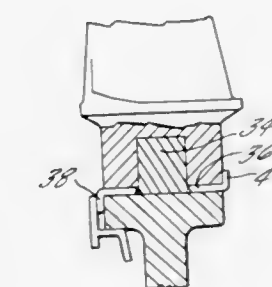
James S. Plowman, Longmeadow, Mass., and Thomas C. Walsh, New Britain, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed June 29, 1971, Ser. No. 157,969

Int. Cl. F01d 5/32

U.S. Cl. 416—220

3 Claims



A rotor construction comprising a hub having a plurality of undercut slots defining a plurality of lugs in the periphery thereof, a plurality of filament reinforced composite blades having splayed roots in the slots engaging the lugs and a reinforcement



forcing insert disposed in the root portion of the blades extending in a direction transverse to the rotor axis, the ends of the insert engaging opposing walls of adjacent lugs and being of a material sufficiently strong in compression to resist lug bending due to blade loss.

3,720,481

### MEANS FOR FORMING AND SECURING TURBINE COMPRESSOR BLADES

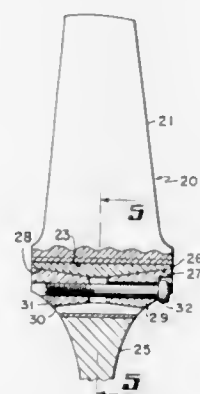
Salvatore Motta, Commack, N.Y., assignor to Avco Corporation, Stratford, Conn.

Filed Apr. 28, 1971, Ser. No. 138,241

Int. Cl. F01d 5/32

U.S. Cl. 416—220

3 Claims



The invention is a forming die for use in fabricating compressor blades from synthetic fibers. Such fibers are spaced a predetermined distance apart and formed into a web which is held in fixed position approximating the shape of the finished blade and then impregnated with a bonding agent to produce an integral blade with reinforced blade portions and root portions. The invention includes means for mounting blades to a rotor by securing a split bushing with oppositely disposed conical bores in the bore of the blade root, inserting and securing the blade root in a keyhole slot in the rotor and by forcing the conical wedges together in said bushing.

3,720,482

### DEVICE FOR GENERATING AN AIR SYSTEM BY MEANS OF AN EJECTOR

Peter Tell, 184 00 Akersberga, Sweden, assignor to Aktiebolaget Plab, Danderyd, Sweden

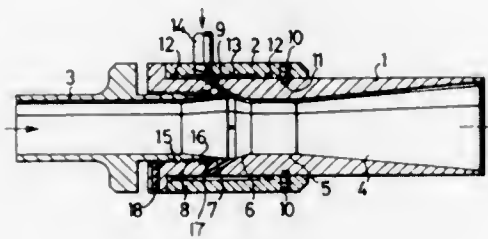
Filed April 13, 1971, Ser. No. 133,583

Claims priority, application Sweden, May 14, 1970, 6615/70

Int. Cl. F04f 5/46, 5/48

U.S. Cl. 417—179

7 Claims



A device for generating an air stream through the venturi tube of an ejector, in which there are a number of channels for supplying air under pressure going through the wall of said venturi tube, and in which there is an inner tube slidably

mounted in said venturi tube from a position where the orifices of said channels are substantially closed to a position where said channels are open.

3,720,483

### HYDRAULIC POWER SUPPLY SYSTEM

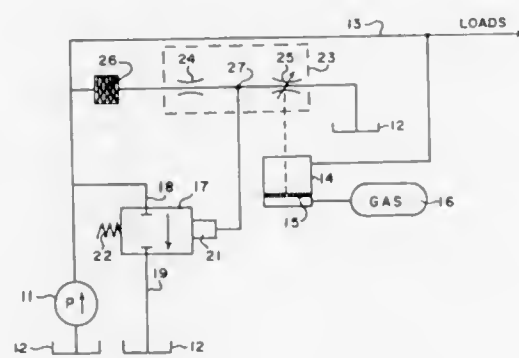
Paul F. Hayner, Lexington, Mass., and David G. Eldridge, Nashua, N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed July 23, 1971, Ser. No. 165,554

Int. Cl. F04b 49/00

U.S. Cl. 417—304

2 Claims



An hydraulic power supply system including a pump, an accumulator and a variable flow rate valve connected to by-pass to the reservoir that portion of the pump output which exceeds current system demand. This is accomplished by varying the flow rate of the by-pass valve in accordance with the quantity of fluid stored in the accumulator.

3,720,484

### HYDRAULIC PRESSURE TRANSFORMER

Walter Kirchsieper, Urechmatt 121, 5445 Eggenwil, Switzerland

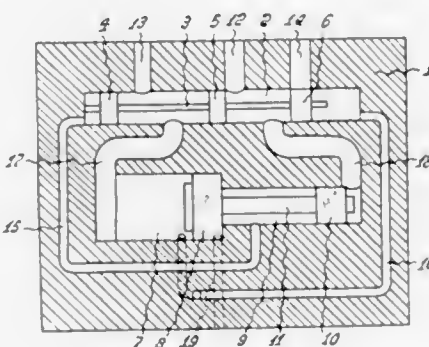
Filed March 2, 1971, Ser. No. 120,285

Claims priority, application Switzerland, March 4, 1970, 3142/70

Int. Cl. F04b 17/00, 35/00

U.S. Cl. 417—401

1 Claim



A hydraulic pressure transformer for the delivery of liquid under high and low pressure comprising a first bore for control purposes with three pistons on a common piston rod and at least two concentric bores of different cross sections with two working pistons of different cross sections connected by a common piston rod. The bores are interconnected by passages to effect pressure transformation of the liquid.

3,720,485

### ARTIFICIAL HEART

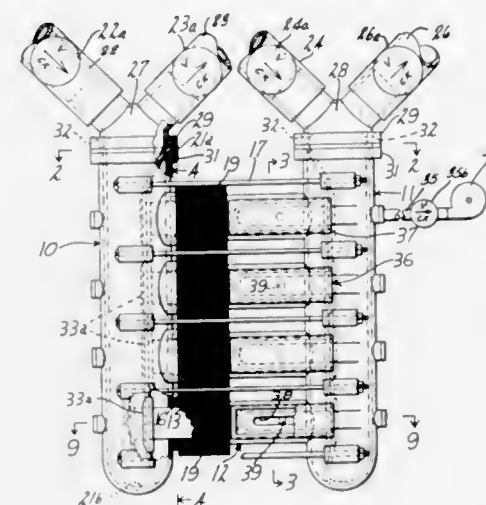
Norman W. Holman, Jr., 104 Hemlock Drive, Auburn, Ala.

Filed July 1, 1971, Ser. No. 158,925

Int. Cl. F04b 43/08, 43/12; A61f 1/00

U.S. Cl. 417—413

4 Claims



A pump, the construction of which makes it suitable for implantation in the human body, comprising a pair of pumping chambers of flexible material in the form of tubes having one closed end and one open end. A plurality of solenoids is arranged sequentially and alternately, starting adjacent the closed ends of the tubes, inwardly to distort the tubes, thus expelling fluid from the open ends. The solenoids and tubes are encased in a fluid tight housing maintained under sub-atmospheric pressure so that atmospheric pressure acts on fluid in the tubes, thus to return the tubes to expanded position, drawing a fresh supply of fluid after each pumping cycle. Circuitry and switches are provided to operate the solenoids in proper order.

3,720,486

### HYDRAULIC ACTUATORS

Pierre J. Jousson and Michel-Antoine Moret, Geneva, Switzerland, assignors to Institut de Recherche WOOG, Geneva, Switzerland

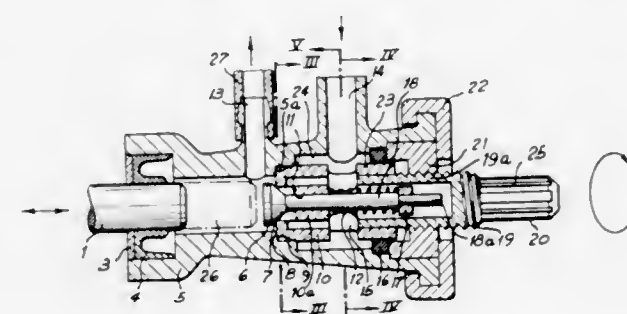
Filed Sept. 21, 1970, Ser. No. 74,102

Claims priority, application Switzerland, Sept. 19, 1969, 14,239/69

Int. Cl. F04b 21/02

U.S. Cl. 417—440

6 Claims



An hydraulic actuator for supplying liquid pressure pulses to a hand appliance for body care comprises a cylinder and reciprocating piston forming a working chamber, an outlet passage connected to the working chamber, an inlet chamber connected to the working chamber through an inlet valve, and pressure regulating means for bypassing a portion of the liquid to the inlet chamber on the pressure stroke of the piston. The pressure regulating means includes a valve holder adjustably mounted in the inlet chamber and movable toward and away from an opening in the working chamber opposite the piston, and the inlet valve is mounted therein inside the annular

region of the valve holder which closes the opening. Tapered notches at the front end of the valve holder cooperate with the housing to provide bypass passages of progressively increasing cross-sectional area as the valve holder is moved away from the opening, and are designed to provide a linear reduction in liquid pressure in the outlet passage.

3,720,487

### PRESSURE CONTROL

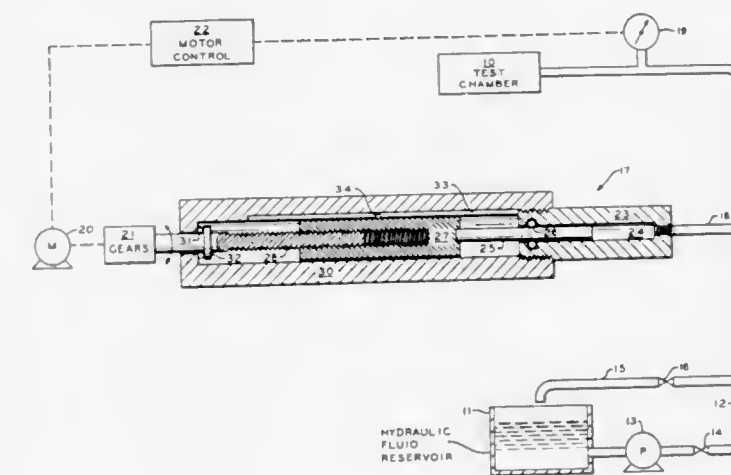
Bruce F. Wiley, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 4, 1971, Ser. No. 195,665

Int. Cl. F16l 55/04

U.S. Cl. 417—572

5 Claims



The pressure in a closed hydraulic system is maintained constant by adjustment of the volume of a variable-volume chamber in communication with the system. This adjustment is made by a servo unit in response to measured pressure changes in the hydraulic system.

3,720,488

### WELL PUMPING APPARATUS FOR POLLUTED WATER

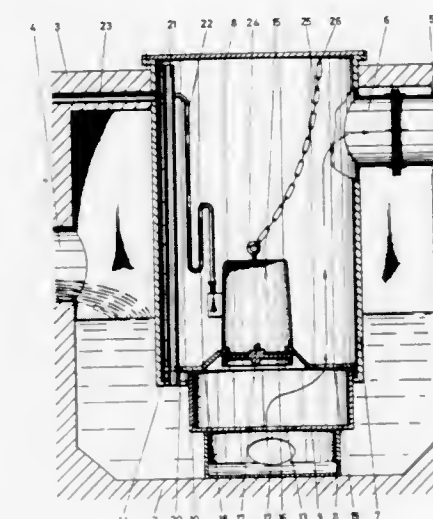
Louis Bood, Rodenrijs, Netherlands, assignor to Mowid Anstalt, Vaduz, Liechtenstein

Filed Sept. 22, 1971, Ser. No. 182,806

Int. Cl. F04d 29/40

U.S. Cl. 417—360

5 Claims



A well pumping apparatus for polluted water is disclosed wherein a housing portion is fixedly arranged within the wall. A removable portion, comprising an electric motor, a motor housing and an impeller, is arranged to sealingly engage the



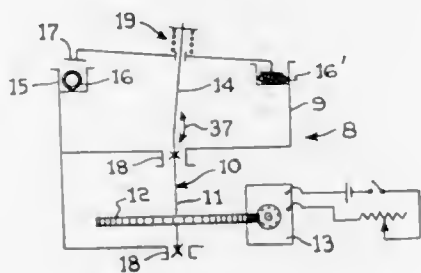
fixed housing portion with the well to define a pumping chamber.

3,720,489

## SELF CONTAINED FLUID PUMP DEVICE

Dick Raper, 3107 Shell Street, Midland, Tex.  
Filed April 2, 1971, Ser. No. 131,030  
Int. Cl. F04b 43/08, 35/04; H01m 1/04  
U.S. Cl. 418—45

9 Claims



A small self contained positive displacement pump which contains no mechanical type valves, and which can be utilized to transfer a finite quantity of liquid. A flexible looped tube is placed within a groove and a pumping head is superimposed thereover. The pumping head is attached to a rotatable shaft and causes fluid to flow through the tube when a peripheral edge portion of the head collapses a marginal length of the looped tube while traveling circumferentially about the groove.

The pumping head is biased into proper operative position by a combination fastener means and pressure regulator device. The pumping head is loosely captured by a portion of the main body of the pump by means of a lost motion coupling in a manner to prevent the tube from creeping longitudinally of the groove.

3,720,490

## APPARATUS FOR JOINING WALL TILES

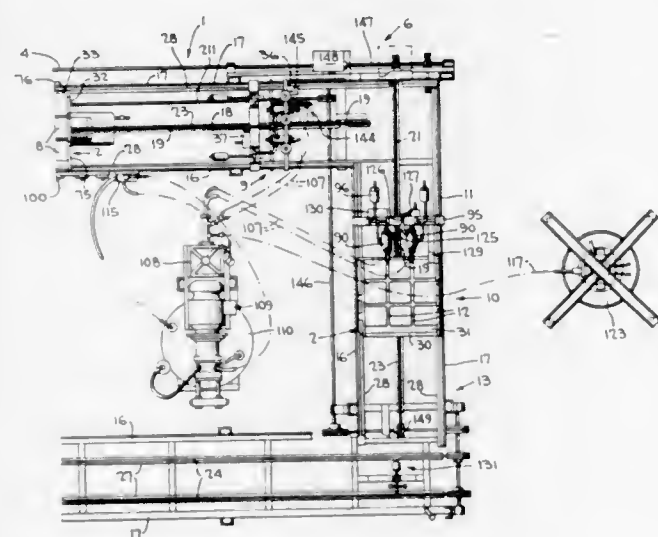
Luc Gaston de Vinck, Hunsberg, Merchtem, Belgium, assignor to Villeroy & Boch Keramische Werke KG, Mettlach, Germany

Filed Mar. 24, 1969, Ser. No. 809,651  
Claims priority, application Belgium, Mar. 26, 1968, 56,336

Int. Cl. B29c 27/00

U.S. Cl. 425—3

36 Claims



The specification describes an improved tile structure in the form of a sheet of tiles connected together at their

edges ready for mounting on a wall. The specification also described an apparatus for assembling tiles to form such sheets. The apparatus comprises a conveying system which is rectangular in plan and on one side is provided with means for ejecting tiles on to a rectangular support on the conveying system. On this same side of the conveying system and on the next following side there are means for placing jointing material in gaps or joints between the tiles on the support.

3,720,491

## APPARATUS FOR FORMING ARTICLES FROM POWDERED METAL

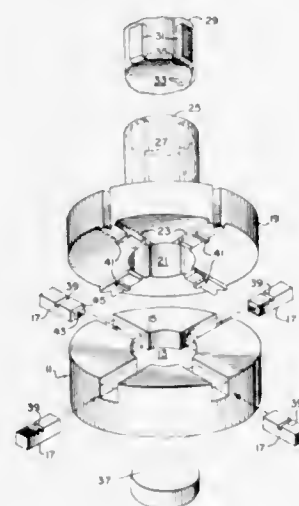
Frank G. Dedek, Westland, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed July 15, 1970, Ser. No. 54,971

Int. Cl. B30b 11/04; B29d 15/00

U.S. Cl. 425—78

10 Claims



An apparatus for forming a unitary article, such as a printing disk, from powdered metal wherein at least one given face of the article is required to have a preferred grain density. A die, complementary in area and configuration to the given face, is provided for forming the given face of said preferred grain density. The face-forming die is mounted within an aperture in the inner wall of a molding cavity wherein the aperture has an outlet on the cavity and is dimensionally greater than the face-forming die. A space is provided about the face-forming die for the accumulation of a disposable portion of compacted powdered metal of less than said preferred grain density, the space being partially bounded by surfaces around said face-forming die and sloping away therefrom to the walls of the aperture. Powdered metal is placed in the mold and forced against the face-forming die and into the provided space, thereby forming a unitary article having a preferred grain density at one or more given face while simultaneously providing for the accumulation of the disposable portion of less dense metal which may be removed in subsequent operations. The molded article is sintered to relieve work-hardening and then restruck to insure said preferred grain density and to improve facial definition. The restruck article may be subjected to further heat-treating operations depending on the desired physical characteristics required of the finished article.

3,720,492

## MACHINE FOR PROCESSING SYNTHETIC MATERIALS

Karl Hehl, 183 Siedlung, Lossburg, Württemberg, Germany

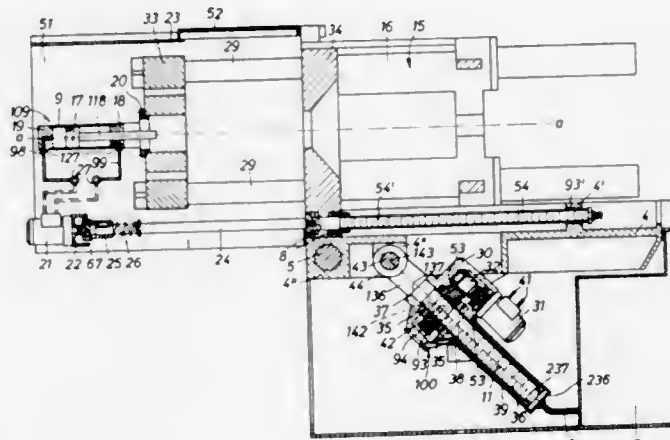
Filed Apr. 6, 1971, Ser. No. 131,666

Claims priority, application Germany, Apr. 25, 1970, P 20 20 336.5

Int. Cl. B28b 17/00

U.S. Cl. 425—107

10 Claims



An injection molding apparatus having a base and injection mold clamping means which is displaceable in its axial direction as well as pivotal by at least 90° with respect to the base by means of a motor-driven turning assembly having a screw and nut drive. The mold clamping means is moved axially by means of a motor-driven screw and nut drive.

3,720,493

## MACHINE FOR THE MANUFACTURE OF REINFORCED CONCRETE OR PRESTRESSED CONCRETE ELEMENTS

Mircea Borcoman, and Virgil Clufu, both of Paris, France, assignors to said Borcoman, by said Clufu 75 Paris, France

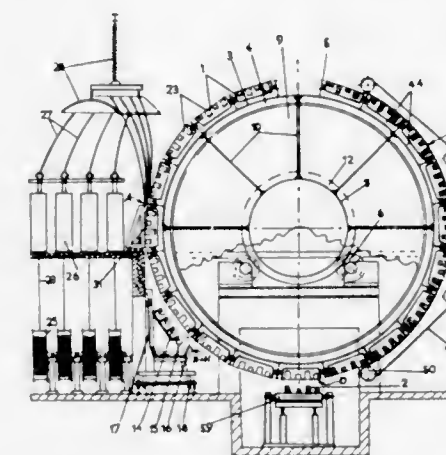
Filed July 21, 1970, Ser. No. 56,918

Claims priority, application France, July 25, 1969, 6925511

Int. Cl. B28b 23/04

U.S. Cl. 425—111

10 Claims



The elements are formed in molds. The machine includes means adapted to displace the molds, in a manufacturing circuit, by rotation, stepwise or continuously, around the horizontal axis, and installations for cleaning the molds, oiling the molds, assembling cores in the molds, concreting, continuous heat treatment of the concrete contained in the molds, demolding and removal of the finished concrete elements arranged outside and in the vicinity of the path followed by the molds and synchronized with the rotation of the molds. The machine is useful for the manufacture of posts, stakes, beams, planks, etc.

3,720,494

## APPARATUS FOR CASTING CERAMIC ARTICLES

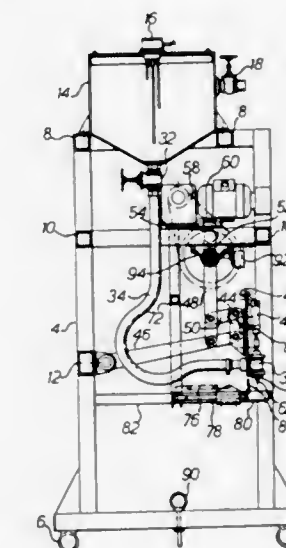
George Terah Gough, Newcastle, England, assignor to Gough and Company (Hanley) Limited, Hanley, Stoke-on-Trent, England

Filed July 9, 1971, Ser. No. 161,216

Int. Cl. B28c 7/16

U.S. Cl. 425—147

8 Claims



An automatic slip dispensing head comprises a slip dispensing nozzle which is lowered into a filling position from a retracted position, conductive probes between which the slip dispensed completes a circuit when a desired depth of slip has been dispensed into a mould, and a probe cleaning brush which operates to clean the probes between each filling operation.

3,720,495

## BURNER ASSEMBLY FOR LIQUID FUEL

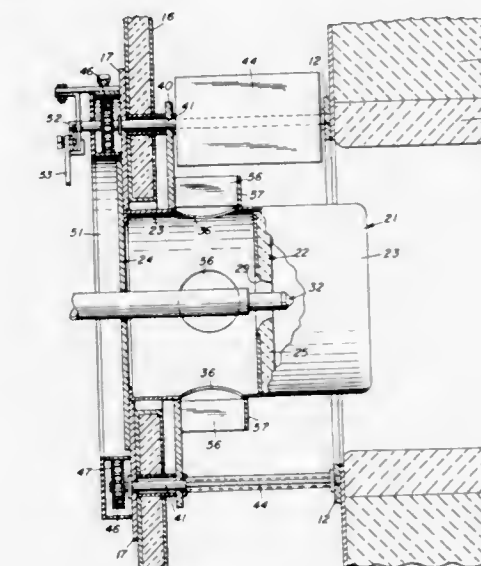
John Smith Zink; Hershel Goodnight, and Robert D. Reed, all of Tulsa, Okla., assignors to John Zink Company, Tulsa, Okla.

Filed April 5, 1971, Ser. No. 131,145

Int. Cl. F23m 9/00

U.S. Cl. 431—184

2 Claims



A burner assembly for the combustion of liquid fuel wherein a plurality of circumferentially spaced vanes are adjustable to control whirling movement of secondary air that moves over the exterior of a regenerative tile and to an assembly that includes interceptor vanes which prevent circumferentially moving air from moving into the regenerative tile which forms a part of the burner assembly.



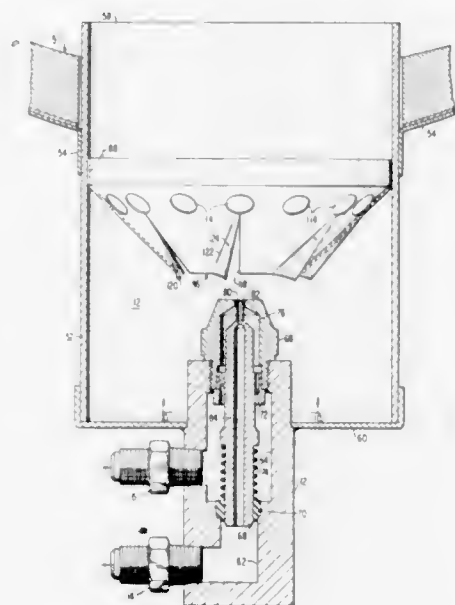
### 3,720,496 FUEL BURNER

Eugene C. Briggs, Dayton, Ohio, assignor to Koehring Company, Milwaukee, Wis.

Filed March 29, 1971, Ser. No. 128,734  
Int. Cl. F23d 15/02

U.S. Cl. 431—353

7 Claims



A burner nozzle projects a mixture of fuel oil and air into a burner tube fitted with an open ended flame retention head having the general configuration of a frustum of a cone the small end of which faces the nozzle and the large end of which abuts the interior wall of the burner tube. The zone on the nozzle side and around the circumference of the conical flame retention head is supplied with air under pressure. Slots each having an outwardly inclined vane adjacent one of its margins extend longitudinally of the head and open at both the periphery and the small end of the head to direct air from the pressure zone into an axially swirling pattern of motion within the head. Additional openings of circular configuration are disposed in a ring about the conical head in the vicinity of but

spaced from its large end, and the slots terminate at individual ones of these circular openings. The openings provide additional passages for directing air from the pressurized zone toward the axis of the head.

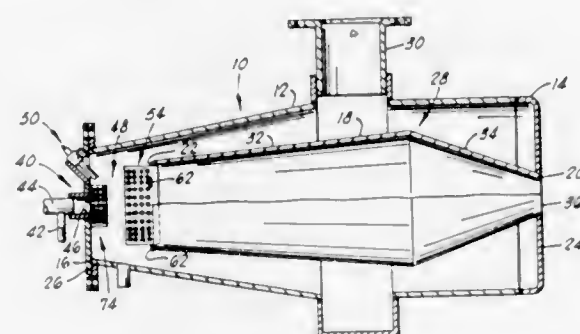
### 3,720,497 GAS BURNER APPARATUS

Edwin M. Arenson, El Reno, Okla., assignor to Black, Sivalls & Bryson, Inc., Oklahoma City, Okla.

Filed June 3, 1971, Ser. No. 149,716  
Int. Cl. F23d 15/02

U.S. Cl. 431—114

10 Claims



An improved gas burner apparatus of the type having a hollow inner liner supported within an outer shell, such that combustion air injected between the inner liner and the outer shell travels in a generally helical path to the rear end portion of the inner liner and thoroughly mixes with fuel injected into the end of the outer shell, the fuel and combustion air being mixed and burned generally within the inner liner. The improved gas burner apparatus of the present invention includes a noise abatement apparatus secured to the rear end of the inner liner to diffuse a portion of the combustion air thereby substantially eliminating undesirable noise encountered during operation of the gas burner apparatus, and a flame protection apparatus encompassing the opening for injecting fuel into the outer shell to diffuse a portion of the combustion air thereby preventing the pilot flame from being blown-out.

## CHEMICAL

### ERRATUM

For Class 8—115.7 see:  
Patent No. 3,720,500

### 3,720,498 INHIBITING CORROSION WITH NITROGEN- HETEROCYCLIC PHOSPHONIC ACIDS

Derek Redmore, Ballwin, Mo., assignor to Petrolite Corporation, Wilmington, Del.

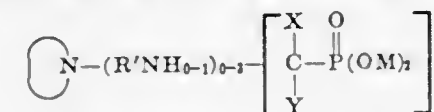
No Drawing. Original application Oct. 17, 1968, Ser. No. 768,509, now Patent No. 3,674,804, dated July 4, 1972. Divided and this application Aug. 26, 1971, Ser. No. 175,362

Int. Cl. C23f 11/16

U.S. Cl. 21—2.5

14 Claims

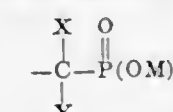
Process of inhibiting corrosion of metals, most particularly iron, steel and ferrous alloys, in a corrosive medium, such as, for example, a corrosive oil-containing medium, by contacting the surface of the metal, prior to contact with the medium or by dissolution in the medium or dissolution in a solvent and addition of said solution to the medium, with nitrogen-heterocyclic phosphonic acids and derivatives thereof characterized by aminomethyl (or substituted methyl) phosphonic acids or derivatives thereof bonded directly or indirectly, i.e., through a N-side chain to the nitrogen atom in the heterocyclic ring, for example those containing in the molecule at least one of the following units:



where



represents a heterocyclic ring having a nitrogen atom on the ring; R'NH<sub>0.1</sub> represents an amino-terminated side chain attached directly to the ring nitrogen (which side chain may or may not be present); and



represents a methyl (or substituted methyl) phosphonic acid group where M is hydrogen, an alcohol or a salt moiety, and X and Y are hydrogen or a substituted group such as alkyl, aryl, etc., of which one or two units may be present depending on the available nitrogen bonded hydrogens.

### 3,720,499

#### PROCESS FOR PRODUCING PYROLYTIC GRAPHITE

Chikara Hirayama, Murraysville, Pa., and Daniel A. Maniero, Racine, Wis., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 533,004, March 9, 1966, abandoned. This application March 6, 1970, Ser. No. 17,132  
Int. Cl. C01b 31/04

U.S. Cl. 423—448

8 Claims

A hydrocarbon is pyrolyzed to produce a stream of gas having a preselected average gas temperature. An electric arc heater may be employed having an elongated exhaust nozzle, which may be fluid cooled or not fluid cooled, and carbon in the form of soot and/or crystalline graphite may be deposited on the inside wall of the exhaust nozzle, depending on the temperature difference between the gas and the inside surface of the nozzle. Alternatively, an object to be coated with carbon

in the form of soot and/or pyrolytic graphite may be mounted in the stream of gas exhausted from the nozzle. The processes may be carried on at atmospheric pressure. The desired average gas temperature may be obtained by adjusting arc power, adjusting the mass flow rate of the hydrocarbon gas, passing a selected portion of the hydrocarbon gas through the arc path to be pyrolyzed and mixing it with another selected portion not passed through the arc path, or utilizing instant variations in current of an alternating current source as the current varies during each alternation between zero and a peak value. An object placed in the gas stream to be coated may be composed of a refractory metal, a refractory non-metal, or may be fluid cooled. Vacuum pump means is used where desired to maintain a pressure at or near atmospheric pressure in the area where an object to be coated comes in contact with the stream of hot gas.

### 3,720,500

#### TEXTILE MATERIALS AND PROCESSES FOR MAKING THE SAME

Donald J. Gale, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

No Drawing. Continuation-in-part of application Ser. No. 77,284, Dec. 21, 1960, which is a continuation-in-part of abandoned application Ser. No. 863,217, Dec. 31, 1959. This application Oct. 12, 1970, Ser. No. 80,206  
Int. Cl. D06m 13/28, 13/54, 15/54

U.S. Cl. 8—115.7

26 Claims

Cellulosic materials, particularly textile materials consisting of cellulosic fibers or blends of cellulosic and non-cellulosic fibers, are treated with compounds containing sulfato ethyl sulfone groups which function as vinyl sulfone group precursors. The compounds may be applied to the cellulosic material either concomitantly with thermosetting resins or subsequent to modification of the cellulosic material with thermosetting resins.

### 3,720,501

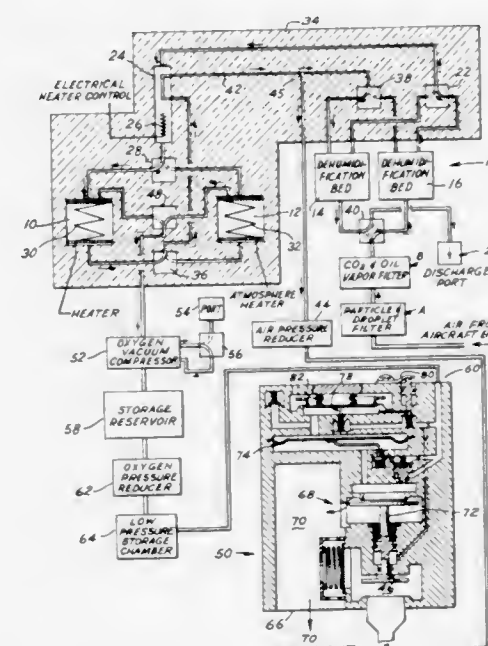
#### SYSTEM FOR ENRICHING INHALABLE AIR WITH OXYGEN

Robert L. Cramer and John W. Henneman, Davenport, Iowa, assignors to The Bendix Corporation

Filed Nov. 2, 1970, Ser. No. 86,240  
Int. Cl. B64d 13/08; B01j 7/00

U.S. Cl. 23—281

6 Claims



A system for providing oxygen enriched air to a recipient. Contaminants carried by air from an external source



are removed by a filter member. This filtered air is transported to a humidification chamber where the water vapor is reduced to a desired amount. The temperature of the air and crystals of barium oxide are simultaneously raised to a desired temperature. This heated air is then pressurized and brought into contact with the barium oxide to form barium peroxide. The unreacted air and nitrogen given up by the reaction is returned by a conduit to the humidification chamber where excess water vapor is picked up and returned to the atmosphere. After a predetermined time, communication of the pressurized air with the barium oxide is prevented and the pressure around the barium peroxide is reduced by a vacuum. When the pressure has been reduced sufficiently, the barium peroxide will revert to barium oxide by releasing oxygen. The released oxygen is condensed and stored in a reservoir. A dilution regulator has one inlet port connected to the conduit carrying the unreacted air and nitrogen and a second inlet port connected to the oxygen reservoir. A valve member located in the dilution regulator, which is responsive to a change in altitude, will proportion the oxygen with the unreacted air to maintain the physiological level for the recipient.

3,720,502

## CENTRIFUGE TEST TUBE STOPPER

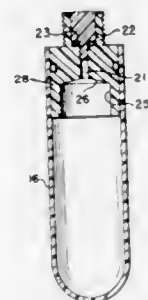
Lee Gropper, Los Altos Hills, and Lawrence E. Stahl, San Mateo, Calif., assignors to Beckman Instruments, Inc.

Filed Dec. 21, 1970, Ser. No. 100,005

Int. Cl. B011 3/00

U.S. Cl. 23—292

3 Claims



An easily assembled and disassembled centrifuge sample holder including a sample container and a stopper assembly which fits snugly inside the mouth of the container and carries an O-ring for forming a liquid-tight seal about the inner surface of the container with the stopper assembly having its outer dimensions no greater than the dimension of the cylindrical inner surface inside the mouth of the container so that said stopper assembly is movable to a multitude of positions along the inner cylindrical surface until the lower surface of the stopper abuts against the surface of the sample solution which thereby supports the stopper assembly in the direction of the axis of the sample container against the forces of centrifugation during operation of the centrifuge.

3,720,503

## SOLDER CLAD METAL

George P. Trost, North Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Original application Nov. 7, 1966, Ser. No. 592,579, now Patent No. 3,482,303, dated Dec. 9, 1969. Divided and this application Sept. 19, 1969, Ser. No. 871,230

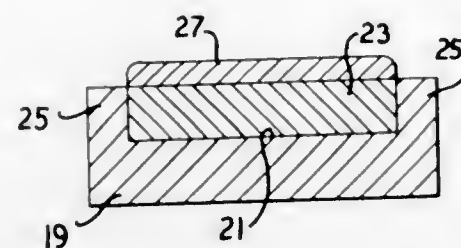
Int. Cl. B32b 15/18

U.S. Cl. 29—191.6

1 Claim

There is provided a three-component composite metal strip material from which articles to be soldered can be

punched, comprising a strip of readily solderable metal solid-phased bonded to a strip of nonsolderable metal,



and a layer of solder adhered to the exposed surface of the readily solderable metal which is inlaid in a groove in the nonsolderable metal.

3,720,504

## SINTERED STEEL-BONDED HARD METAL ALLOY AND A METHOD OF PREPARING THE SAME

Fritz Frehn, Krefeld, Germany, assignor to Deutsche Edelstahlwerke Aktiengesellschaft, Krefeld, Germany

No Drawing. Filed Oct. 16, 1970, Ser. No. 81,497

Claims priority, application Germany, Oct. 24, 1969, P 19 53 481.7

Int. Cl. B22f 1/00

U.S. Cl. 29—182.7

7 Claims

A sintered alloy of the type comprising a steel matrix and one or more metal carbides and which has high abrasion resistance, is characterized by the presence of free graphite in the steel matrix. Such sintered alloys are obtained by a method of sintering in which the sintered alloys are maintained for an extended period of time at sintering temperatures followed by controlled cooling.

3,720,505

## METHOD OF FORMING A PHOSPHATE GLASS TO INOCULATE WATER

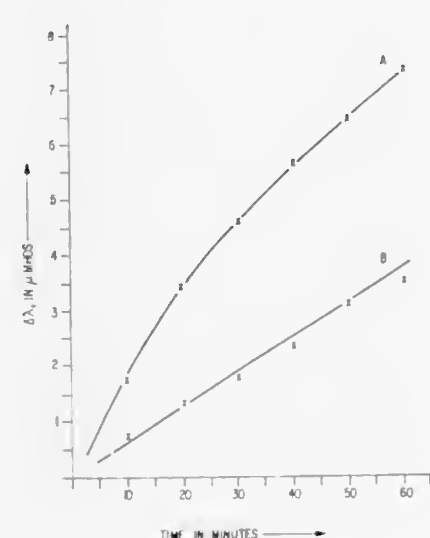
Hans Vogel, Ludwigshafen-Mundenheim, Germany, assignor to Gebr. Gluini GmbH, Ludwigshafen am Rhine, Germany

Filed Dec. 9, 1970, Ser. No. 96,509

Int. Cl. C03b 19/10

U.S. Cl. 65—21

7 Claims



A method for inoculating water with  $P_2O_5$ . A phosphate glass melt containing  $Na_2O$ ,  $CaO$ , and  $MgO$  and

having a base to acid ratio greater than 1.5:1.0 is brought to a temperature of at least  $1200^\circ C$ . and then cooled to form a glass. This glass is placed in the water to be inoculated, where the  $P_2O_5$  goes slowly into solution.

3,720,506

## PROCESS FOR SEPARATING FERROPHOSPHORUS AND PHOSPHORUS FURNACE SLAG FROM ONE ANOTHER IN A CASTING BED

Fritz Muller, Knapsack near Cologne; Hugo Werner, Hermulheim near Cologne; Werner Nolden, Bruhl, and Ursus Thummler, Hurth near Cologne, all of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack bei Köln, Germany

Filed July 8, 1970, Ser. No. 53,095

Claims priority, application Germany, July 23, 1969, P 19 37 381.0

Int. Cl. C22b 7/04

U.S. Cl. 75—24

1 Claim

Process for separating ferrophosphorus and phosphorus furnace slag from one another in, and removing them from, a casting bed receiving a ferrophosphorus/phosphorus furnace slag-mixture. The mixture is poured into the casting bed, allowed to remain therein for a period of 2 to 2.5 hours and then cooled; after a period of between 4 and 5 hours after pouring, the phosphorus furnace slag is crushed from above by subjecting it to mechanical breaking stresses or impact stresses and the crushed slag is removed from the downstream end of the casting bed; and, after a period of between 5 and 6 hours after pouring, the ferrophosphorus is crushed away from above by subjecting it to mechanical impact stresses and the crushed ferrophosphorus is removed from below.

Apparatus for use in carrying out the process. The apparatus may be a digger provided with a telescopic arm which is arranged so as to be rotatable around its longitudinal axis and has interchangeable crushing means, slag removing means or ferrophosphorus removing means mounted on the head end of the said telescopic arm.

3,720,507

## COPPER-LEAD ALLOY

Charles E. Lundin, Evergreen, Colo., assignor to Colorado Springs National Bank, Colorado Springs, Colo.

Filed Aug. 10, 1970, Ser. No. 62,338

Int. Cl. C22c 9/08, 11/00

U.S. Cl. 75—135

12 Claims

A method of making a homogeneous copper-lead alloy having a fine and even dispersion of the phases, and the alloy and its uses, wherein the method comprises adding an effective amount of a homogeneity promoter to a mixture of molten lead and copper. The promoter comprises elemental carbon and a rare earth compound. An example of the rare earth compound is a rare earth fluorocarbonate such as cerium fluorocarbonate.

3,720,508

## ALUMINUM ALLOY

Andrew J. Brock, Cheshire, and Michael J. Pryor, Woodbridge, both of Conn., assignors to Olin Corporation

Filed June 1, 1971, Ser. No. 148,582

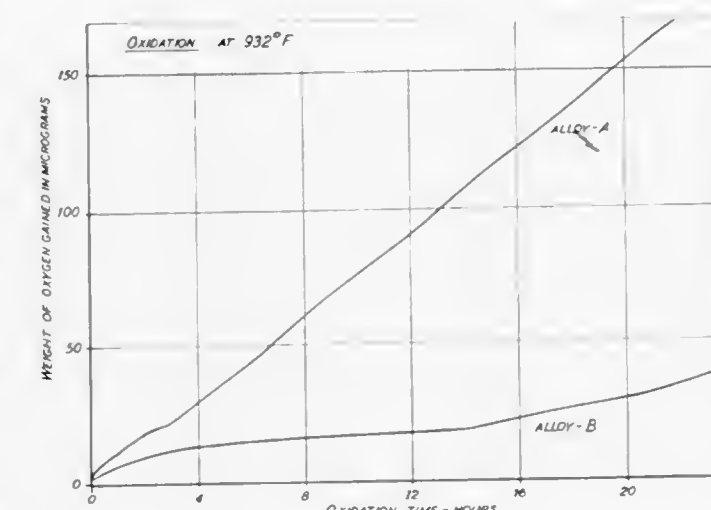
Int. Cl. C22c 21/02

U.S. Cl. 75—147

3 Claims

This disclosure teaches a novel aluminum alloy having high resistance to oxidation during hot rolling, improved surface appearance and improved bright anodizing characteristics and the method of processing same. The alloy contains from 0.5 to

3 percent magnesium, from 0.02 to 0.5 percent silver, from 0.001 to 0.2 percent iron, from 0.001 to 0.15 percent silicon,



balance essentially aluminum, wherein the silver is substantially dissolved in solid solution in the matrix.

3,720,509

## NICKEL BASE ALLOY

Wilbert P. Danesi, Deerfield, Ill., and Rudolf H. Thielemann, Portland, Oreg., assignors to Martin Metals Company, Wheeling, Ill.

No Drawing. Filed Dec. 14, 1970, Ser. No. 98,013

Int. Cl. C22c 19/00

U.S. Cl. 75—171

4 Claims

The present invention contemplates nickel-base alloys consisting in percent by weight essentially of about 0.1% to about 0.25% carbon, about 7.5% to about 10% chromium, about 0.75% to about 2% titanium, about 5% to about 6.25% aluminum, about 8% to about 12% cobalt, about 8% to about 12% tungsten, about 0.8% to about 2.5% hafnium, about 0.002% to about 0.2% boron, up to about 0.15% zirconium, about 1.5% to about 3.5% tantalum, about 0.2% to about 0.9% molybdenum, with the balance being essentially nickel.

3,720,510

## COMPRESSION RESISTANT ZINC BASE ALLOY WITH HIGH WEAR RESISTANCE

Takehiro Isobe, Yama, Toshio Shimazu, Tokyo, and Koji Ogawa, Yukio Arake, Aizu Wakamatsu, and Tatsuji Hashimoto, Yama, Japan, assignors to Nisso Smelting Co., Ltd., Tokyo, Japan

Filed July 22, 1971, Ser. No. 165,016

Claims priority, application Japan, July 27, 1970, 45/65,023

Int. Cl. C22c 17/00

U.S. Cl. 75—178 AM

2 Claims

Zinc base alloy consisting by weight of about 2 to about 15% aluminum, about 2 to about 10% copper, about 0.01 to about 0.15% magnesium, about 0.02 to about 0.15% beryllium, about 0.01 to about 0.05% titanium, about 0.01 to about 3% silver and the balance of zinc, has superior wear resistance and superior compression resistance extending to about 80 to about 170 kg./mm.<sup>2</sup> of compressive strength and about 32 to about 43 kg./mm.<sup>2</sup> of proof stress on compressive deformation at about 0.2% offset.



### 3,720,511 PRODUCTION OF METAL STRIP FROM POWDERED METAL

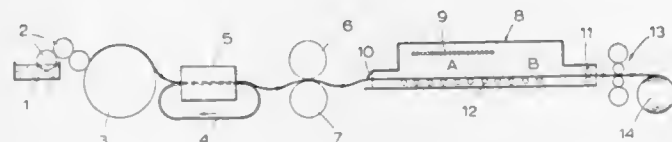
Idwal Davies and Alan G. Harris, Swansea, Wales, assignor to The British Iron and Steel Research Association, London, England

Filed Mar. 17, 1970, Ser. No. 20,184

Claims priority, application Great Britain, Mar. 18, 1969, 14,155/69

U.S. Cl. 75—214 Int. Cl. B22f 1/00

5 Claims



A process is provided for rolling metal strip, particularly iron or iron alloy strip, directly from powdered metal utilising the technique of batch sintering a green strip or a partially sintered strip in coiled form in a batch annealing furnace at relatively low temperatures. In a preferred embodiment a green strip is formed by compacting a layer found from a metal/binder composition, partially sintering the green strip by passage through an in-line furnace, coiling the partially sintered strip and sintering it in a batch annealing furnace at a temperature substantially below that of the in-line furnace.

### 3,720,512 CLOSED DIE FORGING METHOD OF MAKING HIGH DENSITY FERROUS SINTERED ALLOYS

Tetsuro Yamaguchi, Yuichi Saito, both of Urawa-shi, Saitama-ken; Yoshio Nishino, and Inove Shunichi, both of Omiya-shi, Saitama-ken, all of Japan, assignors to Mitsubishi Kinzoku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed May 6, 1970, Ser. No. 35,183

Int. Cl. B22f 3/12

U.S. Cl. 75—221

2 Claims

Closed die forging method of high density ferrous sintered alloys, wherein an mixture iron based and added components is preformed, then the preform is presintered at a predetermined temperature, subsequently rapidly heated for a short period and finally hot-formed.

### 3,720,513 MIGRATION IMAGING METHOD INVOLVING SOLVENT WASH-AWAY OF UNMIGRATED PARTICLES

Robert W. Gundlach, Victor, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Continuation-in-part of Ser. No. 851,872, Aug. 21, 1969, Pat. No. 3,648,607. This application March 31, 1970, Ser. No. 24,148

Int. Cl. G03g 5/00, 13/20, 13/22

U.S. Cl. 96—1 R

26 Claims

A migration imaging system wherein an imaging member typically comprising a softenable layer, migration marking material, and a supporting substrate, is provided, an electrical latent image is formed thereon, and the latently imaged member is softened whereby the marking material migrates in depth in the softenable layer in imagewise configuration toward the substrate. This member is then more fully developed by substantially uniformly recharging in the presence of activating electromagnetic radiation and by removing the background and residual materials.

### 3,720,514 ELECTROPHOTOGRAPHIC PAPER HAVING AN INORGANIC COLLOIDAL OXIDE COATING

Satoru Honjo, and Yasuo Tamai, both of Asaka, Japan, assignors to Xerox Corporation, Stamford, Conn.

Filed July 6, 1970, Ser. No. 52,311

Claims priority, application Japan, July 17, 1969, 44/56668

Int. Cl. G03g 5/00

U.S. Cl. 96—1.5

16 Claims



An electrophotographic paper is provided which comprises a waterproof paper treated with an inorganic colloidal oxide dispersion having an electroconductive layer coated over the treated surface and a photoconductive layer residing on the surface of the electroconductive layer.

### 3,720,515 MICROELECTRONIC CIRCUIT PRODUCTION

Charles C. Stanley, Canoga Park, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Division of Ser. No. 3,435, Jan. 16, 1970. This application Oct. 20, 1971, Ser. No. 190,834

Int. Cl. G03c 5/00, 11/00

U.S. Cl. 96—38.4

6 Claims

Microelectronic circuits are produced by evaporating a photosensitive compound such as a silver halide onto a chip which is then exposed to radiation such as light, or an electron beam whose motion may be controlled by a computer or similar device. The chip is then developed leaving behind the metallic conductive circuit, and the undeveloped portion is removed preferably by heating.

### 3,720,516 SILVER HALIDE EMULSIONS STABILIZED WITH MANGANOUS SALTS

Robert Newell Woodward and Nelson Robert Sidebotham, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Oct. 15, 1971, Ser. No. 189,745

Int. Cl. G03c 1/30

U.S. Cl. 96—110

11 Claims

Processes for precipitating silver halide grains in the presence of a rhodium salt and stabilizing emulsions comprising said grains with (1) a water soluble manganous salt or (2) a combination of said water soluble manganous salt and cadmium bromide are disclosed.

Photographic emulsions and elements containing these silver halide grains are ecologically desirable and are particularly useful in providing unexpected and improved sensitometric properties, particularly upon storage.

### 3,720,517 PREPARATION OF A FERMENTED MALT CHAMPAGNE

Vincent S. Bavisotto, Mahtomed, and Jerome S. Haggmiller, St. Paul, Minn., assignors to Theodore Hamm Brewing Co.

No Drawing. Filed Dec. 21, 1970, Ser. No. 100,521

Int. Cl. C12g 1/06

U.S. Cl. 99—35

5 Claims

A naturally brewed beverage having a champagne taste prepared by adding a sugar and cold water dispersible edible organic acid to a yeast fermented boiled aqueous medium containing a fermentable carbohydrate, a food

grade material having a high soluble protein or amino acid content, malt and hops or hops extract.

### 3,720,518 PROCESS FOR THE MANUFACTURE OF A CONCENTRATED COFFEE PRODUCT

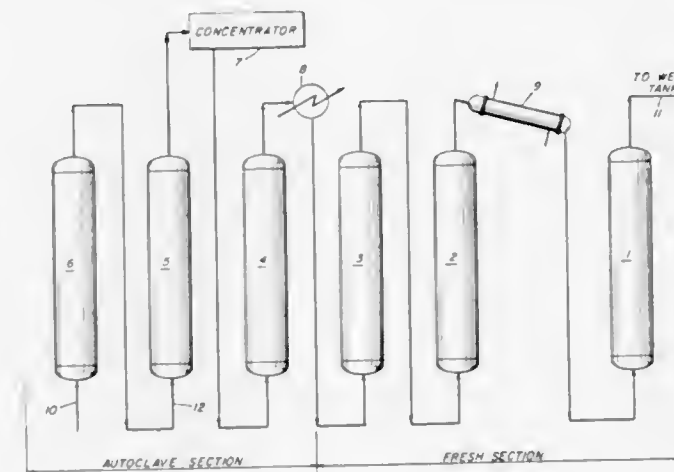
Gustavo M. Galdo, River Edge, and Irwin L. Adler, River Vale, N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed Feb. 23, 1971, Ser. No. 117,991

Int. Cl. A23f 1/08

U.S. Cl. 99—71

25 Claims



A process whereby a high concentration coffee extract containing about 30 to 40% solids by weight of the extract can be produced in an ordinary percolator set without incurring any significant loss of extraction yield. The key step in the process of this invention is the use of intercolumn concentration prior to the fresh stage in a percolator set. The concentrated extract is advantageously used in further processing to produce a soluble coffee product.

### 3,720,519 FLAVOR POTENTIATOR COMPRISING DRIED, YEAST FERMENTED WHEY AND METHOD OF USE

Robert M. Hamilton, and Salvatore F. Ziccarelli, both of Downers Grove, Ill., assignors to Beatrice Foods Co., Chicago, Ill.

Filed Feb. 16, 1971, Ser. No. 115,752

Int. Cl. A23l 1/26

U.S. Cl. 99—140 N

15 Claims

Flavor potentiators for use in foods and food products. The potentiators are dried yeast fermented whey of low moisture content and the potentiators are mixed with food at levels up to 10 percent by weight. After the potentiators are mixed with foods the potentiators are, preferably, in a hydrated state.

### 3,720,520 PREPARATION OF BLEU CHEESE FLAVORED PRODUCT

Anthony J. Luksas, Chicago, Ill., assignor to Beatrice Food Co., Chicago, Ill.

Continuation-in-part of Ser. No. 743,050, July 8, 1968, abandoned. This application Nov. 10, 1971, Ser. No. 197,481

Int. Cl. A23l 1/26

U.S. Cl. 99—140 R

5 Claims

A bleu cheese flavor is produced by growing *Penicillium roqueforti* with aeration in an aqueous medium of sodium caseinate and fat for at least 24 hours at 15° to 40°C.

### 3,720,521 PREVENTION OF CAKING OF POWDERED SUGAR

Tokuji Tanaka and Hideaki Hayashi, Tokyo, Japan, assignors to Sankyo Company Limited

No Drawing. Filed Feb. 9, 1971, Ser. No. 114,030

Claims priority, application Japan, Feb. 18, 1970, 45/14,351

Int. Cl. A23l 1/22

U.S. Cl. 99—141 R

4 Claims

Powdered sugar having incorporated therein a sufficient amount of invertase to prevent caking.

### 3,720,522 DRESSING CONTAINER ASSEMBLY

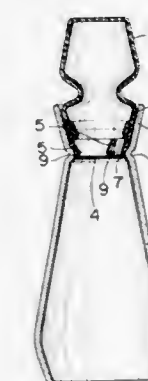
Shizuo Nakagami, 7-26, 1-chome Shimomae, Toda, Japan

Filed Oct. 16, 1970, Ser. No. 81,291

Int. Cl. B65b 29/10

U.S. Cl. 99—171 CP

2 Claims



This invention relates to the construction of a capsule type dressing container assembly comprising an integral combination of a container containing salad oil and a container containing a spice-vinegar mixture, in which when it is desired to serve dressing, a partition between said containers is broken away with a single finger to allow inter-mixture of the contents in the containers. The container assembly is then shaken to sufficiently mix up the contents, whereby desired salad dressing is prepared instantly.

### 3,720,523 DRESSING CONTAINER ASSEMBLY

Shizuo Nakagami, 7-26, 1-chome Shimomae, Toda, Japan

Filed Oct. 16, 1970, Ser. No. 81,292

Int. Cl. B65b 29/10

U.S. Cl. 99—171 CP

6 Claims



The present disclosure relates to a container assembly designed to allow instant preparation of fresh dressing and immediate serving thereof on the table. According to the invention, a lower container containing salad oil



and an upper container containing a spice-vinegar mixture are integrally joined. A cutter assembly is fixedly provided at the opening portion or mouth of the oil container and has a piston erected at the center of the base of said assembly. A seal is tightly secured at the end of the opening portion or mouth of the vinegar container and a cylinder is provided at the center of said seal. The mouth of the upper container is not fixed to the inner face of the cutter assembly but is arranged to be freely rotatable. The wall portion of the base of the seal that surrounds the cylinder is made very thin so that when the upper container is pressed into the lower container, said thinned portion is broken to remove the partition between said containers, thus allowing the intermixture of their contents. The mixed contents are then shaken for better mixing thereof, whereby salad dressing for one meal is readily prepared.

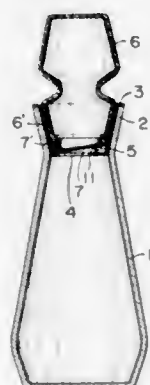
**3,720,524**  
**CONTAINER ASSEMBLY WITH FRANGIBLE MIXING MEANS**

Shizuo Nakagami, 7-26, 1-chome Shiomae, Toda, Japan

Filed Oct. 16, 1970, Ser. No. 81,293  
Int. Cl. B65b 29/10

U.S. Cl. 99—171 B

5 Claims



The present disclosure relates to a container assembly designed to allow impromptu preparation and serving of fresh salad dressing on the table. A lower container containing salad oil and an upper container containing a spice-vinegar mixture are integrally joined. A seal cutter assembly is provided in the inside of the opening portion of the oil container, while a seal is secured in the inside of the opening portion of the upper container. The mouth of the upper container is adapted to be rotated while being kept in a closely fit engagement in the mouth of the oil container. When the containers are rotated relative to each other, the seal in the upper container is readily cut away by the seal cutter fixed to the lower container, thus allowing intermixture of the materials in the containers.

**3,720,525**  
**ELECTROLESS COPPER PLATING SOLUTIONS WITH ACCELERATED PLATING RATES**

Nathan Feldstein, Kendall Park, and Joel Alan Weiner, Cranbury, N.J., assignors to RCA Corporation

No Drawing. Filed Aug. 16, 1971, Ser. No. 172,300  
Int. Cl. C23c 3/02

U.S. Cl. 106—1  
The rate of plating copper onto an active metallic surface of a substrate from an electroless copper plating solution is enhanced by adding to the plating solution an ionic compound consisting of either an acetate, a nitrate, an oxalate, a lactate, a chloride, a tartrate, a formate, a phthalate, a tungstate, a molybdate, a chlorate, a perchlorate, a citrate, a malonate, or mixtures thereof.

**3,720,526**  
**GLASS-CERAMIC BODY**

David A. Duke, Corning, and John F. MacDowell, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 452,388, April 30, 1965, abandoned. This application Aug. 12, 1971, Ser. No. 171,343  
Int. Cl. C03c 3/22

U.S. Cl. 106—39.6  
This invention relates to the manufacture of dense, fine-grained glass-ceramic articles having compositions within the  $\text{Na}_2\text{O}$  and/or  $\text{K}_2\text{O}$ - $\text{Al}_2\text{O}_3$ - $\text{SiO}_2$  field which are nucleated with  $\text{TiO}_2$  and/or  $\text{ZrO}_2$  and/or  $\text{SnO}_2$  and wherein the principal crystal phase is a nepheline-type crystal, i.e., a nepheline and/or kaliophilite solid solution.

**3,720,527**  
**FAST SETTING HYDRAULIC CEMENTS FROM GLASS POWDERS**

Robert J. Farrauto, Painted Post, and William L. Haynes, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed April 15, 1971, Ser. No. 134,409  
Int. Cl. C04b 7/00

U.S. Cl. 106—85  
The present invention is concerned with the production of strong amorphous hydraulic cements from glass powders in the general composition field  $\text{R}_2\text{O}$ - $\text{SiO}_2$ - $\text{P}_2\text{O}_5$ , wherein  $\text{R}_2\text{O}$  consists of  $\text{Na}_2\text{O}$  and/or  $\text{K}_2\text{O}$ , which are relatively very fast setting, i.e., have setting times normally less than one hour. More specifically, the glass powders operable in this invention consists essentially, by weight on the oxide basis, of about 15-85%  $\text{R}_2\text{O}$ , 10-80%  $\text{SiO}_2$ , and 3-20%  $\text{P}_2\text{O}_5$ .

**3,720,528**  
**CEMENT HAVING IMPROVED COLOR**

Russell T. Jordan, Denver, Colo.  
(180 S. Xenia St., Enon, Ohio 45323)

No Drawing. Continuation-in-part of application Ser. No. 576,816, Sept. 2, 1966. This application May 18, 1970, Ser. No. 38,546

Int. Cl. C04l 7/02

U.S. Cl. 106—90  
Colored cements having improved color and reduced efflorescence are prepared by adhering to a portion of the surface of a majority of the unset cement particles a surface-tension reducing agent and/or a dispersant which effects dispersion by establishing a common charge on each of the cement particles without substantial reduction in the size of the particles. Preferably, the organic matter is adhered to the cement particles by impinging a stream of one of the particles on a stream of the other and preferably both a surface-tension reducing agent and a dispersant are utilized.

**3,720,529**  
**CEMENTS**

Russell T. Jordan, Denver, Colo.  
(180 S. Xenia St., Enon, Ohio 45323)

No Drawing. Continuation-in-part of application Ser. No. 576,835, Sept. 2, 1966. This application May 18, 1970, Ser. No. 38,603

Int. Cl. C04l 7/02

U.S. Cl. 106—90  
Cements having a variety of improved properties including reduced efflorescence and improved appearance when molded can be prepared by adhering to a portion of the surface of a majority of the unset cement particles a surface-tension reducing agent and/or a dispersant which effects dispersion by establishing a common charge on each of the cement particles without substantial reduc-

tion in the size of the particles. Preferably, the organic matter is adhered to the cement particles by impinging a stream of one of the particles on a stream of the other and preferably both a surface-tension reducing agent and a dispersant are utilized.

**3,720,530**  
**COMPOSITION FOR PREVENTING RUSSET ON POME FRUIT COMPRISING CASEIN AND HYDRATED SILICONE DIOXIDE**

Hisajiro Yukinaga, 1-4-2 Kusatsu, Kusatsu-shi, Japan; Yoshimasa Nan'jo, 3-6 Asahigaoka-cho, Tondabayashi, Japan; and Takashi Wada, 2455 Kariya, Aki, Japan  
No Drawing. Filed July 30, 1971, Ser. No. 167,816  
Claims priority, application Japan, Sept. 7, 1970, 45/78,270

U.S. Cl. 106—146  
Int. Cl. C08h 17/02

6 Claims  
An agricultural composition for preventing a russet formation on pome fruit comprising not less than 50% by weight of finely divided, amorphous and hydrated silicon dioxide being substantially  $\text{SiO}_2 \cdot n\text{H}_2\text{O}$ , not more than 10% by weight of casein, and an agriculturally acceptable carrier.

**3,720,531**  
**PROCESS FOR RECOVERING AND MANUFACTURING SILICIC ACID SYSTEM PIGMENT FROM ALKALI PROCESS PULP BLACK LIQUOR CONTAINING SILICATES**

Toshiaki Makino, 360 Iwai-machi, Hodogaya-ku, Yokohama-shi, Japan

Filed Mar. 17, 1971, Ser. No. 125,083

Claims priority, application Japan, Oct. 23, 1970, 45/92,748

U.S. Cl. 106—288 B  
Int. Cl. C09c 1/30

5 Claims  
A process for recovering and manufacturing silicic acid system pigment from alkali process pulp black liquor containing silicates, in which when said black liquor contains water-soluble silicates, said liquor being added with at least one member selected from the group consisting of substances having stronger acidity than silicic acid, substances having stronger alkalinity than the alkali as used for digestion or their salts, and when said black liquor contains water-insoluble silicates, said liquor being added with acids or ammonium salts which produce water-soluble salts with said water-insoluble silicates or added with carbon dioxide gas, to obtain complex of silicic acid system and organic substance.

**3,720,532**  
**HYDROPHOBIC SILICA**

Edgar A. Simpson and Carroll F. Doyle, Ellicott City, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed Apr. 23, 1971, Ser. No. 137,031

U.S. Cl. 106—308 Q  
Int. Cl. C09c 1/28

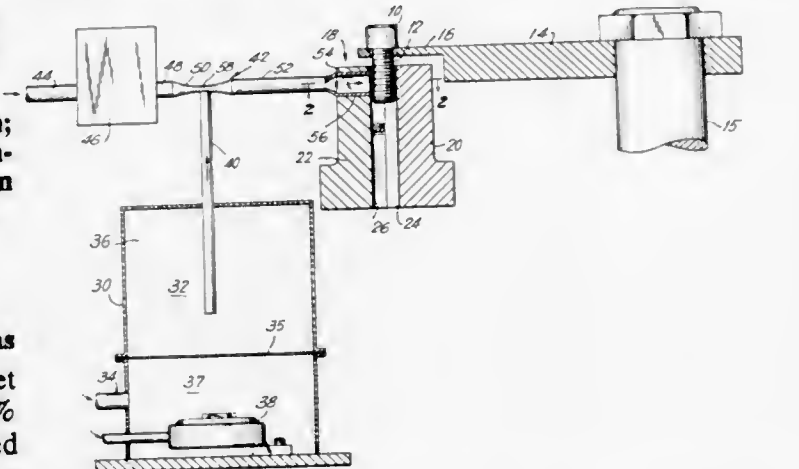
8 Claims  
Hydrophobic silica materials are produced by fluid energy milling a silica hydrogel at a temperature of about 100° C. to 215° C. at an essentially atmospheric or superatmospheric pressure to yield a silica hydrogel having an active surface and a substantial silanol group population, and then contacting this milled active silica hydrogel product with a straight chain alcohol of from 4 to 20 carbon atoms at a temperature of about 135 to 220° C.

**3,720,533**  
**METHOD FOR APPLYING A THERMOPLASTIC LOCKING PATCH ON A THREADED FASTENER**

James J. Gallagher, Chalfont, Pa., assignor to Standard Pressed Steel Co., Jenkintown, Pa.

Filed Jan. 12, 1971, Ser. No. 105,936

Int. Cl. B44d 1/094



A finely powdered thermoplastic material is placed in a fluidizing chamber and is dispensed on a preheated threaded fastener element in controlled amounts by controlled air pulsations which pass through a venturi tube arrangement. The powdered material is deposited on the threaded surface in a predetermined amount and is fused thereto to provide a locking patch of solidified thermoplastic material.

**3,720,534**  
**POLYMER GELS AND METHOD OF MAKING SAME**

Norman Macaulay, Tonawanda, and Henn Ruus, Niagara Falls, both of N.Y., assignors to Moore Business Forms, Inc., Niagara Falls, N.Y.

Continuation of Ser. No. 798,257, Feb. 3, 1969, abandoned, which is a continuation of Ser. No. 341,055, Jan. 29, 1964, abandoned. This application May 25, 1970, Ser. No. 41,685

U.S. Cl. 117—36.2  
A solid composition exuding oil under pressure and constituted essentially of a solid, generally rigid, lattice of molecules of an acrylate polymer cross-linked with sufficient cross-linking agent up to a minor amount of yield a solid water-insoluble polymer, said lattice having non-volatile, non-drying oil occluded in situ uniformly therethrough, the oil being present in the amount of about 35-80 percent by weight of the solid polymer, the oil being a solvent for the monomer and cross-linking agent and a non-solvent for the solid polymer but exerting at least a partial swelling or plasticizing action on the polymer. The composition may be formed as structures varying from shaped three-dimensional masses to discrete finely-divided particles. The compositions are prepared by voring an intimate admixture of the monomer and cross-linking agent in the oil and polymerizing the same in situ. Finely-divided particles are obtained by the further steps of dispersing the admixture of monomer oil solution in an aqueous medium and effecting the polymerization while maintaining the dispersion.

**3,720,535**  
**PROCESS FOR APPLYING A NON-SELF-SUPPORTING METAL LAYER ATOP A PLATE SURFACE**

Hubert Gene Parish, Belmont, and Bernard Cesar Einstein, Redwood Estates, both of Calif., assignors to Litton Systems, Inc., San Carlos, Calif.

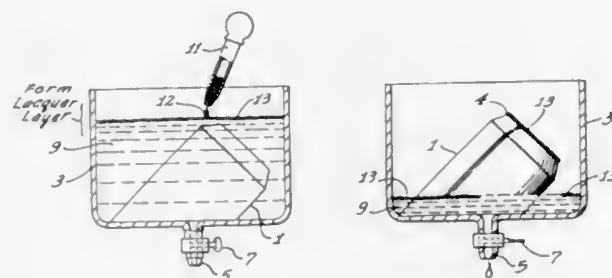
Filed March 15, 1971, Ser. No. 124,108

U.S. Cl. 117—46 CA  
Int. Cl. C23c 1/00

8 Claims  
The process of coating or placing a fragile thin non-self-supporting metal layer upon a surface of a flat platelike body,



such as a microchannel plate as disclosed comprises the steps of placing a thin self-supporting layer of lacquer upon the surface of the platelike body, thereupon depositing over and atop said lacquer layer a sufficient metal to the desired thickness, suitably by vacuum deposition techniques, to form a layer of the metal, and then placing the entire structure in an oven to bake off the lacquer in an air atmosphere and allow the thin



non-self-supporting metal layer to settle against the end surface of the plate. An additional process provides for the formation of the lacquer layer in which the plate remains dry by spreading liquid lacquer over the surface of a fluid in which is submerged a support ring, allowing the lacquer to harden, draining the fluid to permit the lacquer to drape over the support ring, removing the latter assembly and applying the lacquer layer to the platelike body.

3,720,536

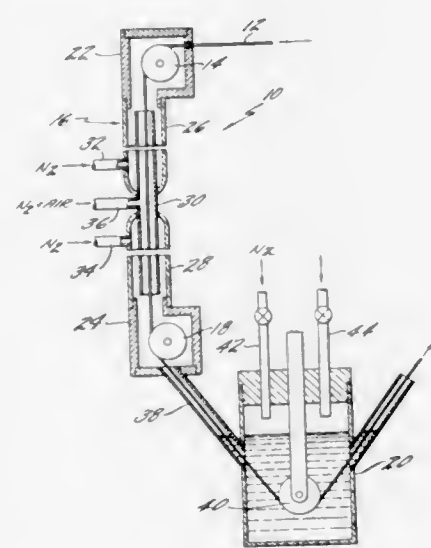
## TREATMENT OF CARBON FIBERS

Daniel A. Scola, Glastonbury, and Malcolm Basche, West Hartford, both of Conn., assignors to United Aircraft Corporation, West Hartford, Conn.

Filed June 18, 1970, Ser. No. 47,489  
Int. Cl. B44d 1/092, 5/12; C01b 31/07

U.S. Cl. 117—47 R

3 Claims



A method of treating carbon fiber to improve its bonding characteristics in a resin matrix comprising heating the fiber to 1,000°–1,500° C and exposing the heated fiber to an atmosphere consisting essentially of nitrogen and 0.1–1.8 percent, by volume, of oxygen for a period of 0.1–60 seconds.

3,720,537  
PROCESS OF COATING AN ALLOY SUBSTRATE WITH AN ALLOY

David V. Rigney, Portland, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Nov. 25, 1970, Ser. No. 92,932

Int. Cl. C23c 11/00, 17/00

U.S. Cl. 117—50

6 Claims

A process for coating an alloy to render it resistant to oxidation, sulfidation and thermal shock by forming a dispersion of an aluminum alloy and a chromium-aluminum alloy and then bonding the dispersion to the substrate.

3,720,538

METHOD OF PROTECTING MATERIALS AGAINST WATER ABSORPTION

Eduard Bergmeister, Paul-Gerhard Kirst, Siegfried Nitzsche, Ewald Pirson, and Michael Roth, all of Burghausen/Obb., Germany, assignors to Wacker Chemie GmbH, Munich, Germany

Division of Ser. No. 739,662, June 25, 1968, abandoned. This application Dec. 14, 1970, Ser. No. 98,189

Claims priority, application Germany, June 30, 1967, W 44,287

Int. Cl. B32b 13/12; B44d 1/14

U.S. Cl. 117—72

9 Claims

A mixture of 20 to 99% by weight of an organic synthetic resin and 1 to 80% by weight of an organopolysiloxane having the average formula



wherein R is selected from the group consisting of hydrogen methyl and at least 50 percent of the R's being methyl, R' is alkyl of one to four carbon atoms, x, y and z are 0, 1, 2 or 3 with the sum of x + y + z being not greater than 3, the average value of x being 0.9 to 1.7 and the average value of x and y being 0.00 to 0.10 with at least one of the average values for x and y being other than 0.00, said mixture being dissolved in an organic solvent, which is useful for forming a prime coat on construction materials.

3,720,539

PROCESS FOR IMPROVING THE SURFACE ADHESION OF SHAPED ARTICLES MADE FROM POLYESTERS

Markus Selbel, Mainz, and Klaus Thoesse, Wiesbaden-Schlierstein, both of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed April 22, 1968, Ser. No. 723,265

Claims priority, application Germany, April 25, 1967, K 62108

Int. Cl. B32b 27/08; B44d 5/04

U.S. Cl. 117—138.8 F

1 Claim

This invention relates to a process for modifying the surface of a shaped article made from a polyester which comprises treating the article with an aqueous solution containing a halogenated fatty acid, a wetting agent and a polymer which is compatible with the halogenated fatty acid, and drying the treated article.

3,720,540

PRODUCTION OF GLASS FIBER-REINFORCED PLASTIC ARTICLES

Robert Wimmer, Linzer-Strasse 246, A 4600 Wels, Austria

Filed July 14, 1970, Ser. No. 54,843

Int. Cl. B44d 1/08

U.S. Cl. 117—139

10 Claims

Glass fiber-reinforced plastic articles such as bathtubs are produced by shaping, e.g., vacuum forming, thermoplastic material such as acrylic sheeting into a body and then applying a sprayable mixture of thermosetting unsaturated polyester resin material and a bond-improving additive consisting of a monomeric styrene compound and chalk or talc to the body to

form a coating thereon. Reinforcing glass fibers are embedded in the thermosetting coating which is cured to form the resultant reinforced plastic article. The coating and the reinforcing glass fibers are preferably applied using a "spray-up" system, i.e., coating by means of a spray gun.

3,720,541

## TRANSPARENT ARTICLES

Robert David King, Dorridge, England, assignor to Tripley Safety Glass Company Limited, London, England

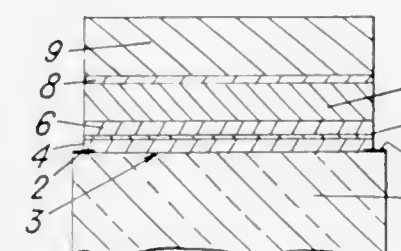
Filed Nov. 12, 1970, Ser. No. 88,717

Claims priority, application Great Britain, Nov. 20, 1969, 56,906/69

Int. Cl. B44d 1/18

U.S. Cl. 117—211

20 Claims



An electrically conductive transparent article comprises a transparent base coated with a first layer of metallic compound, a film of electrically conductive material, a second layer of metallic compound, a third layer of metallic compound, and a final protective layer of a siliceous compound. The third layer comprises a metallic compound which is different from that of the second layer and serves to isolate the first and second layers of metallic compound and the film of electrically conductive material from the surface coating of siliceous compound. Preferably the article has a glass base to which is applied in succession, a layer of bismuth oxide, a film of gold, a layer of bismuth oxide, a layer of copper oxide, and a final surface layer of silica.

3,720,542

PROCESS FOR PRODUCING DENSE METAL OXIDE COATINGS ON SEMICONDUCTOR

Heinrich Sohlbrand, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Munich and Erlanger, Germany

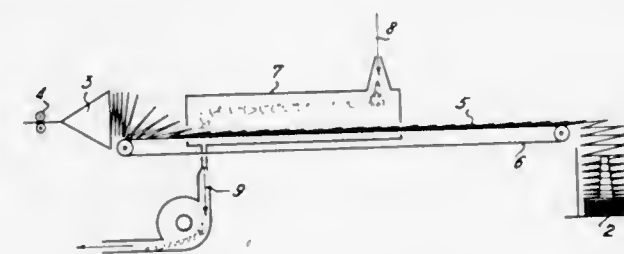
Filed March 11, 1971, Ser. No. 122,988

Claims priority, application Germany, March 13, 1970, P 20 12 080.3

Int. Cl. H01l 7/00

U.S. Cl. 117—201

2 Claims



The invention relates to a method of producing dense metal oxide coatings on semiconductor surfaces.

To produce metal oxide coatings which serve as insulation or masking layers on a semiconductor body, an organic compound which contains the metal and oxygen, is dissolved in an organic varnish and applied on the semiconductor surface and transferred into the pure metal oxide layer by thermolysis. The invention is particularly suited for producing Al<sub>2</sub>O<sub>3</sub> layers for integrated circuits and transistors.

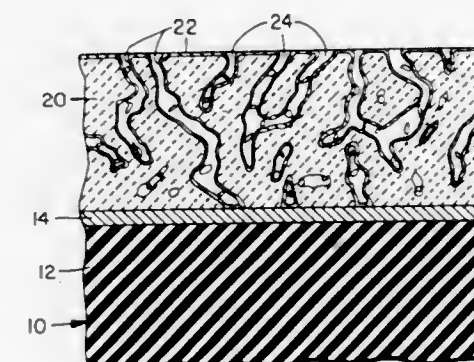
3,720,543  
COATED POROUS CERAMIC ARTICLE AND METHOD OF MAKING  
Lawrence G. Bockstie, Jr., Bradford, Pa., assignor to Corning Glass Works, Corning, N.Y.

Continuation-in-part of application Ser. No. 820,054, Apr. 29, 1969. This application Apr. 12, 1971, Ser. No. 133,228

Int. Cl. B44d 1/18; H01b 3/00

U.S. Cl. 117—218

18 Claims



A composition for coating a porous inorganic body to promote water repellency while maintaining its flame-proof quality consisting essentially of an aromatic or aliphatic hydrogen polysiloxane and combinations thereof, and a volatile solvent. Upon application of the composition to such a body, the solvent rapidly evaporates while the polysiloxane cures leaving a nonablatively ceramic-polysiloxane molecular complex on the entire surface of the porous body including the pore defining surfaces or walls without plugging the pores.

3,720,544

HEAT TREATMENT OF HOT ROLLED STEEL WIRE RODS

Michel Entringer, Hayange, France, assignor to Societe Wendel Sidelor S.A., Hayange, France

Filed March 4, 1970, Ser. No. 16,542

Claims priority, application France, March 5, 1969, 6905068; Sept. 3, 1969, 6931036

Int. Cl. C21d 9/64, 1/00

U.S. Cl. 148—14

5 Claims



Process for heat treatment in line with a wire rod rolling mill, of a steel wire rod containing less than 0.15 per cent of carbon and which has been previously subjected after leaving a rolling mill to the cooling treatment of a known controlled cooling process and device. The wire rod is subjected to an isothermal holding at a temperature between 200°C and 400°C so that the interstitial atoms place in a supersaturated solution during the known controlled cooling gather together on sites other than dislocations which allows the phenomenon of anchoring of the dislocations to be avoided, this anchoring being partially responsible for the deterioration of the drawability for the fine drawing of such steel wire rods. This thus allows the direct drawing of the wire rod without subsequent heat treatment to a final very small diameter. The process



thereby avoids decomposition of a thin layer of non-adhering wustite formed on the surface of the wire rod during the controlled cooling treatment into an adhering layer of a superior oxide difficult to remove before the drawing off the wire rod.

3,720,545

# STEEL MOLD AND METHOD FOR PRODUCING THE SAME

Gary Steven, and Kenneth E. Pinnow, both of Pittsburgh, Pa., assignors to Crucible Inc., Pittsburgh, Pa.

Filed Aug. 20, 1971, Ser. No. 173,520  
Int. Cl. B28b 7/34; B29c 1/02

U.S. Cl. 148—2

9 Claims

A weldable, corrosion resistant steel mold, particularly suited for use in plastic-injection molding, characterized by ease of heat treatment to BHN 300/400 range and having excellent dimensional stability during heat treatment, deep hardenability, good notch toughness, said steel mold having essentially a composition comprising, in weight percent, carbon up to 0.06, manganese up to 2, silicon up to 1, nickel 2 to 4.0, chromium 10.0 to 14.0, molybdenum up to 1.0, copper up to 1.00, nitrogen up to 0.05, sulfur up to 0.10 and balance iron.

3,720,546

# METHOD FOR PREVENTING DESTRUCTION OF STRIP METAL IN ANNEALING FURNACE CONNECTED WITH DIRECT HEATING FURNACE

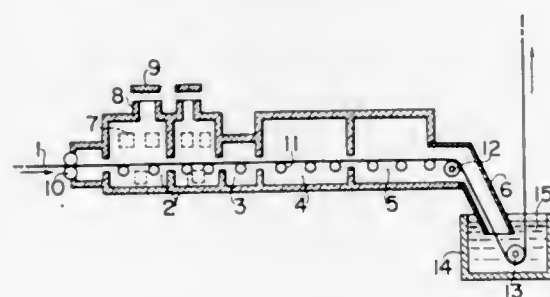
Saburo Ayusawa, and Kiyotoshi Iwasaki, both of Kisarazu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed April 13, 1970, Ser. No. 27,477

Claims priority, application, Japan, Apr. 21, 1969, 44/31389  
Int. Cl. C21d 9/52

U.S. Cl. 148—156

6 Claims



Method for preventing destruction of a strip of metal moving in treatment line containing a continuous annealing furnace connected with a direct-heating furnace due to over-oxidation during longer than normal residence in the direct heating furnace, that is, before re-starting from an exigent stoppage of the line, which method is so carried out that at the same time with such stoppage, the opening for air outside of said direct heating furnace is closed, and combustion continues at limited operation rate of the burner, hardly reducing the temperature inside the furnace but maintaining the atmosphere inside the furnace non-oxidant.

3,720,547

# PERMANGANATE FINAL RINSE FOR METAL COATINGS

Donald J. Melotik, Dearborn, Mich., assignor to Stauffer Chemical Company, New York, N.Y.

Filed Feb. 16, 1971, Ser. No. 115,691

Int. Cl. C23f 7/08

U.S. Cl. 148—6.14 R

9 Claims

A final rinse for conversion coated metal surfaces comprising an aqueous acidic solution of permanganate ions having a normality in the range from about 0.0001 to about 2.0 N is disclosed. The rinse of the present invention not only yields coatings having superior corrosion resistance but is also easily disposable without harmful effects on the environment.

3,720,548

# PROCESS FOR INCREASING THE CORROSION RESISTANCE OF AUSTENITIC STAINLESS STEELS

Franciscus X. C. M. Barake, Sittard; Christiaan G. M. Dijkhuis, and Johan D. Logemann, both of Geleen, all of Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

Filed April 1, 1971, Ser. No. 130,483

Claims priority, application Netherlands, April 2, 1970, 7004678

Int. Cl. C23f 9/02, 7/04

U.S. Cl. 148—6.14 R

8 Claims

A process is described for enhancing the corrosion resistance of austenitic stainless steels which are exposed to solutions containing ammonium carbamate. The process involves exposing the surfaces of such stainless steel equipment, which are exposed to ammonium carbamate solutions during, e.g., the commercial manufacture of urea and melamine, to the corrosive effects of such solutions for a period of time to induce significant corrosion of such surfaces, followed by contacting said surfaces at a temperature of at least about 100° C for a period of time with an oxidizing agent.

3,720,549

# INSULATING COATING AND METHOD OF MAKING THE SAME

Robert G. Hirst and George J. Desnoyers, Pittsfield, Mass., assignors to General Electric Company

No Drawing. Filed Sept. 23, 1970, Ser. No. 74,508

Int. Cl. C23f 7/26

U.S. Cl. 142—6.16

3 Claims

Electrically insulating coating for strand annealed magnetic silicon steel is composed of an aqueous mixture of (1) the reaction product of chromium trioxide, formic acid and phosphoric acid, (2) phosphoric acid, and (3) colloidal silica.

3,720,550

# METHOD OF MAKING MALLEABLE ZINC-ALLOY BODIES

Erich Pelzer, Stolberg, Germany, assignor to Stolberger Zink AG, Aachen, Germany

No Drawing. Filed July 7, 1970, Ser. No. 53,037

Claims priority, application Germany, July 29, 1969, P 19 38 385.8

Int. Cl. C22f 1/16

U.S. Cl. 148—11.5 R

8 Claims

A method of making malleable zinc-alloy bodies in which a zinc alloy of the following composition: 0.05 to 1.2% by weight aluminum, 0.05 to 0.8% by weight copper, 0.0005 to 0.015% by weight magnesium and 0 to 0.05% nickel, balance high-purity zinc, is maintained at a temperature of 250° to 350° C. to effect homogenization. Thereafter, the zinc-alloy body is subjected at a temperature between 200° and 300° C. to deformation to reduce its cross-section by at least 50% and, at a temperature between about room temperature (ca. 20° C.) and 80° C. is subjected to a further deformation to reduce its cross-section by at least 70%.

3,720,551

# METHOD FOR MAKING A DISPERSION STRENGTHENED ALLOY ARTICLE

Robert E. Allen, Cincinnati, Ohio, assignor to General Electric Company

No Drawing. Filed Jan. 29, 1970, Ser. No. 6,931

Int. Cl. B22f 1/00

U.S. Cl. 148—126

4 Claims

A superalloy article based on at least one of the elements from the group iron, cobalt and nickel is provided with improved mechanical strength properties, particularly at about 1400° F. or above, through an improved powder metallurgical method. Such a method includes first preparing relatively large particles of the alloy in the size range of about —20 to about —400 mesh. The

particles are then treated in an atmosphere which provides on the particle a film of from a small but effective amount up to about 6 volume percent of the particle of a compound of the alloy selected from the compounds, nitrides, carbides and oxides. The particles so treated are then consolidated into an article, which can be a mill form, during which the film is fragmented and the fragments are dispersed throughout the matrix of the article. Further improved properties are obtained by additional working such as by ordinary means as rolling, forming, swaging, etc. to provide a deformation texture while preferably avoiding recrystallization during working.

3,720,552

# EXOTHERMIC COMPOSITION FOR USE IN STEELWORKS AND IN FOUNDRIES

Simon Lustig, 28 Avenue Leman, Lausanne, Switzerland

No Drawing. Filed Mar. 15, 1971, Ser. No. 124,508

Int. Cl. C06b 19/02

U.S. Cl. 149—3

5 Claims

This exothermic composition can be used in casting molten metals in steelworks and in foundries so as to delay solidification and to fill up the cavities caused by the shrinkage of the metal during solidification. It contains in a known manner aluminum, at least one oxidizing agent and at least one filler. It additionally contains a solid easily combustible carbonaceous material in a finely divided state. This material can be paper or plastic. In case of paper, the proportion as used is at least 5%. This proportion is comprised between 0.2 and 5% in case of plastic. The composition advantageously contains fine particles of a composite consisting of a film of aluminum deposited on a support of a solid easily combustible carbonaceous material such as paper or plastic.

3,720,553

# AMMONIUM NITRATE PROPELLANT COMPOSITIONS

Lionel A. Henderson, Columbus, Ohio, assignor to Standard Oil Company, Chicago, Ill.

Filed Feb. 7, 1969, Ser. No. 797,697

Int. Cl. C06d 5/06

U.S. Cl. 149—19

5 Claims

Novel propellant compositions comprising ammonium nitrate as the primary oxidizer and thermoplastic phenoxy resin as the binder.

3,720,554

# METHOD OF MANUFACTURING HIGH-LOFT, NONWOVEN FABRIC

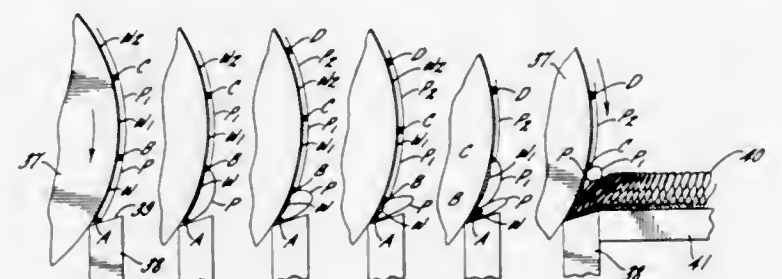
Robert J. Stumpf, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Sept. 10, 1969, Ser. No. 856,793

Int. Cl. B32b 17/04; D05c 15/00

U.S. Cl. 156—62.6

17 Claims



A high-loft, nonwoven fabric with a substantially continuous backing layer of adhesive and multiplicity of fibers looped outwardly from the backing and a method of making the fabric by first embedding a web of fibers in a relatively thick

open pattern of adhesive interconnected by relatively thin webs of the same adhesive, and then consolidating the adhesive into a substantially continuous backing layer while looping the fibers outwardly from the backing.

3,720,555

# LIGHT POLARIZING DEVICE AND PROCESS FOR MAKING THE SAME

Francis G. Ceppi, Arlington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

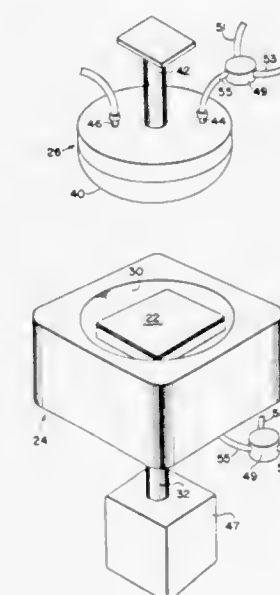
Division of Ser. No. 642,792, June 1, 1967, Pat. No. 3,560,076.

This application May 15, 1970, Ser. No. 48,649

Int. Cl. B32b 17/10

U.S. Cl. 156—102

6 Claims



This disclosure involves laminated light polarizing devices concave on one side and convex on the other side and a method for press-forming the same.

3,720,556

# METHOD FOR THE PREPARATION OF WALLED STRUCTURES

Donald R. Wright, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

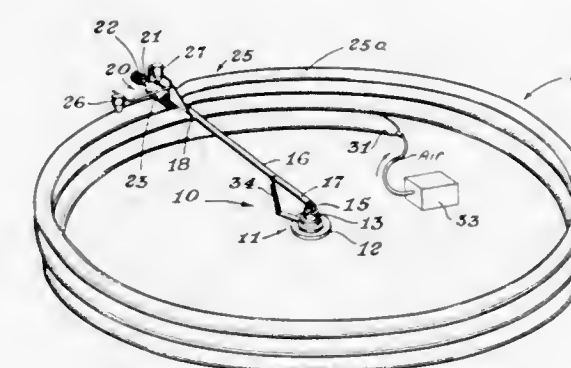
Division of Ser. No. 670,055, Sept. 25, 1967, Pat. No.

3,578,537. This application July 13, 1970, Ser. No. 61,030

Int. Cl. B29c 17/00; B32b 31/12; B04c 2/30

U.S. Cl. 156—156

6 Claims



A structure is prepared by the spiral generation technique employing a flattened plastic tube which is inflated by means of internal fluid pressure and deposited in a generally helical manner. Adjacent turns of the helix are adhered to each other to provide a walled structure.



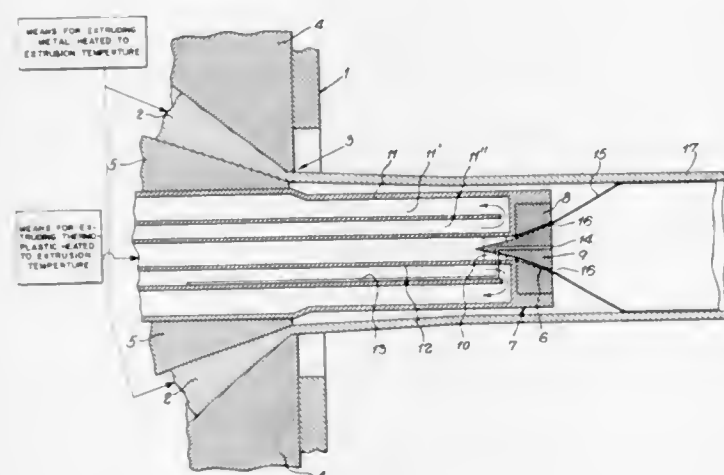
3,720,557

PROCESS FOR LINING CONDUCTIVE TUBES  
WITH INSULATING MATERIAL

Sergio Longoni, Milan, and Antonio Portinari, Sesto San Giovanni, Italy, assignors to Industrie Pirelli S.p.A.

Filed Oct. 21, 1970, Ser. No. 82,704

Claims priority, application Italy, Mar. 24, 1970, 22,352/70

Int. Cl. B32b 1/08, 15/08, 15/20  
U.S. Cl. 156—156 6 Claims

Process for producing a layer of insulating material on the interior of a conductive tube in which a tube of insulating material is extruded by an extruder head and expanded within the conductive tube as it is extruded by a second extruder head co-axial with the first head as the conductive tube is advanced, the insulating tube engaging the inner wall of the conductive tube at a point where the temperature of the latter is approximately equal to the melting temperature of the insulating material.

3,720,558

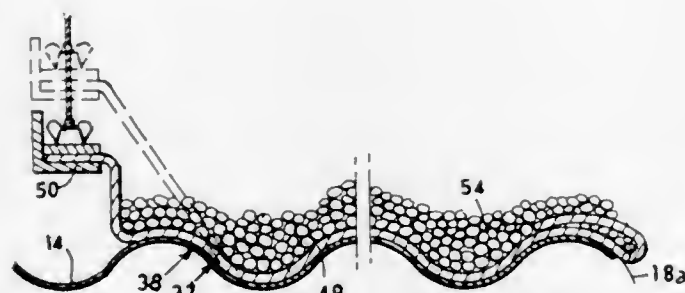
HEAT-INSULATING PANEL OR SHEET AND A METHOD  
OF AND APPARATUS FOR MAKING THE SAME

John Ian Menzies, and Maureen Menzies, Kenmore, Brisbane, Queensland, Australia, assignors to Heatshield Research and Development Pty. Ltd., Brisbane, Queensland, Australia

Filed June 16, 1969, Ser. No. 834,241

Int. Cl. B31f 1/20, 1/28; B32b 31/20

U.S. Cl. 156—199 5 Claims



A panel or sheet is insulated against heat from a heat source by a metal foil lamination bonded to, and separated from direct contact with, the surface of the panel or sheet remote from the heat source by an interposed lamination of transparent thermoplastic material, the bonding being effected by the application of heat and pressure.

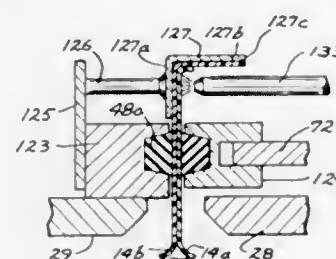
METHOD AND APPARATUS FOR ADHESIVE SEALING  
OF PLASTIC BAGS

Robert E. Odom, and Richard H. Ayres, both of Minneapolis, Minn., assignors to Bemis Company, Inc., Minneapolis, Minn.

Filed Jan. 20, 1971, Ser. No. 108,004

Int. Cl. B31f 5/04; B65b 51/02, 7/20

U.S. Cl. 156—202 20 Claims



A machine for forming a bag closure that includes endless conveyor belts for supportingly conveying at least one bag end portion continuously rearwardly past the member set forth hereinafter, a first trimmer assembly for trimming off part of the one bag end portion that is remote from the belts, a slitter assembly for slitting part of the leading and trailing edges of the non-trimmed off one end portion to provide first and second side wall flaps and first and second side wall portions joined to the respective flap, and spreading the side wall flaps, a side flap trimmer assembly to trim off a part of the first side flap, a guide and ramp rearwardly of the first trimmer assembly to retain the second flap spaced from the side flap trimmer assembly and move the first flap to a condition to be trimmed, a second ramp and a folder assembly for relatively folding a trimmed first flap terminal part and the second flap to have the first flap underlapping part of the second flap, an applicator for applying adhesive to the folded flaps, a folder blade for folding the first flap terminal part and second flap with adhesive thereon against the first side wall portion to form a sealed closure and compression rollers for compressing the sealed closure.

3,720,560

SPARK GAP DEVICES AND METHODS AND APPARATUS  
FOR MAKING SAME

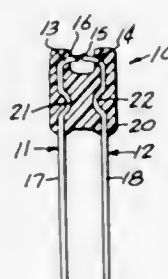
Sylvester R. Taterzynski, and George Dand Raeburn, both of Milwaukee, Wis., assignors to Globe-Union Inc., Milwaukee, Wis.

Division of Ser. No. 728,497, May 13, 1968, Pat. No. 3,586,903.

This application Aug. 18, 1970, Ser. No. 64,800

Int. Cl. B32h 31/10; H01j 9/2

U.S. Cl. 156—268 8 Claims



Electrical devices and methods and apparatus for making the same, involving the support of conductive portions in an insulating member. Spark gap devices are constructed by moving heated rigid pressure members together to press kinked U-shaped wires into a strip of insulating material which is preferably a glass fiber mat pre-impregnated with a semi-cured polyester. A second strip may be used with the wires being sandwiched between the strips which are pressed

together by the pressure members to fuse them. The bight portions of the U-shaped wires are severed to provide spark gaps, preferably by use of severing means associated with the pressure members. By making a plurality of spark gap devices in strip form grooves for automatic separation may be formed by providing projections on at least one of the pressure members.

3,720,561

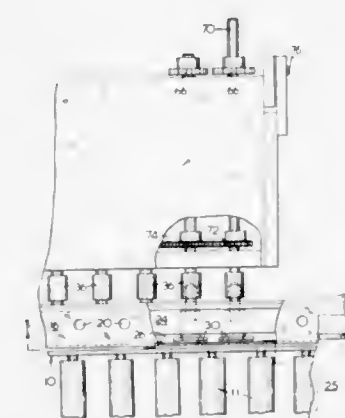
## PROCESS FOR PRODUCING MANIFOLDED FORMS

Henry E. Dorow, Ottawa, Ontario, Canada, assignor to R. L. Crain Limited, Ottawa, Ontario, Canada

Filed Jan. 20, 1970, Ser. No. 4,269

Int. Cl. B32b 31/20

U.S. Cl. 156—272 6 Claims



A process is described for producing a manifolded business form from a plurality of superimposed plies of printable material. Each of the plies has at least one adhesive covered portion thereto for joining the plies together. In the process, the plies are fed along a path so as to expose the adhesive covered portion to microwave energy which effects setting of the adhesive. While the adhesive is setting, squeezing pressure is applied periodically to a number of spots in each adhesive covered portion to disable any tendency of the plies to separate.

3,720,562

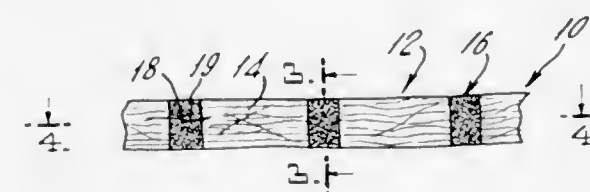
## A METHOD OF BONDING NON WOVEN FABRICS

Arthur H. Drelich, Plainfield, N.J., assignor to Johnson &amp; Johnson

Continuation-in-part of Ser. No. 800,265, Feb. 18, 1969, Pat. No. 3,649,330, which is a continuation-in-part of Ser. No. 618,317, Feb. 24, 1967, abandoned, and a continuation-in-part of Ser. Nos. 623,797, March 10, 1967, Pat. No. 3,536,518, and Ser. No. 2,955, Jan. 14, 1970, abandoned, and Ser. No. 817,177, April 17, 1969, which is a continuation-in-part of Ser. No. 639,011, May 17, 1967, abandoned. This application Aug. 21, 1970, Ser. No. 65,880

Int. Cl. B32b 7/14

U.S. Cl. 156—291 15 Claims



Bonded fibrous nonwoven textile fabrics having excellent strength and textile-like softness, drape and hand which are intermittently bonded with synthetic resins in predetermined print patterns of binder areas having a relatively high, uniform

concentration of from about 50 percent to about 120 percent by weight of resin binder in the binder areas, based on the weight of the fibers therein, said binder areas having very sharply defined borders or edges with a minimum of binder feathering thereat whereby the optical density of the bonded fibrous nonwoven textile fabric very sharply increases from substantially zero to a maximum of at least from about 0.6 to about 1.0 or greater in a distance of less than about 1 mm. (0.04 inch), and methods of depositing such synthetic resins from colloidal aqueous dispersions thereof into wet fibrous webs to form the bonded fibrous nonwoven textile fabrics, comprising the use of (1) metal complex coordination compounds and (2) synthetic resins and/or surfactants, at least one of which contains a specific coordinating ligand capable of being affected by ions or said metals to control the total migration of the resin binder during such deposition.

3,720,563

METHOD AND APPARATUS FOR GLUING FLAT  
SHAPED TEXTILE ARTICLES

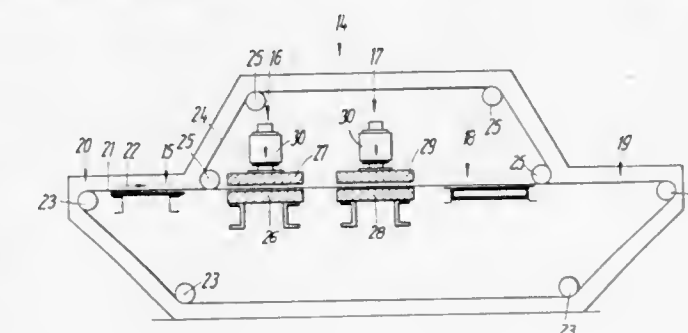
Herbert Kannegiesser, Hollwiesen-Vlotho, Weser, and Richard Juraschek, Vlotho, Weser am Kinderheim, Germany

Filed Oct. 26, 1970, Ser. No. 83,919

Claims priority, application Germany, Oct. 24, 1969, P 19 53 577.4

Int. Cl. C09j 7/04

U.S. Cl. 156—306 6 Claims



A method and apparatus for gluing multilayer textile fabrics together which comprises a means for automatically conveying the fabric pieces to a first heating and pressing station, where a heated press is used to melt the glue which has been previously applied to one of the fabric layers and simultaneously convert any moisture contained in the fabric layers to steam, which then escapes from the fabric layers. A second heating and pressing operation is performed on the fabric layers, after which the textile fabrics pass through a station where any steam remaining in the fabric layers is allowed to escape.

3,720,564

METHOD AND APPARATUS FOR INDIVIDUALLY  
LAMINATING BOUND SHEETS

Henry N. Staats, Deerfield, and Neal J. Morrissey, Chicago, both of Ill., assignors to General Binding Corporation, Northbrook, Ill.

Filed Jan. 13, 1971, Ser. No. 106,157

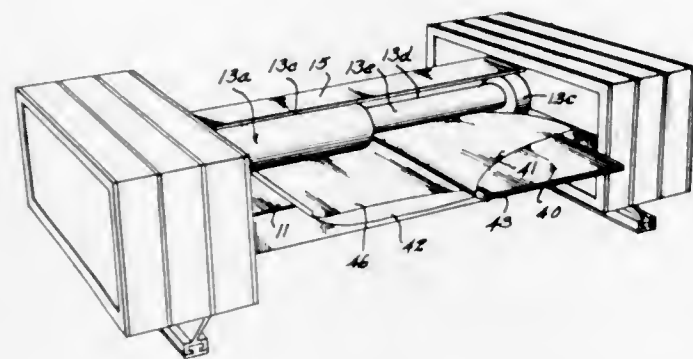
Int. Cl. B42c 11/02

U.S. Cl. 156—477 B 4 Claims

A compact, inexpensive laminating device for applying heat and pressure to a sandwich of sheet materials desired to be laminated, at least one of which has previously been bound to other materials. A highly efficient material transfer and heat application system is constructed of a minimum of moving parts and simple provision is made for permitting the pass-through of the previously bound materials without being affected by the laminating device. Novel laminating roll configura-



ration and mounting combine to permit lamination of photographs and other similar identification data in previously as-



sembled books such as, for example, passports, bank deposit books, and the like, in a tamper-proof manner.

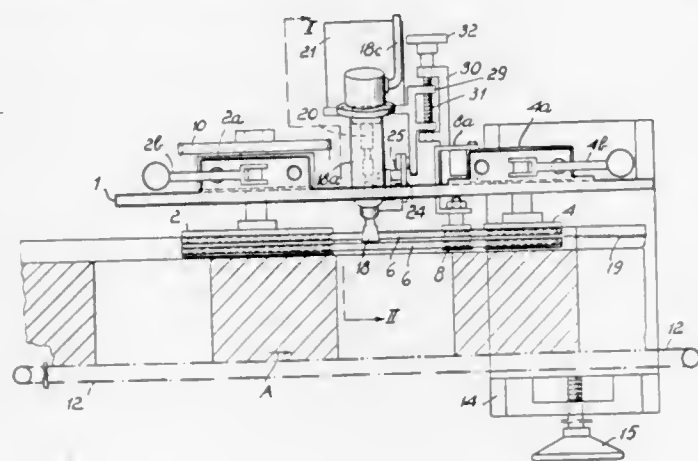
3,720,565

**DEVICE FOR LONGITUDINALLY WELDING TAPES OF PLASTICS MATERIAL - IN PACKAGING MACHINES**  
Mario Cavanna, Via Antonelli, 24, Romagnano Sesia (Novara), Italy

Filed June 29, 1970, Ser. No. 50,727  
Int. Cl. B65b 51/20

U.S. Cl. 156-497

3 Claims



A device for longitudinally welding tapes of plastics material in packaging machines, which comprises, pulleys on a plate-like element which may be adjusted in level, at least some of said pulleys being driving pulleys and rotatably mounted with preferably vertical axis, on the said pulleys two pairs of endless belts being taken up, which have straight sections tangent between the said pulleys at the welding zone in order to clamp therebetween the edges of the tape of plastics material to be welded, the said belts being overlapped at a short distance from one another in number of two at each side with respect to the said welding zone, in such a manner as to define a narrow strip at which at least one nozzle is mounted to blow hot air.

3,720,566

**MACHINE FOR MANUFACTURING ADHESIVE BINDER COVERS**  
Egon Helmann, Falkenberg 61, Wuppertal-Elberfeld, Germany

Filed June 8, 1970, Ser. No. 48,608  
Claims priority, application Germany, June 28, 1969, P 19 32 967.0

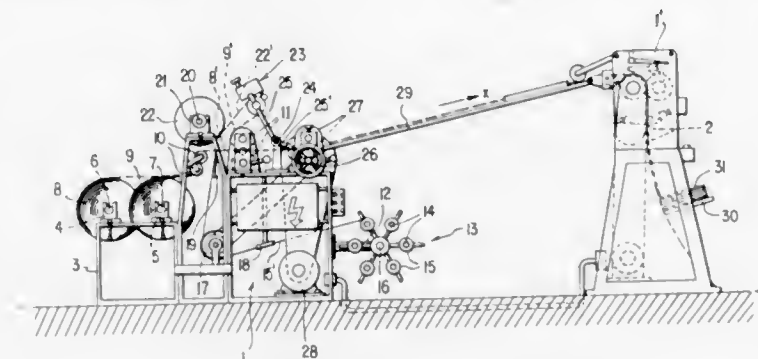
Int. Cl. B32b 31/08, 31/20

U.S. Cl. 156-544

16 Claims

A machine for manufacturing adhesive binder covers is provided with a pair of off-set magazine rolls of two strips of non-adhesive material. The rolls are separated so

the strips are supplied with a gap between them. A roll of adhesive strip is positioned in alignment with the gap. A pulling deflector roller having a plurality of separate contact members, preferably point contact members, is



provided for pulling the adhesive strip from its roll. At least one pair of pressure rollers is provided downstream from the pulling deflector roller. A cutting device is arranged downstream from the pressure rollers.

3,720,567

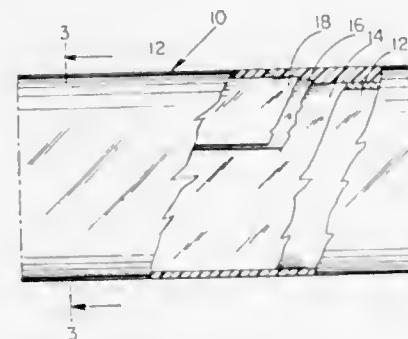
**LIGHT REFLECTIVE COMPOSITE MOLDING**  
Victor Shanok, and Jesse P. Shanok, Brooklyn, N.Y., assignors to Glass Laboratories Company, Brooklyn, N.Y.

Filed Feb. 9, 1971, Ser. No. 113,858

Int. Cl. B32b 15/08; E04f 19/02; B44f 1/02

U.S. Cl. 161-5

11 Claims



A composite molding comprising an elongate transparent casing adapted for operative association with an external source. The casing includes a pair of opposing faces one of which is adapted to contact and be concealed by the external source and the other of which is adapted to be exposed relative to the external source. A metallic strip extends in the casing proximate and generally parallel to the one of the faces which is adapted to contact the external source. A light-reflective strip extends in the casing generally parallel to the metallic strip and is separated from the latter of said faces by the metallic strip. A transparent self-hardening coating such as lacquer, varnish or the like extends on the light-reflective strip proximate the face which is adapted to be exposed relative to the external source. The coating is adapted to seal and eliminate air-cavities existing between the light-reflective strip and the exposed surface of said faces to obviate interference of light-rays to be reflected by the molding.

3,720,568

**SEATING AND SUB-ASSEMBLY FOR SEATS AND BACKS**  
David L. Rowland, 49 West 55th Street, New York, N.Y.

Filed March 22, 1971, Ser. No. 126,808

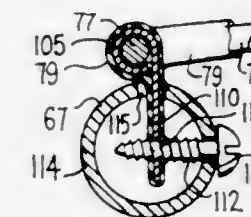
Int. Cl. A47c 7/02; F16f 3/02

U.S. Cl. 161-48

47 Claims

Seats and backs for chairs and other seating units are made as a sub-assembly of sinuous spring wires. For example, a rim, typically having straight ends joined by usually parallel sides shaped as circular arcs, encloses, and its straight ends are attached to, the opposite ends of each of a series of the sinuous

spring wires, which extend between them in a circular arc paralleling those of the rim sides. Each of the two extreme spring wires is preferably tangent at each cycle to one of those sides, and each wire touches its adjacent wire at least once per cycle. A thin sleeve-like plastic coating surrounds the wires and follows their sinuous shape. It also surrounds the rim and links the wires and the rim together and links the wires themselves together wherever they touch, into a unitary assembly shaped as a cylindrical arc and intended to be flattened somewhat when installed on a chair frame, to place the springs in tension



along a flatter cylindrical arc. The ends serve to mount the assembly on the frame, and the parallel sides enclose the springs and minimize their catching on clothing, while the tension provides one of the main forces retaining the assembly in place. In preferred forms of the invention the plastic coating has an A-scale Shore durometer between 45 and 90, so that the assembly is held together by the plastic coating without substantially restraining the flexing of the spring wires, while the coating also provides a spring action itself between the adjacent wires, by stretching and contracting, giving a two-way stretch.

3,720,569

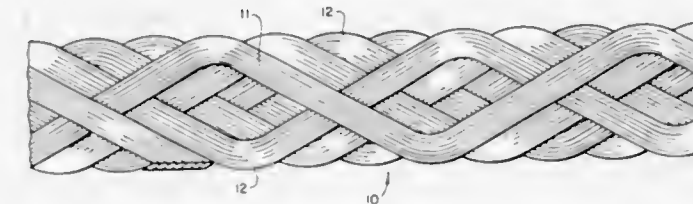
**ENDLESS REINFORCEMENT AND METHOD FOR PRODUCING SAME**  
Victor W. Kimble, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Dec. 14, 1970, Ser. No. 97,715

Int. Cl. B32b 5/12

U.S. Cl. 161-57

19 Claims



An endless reinforcement which comprises a unitary strip including a multiplicity of continuous cords, the strip forming a generally zigzag pattern and being positioned across the width of the reinforcement from one side to the other at an angle to the edges of the reinforcement with a turn at each edge about an axis substantially perpendicular to the major plane of the strip. Also, a method for producing such a reinforcement and a tire therewith as well as the resulting tire.

3,720,570

**ENDLESS REINFORCEMENT AND METHOD FOR PRODUCING SAME**  
Charles W. Greene and George C. Varner, Spartanburg, S.C., assignors to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Nov. 18, 1970, Ser. No. 90,560

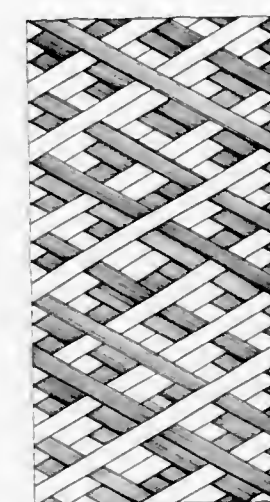
Int. Cl. B32b 5/12

U.S. Cl. 161-58

17 Claims

An endless reinforcement which comprises a plurality of unitary strips including a multiplicity of continuous cords with the strips being positioned across the width of

the reinforcement from one side to the other at opposing angles to the edges of the reinforcement with successive lengths of the strips being folded with respect to each



other at the edges to form a generally zigzag pattern. Also, a method for producing such a reinforcement and a tire therewith as well as the resulting tire.

3,720,571

**FABRIC EFFECT FOR FIBROUS GLASS FABRICS**  
Remus F. Caroselli, Cumberland, James J. Dillon, Providence, and David E. Leary, Cumberland, R.I., assignors to Owens-Corning Fiberglas Corporation

Original application Sept. 8, 1966, Ser. No. 578,430, now Patent No. 3,571,871. Divided and this application Mar. 19, 1971, Ser. No. 126,093

Int. Cl. D03d 3/00

U.S. Cl. 161-73

4 Claims



Fibrous glass fabric having pseudo-embossed effects, comprising warp and weft yarns lying in laterally and vertically randomly shifted, stress-relieved and compacted equilibrium configurations of the original weave pattern wherein the yarns were originally in a stressed condition due to their displacement from an essentially straight configuration into sinusoidal paths in the original weave pattern.



### 3,720,572 SYNTHETIC WOOD AND A METHOD FOR PREPARATION THEREOF

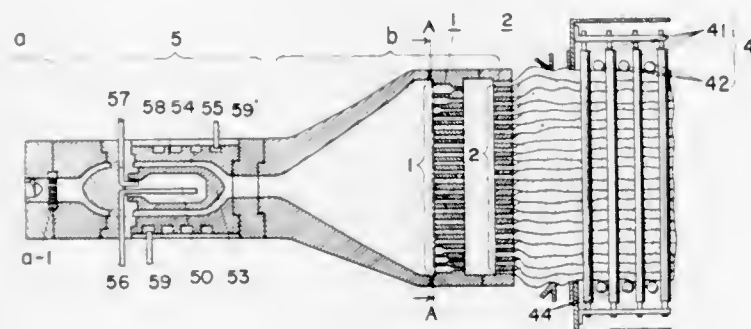
Shigenari Soda, Kyoto; Tatsujiro Seki; Shigeru Daiguji, both of Nara, and Motoshige Hayashi, Ikoma-gun, all of Japan, assignors to Sekisui Kaseihin Kogyo Kabushiki Kaisha, Minamikyobate-cho, Nara-shi, Japan

Filed Aug. 5, 1970, Ser. No. 61,247

Claims priority, application Japan, Aug. 7, 1969, 44/62749  
Int. Cl. B32b 5/02, 5/20; B29d 27/00

U.S. Cl. 161—143

12 Claims



A synthetic wood is provided which is an elongated microporous article formed of a plurality of coalesced, foamed resin strands. The strands are in intimate contact with each other, and each has a higher density in its outer surface and lower density in its inner portion. Thus, the cross section of the synthetic wood comprises a frame distributed in a reticulate form. The synthetic wood of the invention is produced by extruding softened thermoplastic resin containing expanding agents into a plurality of expandable strands by passing it through a die at the discharge end of an extruder, said die having a number of apertures and coalescing the strands into a microporous article having a desired cross-sectional area while the strands are still in a softened state, wherein the space in which each individual strand is allowed to expand is restricted to provide each of the strands with a higher density outer surface.

### 3,720,573 RESIN BONDED DRY CREPED TISSUE LAMINATE HAVING THE CREPE REMOVED THEREFROM AND METHOD OF MAKING SAME

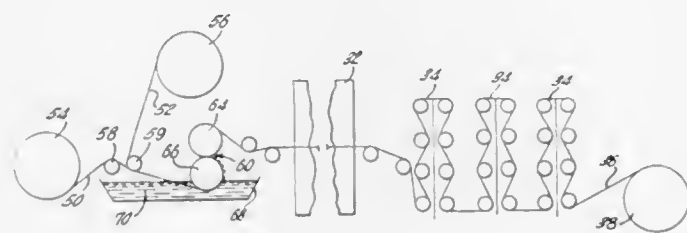
Warren C. Mayer, Somerville, N.J., assignor to Johnson & Johnson

Continuation-in-part of Ser. No. 671,963, Oct. 2, 1967, abandoned. This application March 26, 1970, Ser. No. 22,942

Int. Cl. B32b 7/04, 29/00

U.S. Cl. 161—156

5 Claims



An impregnated paper product having strength, toughness, tear resistance, softness, hand and breathability sufficient to permit such papers to be used as substitutes for woven or non-woven fabrics in making disposable fabric products. By applying conventionally known strength imparting resins, polymers, and copolymers to multi-ply, dry creped tissue papers of low basis weight, which multi-ply laminate has the crepe removed therefrom as a result of passing through an aqueous suspension or emulsion of such resins, polymers or copolymers, the stiffness, noisiness and loss of breathability that result from

such impregnation of single ply creped or uncreped papers does not occur.

### 3,720,574 FILTER ELEMENT

Frank C. Kunc, East Brunswick, N.J., assignor to Scott Paper Company, Delaware County, Pa.

Filed July 28, 1971, Ser. No. 166,990

Int. Cl. B32b 5/18

U.S. Cl. 161—156

4 Claims

A flexible, reticulated, polyurethane foam which has been rigidified by coating the strands with an epoxy resin is especially useful as a filter element due to the unexpected increase in dirt holding capacity of the rigidified foam as compared to the flexible, untreated foam.

### 3,720,575 MANUFACTURE OF FIBRE-REINFORCED CARBON BODIES

Frederick Claud Cowland, Towcester, England, assignor to Beckwith Carbon Corporation, Van Nuys, Calif.

No Drawing. Filed Feb. 3, 1971, Ser. No. 112,479

Claims priority, application Great Britain, Feb. 6, 1970, 5,863/70

Int. Cl. B32b 5/16

U.S. Cl. 161—170

7 Claims

A mechanical strength of a carbon body made by carbonization of a phenolic resin body, which may be so-called vitreous carbon, is greatly increased by embodying therein pre-stressed carbon fibres. Pre-stressing of these fibres is preferably effected by embodying in the phenolic body, prior to its carbonization, fibres made from acrylonitrile whose normal carbonization process has been conducted only to the stage of oxidising the fibres while they are under tension. During the subsequent carbonization of the resin the fibres will shrink more than the resin, thereby producing pre-stressing, or assisting previously mechanically applied pre-stressing, of the fibres in the resulting carbon body.

### 3,720,576 CRIMPED COMPOSITE FIBERS AND PROCESS FOR PREPARATION THEREOF

Yoshisato Fujisaki, Noboru Fukuma, Hiroshi Chayamiti, Toshio Okamoto, Seizaburo Shigetani, and Takanobu Kitago, Nobeoka-shi, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Kita-ku, Osaka, Japan

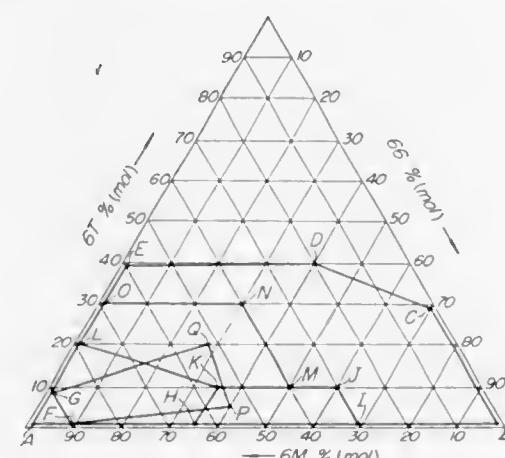
Claims priority, application Japan, Mar. 11, 1966, 41/14,671; Oct. 17, 1966, 41/67,874, 41/67,873;

Dec. 1, 1966, 41/78,365

Int. Cl. D01d 5/12; B29f 3/10

U.S. Cl. 161—173

10 Claims



Crimped composite fibers having a large number of crimps, high crimp elongation, high crimp strength, high crimp developing capability and high bulkiness can be obtained by spinning a homopolyamide component and a terpolyamide component produced by polymerizing

$\epsilon$ -caprolactam, hexamethylenediammonium adipate (66 salt) and hexamethylenediammonium terephthalate (6 T salt), the composition of said copolymer falling within a specified area in a triangular coordinate, into fibers through a common spinneret, stretching the resultant fibers and subjecting the drawn fibers to heat treatment.

### 3,720,577 CHLORINE DIOXIDE-PERACETIC ACID-CHLORINE DIOXIDE PULP BLEACHING SEQUENCE

Sunanda K. Roymoulik, Suffern, N.Y., assignor to International Paper Company, New York, N.Y.

No Drawing. Filed May 25, 1970, Ser. No. 40,403

Int. Cl. D21c 9/14, 9/16

U.S. Cl. 162—67

11 Claims

A chemical pulp can be bleached with chlorine dioxide in the first stage and peracetic acid in the second stage to a brightness of 60% or above. The addition of a chlorine dioxide third stage results in a fully bleached pulp having a brightness of 80% or above in just 3 stages, compared to the usual 5 or 6 stage sequences.

### 3,720,578 NON-WOVEN TEXTILE FLEECE CONTAINING PERFORATED AREAS

Wilhelm Heling, Bensheim-Auerbach, and Hans Brehm, Furth/Odenwald, both of Germany, assignors to Firma Carl Freudenberg, Weinheim, Germany

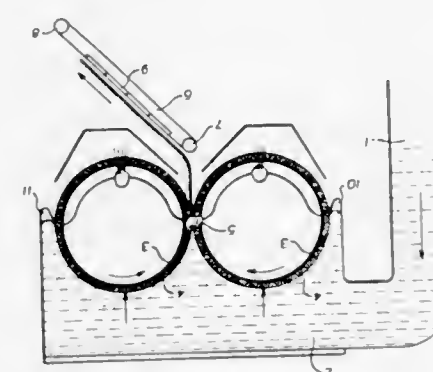
Filed Aug. 24, 1970, Ser. No. 66,519

Claims priority, application Switzerland, Aug. 29, 1969, 13136/69; Germany, Sept. 18, 1969, P 19 47 176.2

Int. Cl. D04h 1/44; D21h 5/02

U.S. Cl. 162—116

4 Claims



A perforated non-woven fleece is formed by filtering through a screen having a pattern of impermeable areas an aqueous slurry containing textile fibers to the extent of less than about 0.5 percent by weight. Preferably two such screens are provided in the form of a covering on a pair of oppositely rotating drums forming a nip therebetween to which the slurry is continuously supplied, the water is sucked into the drums and the fleece issues from between the nip. The impermeable areas are preferably dots of resilient plastic material such as polyvinyl chloride which project in the direction of the nip to a height of at least 0.5 mm so that no fiber is laid down where such projecting dots are located, the resulting fleece thereby having perforations in the corresponding areas.

The slurry may contain a binder which is laid down together with the fibers so as to be uniformly distributed throughout the resulting fleece which can then be converted into fabric form by activating the binder.

The resulting fleece is characterized by a substantially uniform fiber density around the perforations as well as elsewhere throughout the fleece.

The method of producing the screen comprises printing onto a permeable base a thixotropic combustion and allowing the printed portions to set into impermeable deposits.

### 3,720,579 FIBROUS SUBSTRATES WITH MICROCAPSULAR OPACIFIERS

Anthony Vassiliades, Deerfield; Edward F. Nauman, Lake Forest, and Shrenik Shroff, Chicago, all of Ill., assignors to Champion International Corporation, New York, N.Y.

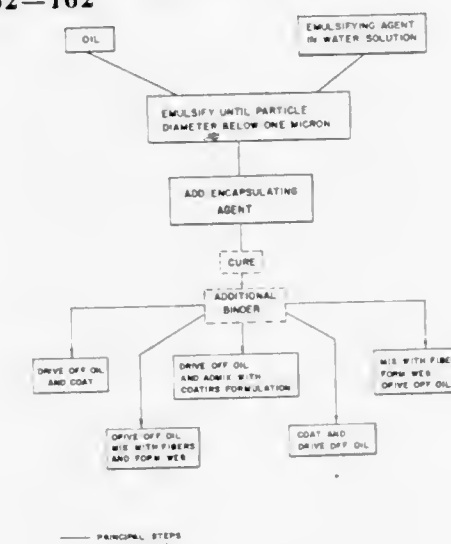
Division of Ser. No. 786,337, Dec. 23, 1968, Pat. No.

3,585,149. This application March 16, 1971, Ser. No. 124,986

Int. Cl. D21h 3/80

U.S. Cl. 162—162

6 Claims



Opacifiers comprising air-containing microcapsules having an average particle diameter of below about 1 micron provide highly opaque surfaces when coated onto and/or incorporated into fibrous and non-fibrous substrates. The opacifiers are produced by heating liquid-containing precursor microcapsules at temperatures sufficient to expel the liquid and provide air in the microcapsule.

### 3,720,580 DEVICE FOR COUPLING NUCLEAR REACTOR CONTROL RODS TO DRIVE LINKAGE THEREFOR AND FOR MAINTAINING CONTROL RODS IN REACTOR CORE

Hans-Peter Schabert, and Rainer Pawlitzki, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

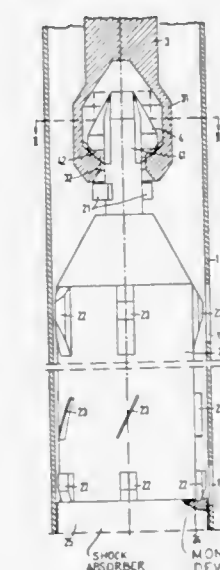
Filed Dec. 5, 1969, Ser. No. 882,670

Claims priority, application Germany, Dec. 7, 1968, P 18 13 293.9

Int. Cl. G21c 7/08

U.S. Cl. 176—36 R

6 Claims



Method of coupling nuclear reactor control rods, displaceable in guide tubes and around which coolant flows in a nuclear



reactor, to a drive linkage therefor, and uncoupling the control rods from the drive linkage includes turning a one-piece drive linkage with respect to a control rod located in reactor shut-off location, and turning the control rod proper with the aid of the drive linkage with respect to a guide tube in which the control rod is received, for the purpose of locking and unlocking the same.

3,720,581

**INNER SHELL AND SUPPORTING STRUCTURE FOR USE IN A NUCLEAR REACTOR HAVING A REACTOR CORE AND A REACTOR TANK SPACED AROUND SAID CORE**  
Arthur Kaser, Gunskirchen, Austria, assignor to Vereinigte Österreichische Eisen-und Stahlwerke Aktiengesellschaft, Linz, Austria

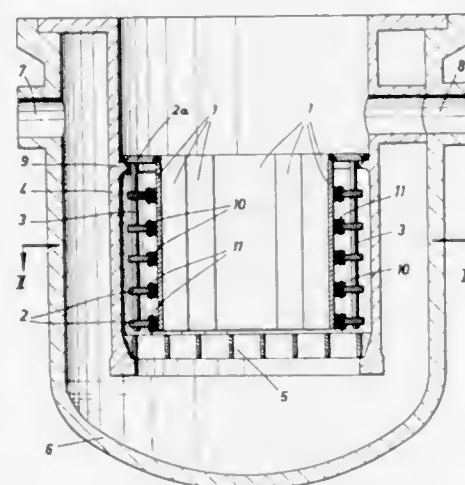
Filed March 29, 1971, Ser. No. 129,012

Claims priority, application Austria, April 30, 1970, 3948/70

Int. Cl. G21c 13/04

U.S. Cl. 176-87

16 Claims



A plurality of vertical inner shell plates form an inner shell and are free of direct interconnections. A plurality of vertically spaced, horizontal section ribs are provided, each of which surrounds said shell. A plurality of vertical posts are connected to said ribs to form therewith a cage adapted to be inserted as a whole into said tank around said core. Each of said inner shell plates is firmly secured to only one of said section ribs and vertically movably guided on all other section ribs.

3,720,582

# **PREPARATION OF NORADRENALINE**

Michael Harry Barnes, Rickmansworth, England, assignor to United Kingdom Atomic Energy Authority, London, England

No Drawing. Filed July 20, 1970, Ser. No. 56,754

Claims priority, application Great Britain, July 24, 1969, 37,376/69

Int. Cl. C12d 13/02

U.S. Cl. 195-30

5 Claims

A process for the preparation of noradrenaline which comprises reacting hydrogen cyanide with 3,4-diacetoxybenzaldehyde in the presence of an enzyme to produce a cyanohydrine which is then reduced and deacetylated to give *dl*-noradrenaline.

3,720,583

# **ENZYME HYDROLYSIS**

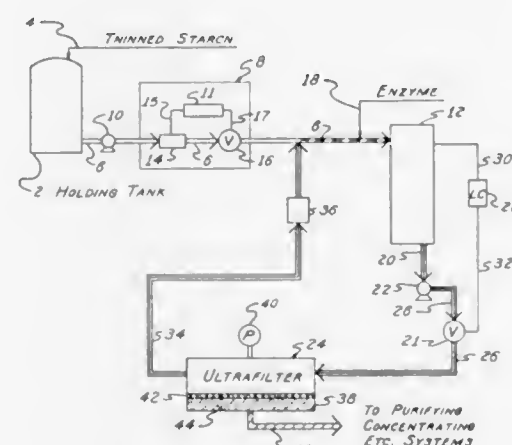
Earl Eugene Fisher, Decatur, Ill., assignor to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Dec. 20, 1968, Ser. No. 785,607

Int. Cl. C13k 1/06

U.S. Cl. 195-31 R

21 Claims



Process for continuously producing hydrolytic products whereby carbohydrates are hydrolyzed with enzymes under conditions which minimize enzyme inactivation and thereafter isolated and recovered by means of ultrafiltration.

3,720,584

# **PROCESS FOR THE PRODUCTION OF MONO-HYDROXY CARBOXYLIC ACIDS**

Kouichi Yamada and Osami Yagi, Tokyo, Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

No Drawing. Filed Sept. 8, 1969, Ser. No. 856,179

Claims priority, application Japan, July 9, 1969, 44/53,968

Int. Cl. C12d 1/00

U.S. Cl. 195-49

2 Claims

Process for the production of monohydroxy carboxylic acids such as lactic acid wherein *Arthrobacter*, *Alcaligenes* or *Fusarium* microorganisms are aerobically incubated in a culture medium including glycols as a source of assimilable carbon.

3,720,585

# **PROCESS OF REDUCING THE NUCLEIC ACID CONTENT IN YEAST**

Steven R. Tannenbaum, Framingham; Anthony J. Sinskey, Southbridge, and Stephen B. Maul, Cambridge, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed July 8, 1970, Ser. No. 53,263

Int. Cl. C12c 11/00

U.S. Cl. 195-98

9 Claims

A process performed upon yeast cells to produce inexpensive, palatable protein by first heat shocking at preselected temperatures, then incubating at other preselected temperatures, under controlled pH and for prescribed intervals of time.

3,720,586

# **MULTIPLE EXPANSION FLASH EVAPORATOR COMPRISING A CONTINUOUS CASING WITH A CENTRAL EVAPORATION CHAMBER**

Diego Barba, Candido D'Agostino, and Giuseppe Liuzzo, Rome, Italy, assignors to Società Italiana Resine S.p.A., Milan, Italy

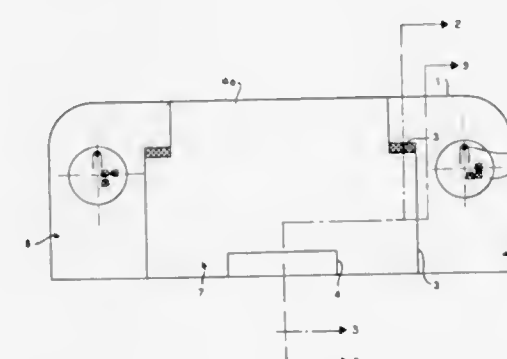
Filed Apr. 15, 1970, Ser. No. 28,827

Int. Cl. B01d 3/02, 3/06

U.S. Cl. 202-173

2 Claims

A multiple expansion flash evaporator comprising a continuous casing, with vertical longitudinal baffles dividing the casing into a central evaporation zone and two side condensation zones in communication with the central zone, a number of vertical transverse baffles dividing



the evaporator into a succession of expansion chambers with flow openings between them, and a multi-tube heat exchanger running the length of each condensation zone.

3,720,587

# **SEPARATING 1-CHLORO-2,2,2-TRIFLUORO-ETHYL DIFLUOROMETHYL ETHER FROM 1-CHLORO-2,2,2-TRIFLUOROETHYL DIFLUOROCHLORO-METHYL ETHER BY AZEOTROPIC DISTILLATION**

Louise S. Croix, Summit, N.J., assignor to Alarco, Inc., New York, N.Y.

Filed Aug. 2, 1971, Ser. No. 168,399

Int. Cl. B01d 3/36

U.S. Cl. 203-58

8 Claims

Azeotropes of 1-chloro-2,2,2-trifluoroethyl difluoromethyl ether and acetone, methyl ethyl ketone or tetrahydrofuran are formed and used to separate this ether from 1-chloro-2,2,2-trifluoroethyl difluoroethyl ether.

3,720,588

# **BLACK CHROMIUM PLATING PROCESS**

George E. Oleson, 3502 Burrows Avenue, Fairfax City, Va., and Roger M. Woods, 2301 S.E. 11th Thomas Road, Charlotte, N.C.

Continuation-in-part of Ser. No. 422,503, Dec. 31, 1964, abandoned. This application Nov. 30, 1970, Ser. No. 93,871

Int. Cl. C23b 5/06

U.S. Cl. 204-51

4 Claims

A process for producing a lustrous, deep black, corrosion resistant, adherent film upon a conductive base which comprises electrodepositing such film upon such base acting as a cathode, employing an electrolyte comprising:

- 20-35 percent by weight water; and
- 65-80 percent by weight of a mixture of:
  - 30-75 percent by weight chromic anhydride; and
  - 25-70 percent by weight acetic acid,

while maintaining the electrolyte at a temperature of 60° to 80° F. while passing a current therethrough at a current density of 125 to 1,000 amperes per square foot.

3,720,589

# **METHOD OF FORMING A HEAT RESISTANT FILM** Kunihiko Masunaga; Hiroshi Shinohara, and Toshihito Kondo, all of Toyota-shi, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-Shi, Japan

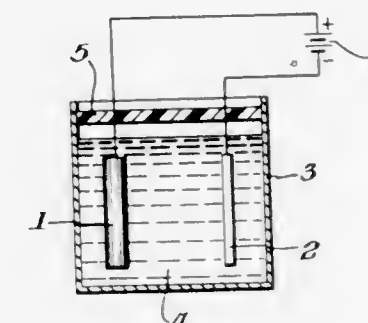
Filed Aug. 6, 1971, Ser. No. 169,721

Claims priority, application Japan, Aug. 17, 1970, 45/71602

Int. Cl. C23b 5/00, 9/00; B01k 5/00

U.S. Cl. 204-14 N

8 Claims



A method of forming a highly heat-resistant polymer film on an object surface by electrolyzing a vinyl monomer and a  $\alpha, \alpha'$ -derivative salt of p-xylylene without use of any supporting electrolyte and with the object taken as one of the electrodes.

3,720,590

# **METHOD OF COATING AN ELECTRODE**

Bernard J. DeWitt, Akron, and Aleksandrs Martinsons, Wadsworth, both of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 850,258, Aug. 14, 1969, abandoned. This application June 22, 1971, Ser. No. 155,647

Int. Cl. C23b 5/52

U.S. Cl. 204-37 R

18 Claims

A novel method of producing an anode for use in the electrolysis of an aqueous solution such as of an alkali metal chloride. The method includes electrodeposition of a layer of a platinum group metal from a solution containing an organic material onto an electroconductive substrate, typically of titanium. After the electrodeposition, the coated substrate is heat treated to decompose the organic material and form a coating comprising a platinum group metal and carbon.

3,720,591

# **PREPARATION OF OXALIC ACID**

Leonidas Skarlos, Richmond, Va., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 28, 1971, Ser. No. 213,206

Int. Cl. C07b 29/06; C07c 51/40, 55/06

U.S. Cl. 204-59 R

10 Claims

An oxalate salt from which oxalic acid may be produced is prepared by the cationic reduction of carbon dioxide in an electrolytic cell wherein the anode and cathode compartments are separated by a porous membrane and the catholyte is an organic solvent. Tetraethylammonium perchlorate, tetraethylammonium bromide, tetrabutylammonium perchlorate, tetrabutylammonium iodide and tetraethylammonium p-toluenesulfonate are the preferred solutes for the catholyte. Coulombic yields as high as 75 percent are obtained where the anolyte is the same electrolyte and solvent as the catholyte while yields as high as 97 percent of sodium oxalate are obtained when aqueous solutions of sodium salts are used as the anolyte.



3,720,592

# **VINYL ESTER RESINS CURED BY IONIZING RADIATION IN THE PRESENCE OF CBr<sub>4</sub>** Inder Mani, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Mar. 12, 1971, Ser. No. 123,913  
Int. Cl. C08g 45/04

U.S. Cl. 204—159.15

18 Claims

The addition of at least about 0.1 weight percent of carbon tetrabromide to a thermosettable mixture of certain vinyl monomers and polymerizable vinyl ester resins reduces the dosage level of ionizing radiation required to cure the mixture.

3,720,593

# **METHOD FOR HIGH RESOLUTION ZONE ELECTROPHORESIS**

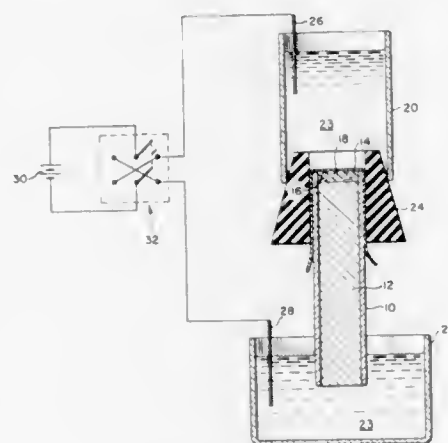
Eva Th. Juhos, Mountain View, Calif., assignor to Beckman Instruments, Inc.

Division of Ser. No. 587,013, Oct. 17, 1966, abandoned. This application Jan. 17, 1972, Ser. No. 218,613

Int. Cl. B01k 5/00

U.S. Cl. 204—180 G

2 Claims



A method of separating particles by zone electrophoresis by applying a potential gradient in one direction, allowing particles to migrate and build-up against a barrier, then reversing the current to allow the particles to migrate away from the barrier.

3,720,594

# **APPARATUS FOR MEASUREMENT OF GAS MIXTURE PROPERTIES**

Haydn Wilson, Luton, England, assignor to Kent Instruments Limited, Luton, Bedfordshire, England

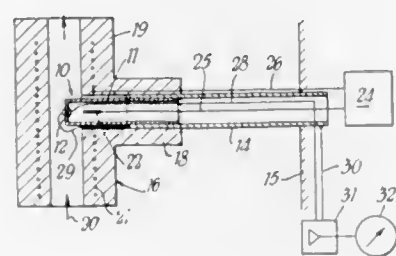
Filed May 4, 1970, Ser. No. 34,356

Claims priority, application Great Britain, May 9, 1969, 23,767/69

Int. Cl. G01n 27/46

U.S. Cl. 204—195 S

12 Claims



In a method of apparatus for measuring the percentage content or partial pressure of one component of a gas mixture, or for measuring the chemical potential of one component of a gas mixture, a sample flows through a sample tube incorporating the cell and located in the mix-

ture, the sample being heated in the tube to the temperature needed for operation of the cell. The sample is caused to flow through the tube by the flow of the mixture, by convection due to the heating or by the suction of a pump.

3,720,595

# **APPARATUS FOR ELECTROLYTIC POLISHING OF ROD-SHAPED WORKPIECES**

Ludwig Kohler, Nurnberg, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

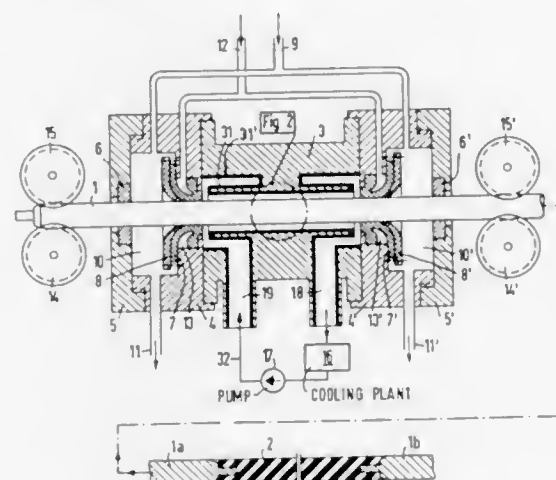
Filed June 9, 1970, Ser. No. 44,720

Claims priority, application Germany, June 19, 1969, P 19 31 174.1

Int. Cl. C23b 5/68; B23p 1/12; B01k 3/00

U.S. Cl. 204—206

8 Claims



A tubular electrolyte container functions as a cathode and encloses a workpiece moving therethrough. The container has a cross-section corresponding to that of the workpiece. Each of a pair of seals is provided at a corresponding axial end of the container to seal the container from the workpiece and the outside. Electrolyte is continuously circulated in the container. Rollers outside the container move the workpiece through the container and supply electric current to the workpiece.

3,720,596

# **APPARATUS FOR THE HARD-CHROME PLATING OF LARGE METALLIC SURFACES**

Antoaneta M. Draghicescu, and Aurel C. Radoi, both of Bucharest, Romania, assignors to Institutul De Cercetari Technologice Pentru Constructii De Masini

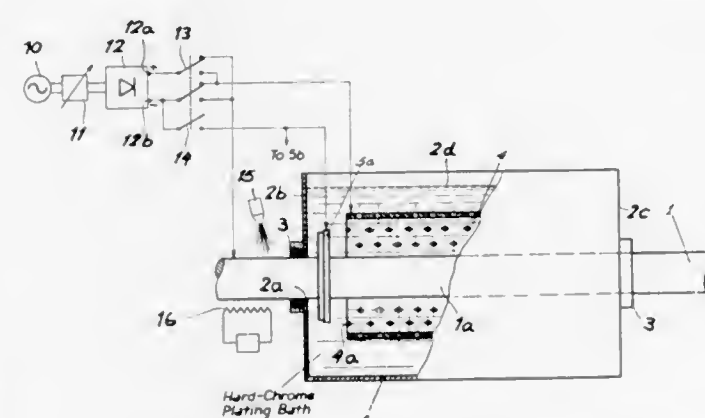
Division of Ser. No. 813,828, April 7, 1968, Pat. No.

3,616,287. This application June 15, 1970, Ser. No. 62,783

Int. Cl. B01k 3/04

U.S. Cl. 204—211

3 Claims



An apparatus for the hard-chromium plating elongated bodies of large surface area wherein the body is advanced in

stages through the chromium plating bath relative to the anode, and chromium plating is carried out during the transverse in which the substrate is stationary. A pair of equipotential screens is provided in axially spaced relationship at each end of the plating zone, at least one of the screens being positioned upon the previously coated portion of the substrate at a location in which the prior plating has reached its maximum thickness.

3,720,597

# **MULTIPOROSITY ELECTRODE FOR ELECTROCHEMICAL CONVERSION**

Benedict H. Ashe, Jr., Bartlesville, and William V. Childs, Austin, both of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

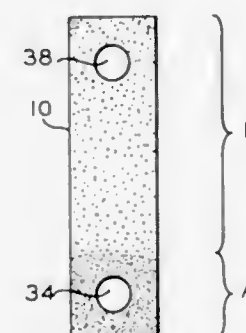
Division of Ser. No. 739,510, June 24, 1968, Pat. No.

3,558,450. This application July 28, 1970, Ser. No. 58,952

Int. Cl. B01r 3/04

U.S. Cl. 204—284

14 Claims



In an electrochemical process, the reaction takes place within the confines of a porous electrode element in which the pores of the lower portion have a lower effective size than the pores of the upper portion.

3,720,598

# **CRYOGENIC ARC FURNACE AND METHOD OF FORMING MATERIALS**

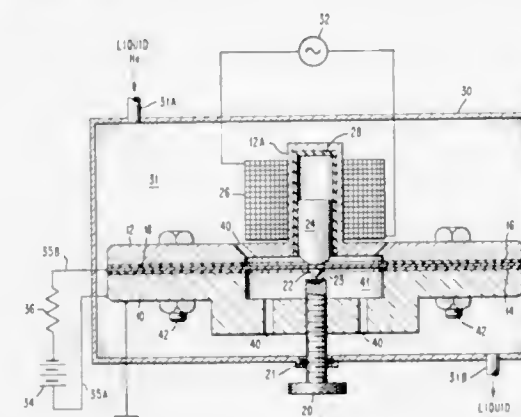
William A. Thompson, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1970, Ser. No. 103,086

Int. Cl. C22d ; B23k 9/00

U.S. Cl. 204—328

13 Claims



This disclosure provides apparatus for achieving rapidly a high temperature arc discharge in the region of a material to be vaporized. Surrounding the region of the arc discharge is a cryogenic fluid against which both the arc and the vaporized produces exert pressure. The effect of the presence of the cryogenic fluid adjacent to the high temperature region is to constrain the arc discharge strongly and to quench rapidly the material in the vapor state to the solid state. As a consequence of the localized heating and rapid quenching in the cryogenic arc furnace, special materials and physical states thereof are

achieved. Illustratively, chemical products and amorphous conditions of materials are achieved for the practice of this disclosure not heretofore contemplated in the practice of the prior art.

For an embodiment of this disclosure, the material to be vaporized is ab initio established in location for a capacitive arc discharge and the capacitor plates are caused by mechanical shock to approach each other so that the discharge occurs preferentially at a preselected path on the material.

Practice of this invention is readily extrapolated to the very high temperatures required for fusion experiments in liquid deuterium, e.g., greater than 100,000°C.

3,720,599

# **CONTINUOUS DEWAXING OF OILS BY IN SITU REFRIGERATION**

Leslie R. Gould, Sarnia, Ontario, Canada, assignor to Esso Research and Engineering Company

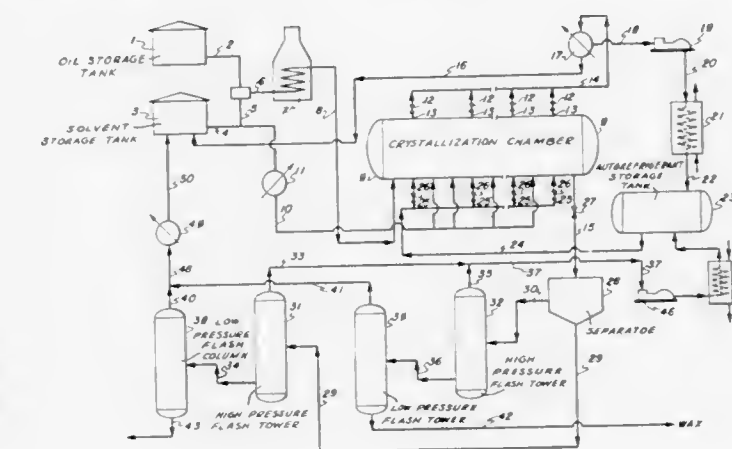
Continuation of Ser. No. 829,467, June 2, 1969, abandoned.

This application May 3, 1971, Ser. No. 139,835

Int. Cl. C10g 43/08

U.S. Cl. 208—33

17 Claims



An improved process for dewaxing petroleum oil stocks. Feed oil, with or without a dewaxing solvent, is both mixed and cooled by direct contact with boiling liquid refrigerant, with required residence time in a vessel containing sufficient stages to effect required wax crystal growth.

3,720,600

# **CRACKING OF HYDROCARBONS**

Geoffrey Harry Mansfield and Malcolm Lehany Watts, Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

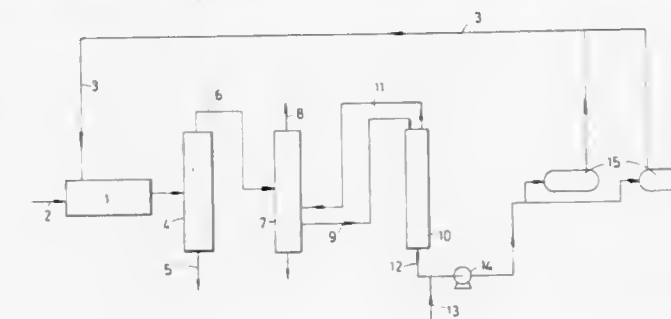
Filed Mar. 1, 1971, Ser. No. 119,708

Claims priority, application Great Britain, Mar. 2, 1970, 9,835/70

Int. Cl. C07c 3/30; C23f 11/10

U.S. Cl. 208—47

11 Claims



A hydrocarbon feedstock, for example, naphtha, is cracked in the presence of steam which has been produced in the presence of an alkanolamine, preferably ethanolamine. The process reduces corrosion in the steam-raising equipment.



3,720,601

## HYDROCRACKING PROCESS

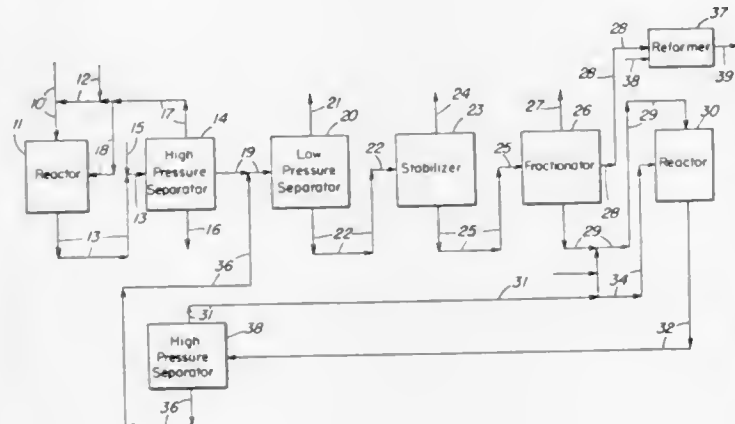
Harry L. Coonrad, Woodbury, and Paul W. Snyder, Jr., Pitman, both of N.J., assignors to Mobil Oil Corporation

Filed July 9, 1969, Ser. No. 840,280

Int. Cl. C10g 13/02, 37/04; C01b 33/28

U.S. Cl. 260—111

6 Claims



Selected nitrogen-containing hydrocarbon fractions are hydrocracked to maximize gasoline production. A fraction is hydrocracked severely in the presence of added hydrogen and a hydrocracking catalyst resistant to organic nitrogen compounds. Naphtha is separated from the resultant product, and the remaining liquid product is then hydrocracked in the presence of a hydrocracking catalyst.

3,720,602

## WATER INJECTION IN A HYDRODESULFURIZATION PROCESS

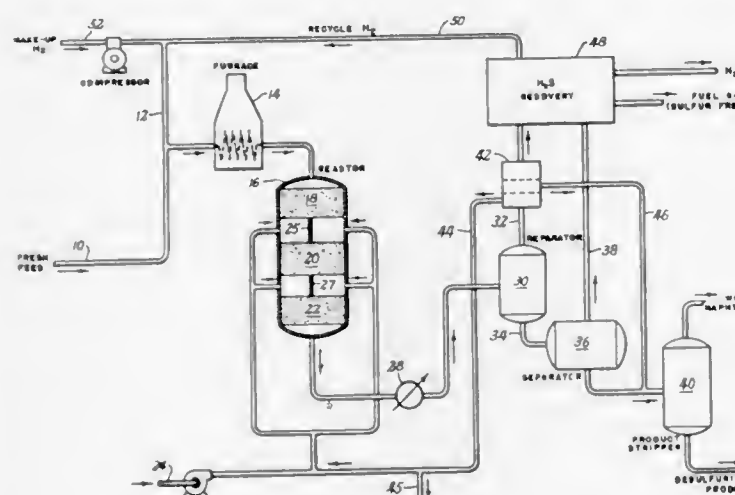
Kenneth L. Riley, and John D. Shoemaker, Jr., both of Baton Rouge, La., assignors to Esso Research and Engineering Company

Filed Feb. 26, 1971, Ser. No. 119,222

Int. Cl. C10g 23/02

U.S. Cl. 208—216

19 Claims



Hydrodesulfurization of substantially non-metal containing hydrocarbon feed, such as vacuum gas oils, virgin gas oils and cycle oils, is carried out in a contacting step with hydrogen and a catalyst of a Group VI-B and/or Group VIII metal which also contains 0.1–15 percent by weight of a Group VB metal. Water, in the form of either liquid or vapor, is injected in the desulfurization reaction to effect cooling and to enhance catalyst activity.

3,720,603

## METAL RECOVERY PROCESS

William K. T. Gieim, Island Lake, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Feb. 5, 1971, Ser. No. 113,109

Int. Cl. C10g 17/00

5 Claims

U.S. Cl. 208—251 R

Metallic components are recovered from a hydrocarbon mixture by (1) forming the sulfides of the metals, (2) converting the sulfides to metal carbonyls and (3) separating the carbonyls from the hydrocarbon mixture. Especially adaptable for the recovery of a colloidal metal catalyst from the reaction product effluent of a slurry process for the conversion of heavy hydrocarbonaceous charge stocks. The effluent, in which the metal exists in the sulfide form, is treated with carbon monoxide which produces the carbonyl. The metal carbonyl is capable of subsequent use as the precursor of the colloidal metal catalyst.

3,720,604

## ADSORBING OLEFINS WITH A COPPER-EXCHANGED TYPE Y ZEOLITE

Donald H. Rosback, Elmhurst, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Division of Ser. No. 865,980, Oct. 13, 1969, Pat. No.

3,649,177. This application Aug. 16, 1971, Ser. No. 172,322

Int. Cl. C10g 25/04

5 Claims

U.S. Cl. 208—310

A new composition of matter, a method for the preparation of a copper-exchanged Type Y structured zeolite and a separation process employing the same. The zeolite adsorbent is prepared by a procedure employing an aqueous ion-exchange step and a final step including contacting the copper-exchanged zeolite with a mixture containing a cuprous salt and a hydrocarbon. The process involves the selective separation of olefinic hydrocarbons from saturated hydrocarbons employing a Type Y structured zeolite containing copper cations at the cationic exchange sites within the zeolite. The olefins are selectively retained by an adsorbent and are removed in a concentrated form by a desorption step.

3,720,605

## PROCESS FOR THE EXTRACTION OF AROMATIC HYDROCARBONS BY KETO AND ALDO-MORPHOLINES

Giancarlo Paret, Milan, and Ermanno Cinelli, San Donato Milanese, both of Italy, assignors to Snam Progetti S.P.A., Milan, Italy

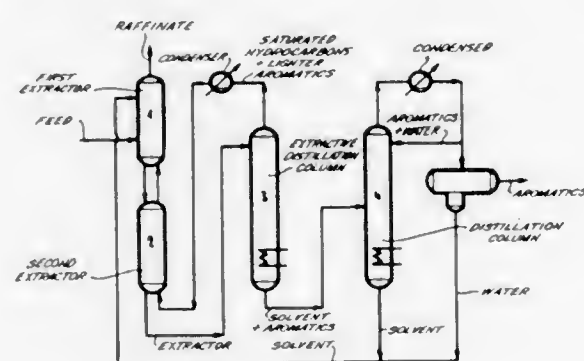
Filed July 17, 1970, Ser. No. 55,908

Claims priority, application Italy, July 18, 1969, 19812 A/69

Int. Cl. C10g 21/28

U.S. Cl. 208—321

7 Claims



A multi-stage countercurrent process for the solvent extraction of aromatic hydrocarbons from a mixed feed stock is disclosed wherein the feed is contacted with a keto- or aldopholine and extracted in a first stage, extract from the first stage is purified in a second stage by countercurrent contact with an overhead fraction from a third stage wherein the

second stage extract is distilled, and rectification is effected in a fourth stage wherein water is refluxed and a part of the water, obtained as reflux free of solvent, is vaporized and recycled to the bottom of this rectification stage to recover the sensible heat of lean solvent.

3,720,606

## DEODORIZING AND SEWAGE TREATMENT FORMULATION

Ronald E. Horney, Summerfield, and Hiram T. Jackson, Greensboro, both of N.C., assignors to Biogenics Company, Inc., Greensboro, N.C.

Filed Feb. 18, 1971, Ser. No. 116,606

Int. Cl. C02c 1/40

5 Claims

U.S. Cl. 210—11

A formulation comprising an aqueous solution containing one or more aerobic, mesophilic, spore-forming bacterial agents selected from Group I of the genus Bacillus to induce aerobic decomposition of odor causing waste matter to a form free of odor; and an odor suppressing agent including a perfumant initially effective to suppress and/or mask any undesirable odors that might be released by the waste materials before and during decomposition thereof, and a carrier containing an emulsifier into which the perfumant is dissolved.

3,720,607

## REVERSE OSMOSIS PROCESS EMPLOYING POLYBENZIMIDAZOLE MEMBRANES

Willard C. Brinegar, Charlotte, N.C., assignor to Celanese Corporation, New York, N.Y.

Filed April 15, 1970, Ser. No. 28,940

Int. Cl. B01d 13/00

10 Claims

U.S. Cl. 210—23

A process for desalinization of water by reversed osmosis is disclosed particular utility in the separation of components of a solution. A solution of a polybenzimidazole polymer is deposited upon a support to form a wet film, an amount of solvent is evaporated from the wet film sufficient to allow the formation of a thin layer of higher density at the exposed surface of the film, and the resulting film is washed to remove residual solvent and thereby form a semipermeable polybenzimidazole membrane which membrane is then employed in the reverse osmosis process.

3,720,608

## METHOD AND APPARATUS FOR CONDITIONING AND DISPOSING OF ALUM SLUDGE FROM WATER TREATMENT

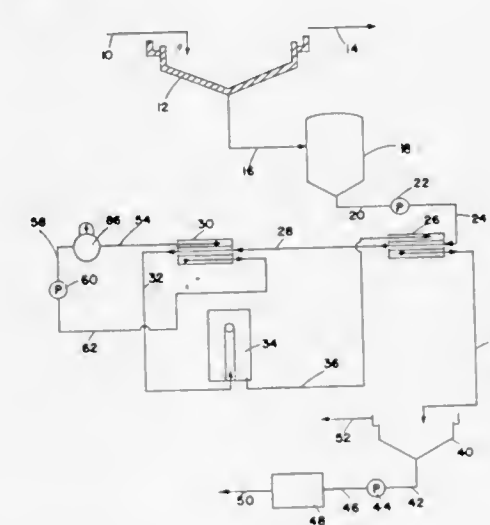
James D. Stauffer, Columbus, Ohio, assignor to Bonham, Grant & Brundage Limited, Columbus, Ohio

Filed Sept. 8, 1971, Ser. No. 178,702

Int. Cl. B01d 21/01

4 Claims

U.S. Cl. 210—56



A process and apparatus for Pollution Abatement by the transfer, conditioning and disposing of alum sludge.

3,720,609

## PROCESS FOR TREATING AQUEOUS CHEMICAL WASTE SLUDGES AND COMPOSITION PRODUCED THEREBY

Charles L. Smith, Conshohocken, and William C. Webster, Warminster, both of Pa., assignors to G. & W.H. Corson, Inc., Plymouth Meeting, Pa.

Filed April 17, 1970, Ser. No. 29,561

Int. Cl. C02c 5/02

16 Claims

U.S. Cl. 210—59

Waste sludges containing small amounts of certain types of reactive materials are treated by adding to such sludges materials capable of producing aluminum ions, lime and/or sulfate bearing compounds to produce a composition having a sufficient concentration of sulfate ions, aluminum ions and equivalents thereof, and calcium ions and equivalents thereof. Fly ash is preferred source of aluminum ions for this purpose. Over a period of time such compositions harden by the formation of calcium sulfo-aluminate hydrates. Hardening of the sludge facilitates its disposition and may permit the reclamation of the land now occupied by large settling ponds for such sludge. Still further, the solidification of such settling ponds may provide permanent land fill which permits immediate use of the land without the necessity for removal of the sludge. Aggregate materials may also be incorporated in the solidified waste.

3,720,610

## THINNER FOR DRILLING FLUIDS

Albert Erasmus, Landenburg, Germany, assignor to Benc-kiser-Knapsack GmbH, Ludwigshafen/Rhine, Germany

Filed June 9, 1970, Ser. No. 44,888

Claims priority, application Germany, June 12, 1969, P 19 29 968.4

Int. Cl. C10m 3/48

10 Claims

U.S. Cl. 252—8.5 C

The thinner according to this invention added to drilling fluids used for drilling for petroleum or natural gas is gluconic acid and/or its heavy metal salts and/or its alkali metal-heavy metal salts, especially chromic gluconate and/or an alkali metal chromic gluconate.

3,720,611

## GELATION INHIBITED SILICONE FLUIDS

A. D. Britt, Alexandria, Va., assignor to the United States of America as represented by the Secretary of the Navy

No Drawing. Continuation-in-part of abandoned application Ser. No. 22,083, Mar. 23, 1970. This application Mar. 23, 1971, Ser. No. 127,380

Int. Cl. C10m 3/46, 3/24

U.S. Cl. 252—18

9 Claims

Silicone fluids containing a small amount of alkali metal salt of trifluoroacetic acid have reduced tendency to form gelatinous solids as they decompose at high temperature. The function of said metal salt is improved by the addition of a small amount of sodium hydroxide.



3,720,612

**SYNTHETIC ESTER LUBRICATING OIL COMPOSITIONS**  
David S. Bosniack, Edison, and Stephen J. Metro, Scotch Plains, both of N.J., assignors to Esso Research and Engineering Company, Linden, N.J.  
Continuation-in-part of Ser. No. 836,613, June 25, 1969, Pat. No. 3,585,137. This application May 11, 1970, Ser. No. 36,436. The portion of the term of this patent subsequent to June 15, 1988, has been disclaimed.

Int. Cl. C10m 3/40, 3/30

U.S. Cl. 252—32.5

15 Claims

Synthetic ester lubricating oils made from saturated aliphatic monocarboxylic acids and neopentyl polyols and containing small amounts of amine addition salts of acid phosphate esters, aminobenzamides, and neutral phosphate esters.

3,720,613

**SYNERGISTIC MIXTURE OF ZINC DIALKYL DITHIOPHOSPHATE AND ZINC DIALKYLPHENOXYETHYL DITHIOPHOSPHATE**  
Thomas O. Brown, Nederland, and James H. Cupit, Port Arthur, both of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 9, 1970, Ser. No. 96,396

Int. Cl. C10m 1/48, 3/42

U.S. Cl. 252—32.7 E

6 Claims

A synergistic mixture comprising zinc dialkyl dithiophosphate and zinc dialkylphenoxyethyl dithiophosphate, said mixture provides improved oxidation resistance, nitration inhibition and antiwear properties to a wide variety of organic oil substrates.

3,720,614

**POLYPHENYL THIOETHER LUBRICATING COMPOSITIONS**

Frank S. Clark, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Sept. 25, 1970, Ser. No. 75,751

Int. Cl. C10m 1/46, 1/38

U.S. Cl. 252—46.7

7 Claims

Lubricating compositions comprising polyphenyl thioether, polyphenyl ethers-thioethers or mixtures thereof and containing small amounts of trichloroacetic acid have improved lubricating properties. These compositions are useful as lubricants over wide temperature ranges.

3,720,615

**OIL-SOLUBLE RUST PREVENTIVE COMPOSITION**

Kaichi Izumi, and Takao Watanabe, both of Tokyo, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Aug. 6, 1970, Ser. No. 61,850

Claims priority, application Japan, Aug. 11, 1969, 44/63464

Int. Cl. C10m 1/26, 1/32, 1/40

U.S. Cl. 252—33

5 Claims

An oil-soluble rust preventive composition consists essentially of (A) a polycarboxylic acid having seven to 44 carbon atoms and 2 or 3 carboxyl groups or a partial ester of said acid with aliphatic alcohol having one to 18 carbon atoms and (B) an aliphatic tertiary amine having three hydrocarbon groups, each of which has at least one to 20 carbon atoms and at least one of which has six to 20 carbon atoms. The weight ratio of (A) to (B) is in the range of 95:5 to 5:95. The composition, when added to hydrocarbon oil, provides improved rust preventive characteristics and improved demulsibility, particularly when the oil contains a dispersant of the metal salt type.

3,720,616

**HYDROXYBENZOTRIAZOLES AS METAL DEACTIVATORS**

Donald Richard Randell, Stockport, and Ernest Alfred Cox, Urmston, both of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 745,115, July 16, 1968, abandoned. This application Jan. 14, 1971, Ser. No. 106,532

Claims priority, application Great Britain, July 21, 1967, 33536/67

Int. Cl. C10m 1/20, 1/32

U.S. Cl. 252—51.5 R

9 Claims

4-Hydroxy-5-alkyl-benzotriazoles are described as useful corrosion or tarnish inhibitors on metal surfaces, especially on copper, and as metal deactivators in functional fluids. Compositions containing the novel benzotriazoles or 4-hydroxy-benzotriazole and a process for making these compounds in a particularly advantageous manner are also described.

3,720,617

**AN ELECTROSTATIC DEVELOPER CONTAINING MODIFIED SILICON DIOXIDE PARTICLES**

Arun K. Chatterji; Marianne Custozzo; Demosthenes K. Kiriazides, all of Webster, N.Y.; John J. Russell, Jr., Tyrone, Pa., and John P. Serio, Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 20, 1970, Ser. No. 39,856

Int. Cl. G03g 9/02

U.S. Cl. 252—62.1

7 Claims

A developer material comprising colored toner particles having a particle size less than about 30 microns and a minor proportion of submicroscopic silicon dioxide additive particles having at least a portion of the silicon atoms on the outside surface of the silicon dioxide particles directly attached through an oxygen atom to another silicon atom which in turn directly attached through a carbon linkage to one to three organic groups.

3,720,618

**METHOD OF PRODUCING A POWDER OF COBALT-CONTAINING NEEDLE-LIKE SHAPED GAMMA-FERRIC OXIDE PARTICLES AS MAGNETIC RECORDING MATERIAL**

Hideo Toda; Shigeki Shimizu, and Hisato Ihara, all of Hiroshima, Japan, assignors to Toda Kogyo Co. Ltd., Hiroshima, Japan

Filed Feb. 25, 1971, Ser. No. 118,654

Claims priority, application Japan, May 8, 1970, 45/39077

Int. Cl. C04b 35/00

U.S. Cl. 252—62.56

5 Claims

Procedure is described for producing a powder of cobalt-containing, needle-like shaped gamma-ferric oxide,  $\gamma$ -Fe<sub>2</sub>O<sub>3</sub> particles useful for magnetic recording and the making of magnetic tape, magnetic sheet and magnetic disk with the powder which has high coercive force, high remanence and good dispersibility, uniform chemical composition, the cobalt uniformly dispersed on each particle, no twin particle structure, a particle length of 0.2–0.5 micron, a specific surface area of 15–25 m<sup>2</sup>/g and a content of anion such as SO<sub>4</sub><sup>2-</sup> less than 0.1 percent. Alkali is added to a mixture of a ferrous salt solution and a cobalt salt solution until the pH exceeds 11, an oxidizing gas of constant oxygen partial pressure is blown into the solution as uniformly fine air bubbles, also causing agitation while maintaining the solution at 30°–50°C, whereupon alpha-Fe<sub>2</sub>O<sub>3</sub> hydrate particles precipitate with the cobalt ions in solid solution, and by washing, dehydrating, reducing and oxidizing conversion into the desired  $\gamma$ -Fe<sub>2</sub>O<sub>3</sub> particles results.

3,720,619

**LIQUID DEVELOPER FOR ELECTROPHOTOGRAPHY CONTAINING THE REACTION PRODUCT OF A DYESTUFF AND A FATTY ACID**

Eiichi Inoue, Tokyo, Yasuo Ueda, Kobe-shi, and Tatsuo Aizawa, Osaka, Japan, assignors to Mita Industrial Company Limited, Osaka, Japan

No Drawing. Filed Dec. 16, 1969, Ser. No. 885,626

Claims priority, application Japan, Dec. 18, 1968, 43/92,573

Int. Cl. G03g 9/04

U.S. Cl. 252—62.1

5 Claims

A liquid developer for electrophotography which comprises a dispersion of a salt-forming reaction product between at least one dyestuff or dyestuff base containing amino groups and at least one fatty acid of not less than 8 carbon atoms, in a high electric resistance liquid as carrier, said fatty acid being soluble in said carrier liquid; characterized in that a salt formed from said fatty acid and said dyestuff or dyestuff base is insoluble in said high electric resistance liquid, and that said fatty acid is present in an amount of at least 4 mols per mol of said dyestuff or dyestuff base, the amount of said fatty acid being sufficient to disperse said salt in the fine divided state stably in the carrier liquid but being not so excessive as to cause any bleeding of an image to be formed.

3,720,620

**SYNERGISTIC ANTISEPTIC COMPOSITIONS**

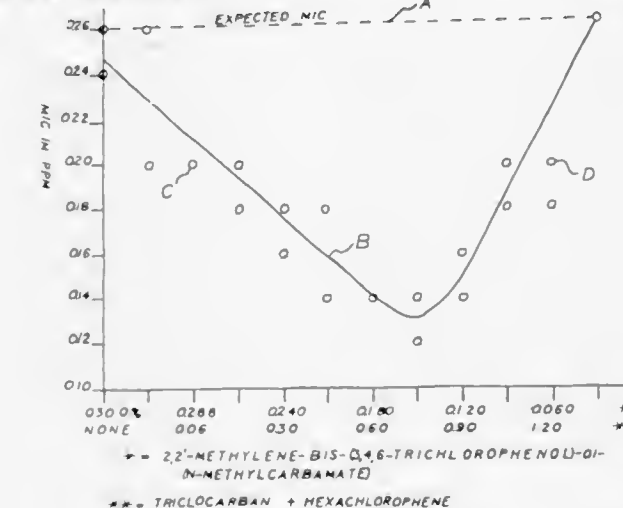
David Taber, 2000 Lincoln, Evanston, Ill. 62242, and Leo A. Raphaelian, 2640 Laurel Lane, Wilmette, Ill. 60091

Filed July 20, 1970, Ser. No. 56,272

Int. Cl. C11d 9/50

U.S. Cl. 252—107

6 Claims



Compositions possessing antibacterial activity through the effect of synergistic mixtures of 2,2'-methylene-bis-(3,4,6-trichlorophenol)-di-(N-methylcarbamate), triclocarban and hexachlorophene.

3,720,621

**AQUEOUS DETERGENT COMPOSITIONS**

Alfred Smeets, Tirlemont, Belgium, assignor to Citrex. S. A., Saint-Gilles-lez-Bruxelles, Belgium

Filed June 15, 1970, Ser. No. 46,472

Claims priority, application Great Britain, June 17, 1969, 30,640/69

Int. Cl. C11d 3/04, 7/00

U.S. Cl. 252—135

12 Claims

The present invention provides a homogeneous liquid composition containing by weight:

- from 14 to 35 percent of sodium tripolyphosphate,
  - from 0.1 to 50 percent at least of a potassium and/or ammonium salt of an inorganic or organic acid,
  - from 15 to 85.9 percent of water.
- The composition is especially useful as a detergent for non-porous surfaces and textile materials.

3,720,622

**GENERATION OF LIGHT FROM THE DECOMPOSITION OF DIOXETANES IN THE PRESENCE OF A FLUORESCER**

Laszlo Joseph Bollyky, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Jan. 2, 1970, Ser. No. 415

Int. Cl. C09k 3/00

U.S. Cl. 252—188.3

7 Claims

A bright chemiluminescent light emission is obtained when ketene or substituted ketenes such as diphenylketene are reacted with singlet oxygen or a precursor thereof such as triphenylphosphite-ozone complex in the presence of a fluorescer.

3,720,623

**ENCAPSULATED LIQUID CRYSTALS**

James V. Cartmell, and Donald Churchill, both of Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Feb. 8, 1971, Ser. No. 113,716

Int. Cl. B01j 13/02

U.S. Cl. 252—316

6 Claims

A mixture of cholesteric liquid crystal material such as cholesteryl nonanoate and nematic liquid crystal material such as methoxybenzylidene-p-n-butylaniline is disclosed. The mixture can be encapsulated and employed in temperature-sensitive visual display devices. The addition of nematic liquid crystal material to cholesteric liquid crystal material enhances the brightness of films employing cholesteric liquid crystal material and prolongs the usable life of the films.

3,720,624

**CATIONIC SURFACE ACTIVE SUBSTANCE, METHOD FOR MANUFACTURING SAME**

Shigeyuki Suzuki, Sagami-hara-shi, Kanagawa-ken; Kotara Kumakoto, Setagaya-ku, Tokyo-to; Isamu Kaneda, Edogawa-ku, Tokyo-to, and Shoushiro Sakai, Chigasaki-shi, Kanagawa-ken, all of Japan, assignors to Kurita Water Industries Limited, Koraihashi, Higashi-ku, Osaka-shi, Osaka-fu, Japan

Filed July 17, 1970, Ser. No. 55,961

Claims priority, application Japan, July 18, 1969, 44/56559

Int. Cl. B01f 17/16, 17/18

U.S. Cl. 252—357

4 Claims

Water soluble substance having cationic surface active properties manufactured by subjecting polycyclic condensation compounds (viz, a mixture of high aromatic hydrogen compounds selected from the group consisting of tarry, pitchy and resinous substances obtained by heat-treating petroleum type hydrocarbons, coal tar or coal pitch at a temperature range of 700°C. to 2000°C. for a time period from one-tenth second to 1/1000 second) to halomethylation and quaternization with a thiourea, trialkylamine or pyridine. The substance is useful for flocculation of solid particles suspending in water or organic substances dissolved in water.

3,720,625

**PROCESS FOR PREPARING HYDROGEN OR NITROGEN AND HYDROGEN UNDER PRESSURE**

Ernst Kapp, Frankfurt, and Paul Becker, Eschborn, both of Germany, assignors to Metallgesellschaft, Frankfurt am Main, Germany

Filed Nov. 5, 1970, Ser. No. 87,032

Claims priority, application Germany, Nov. 19, 1969, P 19 58 033.7

Int. Cl. C01b 2/00, 2/30, 1/03

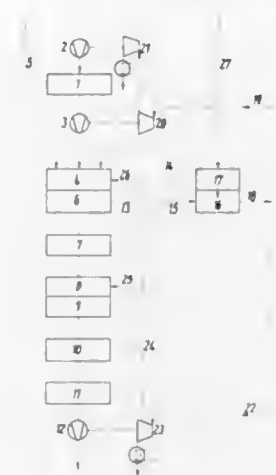
U.S. Cl. 252—377

6 Claims

Process for producing hydrogen and/or a hydrogen-nitrogen mixture for the synthesis of ammonia, which process comprises a gasification of solid or liquid sulfur-containing fuels with oxygen and steam; a desulfurization of the crude gas; conversion of the carbon monoxide contained in the raw gas



with hydrogen to form carbon dioxide and hydrogen in two stages using an iron oxide-chromium oxide catalyst and temperatures of 350°–500°C in the first stage and a copper-con-



taining catalyst and temperatures of 190°–280°C in the second stage; scrubbing the gas which is now rich in hydrogen to remove carbon dioxide; and a final purification of the remaining built up raw hydrogen by a removal of residual carbon dioxide and carbon monoxide.

3,720,626

#### ELUTION PROCESS FOR THE REGENERATION OF SPENT ACTIVATED CARBON

Jacques Raphael Benzaria, Chambly, and Claude Zundel, Neuilly S/Seine, both of France, assignors to Societe Anonyme: Degremont Societe Generale d'Epuration et d'Assainissement, Saint-Cloud Rueil Malmaison, France  
Filed June 19, 1970, Ser. No. 47,599

Claims priority, application France, June 20, 1969, 6920827

Int. Cl. B01j 11/02

U.S. Cl. 252—413

17 Claims

Improvement in the process for the regeneration of spent activated carbon combining an aqueous alkaline solution and an organic solvent, such as a lower alcohol.

The spent carbon is first contacted in a column under practically static conditions, and at between 25° and 90°C for 30 minutes to 2 hours with an aqueous alkaline solution, preferably 0.5 to 25 percent by weight sodium hydroxide. An alkaline treatment prepares the elution action of the solvent. The solvent is a lower alcohol, preferably isopropanol combined with water. The solvent is then removed by steam and the carbon is regenerated by an acid treatment. Complete regeneration is obtained.

3,720,627

#### READY-TO-USE LEAD SULFIDE CATALYST

Howell R. Jarvis, Houston, Tex., assignor to Petrolite Corporation, St. Louis, Mo.

No Drawing. Filed Apr. 15, 1971, Ser. No. 134,464

Int. Cl. B01j 11/74

U.S. Cl. 252—430

6 Claims

A ready-to-use lead sulfide catalyst for use in the Bender (a registered trademark) sweetening process of sour petroleum products. The lead sulfide catalyst comprises a carrier of particulate inert solids and a relatively dry exposed coating residing about the exterior surface of the solids. The coating is formed of a mixture of sodium sulfide and lead oxide reacted in the presence of an aqueous solution of sodium silicate binder. Preferably, the sodium sulfide is introduced in a stoichiometric amount relative to the lead oxide in the mixture. The catalyst can be protected from oxidizing gases or moisture by a hydrocarbon soluble covering enclosing the coating on the carrier. For example, the coating may be a high-melting point natural, petroleum or synthetic wax.

3,720,628

#### HYDROCARBON ISOMERIZATION CATALYST AND PROCESS

John C. Hayes, Palatine, Roy T. Milsche, Island Lake, Richard E. Rausch, Mundelein, and Frederick C. Wilhelm, Arlington Heights, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 34,539, May 4, 1970. This application July 17, 1970, Ser. No. 56,008

Int. Cl. B01j 11/78, 11/40

U.S. Cl. 252—442

3 Claims

Isomerizable hydrocarbons such as paraffins, cycloparaffins, olefins, and alkyl aromatics are isomerized by utilizing a catalytic composite containing catalytically effective amounts of a platinum group component and a Group IV-A metallic component combined with a carrier material of alumina and a finely divided crystalline aluminosilicate such as mordenite. Also disclosed is a catalytic composite comprising a platinum group component, a Group IV-A metallic component and a Friedel-Crafts metal halide component combined with a carrier material of alumina and a finely divided crystalline aluminosilicate.

3,720,629

#### DETERGENT COMPOSITION CONTAINING HYDROGENATED ALPHA OLEFIN SULFONATES

Samuel H. Sharman, Kensington, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 685,948, Nov. 27, 1967, Pat. No. 3,565,809. This application Feb. 27, 1970, Ser. No. 15,214

Int. Cl. C11d 3/065, 1/12

U.S. Cl. 252—535

7 Claims

High performance detergent compositions consist of straight-chain hydrogenated olefin sulfonates, an alkali metal or ammonium group pentavalent phosphoric acid salt and an alkanol-1.

3,720,630

#### POLYMERS OF FLUORINATED EPOXIDES AND USE THEREOF

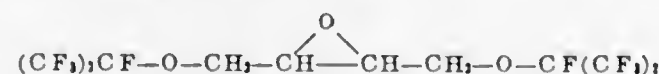
Allen G. Pittman, El Cerrito, and William L. Wasley, Berkeley, Calif., assignors to the United States of America as represented by the Secretary of Agriculture  
No Drawing. Original application Dec. 22, 1969, Ser. No. 887,380. Divided and this application Feb. 17, 1971, Ser. No. 116,290

Int. Cl. C08g 23/06

U.S. Cl. 260—2 A

6 Claims

1,4-bis-(heptafluoroisopropoxy)-2-butene is oxidized to form the corresponding epoxide



This epoxide can be converted into homo- or co-polymers which are useful for enhancing the repellency of fibrous substrates, e.g., fabrics made from natural or synthetic fibers.

3,720,631

#### SHEET MATERIALS OF EXCELLENT DURABILITY AND METHOD OF MANUFACTURING THE SAME

Osamu Fukushima, Kazuo Nagoshi, and Toshiaki Iwamoto, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Continuation-in-part of Ser. No. 701,101, Jan. 29, 1968, abandoned. This application Sept. 28, 1970, Ser. No. 76,235

Claims priority, application Japan, Feb. 10, 1967, 42/8691  
Int. Cl. C08g 22/44, 22/08

U.S. Cl. 260—2.5 AY

7 Claims

A highly durable sheet material using for synthetic leather is prepared by dipping a layer of a solution of a polyurethane

elastomer which is derived from both a polyester having a molecular weight of 800 to 3000 and a polyether having a molecular weight of 800 to 3000 as soft segments, the molar ratio of the polyester to the polyether being from 10:90 to 65:35, and in which elastomer the weight of nitrogen atoms contained in the urethane groups ranges from 3.8 to 6 percent of the total weight of the polyurethane elastomer, into a coagulation bath composed of a solvent and a non-solvent for the polyurethane elastomer at a ratio by weight ranging from 20:80 to 70:30, thereby coagulating said layer of the elastomer into a microporous structure.

3,720,632

#### POLYISOCYANURATE-CONTAINING ELASTOMERS AND FOAMS

Perry A. Argabright, Sedalia, Colo.; Vernon J. Sinkley, Invergrove, Minn., and Brain L. Phillips, Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Continuation-in-part of Ser. No. 840,843, July 10, 1969, abandoned, which is a division of Ser. No. 611,588, Jan. 25, 1967, Pat. No. 3,458,448. This application Sept. 30, 1970, Ser. No. 76,975

Int. Cl. C08g 22/44, 22/22; C08q 22/28

U.S. Cl. 260—2.5 AW

9 Claims

Polyisocyanate compounds containing isocyanurate rings are formed by reacting an organic dichloride with a metal cyanate in the conjoint presence of a halide catalyst and an aprotic solvent.

The present invention also comprises new isocyanurate-containing isocyanate compositions. Both the new and conventional isocyanates produced by the processes of the present invention are useful for the wide variety of uses to which isocyanates are conventionally put, including particularly the manufacture of polyurethane polymers in the form of coatings, films, foams, etc.

3,720,633

#### POLYVINYL ALCOHOL ADHESIVE COMPOSITION WITH HIGH WET TACK CONTAINING A BORON COMPOUND AND A CIS 1,2-POLYOL COMPOUND

Ralph F. Nickerson, West Springfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Original application Nov. 12, 1968, Ser. No. 775,170, now Patent No. 3,632,786. Divided and this application Apr. 21, 1971, Ser. No. 136,208

Int. Cl. B32b 27/04; C08b 25/02; C08d 9/06

U.S. Cl. 260—17.4 ST

4 Claims

Disclosed herein is an adhesive composition with high wet tack, which comprises:

- (A) a polyvinyl alcohol resin,
- (B) a water soluble boron compound, and
- (C) a polyol selected from the group consisting of cis 1,2-polyols and certain 1,3-polyols.

3,720,634

#### ORGANIC HEXAFLUOROPHOSPHATES, ARSENATES OR ANTIMONATES AS ACCELERATORS FOR CURING EPOXY RESINS

Gary L. Statton, Wallingford, Pa., assignor to Atlantic Richfield Company, Philadelphia, Pa.

No Drawing. Filed Jan. 19, 1971, Ser. No. 107,850

Int. Cl. C08g 45/00

U.S. Cl. 260—18 PF

18 Claims

A process for preparing curable thermoset resins from polyepoxides and organic anhydrides with or without polyols in the presence of organic hexafluorophosphates,

hexafluoroarsenates or hexafluoroantimonates which serve as accelerators resulting in shorter gel times with more thorough cure at lower temperatures than obtained with presently recognized accelerators.

3,720,635

#### POLYESTER MOULDING AND COATING MASSES WHICH CAN BE CURED BY ULTRAVIOLET IRRADIATION

Wolfgang Metzner; Karl Fuhr; Hans Rudolph; Hermann Schnell, and Hans-Georg Heine, all of Krefeld-Uerdingen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 810,370, March 25, 1969, abandoned. This application May 5, 1971, Ser. No. 140,581  
Claims priority, application Germany, Apr. 16, 1968, P 17 69 168.8

Int. Cl. C08f 21/02, 43/08, 1/20

U.S. Cl. 260—862

2 Claims

Moulding and coating masses which can be cured by UV-irradiation and consist of mixtures of unsaturated polyesters and copolymerizable monomeric compounds with a content of phenylthio derivatives of acetophenones as photosensitizers.

3,720,636

#### AQUEOUS DISPERSION PAINTS OF COPOLYMERS OF DIESTERS OF FUMARIC ACID WITH VINYL COMPOUNDS

Johannes Wollner, Kapellen, and Wolfgang Tietz, Hamburg 90, both of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, West Germany

Filed Sept. 24, 1970, Ser. No. 75,247

Claims priority, application Germany, Oct. 1, 1969, P 19 49 497.4

Int. Cl. C08f 29/38

U.S. Cl. 260—29.6 T

4 Claims

Dispersion paint compositions prepared by emulsion-copolymerization of fumaric acid esters of aliphatic alcohols with aliphatic and/or aromatic vinyl compounds, olefins or olefinic-unsaturated compounds.

3,720,637

#### OLEFIN-MALEIC ANHYDRIDE CROSSLINKED TERPOLYMERS

Robert Baeskal, Kensington, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed March 29, 1971, Ser. No. 129,222

Int. Cl. C08f 19/20

U.S. Cl. 260—29.7 H

5 Claims

Crosslinked terpolymers of isobutene-maleic anhydride and divinylbenzene and their alkali metal, amide ammonium, amide amine, ammonium and amine salts and aqueous dispersions thereof.

3,720,638

#### COMPOSITIONS OF ANIONICALLY POLYMERIZED POLYCAPROLACTAM PLASTICIZED WITH HEXAMETHYLPHOSPHOROTRIAMIDE

John M. Kolyer, Convent, and Albert A. Kveglis, Pine Brook, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Feb. 24, 1969, Ser. No. 801,391

Int. Cl. C08g 51/50

U.S. Cl. 260—30.6 R

6 Claims

The impact strength of compositions of anionically polymerized polycaprolactam (nylon 6) is improved by carrying out the polymerization reaction in the presence of hexamethylphosphorotriamide.



3,720,639

## FLUORINATED POLYOLS

James R. Griffith, Riverdale Heights, Md., assignor to the United States of America as represented by the Secretary of the Navy

No Drawing. Continuation-in-part of application Ser. No. 13,172, Feb. 20, 1970. This application June 24, 1971, Ser. No. 156,492

Int. Cl. C08g 51/34

U.S. Cl. 260—33.4 EP

15 Claims

A fluorinated polyol is formed from the polymerization reaction of a diglycidyl ether with a fluorinated dihydroxy hydrocarbon. The polymerization may be carried out with a tertiary amine catalyst and with or without a polar solvent. The reaction may take place in-situ as a coating on a surface, or as an adhesive between laminates, or as a molding material within a mold. The product is useful in applications requiring the hydrophobic properties of fluorine in combination with the adhesive and molding properties of epoxy resins.

3,720,640

## SAND CONSOLIDATION METHOD AND COMPOSITION

Bobby G. Harnsberger, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Division of Ser. No. 887,731, Dec. 23, 1969, Pat. No. 3,592,268. This application Nov. 27, 1970, Ser. No. 93,396

Int. Cl. C08g 51/28

U.S. Cl. 260—336 R

4 Claims

Method of and composition for the treatment of unconsolidated sandy formations to stabilize a formation sand comprising injecting a treating composition of 10–60 percent by volume of acrolein dimer, 1 to 10 percent by volume of thionyl chloride catalyst, and 30 to 89 percent by volume of a non-aromatic petroleum solvent into said formation sand, polymerizing said dimer, and forming a fluid permeable consolidated sand in said formation.

3,720,641

## PROCESS FOR PRODUCING AN IMPROVED WHOLLY AROMATIC POLYAMIDE MOLDING RESIN

Frank M. Berardinelli, 121 Rolling Hill Drive, Millington, N.J. 07946, and Saunders E. Jamison, 26 Webster Ave., Summit, N.J. 07901

No Drawing. Filed Dec. 18, 1970, Ser. No. 99,723

Int. Cl. C08g 51/04, 51/08, 51/44

U.S. Cl. 260—37 N

14 Claims

A process of blending an aromatic polyamide resin with reinforcing fillers comprising precipitation of the polyamide resin from a dilute solution and thereafter mixing the polyamide resin and reinforcing fillers together, in a liquid environment and removing the liquid.

3,720,642

## USE OF MODIFIED RESINS AS BINDING AGENTS FOR MINERAL SUBSTANCES

Hans Junger, Troisdorf; Hans-Joachim Kotzsch, Rheinfelden; Hans-Joachim Vahlensieck, Wehr/Baden, and Franz Weissenfels, Siegburg, all of Germany, assignors to Dynamit Nobel AG, Postfach, Germany

Filed Oct. 9, 1970, Ser. No. 90,174

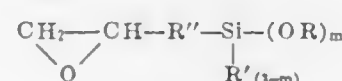
Claims priority, application Germany, Oct. 2, 1969, P 19 49 759.7

Int. Cl. C08k 51/04

U.S. Cl. 260—37 R

3 Claims

Improvements in the strength and other characteristics of sand filled resin, particularly phenolic resin bodies by incorporating epoxy silanes of the formula:



wherein  $m$  is 2 or 3,

$\text{R}$  and  $\text{R}'$  are 1 to 4 carbon alkyls, and

$\text{R}''$  is a 1 to 8 carbon alkylene or alkylene ether in with such resin.

3,720,643

## FIRE RETARDANT POLYMERIC MATERIALS

Ismat Ali Abu-Isa, Birmingham, and Harold E. Trexler, Harper Woods, Mich., assignors to General Motors Corporation, Detroit, Mich.

No Drawing. Filed June 21, 1971, Ser. No. 155,257

Int. Cl. C08f 45/04

U.S. Cl. 260—41.5 A

4 Claims

The addition of suitable minor portions of talc, chlorinated polyethylene and antimony trioxide to polypropylene resins, styrene-acrylonitrile copolymer resins or acrylonitrile-butadiene-styrene resins renders these polymers nonburning. The presence of the talc contributes synergistically to the flame retardancy of the compositions permitting a reduction in the quantities of the chlorine-containing and antimony-containing additives otherwise employed for this purpose.

3,720,644

## POLYSILOXANES CONTAINING FLUOROALKYLAMINOALKYL GROUPS

Robert Neville Haszeldine, Disley, and Anthony Edgar Tipping, Bramhall, both of England, assignors to Minister of Aviation Supply in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Nov. 12, 1970, Ser. No. 89,081

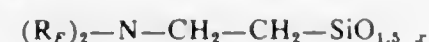
Claims priority, application Great Britain, Nov. 12, 1969, 55,381/69

Int. Cl. C08f 11/04

U.S. Cl. 260—46.5 E

6 Claims

This specification describes polysilsesquioxanes of the general formula



where  $\text{R}_f$  is a fully fluorinated lower alkyl group and  $x$  has the value of 20 to 50 and polysiloxanes of general formula



where  $\text{R}_f$  is a fully fluorinated lower alkyl group,  $m$  is two or three,  $\text{R}$  is lower alkyl group and  $y$  has the value 3 to 16. The preparation of these polymers is also described.

3,720,645

## METHOD OF OBTAINING GEL-FREE EPOXY RESINS BY FILTRATION IN THE MOLTEN STATE

Ugo Nistri, Milan; Silvio Vargiu, Sesto San Giovanni (Milan), and Mario Pitzalis, Arcore (Milan), all of Italy, assignors to Societa Italiana Resines S.p.A., Milan, Italy

Filed Nov. 5, 1970, Ser. No. 87,334

Claims priority, application Italy, Nov. 14, 1969, 24410 A/69

Int. Cl. C08g 30/04

U.S. Cl. 260—47 EP

8 Claims

Gel-free epoxy resins are obtained by filtration of the resin molten rather than in a solvent.

3,720,646

## PERFLUOROPOLYETHERS MODIFIED WITH QUINONE COMPOUNDS IN THE POLYMERIC CHAIN AND PROCESS FOR THEIR PREPARATION

Dario Sianesi, Milan; Renzo Fontanelli, Roma, and Alberto Grazioli, Milan, all of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed March 2, 1971, Ser. No. 120,347

Claims priority, application Italy, March 3, 1970, 21406 A/70

Int. Cl. C08g 15/00

U.S. Cl. 260—63 HA

13 Claims

Modified perfluoropolyethers containing, within the polymeric chain, repeating units derived from a quinone compound, are obtained by reacting a peroxidic oxygen-containing perfluoropolyether with a quinone compound, either at an elevated temperature between about 100° and 350° C or under radiation with ultraviolet light at least a portion of which is in the 200–300 millimicron range, whereby the peroxidic bridges are gradually replaced by the quinone units. The reaction is believed to proceed by a free-radical mechanism. The resulting products may be linear, branched, or cross-linked, depending upon the reaction conditions, ratio of reactants, and nature of the starting materials. The products are essentially unvulcanized rubbers which can be vulcanized by common vulcanizing agents such as diamines.

3,720,647

## PRODUCING P-XYLENE

Horst Gelbe, and Karl Schmid, both of Essen, Germany, assignors to Fried, Krupp, Gesellschaft mit beschränkter Haftung, Essen, Germany

Filed July 8, 1970, Ser. No. 53,284

Claims priority, application Germany, July 9, 1969, P 19 34 721.8

Int. Cl. C07c 7/14

U.S. Cl. 260—674 A

11 Claims

p-Xylene having a purity of more than 99 percent, preferably more than 99.5 percent by weight is produced from a liquid hydrocarbon mixture (containing approximately 15 to 25 percent by weight p-xylene and, in addition, at least one further isomeric xylene) by crystallization above the eutectic point, subsequent filtration and subsequent centrifuging.

3,720,648

## WATER DILUTABLE COATING COMPOSITIONS CONTAINING PRECONDENSATES OF PHENOL RESOLS AND ETHERIFIED PHENOL RESOLS

Rolf Güldenpfennig, Bammental, Germany, assignor to Reichhold-Albert-Chemie Aktiengesellschaft, Hamburg, Germany

No Drawing. Continuation-in-part of application Ser. No. 72,200, Sept. 14, 1970, which is a continuation of application Ser. No. 666,453, Sept. 8, 1967, both now abandoned. This application Jan. 14, 1972, Ser. No. 217,969

Int. Cl. C08g 45/08

U.S. Cl. 260—19 EP

6 Claims

Water-dilutable heat-curable coating compositions for electrophoretic deposition comprising the following components:

(I) precondensates of hydrophilic plasticizing epoxy resin partial esters with thermosetting aldehyde products formed by heating to temperatures of about 80 to 160° C. in the proportions of about 1 to 50 percent by weight of said thermosetting aldehyde products to said partial esters, said precondensates having a Gardner-Holdt viscosity of about B to Q measured at 50 percent in butyl glycol and an acid number range of 60 to 100, wherein:

(a) said hydrophilic plasticizing epoxy resin par-

tial esters are selected from the group consisting of:

- (1) the partial esters of compounds containing epoxy groups or hydroxyl groups produced by hydrolytic cleavage of said epoxy groups with at least one monocarboxylic acid and a polybasic carboxylic acid;
- (2) the partial esters of compounds containing epoxy groups or hydroxyl groups produced by hydrolytic cleavage of said epoxy groups with a polybasic carboxylic acid; and
- (3) mixtures of (1) and (2); wherein said polybasic carboxylic acid of (1) and (2) comprises hydrolyzed adducts selected from the group consisting of maleic acid with fatty acids and maleic anhydride with fatty acids, said fatty acids are selected from the group consisting of drying oil acids and semi-drying oil acids, the molar proportions of fatty acid to maleic acid or maleic anhydride is between about 0.9:1 and 1.1:1 and the molar proportion of free hydroxyl groups to free carboxyl groups is between about 1:0.8 and 1:1, wherein one epoxy group is calculated as two hydroxyl groups and one anhydride group is calculated as two carboxyl groups, said adducts containing no more than 3 percent free maleic anhydride; and

(b) said thermosetting aldehyde products are selected from the group consisting of

- (1) phenol resols;
- (2) etherified phenol resols;
- (II) strong nitrogenous bases forming soaps with the said hydrophilic plasticizing epoxy resin partial esters; and
- (III) water.

3,720,649

## METHOD FOR PRODUCING POLYESTERS FROM BENZENEDICARBOXYLIC ACID AND ALKYLENE OXIDE

Nobuo Izawa; Yasuhiro Iizuka, and Yoshiaki Kubota, all of Osaka-fu, Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 1, 1970, Ser. No. 94,165

Claims priority, application Japan, Dec. 8, 1969, 44/98775; Dec. 26, 1969, 45/1232; Dec. 26, 1969, 45/1233

Int. Cl. C08g 17/17

U.S. Cl. 260—75 M

9 Claims

A polyester having a high quality is produced by reacting a benzenedicarboxylic acid with an alkylene oxide in an aqueous medium containing an alkali metal ion of 2.7 to 10 mole per 1 l of water, extracting the reaction mixture with an organic solvent to separate diglycol ester, concentrating or/and crystallizing the extracted solution and then effecting polycondensation.

3,720,650

## PROCESS FOR PREPARING SINTERED POWDER OF POLYAMIDE 12

Hans Joachim Schultze, Chur, Grisons, and Ruthild Henn, Domat-ems, Grisons, both of Switzerland, assignors to Inventa A.G. Fur Forschung und Patentverwertung, Zurich, Switzerland

Filed Feb. 8, 1971, Ser. No. 113,765

Int. Cl. C08g 20/42

U.S. Cl. 260—78 L

7 Claims

In a process for preparing polyamide 12 (polydodecanoic acid amide) as sintered powder by dissolving the polyamide 12 in molten caprolactam, cooling the melt so obtained and treat-



ing it with a solvent for caprolactam, the improvement, which consists in carrying out the solvent treatment with benzene or toluene at elevated temperature.

3,720,651

**METHOD OF MANUFACTURING A COPOLYMER OF A C<sub>4</sub> OLEFIN WITH MALEIC ANHYDRIDE**  
Saburo Imoto, Osamu Ohara, Hisashi Nakamoto, Hisashi Tanaka, and Ryuhei Ueda, Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan  
No Drawing. Filed Apr. 9, 1971, Ser. No. 132,881  
Claims priority, application Japan, May 1, 1970, 45/38,527; Nov. 17, 1970, 45/101,811  
Int. Cl. C08f 1/08, 15/02

U.S. Cl. 260—78.5 R 15 Claims  
A method of manufacturing a copolymer of a C<sub>4</sub> olefin with maleic anhydride is provided comprising copolymerizing an olefin selected from the group consisting of isobutene and a mixture of isobutene and other hydrocarbons which contain 4 carbon atoms with maleic anhydride in a solvent containing at least 80 weight percent of isopropyl acetate or a mixture of ethyl acetate and tert-butanol.

3,720,652

**POLYMERIC COMPOSITION WITH ANTI-STATIC AND ANTI-FOGGING PROPERTIES**  
Yoshiharu Yagi, Minoru Hino, Takanobu Noguchi, Motomu Wada, Kiyoshi Yasuno, Kou Sota, Nobuo Ito, and Yasuto Nakai, Osaka, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan  
No Drawing. Filed July 8, 1970, Ser. No. 53,297  
Claims priority, application Japan, July 8, 1969, 44/54,309  
Int. Cl. C08f 45/00

U.S. Cl. 260—80.7 2 Claims  
A polymeric composition with anti-static and anti-fogging properties comprising a polymer (for example, a polyolefin, such as polyethylene, polypropylene, and the like; a copolymer of ethylene and a polar vinyl compound, such as a copolymer of ethylene and vinyl acetate, a copolymer of ethylene and vinyl chloride, a copolymer of ethylene and an acrylic acid ester, and the like; an ABS resin; a polystyrene, or a synthetic rubber, such as SBR, BR and EPDM), and at least one of N-(2-hydroxyethyl)stearylamine and N-(2-hydroxyethyl)oleylamine or a mixture of at least one of N-(2-hydroxyethyl)stearylamine and N-(2-hydroxyethyl)oleylamine and at least one of N,N-bis-stearyl-2-ethanolamine and N,N-bis-oleyl-2-ethanolamine is disclosed.

3,720,653

**COLORED INTERPOLYMERS OF AN EPOXY COMPOUND, VINYLPIRROLIDONE AND VINYL ACETATE**

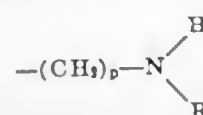
Gregoire Kalopissis and Andre Viout, Paris, France, assignors to Societe Anonyme dite: L'Oreal, Paris, France  
No Drawing. Continuation-in-part of application Ser. No. 549,446, May 12, 1966. This application Jan. 25, 1971, Ser. No. 109,693

Claims priority, application France, Apr. 20, 1966, 58,324; Luxembourg, May 13, 1965, 48,591  
Int. Cl. C08f 15/40

U.S. Cl. 260—80.72

4 Claims  
A colored copolymer soluble in a solvent selected from the group consisting of water, alcohol and mixtures thereof consisting essentially of a first comonomer containing a reactive epoxy group and being selected from the group consisting of glycidyl methacrylate, glycidyl acrylate and allyl glycidyl ether, a second comonomer consisting of vinylpyrrolidone, the remaining comonomer being essentially vinyl acetate, and a dye selected from the group consisting of azo, anthraquinone and benzene

dyes containing an extra-nuclear radical having the formula:



wherein R is selected from the group consisting of hydrogen, —CH<sub>3</sub> and —C<sub>2</sub>H<sub>5</sub> and p is 2–6, said extra-nuclear radical being bonded to the aromatic nucleus of said dye through a nitrogen atom directly attached to said aromatic nucleus and said dye being bonded to said reactive epoxy group through the terminal nitrogen atom of said extra-nuclear radical.

3,720,654

**MOLECULAR SIZING PROCESS FOR PREPARING LOW MOLECULAR ISOBUTYLENE-CONJUGATED POLYENE COPOLYMERS**  
Jerome Robert Olechowski, Trenton, N.J., assignor to Cities Service Company, New York, N.Y.  
No Drawing. Filed May 21, 1971, Ser. No. 145,957  
Int. Cl. C08d 5/00; C08f 1/88

U.S. Cl. 260—85.3 R 20 Claims  
Low molecular weight butyl-type copolymers having narrow molecular weight distributions are prepared by contacting a higher molecular weight butyl-type copolymer, e.g., a butyl rubber, with a catalyst composition comprising a transition metal salt, an organometallic compound of a metal of Group I–A, II–A, II–B, or III–A of the Periodic Table, a proton donor, and hydrogen. The catalyst composition preferably comprises a halide of tungsten, molybdenum, or rhenium, an alkyl aluminum halide, a lower alkanol, and hydrogen.

3,720,655

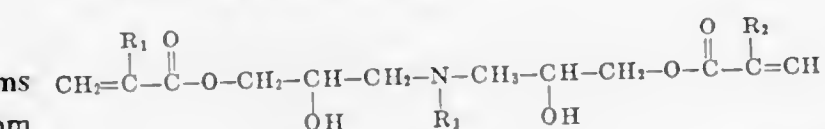
**FLUORINE-CONTAINING COPOLYMER COMPOSITIONS AND METHOD FOR THEIR PREPARATION**  
Swayambu Chandrasekaran, East Orange, and Max B. Mueller, Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.  
No Drawing. Filed Sept. 27, 1971, Ser. No. 184,185  
Int. Cl. C08f 15/04, 15/06

U.S. Cl. 260—87.5 B 3 Claims  
About equimolar thermoplastic 3,3,3-trifluoro-2-trifluoromethyl propene/ethylene copolymers are prepared by copolymerizing the monomers in the presence of a free radical generating initiator. The copolymer products are melt-processable, resist attack by corrosive agents and solvents, can be formed into elastic fiber and are especially suitable for use in surface coatings having high water and oil repellency.

3,720,656

**ANAEROBIC SEALANT COMPOSITIONS**  
Kazuo Manaka, Broadview, Ill., assignor to Broadview Chemical Corporation, Broadview, Ill.  
No Drawing. Filed May 10, 1971, Ser. No. 142,063  
Int. Cl. C08f 3/64, 3/66, 15/18

U.S. Cl. 260—89.5 N 23 Claims  
Anaerobic sealant compositions are prepared with monomers of the general formula:



wherein R<sub>1</sub> and R<sub>2</sub> are selected from the group consisting of hydrogen and lower alkyl and R<sub>3</sub> is selected from the group consisting of lower alkyl, lower hydroxyalkyl, cyano, and lower cyanoalkyl. These monomers are reacted with a vinyl organic acid to prepare the amine salt, and are combined with a suitable initiator, inhibitor, and accelerator to prepare an anaerobic sealant.

3,720,657

**PROCESS FOR EXTRACTING PANCREAS GLANDS**  
Jan Willem de Vries, Oss, Netherlands, assignor to Organon Inc., West Orange, N.J.  
No Drawing. Filed Nov. 6, 1969, Ser. No. 874,727  
Claims priority, application Netherlands, Nov. 20, 1968, 6816599  
Int. Cl. C07c 103/52; A61k 17/04

U.S. Cl. 260—112.7 4 Claims  
The invention relates to a process for extracting insulin from pancreas glands by means of an acidified solvent for insulin and comprises extracting the pancreas with a solvent acidified with sulphuric acid, preferably at a pH between about 2.4 and 5.2, after which hydrochloric acid is added to the extraction mixture preferably till the pH is about 2.0 and the extraction is continued. In this way the amount of protein obtained is on a high level, whereas the extract can be easily separated from the tissue residue to give a clear extract and the precipitate of inactive proteins, formed by adjusting the pH of the extract to about 8, can be filtered in a very short time.

3,720,658

**CHOLESTERYL P-PHENYLAZOPHENYL CARBONATE**  
Newton N. Goldberg, Pittsburgh, Pa., and James L. Ferguson, Kent, Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.  
Division of Ser. No. 820,661, April 30, 1969, Pat. No. 3,627,699. This application Aug. 9, 1971, Ser. No. 170,269  
Int. Cl. C07c 107/06

U.S. Cl. 260—207.1 1 Claim  
Electromagnetic radiation in the frequency range of about 10<sup>18</sup> to 10<sup>17</sup> cycles per second is detected, using a cholesteric liquid-crystal material to which there has been added cholesteryl p-phenylazophenyl carbonate, a novel compound.

3,720,659

**SULFATED GUMS AND METHOD OF PRODUCING SAME**  
Kenneth B. Guiseley, South Hope, and Philip A. Whitehouse, Rockport, Maine, assignors to Marine Colloids, Inc., Springfield, N.J.  
No Drawing. Continuation-in-part of application Ser. No. 848,700, Aug. 8, 1969. This application Feb. 9, 1971, Ser. No. 114,072  
Int. Cl. C08b 19/02, 19/12

U.S. Cl. 260—209.5 36 Claims  
A carbohydrate gum is subjected to anhydrous sulfation with a sulfating agent in the form of a reaction product of sulfur trioxide with a Lewis base. The gum is produced in a water-containing, water-distended condition by coagulation from solution or by swelling in an aqueous medium and water and any liquid irreversibly reactive with the sulfating agent are replaced by a surrogate liquid that has a vapor pressure substantially lower than that of water and any other liquid carried by the particles that is irreversibly reactive with the sulfating agent, said surrogate liquid being miscible with the water and with said other liquid, by slurring the particles with the surrogate liquid and evaporating the liquid medium until the water and any reactive liquid are removed but leaving surrogate liquid associated with the particles. The surrogate liquid is either the same as or is miscible with the solvent that is used for the sulfating agent. The process is one having general applicability to carbohydrate gums so as to impart improved receptivity to sulfation without excessive degradation. Degradation also is minimized by carrying out the sulfation in the presence of a base. Predetermined degrees of sulfation are made possible by temperature control and new sulfated gum products are afforded which may be produced so as to have properties having specific utilities for different commercial applications, the end products having especial advantages for use in milk products.

3,720,660

**SYNTHETIC SMOKING MATERIAL**

John Harold Arendt, Geneva, Jean Pierre Sachetto, Gallard, and Jean-Paul Carriere, Geneva, Switzerland, assignors to Gallaher Limited, Belfast, Northern Ireland  
Filed Aug. 30, 1971, Ser. No. 175,901

Claims priority, application Great Britain, Sept. 4, 1970, 42,553/70; May 11, 1971, 14,215/71

Int. Cl. A24d 1/18; C08b 15/00, 19/00

U.S. Cl. 260—212 8 Claims  
The invention is concerned with a method of producing an oxidized polysaccharide for use in a synthetic smoking material, wherein the polysaccharide is treated in an oxidizing system containing at least stoichiometric quantities of nitronium ion for uronic oxidation.

3,720,661

**PROCESS FOR PRODUCING ACETYLATED REGENERATED CELLULOSE ARTICLES**

Alain Breton, Marc Tricot, and Andre Rajon, all of Paris, France, assignors to Societe Rhodacetee and CTA Compagnie Industrielle de Textiles Artificiels & Synthetiques, Paris, France  
Filed Jan. 5, 1971, Ser. No. 104,137  
Int. Cl. C08b 3/06; D06m 13/20

U.S. Cl. 260—227 10 Claims  
A process for producing acetylated regenerated cellulose articles and such articles per se, wherein the regenerated cellulose article is acetylated first in the liquid phase and thereafter in the gaseous phase, which comprises first acetylating the regenerated cellulose article to a combined acetic acid level of from 20 to 45 percent in a liquid bath at a temperature of 80° to 135°C, such bath containing acetic anhydride and free acetic acid, in the presence of a catalytic agent having a non-acid or slightly acid reaction, the weight ratio of the acetic anhydride to the acetic anhydride plus free acetic acid being between 0.5 and 0.9, and thereafter acetylating the regenerated cellulose article to a combined acetic acid level of from 45 to 62.5 percent with acetic anhydride in the vapor phase at a temperature of 120° to 180°C.

3,720,662

**PREPARATION OF STARCH ESTERS**

Martin M. Tessler, Edison, and Morton W. Rutenberg, Plainfield, N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.

No Drawing. Filed Sept. 13, 1971, Ser. No. 180,129  
Int. Cl. C08b 19/04

U.S. Cl. 260—233.5 7 Claims  
Aqueous slurries or dispersions of starch are reacted with mixed carbonic-carboxylic anhydrides of monocarboxylic acids under alkaline conditions to yield ester derivatives of starch. These starch products can also be prepared by a dry reaction process.

3,720,663

**PREPARATION OF STARCH ESTERS**

Martin M. Tessler, Edison, N.J., assignor to National Starch and Chemical Corporation, New York, N.Y.  
Filed June 24, 1971, Ser. No. 156,524  
Int. Cl. C08b 19/02

U.S. Cl. 260—233.5 9 Claims  
Aqueous slurries or dispersions of starch are reacted with imidazolidines of carboxylic or sulfonic acids to yield starch ester derivatives. These starch products can also be prepared in non-aqueous solvents or by a dry reaction process.



3,720,664

 **$\alpha$ -UREIDOCYCLOHEXADIENYLALKYLENE-PENICILLINS**

Raymond Curry Erickson, Metuchen, N.J., assignor to E. R. Squibb &amp; Sons, Inc., New York, N.Y.

No Drawing. Filed Nov. 17, 1969, Ser. No. 877,478

Int. Cl. C07d 99/16

U.S. Cl. 260—239.1

6 Claims

This invention relates to  $\alpha$ -ureidocyclohexadienylalkylene-penicillins as well as their salts and compositions containing them, which are useful as antibacterial agents.

3,720,665

**ACYLOXYMETHYL ESTERS OF ALPHA-PREIDOCYCLO-HEXADIENYLALKYLENE-PENICILLINS**

Arnold D. Welch, Princeton, Joseph Edward Dolfini, North Brunswick, and Frederick F. Giarrusso, Belle Mead, N.J., assignors to E. R. Squibb &amp; Sons, Inc., New York, N.Y.

No Drawing. Filed Oct. 26, 1970, Ser. No. 84,169

Int. Cl. C07d 99/16

U.S. Cl. 260—239.1

6 Claims

This invention relates to new acyloxymethyl esters of  $\alpha$ -ureidocyclohexadienylalkylene-penicillins and compositions containing them which are useful as antibacterial agents.

3,720,666

**6-(SUBSTITUTED-4-OXOURETIDINO-1-YL) PENICILLANIC ACIDS**

John H. Sellstedt, King of Prussia, Daniel M. Teller, Devon, and Charles J. Guinasso, Abington, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Sept. 2, 1971, Ser. No. 177,485

Int. Cl. C07d 99/16

U.S. Cl. 260—239.1

3 Claims

Novel 6 - (2 - substituted-4-oxo-phenyluretidino-1-yl) penicillanic acids are described which are useful as antibacterial agents.

3,720,667

**20-PYRROLECARBOXYLIC ACID ESTER OF 20-HYDROXY- $\Delta^4$ -PREGNENE DERIVATIVES**

Hansuli Wehrli, Schaffhausen, and Oskar Jeger, Zollikerberg, Zurich, both of Switzerland, assignors to Ciba-Gergy Corporation, Ardsley, N.Y.

Filed June 11, 1970, Ser. No. 45,588

Claims priority, application Switzerland, June 13, 1969, 9122/69

Int. Cl. C07c 173/10

U.S. Cl. 260—239.55 R

3 Claims

Compounds of the class of 20-pyrrolecarboxylic acid esters of 20-hydroxy- $\Delta^4$ -pregnenes have cardiotonic activity; they are active ingredients of pharmaceutical compositions and have useful cardiotonic activity; a typical example is the 20-(2,4-dimethyl-pyrrole-3-carboxylic acid ester) of 3 $\alpha$ ,9 $\alpha$ -epoxy-14 $\beta$ ,18-(epoxyethano-N-methylimino)-5 $\beta$ -pregna-7,16-diene-3 $\beta$ ,11 $\alpha$ ,20 $\alpha$ -triol.

3,720,668

**NITROFURYL-OXADIAZOLE AMIDES**

Hermann Breuer, Burgweinting, Germany, assignor to E. R. Squibb &amp; Sons, Inc., New York, N.Y.

No Drawing. Filed Aug. 12, 1970, Ser. No. 63,328

Int. Cl. C07d 85/52

U.S. Cl. 260—240 A

11 Claims

Amide derivatives of 3-(5-nitro-2-furyl)-1,2,4-oxadiazole-5-carboxylic acid are useful as antimicrobial agents.

3,720,669

**7-[(3,5,7 - TRIAZA-1-AZONIA - 1 - ADAMANTYL)-ACETAMIDO] - CEPHALOSPORANIC ACID HALIDES AND SULFONATES**

Hermann Breuer, Burgweinting, Germany, assignor to E. R. Squibb &amp; Sons, Princeton, N.J.

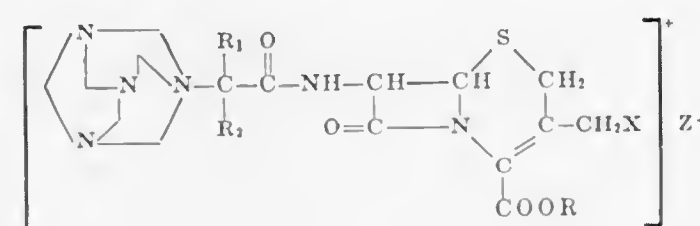
No Drawing. Filed June 28, 1971, Ser. No. 157,690

Int. Cl. C07d 99/24

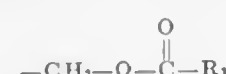
U.S. Cl. 260—243 C

6 Claims

New 7 - [(3,5,7 - triaza-1-azonia-1-adamantyl)acetamido]-cephalosporanic acid halides and sulfonates of the following general formula



wherein R is hydrogen, lower alkyl, aralkyl or the group



R<sub>1</sub> is hydrogen, lower alkyl, cyclo-lower alkyl, unsaturated cyclo-lower alkyl, aryl, aralkyl, adamantyl, cycloheptatrienyl or a heterocyclic group; R<sub>2</sub> is hydrogen or lower alkyl; R<sub>3</sub> is lower alkyl, aryl or aralkyl; X is hydrogen, hydroxy, lower alkanoyloxy, aryloxy or aralkanoyloxy or together X and R represent a bond linking carbon and oxygen in a lactone ring and Z is a halogen or sulfonate group; are useful as antibacterial agents.

3,720,670

**BENZODIOXANE DERIVATIVES**

Michio Nakanishi, Oita, Katsuo Arimura, Fukuoka, and Yoshiaki Tsuda, Oita, Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

No Drawing. Filed Mar. 1, 1971, Ser. No. 119,916

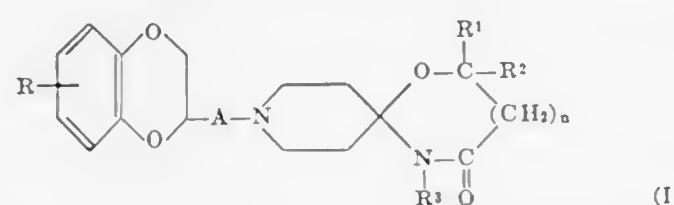
Claims priority, application Japan, Feb. 27, 1970, 45/17,513; Dec. 24, 1970, 45/126,832, 45/126,833, 45/126,834

Int. Cl. C07d 87/08

U.S. Cl. 260—244 R

9 Claims

Benzodioxane derivatives of the formula:



wherein R is a member selected from the group consisting of H, halogen, a lower alkyl group of 1 to 4 carbon atoms and a lower alkoxy group of 1 to 4 carbon atoms, each of R<sup>1</sup> and R<sup>2</sup> is a member selected from the group consisting of H, a lower alkyl group of 1 to 4 carbon atoms and phenyl, R<sup>3</sup> is a member selected from the group consisting of H and a lower alkyl group of 1 to 4 carbon atoms, A is a lower alkylene group of from 1 to 4 carbon atoms, and n is 0 or 1; and the pharmaceutically acceptable acid addition salts thereof.

3,720,671

**POLYCYCLIC DYESTUFFS**

Gunther Kaupp, Binningen, and Jacques Voltz, Riehen Basel-Land, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

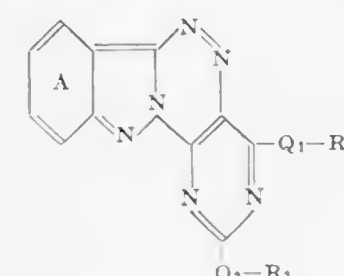
Continuation-in-part of Ser. No. 849,191, Aug. 11, 1969, abandoned. This application Oct. 5, 1970, Ser. No. 78,288

Int. Cl. C07d 57/34

U.S. Cl. 260—249.5

8 Claims

Polycyclic dyestuffs are disclosed which are of the formula



wherein any substituent of A is selected from hydrogen, nitro, halogen, lower alkyl, lower alkoxy and SO<sub>3</sub>M<sup>+</sup>, Q<sub>1</sub> and Q<sub>2</sub> denote preferably each a —NZ-bridge wherein Z is hydrogen or lower alkyl and R<sub>1</sub> and R<sub>2</sub> denotes, independently of each other hydrogen or an optionally substituted hydrocarbon radical, preferably a lower alkyl radical.

These dyestuffs when free from water-solubilizing groups, such as SO<sub>3</sub>M<sup>+</sup>, are useful as dispersion dyestuffs for the dyeing or printing of hydrophobic, synthetic organic fiber material, such as cellulose 2½ or -tri-acetate especially however for the dyeing or printing of textile material made from polymeric esters of aromatic polycarboxylic acids with polyvalent alcohols. Dyestuffs which contain groups dissociating acid in water are useful for dyeing or printing of polyamide fibers.

The greenish-yellow, yellow and reddish-yellow dyeings are distinguished of high brilliancy and fluorescence as well as very good fastness to light and sublimation.

3,720,672

**PREPARATION OF 2-METHOXY-3-ISOBUTYLPYRAZINE**

Ron G. Buttery, Richmond, Richard M. Seifert, El Cerrito, Robert E. Lundin, Berkeley, and Dante G. Guadagni, Moraga, Calif., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Original application Apr. 18, 1969, Ser. No. 818,471, now Patent No. 3,630,750. Divided and this application Jan. 7, 1971, Ser. No. 104,778

Int. Cl. C07d 51/76

U.S. Cl. 260—250 R

3 Claims

Leucine amide is reacted with glyoxal to produce 2-hydroxy-3-isobutylpyrazine, and this intermediate is methylated to yield the new compound 2-methoxy-3-isobutylpyrazine. This compound exhibits an intense aroma of freshly-chopped green bell peppers, and is useful for flavoring food products.

3,720,673

**PROCESS FOR THE MANUFACTURE OF QUINOXALINE 1,4-DIOXIDES**

Raymond Alexander Bowie, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed May 24, 1971, Ser. No. 146,528

Claims priority, application Great Britain, June 18, 1970, 29,626/70

Int. Cl. C07d 51/78

U.S. Cl. 260—250 R

10 Claims

A process for the manufacture of growth promoting quinoxaline-1,4-dioxide derivatives which comprises ox-

idising a quinoxaline derivative with hydrogen peroxide in the presence of a tungsten compound.

3,720,674

**4-AMINO-1H-PYRAZOLO[3,4-d]PYRIMIDINE DERIVATIVES**

Hermann Breuer, Burgweinting, and Ernst Schulze and Uwe D. Treuner, Regensburg, Germany, assignors to E. R. Squibb &amp; Sons, Inc., New York, N.Y.

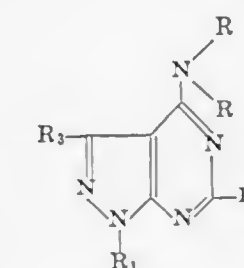
No Drawing. Filed Sept. 2, 1970, Ser. No. 69,172

Int. Cl. C07d 51/46

U.S. Cl. 260—256.4 F

3 Claims

New pyrazolo[3,4-d]pyrimidine derivatives which have the formula



wherein each R is hydrogen, lower alkyl, phenyl, substituted phenyl, hydroxy-lower alkyl or di-lower alkylamino-lower alkylene or together with the nitrogen form a monocyclic nitrogen heterocyclic radical, R<sub>1</sub> is lower alkyl, cycloalkyl, phenyl or substituted phenyl, R<sub>2</sub> is cycloalkyl, phenyl or substituted phenyl and R<sub>3</sub> is hydrogen, lower alkyl, cycloalkyl, phenyl or substituted phenyl, and salts thereof, are useful as hypoglycemic agents and anti-inflammatory agents.

3,720,675

**PYRAZOLO[3,4-b]PYRIDINE-5-CARBOXAMIDES**

Hans Hoehn, Tegernheim, Germany, and Jack Bernstein, New Brunswick, N.J., assignors to E. R. Squibb &amp; Sons, Inc., New York, N.Y.

No Drawing. Filed Aug. 10, 1970, Ser. No. 62,674

Int. Cl. C07d 51/70

U.S. Cl. 260—268 C

5 Claims

New 5-carboxamides of pyrazolo[3,4-b]pyridines and salts thereof are useful as ataractic, analgesic and anti-inflammatory agents.

3,720,676

**[4-(10,11-DIHYDRO-5H-DIBENZO[A,D]CYCLOHEPTEN-10-YL-1-PIPERAZINYL)-ALKYL]-3-ALKYL-2-IMIDAZOLIDINONES AS CNS DEPRESSANTS**

Walter Schindler, Riehen/Basel, and Armin Zuest, Birsfelden/Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 5, 1970, Ser. No. 61,435

Claims priority, application Switzerland, Aug. 11, 1969, 12120/69

Int. Cl. C07d 51/70

U.S. Cl. 260—268 TR

3 Claims

Compounds of the class of 1-[2- and 3-[4-(10,11-dihydro-5H-dibenzo[a,d]cyclohepten-10-yl)-1-piperazinyl]-alkyl]-3-alkyl-2-imidazolidinone which can be substituted in 8-position by chloro, methyl or methoxy, and the pharmaceutically acceptable acid addition salts thereof, have a depressant effect on the central nervous system; pharmaceutical compositions comprising these compounds and a method of producing a depressant effect on the central nervous system of warm-



blooded animals, are provided; an illustrative embodiment is 1-[2-[4-(8-methyl-10,11-dihydro-5H-dibenzo[a,d]cyclohepten-10-yl)-1-piperazinyl]-ethyl]-3-methyl-2-imidazolidinone-bis-maleate.

3,720,677

#### 4-(THIENO[2,3-B][1,5]BENZOTHAZEPIN-4-YL)-PIPERAZINYL-ALKYL-3-ALKYL-2-IMIDAZOLIDINONES AS CNS-DEPRESSANTS

Walter Schindler, Riehen/Basel-land; Erich Schmid, Basel, and Armin Zuest, Birsfelden/Basel-land, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 5, 1970, Ser. No. 61,511

Claims priority, application Switzerland, Aug. 11, 1969, 12125/69

Int. Cl. C07d 51/70

U.S. Cl. 260—268 TR

2 Claims

Compounds of the class of 1-[2-[4-(thienol[2,3-b][1,5]benzothiazepin-4-yl)-1-piperazinyl]-alkyl]-3-alkyl-2-imidazolidinones and their pharmaceutically acceptable acid addition salts have a depressant effect on the central nervous system; pharmaceutical compositions comprising such compounds and methods of producing a central nervous system depressant effect therewith are provided; a typical embodiment is 1-[2-[4-(thieno[2,3-b][1,5]benzothiazepin-4-yl)-1-piperazinyl]-ethyl]-3-methyl-2-imidazolidinone.

3,720,678

#### PROCESS FOR THE MANUFACTURE OF FLAVANTHRONES

Maurice Grelat, Bettingen, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Jan. 21, 1971, Ser. No. 108,602

Claims priority, application Switzerland, Feb. 11, 1970, 1989/70

Int. Cl. C07d 39/00

U.S. Cl. 260—273

10 Claims

A process for the manufacture of flavantrones, wherein a 1-halogeno-2-aminoanthraquinone is heated with copper powder in a strongly polar aprotic organic solvent.

3,720,679

#### 2-METHYLENE GLUTARIMIDE AND PROCESS FOR PREPARING THE SAME

Julian Feldman, Cincinnati, Ohio, and Martin Thomas, Charlton City, Mass., assignors to National Distillers and Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. Nos. 484,448, Sept. 1, 1965, abandoned, and Ser. No. 679,193, Oct. 30, 1967, abandoned, and Ser. No. 830,544, June 4, 1969, abandoned. This application Jan. 18, 1971, Ser. No. 107,527

Int. Cl. C07d 29/20

U.S. Cl. 260—281

2 Claims

A process is provided for the preparation of alpha-substituted unsaturated aliphatic diamides and alpha-substituted unsaturated aliphatic imides from the corresponding dinitriles, employing an amount of water within the range from about 50 mole percent to about 200 mole percent of that stoichiometrically required to hydrolyze the dinitrile to the diamide, and wherein the acid concentration is within the range of 40 percent to 82 percent, at a temperature within the range of about 0° to 150°C., in the presence of an inorganic or organic acid and in a homogeneous reaction medium. The hydrolysis is arrested, preferably by neutralization.

Diamides are obtained preferentially by neutralizing the mixture at temperatures below about 30° C. Cyclic imides are obtained preferentially by neutralizing the acid hydrolysis mixture at elevated temperatures above about 60° C. The products formed by neutralization at intermediate temperatures are mixtures of the two products.

#### 3,720,680 BIS-BASIC ETHERS AND THIOETHERS OF DIBENZOTHIOPHENE

William L. Albrecht, Robert W. Fleming, and Stephen W. Horgan, Cincinnati, Ohio, assignors to Richardson-Merrell, Inc., New York, N.Y.

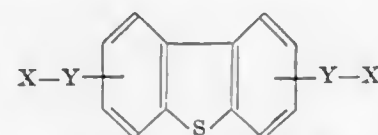
No Drawing. Original application Feb. 18, 1970, Ser. No. 12,428, now Patent No. 3,673,191. Divided and this application Apr. 28, 1972, Ser. No. 248,555

Int. Cl. C07d 63/24

U.S. Cl. 260—293.57

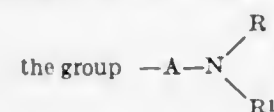
4 Claims

The novel bis-basic ethers and thioethers of dibenzothiophene of the present invention have useful antiviral properties. These new compounds are represented by the formula



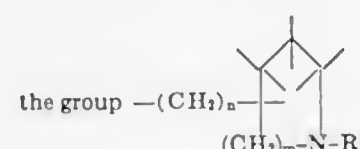
Formula I

wherein each Y is oxygen or divalent sulfur; and each X is (A)



wherein each A is a straight or branched alkylene chain having from 2 to 8 carbon atoms and which separates the amino nitrogen and Y by at least 2 carbon atoms; R and R<sup>1</sup> are individually hydrogen, (lower)alkyl having from 1 to 6 carbon atoms, cycloalkyl having from 3 to 6 carbon atoms, alkenyl having from 3 to 6 carbon atoms and having the vinyl unsaturation in other than the 1-position of the alkenyl group; or each set of R and R<sup>1</sup> taken together with the nitrogen atom to which they are attached is a saturated monocyclic heterocyclic group such as pyrrolidino, piperidino, morpholino, or N-(lower)alkylpiperazino; or

(B)



wherein n is a whole integer of from 0 to 2, m is 1 or 2, and R<sup>2</sup> is hydrogen, (lower)alkyl having from 1 to 6 carbon atoms, or alkenyl of from 3 to 6 carbon atoms and having the vinyl unsaturation in other than the 1-position of the alkenyl group.

This invention also includes pharmaceutically acceptable acid addition salts of the bases represented by Formula I. These new compounds may be prepared by several different methods which are described.

3,720,681

#### 2-AMINO-5-SPIRO SUBSTITUTED OXAZOLIN-4-ONE COMPOUNDS

Michael Raymond Harnden, Horsham, England, assignor to Abbott Laboratories, North Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 27,120, Apr. 9, 1970, which is a continuation-in-part of application Ser. No. 689,356, Dec. 11, 1967, both now abandoned. This application Aug. 10, 1971, Ser. No. 170,652

Int. Cl. C07d 85/40

U.S. Cl. 260—293.66

4 Claims

A novel series of 2-amino-5-spiro substituted oxazolin-4-ones and intermediates for making said compounds. These compounds are prepared by first converting the appropriately substituted cycloketone to the corresponding cycloacyanohydrin; converting this compound to the corresponding hydroxy acid; esterifying the hydroxy acid, and finally cyclizing the hydroester to form the 2-amino-5-spiro substituted oxazolin-4-one. These compounds exhibit central nervous system activity and are active as either stimulants or depressants, and some are useful as performance enhancers.

3,720,682

#### SUBSTITUTED AMIDOPHENYLTHIOUREAS

Arno Widdig; Engelbert Kuhle; Klaus Sasse; Hans Scheinpflog; Ferdinand Grewe; Helmut Kaspers, and Paul-Ernst Frohberger, all of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 6, 1970, Ser. No. 87,590

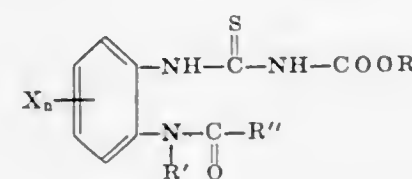
Claims priority, application Germany, Nov. 29, 1969, P 19 60 027.2

Int. Cl. C07d 31/50

U.S. Cl. 260—294.8 H

5 Claims

Amidophenylthioureas of the formula:



in which

each X independently stands for a halogen atom, alkyl with one to four carbon atoms or alkoxy with one to four carbon atoms, n stands for 0, 1 or 2, R stands for alkyl with one to 12 carbon atoms, R' stands for a hydrogen atom or alkyl with one to four carbon atoms, and R'' stands for a five- or six-membered heterocyclic radical which may contain one or more hetero-atoms selected from oxygen, sulfur and nitrogen atoms, which possess fungicidal properties and which may be produced by conventional methods.

3,720,683

#### 2-PHENYL-3-ACYLBENZOTHAZOLINES AND THEIR OXIDES

Hermann Breuer, Burweinting, and Ernst Schulze, Regensburg, Germany, assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

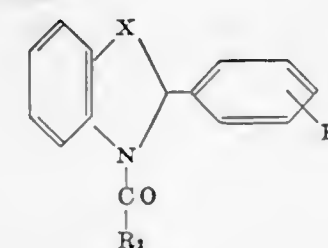
No Drawing. Filed Sept. 2, 1970, Ser. No. 69,170

Int. Cl. C07d 91/16

U.S. Cl. 260—304

11 Claims

2-phenyl-3-acylbenzothiazolines and their 1-oxides of the general formula



are useful as anti-inflammatory and anti-microbial agents.

3,720,684

#### 5-HALO-1,2,4-THIA DIAZOLES

John Krenzer, and Sidney B. Richter, both of Chicago, Ill., assignors to Velsical Chemical Corporation, Chicago, Ill.

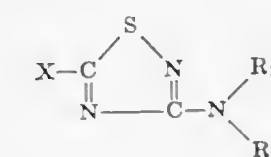
Continuation-in-part of Ser. No. 678,531, Oct. 27, 1967, abandoned. This application Oct. 13, 1970, Ser. No. 80,487

Int. Cl. C07d 91/60

U.S. Cl. 260—306.8 D

12 Claims

A compound of the formula



wherein X is halogen, R<sub>1</sub> and R<sub>2</sub> are each selected from the group consisting of hydrogen, an aliphatic radical, a cycloaliphatic radical, aralkyl, aryl, acyl and trihalomethylmercapto provided that only one of R<sub>1</sub> and R<sub>2</sub> is hydrogen and forms a hydrocarbon heterocyclic ring with the nitrogen atom to which they are attached. These compounds are useful as fungicides, miticides, nematocides and insecticides.

3,720,685

#### 3-AMINO-5-BENZYL-1,2,4-OXADIAZOLES

Hermann Breuer, Burgweinting, and Ernst Schulze, Regensburg, both of Germany, assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

Filed July 15, 1970, Ser. No. 55,253

Int. Cl. C07d 85/52

U.S. Cl. 260—307 G

11 Claims

3-Amino-5-benzyl-1,2,4-oxadiazole and related compounds substituted on the α-carbon atom and/or on the phenyl ring are useful as antiinflammatory agents.

3,720,686

#### MERCAPTOBENZIMIDAZOLE DERIVATIVES

Venkatachala L. Narayanan, Hightstown, and Rudiger D. Haugwitz, Highland Park, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

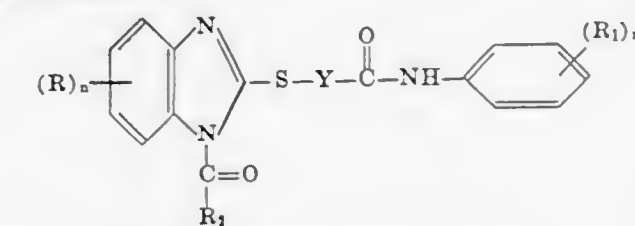
No Drawing. Filed Apr. 1, 1971, Ser. No. 130,452

Int. Cl. C07d 49/38

U.S. Cl. 260—309.2

6 Claims

Mercaptobenzimidazole derivatives are provided having the structure



and which are useful as anthelmintic agents.

3,720,687

#### FURAN AND THIOPHENE SUBSTITUTED VINYL PHOSPHATES

Peter Kirby, Bearsted, England, and Duane K. Hass, Modesto, Calif., assignors to Shell Oil Company, New York, N.Y.

Filed Sept. 19, 1969, Ser. No. 859,562

Int. Cl. A61k 27/00; C07d 51/8, 63/14

U.S. Cl. 260—332.5

9 Claims

Novel heterocyclic substituted aliphatic esters of beta-chloro-substituted vinyl phosphates are useful in the control of internal helminth parasites of warm-blooded animals.

3,720,688

#### CHEMICAL COMPOUNDS AND METHODS OF PREPARING THE SAME

Marcia E. Christy, Perkasio, Pa., assignor to

Merck &amp; Co., Inc., Rahway, N.J.

No Drawing. Original application Jan. 29, 1968, Ser. No. 723,964, now Patent No. 3,576,823. Divided and this application June 22, 1970, Ser. No. 48,475

Int. Cl. C07d 21/00

U.S. Cl. 260—340.5

11 Claims

The disclosure describes derivatives of dibenzocycloheptenes useful because of their antidepressant activity. The disclosure also describes a method for preparing these compounds from the known 3α,12β-dihydro-2,2-dimethyl-5H-dibenzo[3,4:6,7]cyclohepta[1,2-d]-1,3-dioxol-8-one and derivatives thereof which contain additional substituents substituted in any position of the benzenoid ring. This starting material, alternatively known as the acetone of 10,11-dihydroxy-10,11-dihydro-5H-dibenzo[a,d]cyclohepten-5-one is converted by treatment with a 3-dialkylaminopropyl magnesium halide to produce the corresponding 5-hydroxy-5-(3-dialkylaminopropyl)



compound which is then dehydrated under acidic conditions to produce the acetonide of 10,11-dihydroxy-10,11-dihydro-5-(3-dialkylaminopropylidene)-5H-dibenzo[a,d]cycloheptene. This product is hydrolyzed to produce the corresponding 10,11-dihydroxy-5-(3-alkylaminopropylidene)-5H-dibenzo[a,d]cycloheptene.

3,720,689

## PROCESS FOR STABILIZING LACTONES

Gerhard Pohl, Grossauheim; Karl-Heinz Rink, Hanau (Main); Wolfgang Treibel, Grossheim; Otto Weiberg, Neu-Isenburg, and Wolfgang Weigert, Offenbach (Main), all of Germany, assignors to Deutsch Gold-und Silber-Schmelzeanstalt Vormals Roessler, Frankfurt am Main, Germany

Filed Nov. 12, 1970, Ser. No. 89,003

Claims priority, application Germany, Nov. 12, 1969, P 19 56 832.2

Int. Cl. C07d 9/00

U.S. Cl. 260—343

8 Claims

Lactones are stabilized, particularly against discoloration, by mixing the lactone with oxygen, an oxidizing agent or an acid which is less volatile than the lactone and subjecting the mixture to distillation.

3,720,690

## PHARMACEUTICALLY ACTIVE BIS-CARBOXYCHROMONE COMPOUNDS

John King, Sandbach, and George Harry Lord, Hale, both of England, assignors to Fisons Pharmaceuticals Limited, Loughborough, England

Continuation-in-part of Ser. No. 668,931, Sept. 19, 1967, abandoned. This application May 8, 1970, Ser. No. 35,925

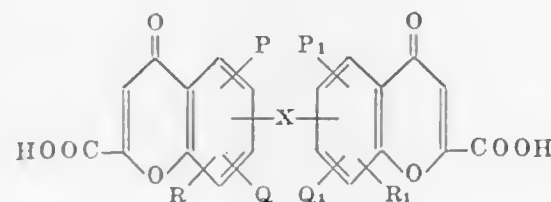
Claims priority, application Great Britain, April 10, 1970, 17,082/70

Int. Cl. C07d 7/34

U.S. Cl. 260—345.2

16 Claims

Novel compounds of the formula



the substituents P, Q, R, P<sub>1</sub>, Q<sub>1</sub> and R<sub>1</sub> being defined in the specification, useful for inhibiting the effects of antibody-antigen reaction, are provided, as well as a method for the preparation thereof and pharmaceutical compositions containing these compounds.

3,720,691

2-(3,8-DIOXATRICYCLO[5.1.0.0<sup>2,4</sup>]-OCT-5-EN-5-YL)-4H-PYRAN-4-ONE

Ferdinand Barbatschi, Montvale, N.J.; Donald Bruce Borders, Suffern, and Anthony Joseph Shay, Pearl River, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed May 21, 1971, Ser. No. 145,968

Int. Cl. C07d 7/18

U.S. Cl. 260—345.9

1 Claim

This disclosure describes 2-(3,8-dioxatricyclo-[5.1.0.0<sup>2,4</sup>]-oct-5-en-5-yl)-4H-pyran-4-one, a new compound which exhibits antimicrobial activity. This new compound is formed during the cultivation under controlled aerobic conditions of an undetermined filamentous fungal species NRRL 3938.

3,720,692

## PRODUCTION OF PHTHALIC ANHYDRIDE FROM PHTHALIC ACID

Ferdinand List, and Helmut Alfs, both of Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

Filed Dec. 2, 1969, Ser. No. 881,598

Claims priority, application Germany, Dec. 7, 1969, P 18 13 391.0

Int. Cl. C07c 63/18

U.S. Cl. 260—346.7

8 Claims

Melt of phthalic anhydride containing a small amount of azeotropic agent is maintained at a temperature of from 160° to 200°C. Phthalic acid is introduced into the melt, and an azeotropic mixture of water and azeotropic agent is withdrawn therefrom. The withdrawn azeotropic agent is separated from the water in the azeotropic mixture and returned to said melt.

3,720,693

## ANTHRAQUINONE DYESTUFFS

Karl-Heinz Peters, and Rutger Neeff, both of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 6, 1970, Ser. No. 9,401

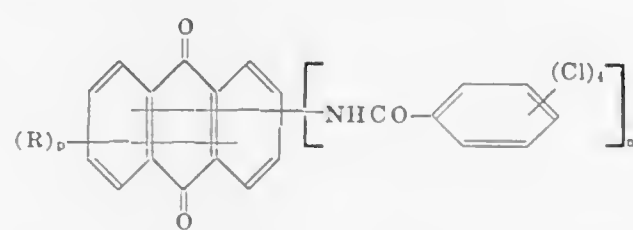
Claims priority, application Germany, Feb. 15, 1969, P 19 07 783.9

Int. Cl. C09b 1/42, 1/50

U.S. Cl. 260—377

5 Claims

Anthraquinone dyestuffs of the formula



in which R is a substituent; p is a number 0-6; and n is 1 or 2; their production and use as pigments are disclosed.

3,720,694

## PARTIAL ELECTROCHEMICAL REDUCTION OF 19-NOR-DELTA 1,3,5(10)-STEROIDS

Klaus Junghans, and Horst Ropke, both of Berlin, Germany, assignors to Schering A.G., Berlin and Bergkamen, Germany

Filed June 11, 1971, Ser. No. 152,454

Claims priority, application Germany, June 11, 1970, P 20 29 415.9; Dec. 12, 1970, P 20 63 101.0

Int. Cl. C07c 169/08, 169/32

U.S. Cl. 260—397.5

17 Claims

A-ring aromatic steroids containing an electrolytically reducible group are selectively reduced with the aromatic A-ring intact employing ammonia or an amine as the reaction solvent.

3,720,695

## WATER SOLUBLE LUBRICANT

Inara Dagnija Meisters, Homewood, Ill., assignor to Pennwalt Corporation, Philadelphia, Pa.

Division of Ser. No. 834,556, June 18, 1969, Pat. No. 3,634,245. This application June 17, 1971, Ser. No. 154,152

Int. Cl. C11c 3/10, 3/00; C10m 1/26

U.S. Cl. 260—404.8

4 Claims

A water soluble composition comprising the product obtained by transesterifying a triglyceride (e.g. castor oil) with a polymeric alkylene oxide glycol until the reaction products are water-soluble and then esterifying the hydroxy compounds present with a carboxylic or dicarboxylic acid. These products are of value as lubricants in a wide variety of fields.

3,720,696

## PROCESS FOR THE EXTRACTION OF 9-HEXADECENOIC ACID

Kiyoshi Osawa, Tokyo, Japan, assignor to Mimatu Kako Kabushiki Kaisha, Kanagawa-ken, Japan

Filed Aug. 6, 1970, Ser. No. 61,565

Int. Cl. C09f 5/00; C11c 1/08

U.S. Cl. 260—419

13 Claims

The invention relates to a novel process for the isolation of 9-hexadecenoic acid from a fatty acid mixture containing the same. The improvement of the process resides in the use of a specific amount of urea (0.5-5 times) relative to the treating mixture, as a negative extraction agent for carrying out the desired isolation.

3,720,697

## PREPARATION OF ORTHO-SUBSTITUTED ARYL PHOSPHINES AND METAL COMPLEXES

Donald M. Fenton, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Filed Mar. 1, 1971, Ser. No. 119,836

Int. Cl. C07f 15/00

U.S. Cl. 260—429 R

11 Claims

A method is described for the preparation of monocyclic aryl compounds of trivalent Group V-A elements wherein the aryl substituent is substituted in its ortho position with a halogen, alkyl, aryloxy or alkoxy substituent. The resultant compound is useful as a ligand in the preparation of metal complexes, such as complexes of palladium and platinum, which are catalysts for hydrocarbon conversions such as oxidations or hydroformylations. The method for the ortho substitution of the aromatic compounds comprises the reaction of a palladium or platinum chelate of the aromatic compound with substituting agents such as halogen or halide for the halogen-substituted, an alkyl halide for the alkyl-substituted, or an alkyl or aryl orthoformate ester for the alkoxy or aryloxy-substituted compound. Suitable chelates for reaction in this method of synthesis are disclosed in my application, Ser. No. 873,641, filed Nov. 3, 1969, now Pat. No. 3,622,607.

3,720,698

## PROCESS FOR PRODUCING TRIALKOXY-ALUMINUM

Eiichi Ichiki, Kazuo Iida, Michio Kozai, and Yoshihiro Kondo, Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed June 7, 1971, Ser. No. 150,565

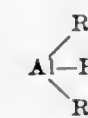
Claims priority, application Japan, June 10, 1970, 45/50,663

Int. Cl. C07f 5/00

U.S. Cl. 260—448 AD

13 Claims

A trialkoxyaluminum is produced from an alkylaluminum compound,



wherein R<sub>1</sub> represents an alkyl group having 2-30 carbon atoms and R<sub>2</sub> and R<sub>3</sub> represent alkyl groups or alkoxy groups having 2-30 carbon atoms through oxidation by introducing the alkylaluminum compound diluted with at least 600 g. of a solvent having a boiling point of -50°-150° C. and being substantially inert to the alkylaluminum compound, per gram equivalent of alkyl groups of the alkylaluminum compound, into a molecular oxygen-containing gas under a partial pressure of oxygen of at least 0.1 kg./cm.<sup>2</sup> absolute at a temperature of -20°-150° C., preferably 0°-100° C. under a pressure of not more than 50 kg./cm.<sup>2</sup> absolute, preferably 0.5-40 kg./cm.<sup>2</sup> absolute in a finely divided droplet state thereby to oxidize the alkylaluminum compound.

3,720,699

## ACYLOXY ENDBLOCKED 3-γ-ACYLAMIDOPROPYL OR 3-γ-HALOACYLAMIDOPROPYL TRISILOXANES AND PROCESS

Darrel D. Stoddard, Santa Monica, Calif., assignor to The Sierracin Corporation, Sylmar, Calif.

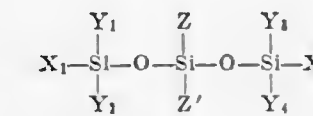
No Drawing. Filed Nov. 19, 1969, Ser. No. 878,187

Int. Cl. C07f 7/10, 7/18

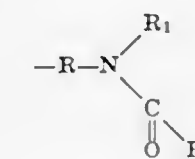
U.S. Cl. 260—448.8 R

10 Claims

Protective cross-linked polysiloxane coatings for normally vulnerable substrates are prepared by curing linear polysiloxane polymers comprised of the hydrolysis-condensation reaction product of a siloxane having the formula



wherein X<sub>1</sub> and X<sub>2</sub> are acyloxy and Y<sub>1-4</sub>, Z and Z' are independently selected from the group consisting of hydrogen, C<sub>1</sub>-C<sub>4</sub> alkyl, C<sub>1</sub>-C<sub>4</sub> alkoxy, phenyl, C<sub>7</sub>-C<sub>10</sub> alkyl-phenyloxy, phenyloxy and



e.g., gamma-acetamidopropyl. The siloxane can be prepared, e.g., by reacting two molar proportions of a diacyloxy silane with about one molar proportion of a di-, tri-, or tetra-alkoxy silane.

3,720,700

## DI-CETYL PEROXY DICARBONATE

Hakan Norback, Danderyd, Sweden, assignor to Kema Nord AB, Stockholm, Sweden

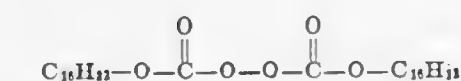
Filed Nov. 14, 1969, Ser. No. 876,802

Int. Cl. C07c 73/10; C09f 1/60

U.S. Cl. 260—463

1 Claim

The chemical compound di-cetyl peroxydicarbonate having the structural formula



as well as its method of production and its use as an initiator in the polymerization of unsaturated compounds such as vinyl chloride or other ethylenically unsaturated monomers.

3,720,701

## 9,10-BRIDGED ANTHRACENE COMPOUNDS

Bruce H. Klanderman, and Jan W. H. Faber, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 811,655, March 28, 1969, Pat. No. 3,577,366, which is a division of Ser. No. 616,789, Feb. 17, 1967, Pat. No. 3,457,235, which is a continuation-in-part of Ser. No. 530,381, Feb. 28, 1966, abandoned. This application

Nov. 30, 1970, Ser. No. 93,815

Int. Cl. C07c 63/46, 69/16, 69/76

U.S. Cl. 260—475 FR

11 Claims

New 9,10-bridged anthracene compounds, such as 9,10-bis(carbomethoxy)tritycene improve certain properties of polyesters prepared by polymerization or dicarboxylic acid, such as terephthalic acid, and an alkylene glycol, such as ethylene glycol, when incorporated in the polymerization mixture.



3,720,702

## PARTIAL REDUCTION OF PHTHALONITRILES

John Archibald Nelson, Morris Plains, and Gledre Maria Zau-nius, Springfield, both of N.J., assignors to Ciba Corpora-tion, Summit, N.J.

Filed Dec. 29, 1969, Ser. No. 888,825  
Int. Cl. C07c 121/78

U.S. Cl. 260—465 D

9 Claims

Dinitriles of organic acids, containing both cyano groups at-tached to vicinal carbon atoms, can be reduced without undue ring-formation and loss of nitrogen, by hydrogenating them in a liquid carboxylic acid anhydride, first over a palladium and then over a platinum catalyst, to yield the correspondingly acylated bis-aminomethyl compounds.

3,720,703  
INSECTICIDES

Michael Elliott, Harpenden, and Norman F. Janes, Luton, both of England, assignors to National Research Development Corporation, London, England

Filed July 2, 1970, Ser. No. 52,084

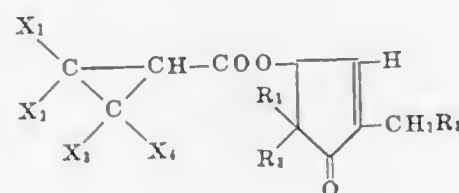
Claims priority, application Great Britain, July 10, 1969, 34,787/69

Int. Cl. C07c 69/74, 69/76

U.S. Cl. 260—468 H

7 Claims

Synthetic pyrethroid insecticides, having no methyl sub-stituent in the 3 position on the cyclopentenone ring, and of formula



where  $X_1$  is halogen, alkyl, alkenyl or aryl,  $X_2$ ,  $X_3$  and  $X_4$  are hydrogen, halogen or alkyl,  $R_1$  and  $R_2$  are hydrogen or alkyl and  $R_3$  is a group having carbon-carbon unsaturation  $\alpha$  to the  $CH_2$  group to which  $R_3$  is bonded, e.g.,  $R_3$  = phenyl, are prepared by esterification.

3,720,704

## PROCESS FOR PREPARING 1,4-DIACETOXY-2-BUTENE FROM DICHLOROBUTENES

Toshio Sakomura, Hisashi Kikuchi, Takashi Tada, and Shunsuke Mabuchi, Yamaguchi-ken, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Yamaguchi-ken, Japan

No Drawing. Filed June 16, 1969, Ser. No. 833,703  
Claims priority, application Japan, June 21, 1968, 43/43,125

Int. Cl. C07c 67/02

U.S. Cl. 260—491

8 Claims

In a process for preparing acetic acid esters by reacting 3,4-dichloro-1-butene or a mixture of 3,4-dichloro-1-bu-tene and 1,4-dichloro-2-butene with an alkali metal ace-tate, a process for preparing 1,4-diacetoxy-2-butene selec-tively characterized by adding at least one elemental metal selected from a group consisting of copper, iron and zinc or a compound thereof.

3,720,705

PROCESS FOR THE MANUFACTURE OF  $\beta$ -ACETOXYPIVALIC ALDEHYDE

Hans-Jürgen Arpe, Fischbach/Taunus, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lu-cius & Bruning, Frankfurt Am Main, Germany

Filed Aug. 6, 1970, Ser. No. 61,854

Claims priority, application Germany, Aug. 13, 1969, P 19 41 184.8

Int. Cl. C07c 67/00

U.S. Cl. 260—494

3 Claims

Process for the manufacture of  $\beta$ -acetoxy-pivalic aldehyde

by the dosed addition of  $\beta$ -hydroxy-pivalic aldehyde and/or its dimer in an acetic acid solution to a boiling mixture of acetic acid, an entrainer and an acid catalyst at a rate which cor-responds to the speed of formation of reaction water.

3,720,706

## METHYLENE AND OXYMETHYLENE BIS-ESTER PRODUCTION

Seymour J. Lapporte, Orinda, and William G. Toland, San Rafael, Calif., assignors to Chevron Research Com-pany, San Francisco, Calif.

No Drawing. Filed Jan. 27, 1972, Ser. No. 221,415

Int. Cl. C07c 67/04

U.S. Cl. 260—494

12 Claims

Methylene and oxymethylene di- or bis-esters, e.g.,



wherein  $n$  is 1 to 5, are produced by the reaction of a carboxylic acid, an olefin, carbon monoxide and formal-dehyde in the presence of a rhodium catalyst and an iodide promoter. In a preferred modification of the process, methylene and oxymethylene bis-alkanoates are produced directly from an alkene, carbon monoxide, water and formaldehyde in the presence of the rhodium catalyst and the iodide promoter.

3,720,707

## PROCESS FOR REDUCING THE SULFURIC ACID CONTENT OF ALKYLARYLSULFONIC ACIDS

Andre Jacques Emile Vanderlinden, and Pierre Marie Joseph Chislain de Radzitzky D'Ostrowick, both of Brussels, Belgi-um, assignors to Labofina Soc. AN., Bruxelles, Belgium

Filed Feb. 27, 1970, Ser. No. 15,200

Int. Cl. C07c 143/24

U.S. Cl. 260—505 P

12 Claims

The sulfuric acid content of alkylarylsulfonic acids obtained by sulfonation with sulfuric acid is reduced by treating said sulfonic acids with ammonia or an ammonium salt in quantity to form crystalline ammonium acid sulfate which is easily separated such as by filtration.

3,720,708

## 2-AMINO-2-(6-METHOXY-2-NAPHTHYL)-PROPIONIC ACID AND DERIVATIVES THEREOF

Otto Halpern, Palo Alto, Calif.

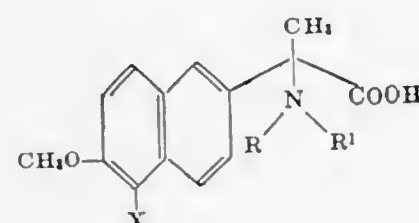
Division of Ser. No. 77,733, Oct. 2, 1970, abandoned. This application Oct. 1, 1971, Ser. No. 185,912

Int. Cl. C07c 101/04, 101/12

U.S. Cl. 260—519

3 Claims

2-(6-Methoxy-2-naphthyl)propionic acid is prepared by treating a compound represented by the formula:



wherein  $X$  is hydrogen, bromo or chloro and each of  $R$  and  $R^1$  is hydrogen and methyl, with palladium-on-charcoal, platinum oxide in an inert organic solvent under hydrogen or with Raney nickel in an inert organic solvent until 2-(6-methoxy-2-

naphthyl)propionic acid is formed. The product has anti-in-flammatory, analgesic and anti-pyretic activities.

3,720,709

## SULFONYLPHENOXYALKANOIC ACIDS

James M. Sprague, Gwynedd Valley, and Carl Ziegler, Glenside, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

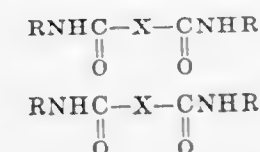
No Drawing. Filed Dec. 16, 1969, Ser. No. 885,641

Int. Cl. C07c 143/78

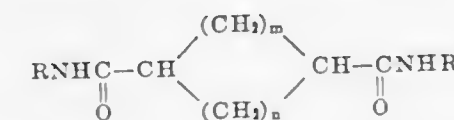
U.S. Cl. 260—519

14 Claims

(Sulfonylphenoxy)alkanoic acids and (mono- or di-substituted sulfamoylphenoxy)alkanoic acids and the salts, esters and amide derivatives wherein the benzene ring may be substituted by halo, trihalomethyl, lower alkyl, nitro, carboxy or a hydrocarbylene moiety. The products are prepared by either of two methods, one of which consists in treating a (halosulfonylphenoxy)alkanoic acid with a primary or secondary amine and the second of which comprises treating a (thiophenoxy)alkanoic acid with an oxidizing agent. The products are useful as uricosuric agents in the treatment of gout and gouty arthritis.



wherein  $R$  is mono or dichloro phenyl and wherein  $X$  is ortho, meta or para phenylene or a difunctional alicyclic group of four to six ring carbons which can be unsubstituted or sub-stituted with  $C_1$  to  $C_3$  alkyl groups, are chemosterilants for in-sects, birds, and mammals. When  $X$  is a difunctional alicyclic group, as above described, particularly preferred compounds of the instant invention have the structure



wherein  $m$  and  $n$ , which can be the same or different can range from 0 to 2 with the sum of  $m$  and  $n$  ranging from 2 to 4.

3,720,710

## CARBONYL COMPOUNDS FROM ALLENE AND ITS DERIVATIVES

Charles J. Norton, Berkeley, Calif., and Edward Hurley, Jr., Littleton, Colo., assignors to Marathon Oil Company, Fin-dlay, Ohio

Filed Nov. 1, 1968, Ser. No. 772,866

Int. Cl. C07c 55/02

U.S. Cl. 260—533 R

5 Claims

Organic carbonyl compounds containing at least five car-bon atoms are prepared by reacting an organic carbonyl com-pound having at least one hydrogen alpha to the carbonyl group with an acyclic organic compound containing at least two adjacent carbon to carbon double bonds at a temperature of from  $-50^\circ$  to  $200^\circ$  C for a period of from 0.1 to about 100 hours in the presence of a free radical initiator. A mixture of monomeric and polymeric carbonyl products are formed. Selectivity to any particular weight product is monitored by selection of the mole ratio of reactants. As a specific example, reaction of allene with excess acetic acid forms a product mix-ture comprising pimelic acid, allyl acetic acid and a resin acid of average gram molecular weight between about 200 and about 2,000. These synthetic resin acids may be used as sub-stitutes for naturally occurring organic acids or may be used to control the molecular weight or cross linking in polyesters.

3,720,711

## DERIVATIVES OF 6-OXO-1-CYCLOHEXENE-1-CARBOXAMIDE

Ivo L. Jirkovsky, Montreal, Quebec, Canada, assignor to American Home Products Corporation, New York, N.Y.

Filed Nov. 2, 1971, Ser. No. 195,037

Int. Cl. C07c 103/86

U.S. Cl. 260—557 R

12 Claims

Carboxamides and thiocarboxamides characterized by hav-ing an aminoalkylamino, lower alkylaminoalkylamino, di(lower)alkylaminoalkylamino or hydroxyalkylamino radical attached to position 2 of a 6-oxo-1-cyclohexene-1-carboxa-mide or 6-oxothio-1-cyclohexene-1-carboxamide with op-tional alkyl groups at position 4 are disclosed. The nitrogen atom of the carboxamido or thiocarboxamido radical may be substituted with an alkyl, aryl or optionally substituted aryl. The compounds are useful antiinflammatory, analgesic, an-tibacterial and antifungal agents and methods for their preparation and use are disclosed.

3,720,714

2-ALKOXY-2-(NAPHTHYL)-ALKANAMIDOXIMES  
Denis M. Bailey, Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 740,473, June 27, 1968, Pat. No. 3,607,941. This application Oct. 19, 1970, Ser. No. 82,148  
Int. Cl. C07c 123/00

U.S. Cl. 260—564 G

3 Claims

A 2-(lower-alkoxy)-2-Ar alkanamidoxime, having hypoglycemic activity, where  $Ar$  is phenyl, naphthyl, indanyl, biphenyl, cyclohexenyl, cyclohexyl or phenyl substituted by from one to three substituents selected from lower-alkyl, lower-alkoxy, halo, trihalomethyl, lower-alkylmercapto,



lower-alkylsulfonyl, di(lower-alkyl)amino, amino, hydroxy, nitro or benzyloxy, is prepared by reacting a 2-(lower-alkoxy)-2-Ar-alkanenitrile with hydroxylamine. The intermediate 2-(lower-alkoxy)-2-Ar-alkanenitrile is prepared preferably by first reacting Ar-CHO with a tri-(lower-alkyl) orthoformate to form the aldehyde di-(lower-alkyl) acetal, reacting the latter with an acyl halide to form the corresponding  $\alpha$ -halo-Ar-methyl lower-alkyl ether and reacting said ether with an alkali cyanide to yield said intermediate nitrile.

3,720,715

## MANUFACTURE OF METHYLAMINES

Edward McKillop Nicholl, Norton Hall, The Green, Norton, Stockton-on-Tees, England

Filed Oct. 12, 1970, Ser. No. 79,771

Claims priority, application Great Britain, Nov. 3, 1969, 53,695/69

Int. Cl. C07c 85/06

U.S. Cl. 260—583 J

7 Claims

Methylamines are synthesized by ammonolysis of methanol at elevated temperature and pressure and in the presence of hydrogen which suppresses formation of undesirable corrosion-inducing compounds.

3,720,716

## PROCESS FOR PREPARATION OF CRESOL AND ACETONE FROM CYMENE HYDROPEROXIDE

Yoshiyuki Shinohara, Otake, and Toshiyuki Isaka, Iwakuni, both of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed June 12, 1970, Ser. No. 45,641

Int. Cl. C07c 49/08

U.S. Cl. 260—593 A

8 Claims

An improvement for a process for the preparation of cresol and acetone from cymene hydroperoxide which comprises (a) subjecting a liquid oxidation product of cymene containing at least 50 percent by weight of cymene hydroperoxide to an acid-catalyzed cleavage at a temperature of 60°–90°C. until the concentration of cymene hydroperoxide in the liquid is 0.5–5 percent by weight, (b) neutralizing the incompletely cleaved product with an alkali to stop the acid-catalyzed cleavage, (c) thermally decomposing the hydroperoxide remaining in the oil phase of the neutralized product at a temperature of 100°–250°C. and (d) recovering cresol and acetone from the thermal decomposition product.

3,720,717

## CONCENTRATING AQUEOUS ACETONE

Terence Cox, and William Featherstone, both of Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Sept. 24, 1970, Ser. No. 75,799

Claims priority, application Great Britain, Sept. 30, 1969, 48,067/69

Int. Cl. C07c 49/08

U.S. Cl. 260—593 P

5 Claims

Removal of water, possibly in already low concentration, from aqueous acetone by pervaporation techniques in which a water enriched phase permeates a selective membrane. In an alternative, a fluid is caused to sweep the permeate fraction off the far side of the membrane.

3,720,718

## CONVERSION OF CHLOROFORMATES TO AN ALDEHYDE

Donald M. Fenton, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Filed Aug. 12, 1970, Ser. No. 63,309

Int. Cl. C07c 45/00

U.S. Cl. 260—601 R

10 Claims

An aldehyde is prepared by contacting a chloroformate with a liquid reaction medium containing a Group VIII

noble metal catalyst in complex association with a biphylic ligand at a temperature between 75° C. and 400° C. and at a pressure sufficient to maintain liquid phase reaction conditions. The chloroformate decomposes to form the aldehyde, hydrogen chloride and carbon monoxide. A typical process comprises contacting ethyl chloroformate with a reaction medium containing palladium chloride in complex association with triphenylphosphine to produce acetaldehyde. The invention has utility in the manufacture of an aldehyde by reacting an alcohol with phosgene to produce a chloroformate which is then converted to an aldehyde by the process of the invention.

3,720,719

## PROCESS FOR POLYMERIZATION OF TETRAHYDROFURAN

Kazuo Matsuda, Wakayama; Yoshiaki Tanaka, Osaka, and Takeyo Sakai, Wakayama, all of Japan, assignors to Kao Soap Co., Ltd., Chuo-ku, Tokyo, Japan

Filed Sept. 13, 1971, Ser. No. 180,175

Claims priority, application Japan, Sept. 16, 1970, 45/81008

Int. Cl. C07c 41/00, 43/00

U.S. Cl. 260—615 B

7 Claims

Tetrahydrofuran is polymerized in the presence of a catalyst system of 5–50 percent by weight of fuming sulfuric acid, based on the weight of tetrahydrofuran, and 0.008–90 percent by weight of a metal belonging to Group V or VI in the Periodic Table, based on the free SO<sub>3</sub> content in the fuming sulfuric acid.

3,720,720

## 6-(HYDROXYALKYL)BENZHYDROLS

Werner Metlesics, Vienna, Austria, and Leo Henryk Sternbach, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Application Jan. 30, 1967, Ser. No. 612,321, now Patent No. 3,558,649, dated Jan. 26, 1971, which is a continuation-in-part of application Ser. No. 487,619, Sept. 15, 1965. Divided and this application Aug. 27, 1970, Ser. No. 67,560

Int. Cl. C07c 31/14

U.S. Cl. 260—618 B

3 Claims

Novel 1-phenyl-2-aminoalkylisoindoline derivatives have been prepared and shown to exhibit useful anorexic properties.

3,720,721

## HALOGENATED BIPHENOLS AND METHODS FOR PREPARING THE SAME

Hans-Dieter Becker, Goteborg, Sweden, and Alfred R. Gilbert, Schenectady, N.Y., assignors to General Electric Company

No Drawing. Filed July 9, 1970, Ser. No. 53,648

Int. Cl. C07c 39/12

U.S. Cl. 260—620

13 Claims

Halobiphenols can be produced from precursor diphenoquinones by effecting reaction between the diphenoquinone and a hydrogen halide, such as hydrogen chloride, while the diphenoquinone is suspended in a liquid medium of the class of water, lower alkanols and mixtures of water and said alkanols. The biphenols thus obtained can be used as antioxidants or as intermediates in the preparation of other diphenoquinones and polymeric compositions useful in the coating and insulating arts.

3,720,722

## NOVEL ALUMINUM FLUORIDE CATALYST AND PROCESS FOR HYDROFLUORINATING ACETYLENE USING SAME

Hiroyuki Wada, Kyoto; Yasumasa Kawakami, and Tutomu Kamihigoshi, both of Osaka, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka-fu, Japan

Division of Ser. No. 770,337, Oct. 24, 1968. This application

Feb. 18, 1971, Ser. No. 116,672

Int. Cl. C07c 17/08

U.S. Cl. 260—653.4

8 Claims

Process for hydrofluorinating acetylene which comprises reacting acetylene with hydrogen fluoride in the vapor phase and in the presence of  $\epsilon$ -aluminum fluoride at a temperature from about 200°C to about 380°C to produce vinyl fluoride and 1,1-difluoroethane, said  $\epsilon$ -aluminum fluoride is being prepared by evaporating an aqueous hydrofluoric acid solution of aluminum fluoride to dryness under vacuum at a temperature from 30° to 120°C optionally followed by heating the resulting product at a temperature from 120° to 500°C.

3,720,723

## PROCESS FOR PREPARING UNSATURATED CHLOROHYDROCARBONS AND SATURATED POLYCHLOROHYDROCARBONS BY OXYCHLORINATION OF HYDROCARBONS AND CATALYST SYSTEM THEREFOR

Ervin G. Pritchett, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Continuation of Ser. No. 529,899, Jan. 3, 1966, abandoned.

This application Nov. 28, 1969, Ser. No. 876,187

Int. Cl. C07c 17/10

U.S. Cl. 260—658 R

11 Claims

1. A process for the preferential oxychlorination of ethane and/or ethyl chloride as a reactant to form 1,2-dichloroethane as the major reaction product, which comprises feeding the reactant ethane and/or ethyl chloride in the vapor phase in admixture with hydrogen chloride in an amount within the range from about 0.05 to about 5 equivalents per mole of the reactant and with molecular oxygen in an amount within the range from about 0.2 to about 1.5 moles per equivalent of hydrogen chloride in contact with a catalyst consisting essentially of a copper chloride and a Group II b metal chloride in an amount within the range from about 20 to about 70 mole percent based on the moles of copper, at a temperature within the range from 250° to 400°C, and recovering 1,2-dichloroethane as the major reaction product.

3,720,724

## DEHYDROGENATION CYCLOHEXANE OR MONO- OR POLYALKYLCYCLOHEXANES

Donald C. Tabler, Bartlesville, Okla., assignor to Phillip Petroleum Company, Bartlesville, Okla.

Filed June 3, 1970, Ser. No. 43,203

Int. Cl. C07c 5/18

U.S. Cl. 260—668 D

6 Claims

A method and catalyst for dehydrogenating cyclohexane and alkyl-substituted cyclohexanes to the corresponding aromatic compounds, the method involving contacting the cyclohexane or alkyl-substituted cyclohexane in the presence of hydrogen with a supported molybdenum-antimony catalyst.

3,720,725

## ALKYLATION PROCESS

Jerome Robert Olechowski, Trenton, N.J., assignor to Cities Service Company, New York, N.Y.

Filed June 25, 1971, Ser. No. 157,044

Int. Cl. C07c 3/56

U.S. Cl. 260—671 C

7 Claims

An aromatic hydrocarbon, such as benzene or toluene, is alkylated with an alkene while in contact with a catalyst com-

position comprising a molybdenum halide, an alkylaluminum dihalide, and a proton donor. In accordance with preferred embodiments of the invention, the alkene is a normally gaseous alkene, and the catalyst composition consists essentially of molybdenum pentachloride, ethyl aluminum dichloride, and ethanol. The nature of the product may be varied by adding the alkene before or after the catalyst composition.

3,720,726

## TRANSALKYLATION OF ALKYLAROMATIC HYDROCARBONS IN CONTACT WITH A ZEOLITE CATALYST COMPOSITION

Roy T. Mitsche, Island Lake, and Edward Michalko, Lombard, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 20,024, Mar. 16, 1970. This application Mar. 27, 1972, Ser. No. 238,622

Int. Cl. C07c 3/62

U.S. Cl. 260—672 T

8 Claims

A process for the transalkylation of alkylaromatic hydrocarbons. Transalkylation of alkylaromatic hydrocarbons, such as toluene, is effected at transalkylation conditions in contact with a catalyst comprising from about 60 to about 90% of a zeolite having a mordenite crystal structure containing alumina fixed in combination therewith. The catalyst is characterized by a method of preparation.

3,720,727

## PURIFICATION OF ACETYLENICALLY UNSATURATED HYDROCARBONS

Calvin L. Daniels, and James M. Watson, both of Big Spring, Tex., assignors to Cosden Oil & Chemical Company, Big Spring, Tex.

Filed Dec. 22, 1971, Ser. No. 211,064

Int. Cl. C07c 7/02

U.S. Cl. 260—674 R

9 Claims

A process for the separation of acetylenically unsaturated aromatic hydrocarbons from mixtures containing such hydrocarbons in admixture with vinyl substituted aromatic hydrocarbons, said process comprising contacting said mixture with a halogen selected from the group consisting of bromine, chlorine and mixtures thereof, under halogenation conditions, said halogen being present in an amount such as to halogenate the vinyl substituents of said vinyl substituted aromatic hydrocarbons, and thereafter separating and recovering said acetylenically unsaturated aromatic hydrocarbons.

3,720,728

## JET FUEL PARAFFIN PRODUCTION

Ernest L. Pollitzer, Skokie, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 809,001, Mar. 20, 1969, which is a continuation-in-part of abandoned application Ser. No. 723,886, Apr. 24, 1968. This application Mar. 11, 1971, Ser. No. 123,476

Int. Cl. C07c 5/10, 9/00; C10g 13/02

U.S. Cl. 260—676 R

9 Claims

Jet fuel paraffinic hydrocarbons are produced from cyclic hydrocarbons, either cycloparaffinic, or aromatic, or mixtures thereof. The process involves hydrogenative cracking, or ring-opening hydrogenation, in contact with a catalyst containing a Group VII-B metal component. The paraffinic product is rich in normal paraffins, and is well-suited for use as a jet fuel blending component.







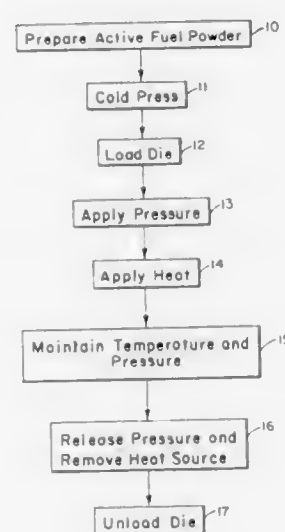
3,720,739

**NUCLEAR FUEL PRESSING PROCESS**  
Laird T. Hagie, Fremont, and Chester M. Ryer, San Jose, Calif., assignors to General Electric Company  
Continuation-in-part of abandoned application Ser. No. 690,248, Dec. 13, 1967. This application Apr. 14, 1969, Ser. No. 815,615

Int. Cl. G21c 21/00

U.S. Cl. 264—5

10 Claims



A pressing technique for producing nuclear fuel pellets for use in nuclear reactors is disclosed. Typically, an active nuclear fuel material is pressed at a pressure of from about 6000 to about 10,000 p.s.i. and a temperature from about 900 to about 1300° C. for about 3 to about 20 minutes. For good results, it is necessary that full pressure be applied before the temperature is increased to the temperature at which significant plastic flow begins in the fuel material.

3,720,740

**LOW PRESSURE SINTERING OF BORON NITRIDE USING LOW THERMAL EXPANSION STATIC SINTERING MOLDS**

Akinori Muta; Yukio Hayakawa, both of Tokyo, and Makoto Manaka, Hitachi, all of Japan, assignors to Kabushiki Kaisha Hitachi Seisakusho and Hitachi Kasei Kogyo Kabushiki Kaisha, Tokyo, Japan  
Continuation-in-part of Ser. No. 830,176, April 22, 1969, abandoned, which is a continuation of Ser. No. 482,268, Aug. 24, 1965, abandoned. This application June 24, 1970, Ser. No. 49,516

Int. Cl. C04b 35/58, 33/32, 33/64

U.S. Cl. 264—65

13 Claims

Boron nitride articles are manufactured by first cold pressure molding boron nitride powder and then sintering the resultant boron nitride article while the article is confined in a sintering mold so that the free expansion of the article during the sintering process is restricted.

3,720,741

**MELT SPINNING PROCESS**

Robert E. Cunningham; Wilbur J. Privott, Jr., and Lawrence F. Rakestraw, all of Raleigh, N.C., assignors to Monsanto Company, St. Louis, Mo.  
Continuation-in-part of Ser. No. 596,286, Nov. 22, 1966, abandoned. This application Oct. 3, 1969, Ser. No. 863,707

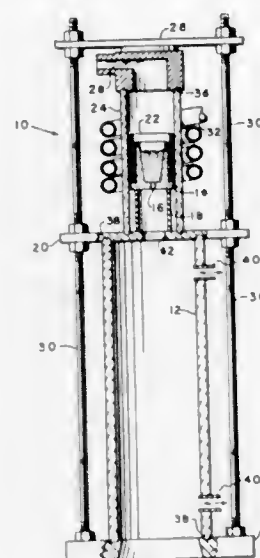
Int. Cl. B28b 3/20; B22d 11/00

U.S. Cl. 264—82

11 Claims

A low stress spinning process wherein disruption of low viscosity streams due to the viscous drag forces imposed upon

the extruding body is minimized by maintaining the propagation velocity of drag-sustained deviations less than the stream velocity to prevent the upstream migration of such deviations



into the low strength molten region. This interrelationship of propagational and spinning velocities may be accomplished by a variety of techniques for controlling the interaction of viscous drag and tensional forces upon the stream.

3,720,742

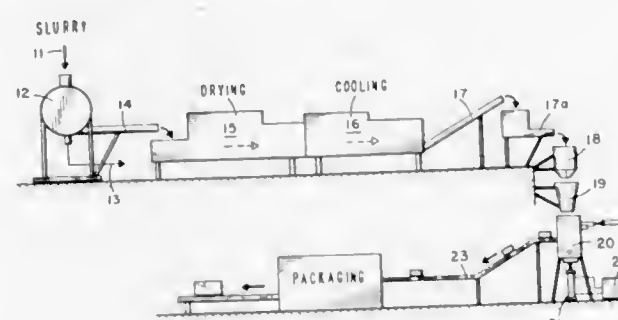
**WRAPPING OF BALED POLYMERS**

Marcus H. Shelton, Baytown, and Ralph James, Jr., Channelview, both of Tex., assignors to Esso Research and Engineering Company, Linden, N.J.  
Filed March 8, 1971, Ser. No. 122,071

Int. Cl. B29h 3/00, 31/00

U.S. Cl. 264—102

11 Claims



Polymeric material such as solid particulate polymers as illustrated by butyl rubber, Vistanex, polyolefins such as polyethylene and polypropylene, and the like which contain residual moisture and/or gasiform material are baled and simultaneously encapsulated or wrapped in a baling zone, the interior wall of which is heated, and depending on the material being baled, subsequent to coating the wall with a polyolefin while applying mechanical pressure and reduced pressure to remove the moisture and/or gasiform material to form the bale.

3,720,743

**PROCESS FOR PRODUCING HIGH PERFORMANCE CRIMPED RAYON STAPLE FIBER**

Hugh Dexter Stevens, Long Valley, and Thomas Emery Muller, Springfield, both of N.J., assignors to International Telephone and Telegraph Corporation, New York, N.Y.  
Filed Oct. 20, 1970, Ser. No. 82,485

Int. Cl. D01f 3/12; D01d 5/22

U.S. Cl. 264—168

5 Claims

Highly crimped, high tenacity rayon filaments and staple fibers are produced by spinning a viscose spinning solution

containing a mixture of modifiers and having a low viscose salt (NaCl) index, into a coagulating-type spin bath to obtain coagulated, incompletely regenerated viscose filaments. The coagulated viscose filaments are withdrawn from the spin bath and stretched up to about 120 percent in length while the filaments are still substantially soluble in dilute alkali solution. The filaments are then completely regenerated and the tension is relaxed to produce highly crimped filaments or staple fiber products which are finished by conventional washing, desulfurization and finishing techniques.

3,720,744

**PROCESS FOR TREATING ELASTOMERIC FIBERS**  
Joseph Germano Santangelo, Norristown, N.J., assignor to Celanese Corporation, New York, N.Y.

No Drawing. Continuation of application Ser. No. 786,821, Dec. 16, 1968, which is a continuation of application Ser. No. 381,554, July 9, 1964, both now abandoned. This application Mar. 23, 1971, Ser. No. 127,335

Int. Cl. B29c 25/00; D01f 7/00

U.S. Cl. 264—205

10 Claims

An improved spandex type fiber of low permanent set and a method for producing such fibers which method comprises reacting the polymer with a peroxide cross-linking agent and subsequently heat treating a fiber spun from said polymer at a temperature of about 50 to 200 degrees centigrade to effect a cross-linking of the polymer.

3,720,745

**PROCESS FOR THE DIRECT POLYMERIZATION OF ACRYLONITRILE IN DIMETHYL FORMAMIDE**

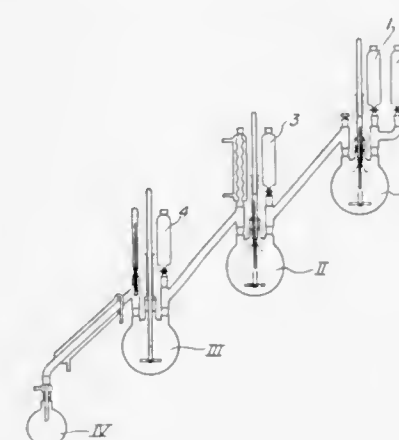
Josef König, Munich, and Erich Schlefer, Offenbach(Main), both of Germany, assignors to Davy-Ashmore Aktiengesellschaft

Continuation-in-part of Ser. No. 476,584, Aug. 2, 1965, abandoned. This application June 5, 1970, Ser. No. 43,932

Int. Cl. C08f 3/76; G08f 15/02

U.S. Cl. 264—206

15 Claims



Methods for solution polymerization of acrylonitrile and direct spinning of the polyacrylonitrile polymers and copolymers produced thereby, which includes the steps of dissolving monomers in dimethyl formamide and solution polymerizing them in the presence of a three-component catalyst system consisting essentially of a persulfate redox catalyst system and a cerium (IV) salt co-catalyst, and directly spinning the resultant polymer-containing solution by a dry spinning process.

908 O.G.—17

**METHOD FOR MOLDING UNDERCUT SLOTS IN MOTOR VEHICLE BODY PARTS**

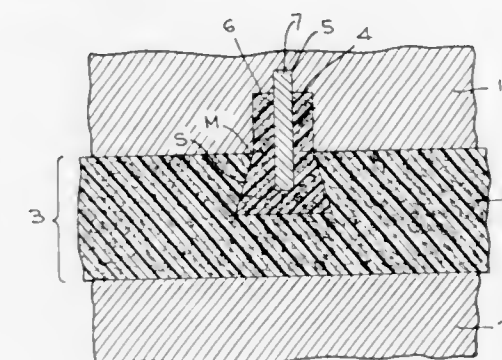
Kurt Schwenk and Hermann Habitzel, Wolfsburg, Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Continuation-in-part of abandoned application Ser. No. 773,409, Nov. 5, 1968. This application Jan. 12, 1971, Ser. No. 105,799

Int. Cl. B29c 1/12

U.S. Cl. 264—219

1 Claim



In a mold comprising separable mold parts, one of the mold parts is formed with an elongated first slot opening into the mold cavity and a similarly elongated second slot in the bottom of the first slot and of narrower width than the first slot. A substantially hard non-deformable stiffening member is removably held in the second slot with a free edge projecting into the mold cavity, and a deformable profile strip of U-shaped cross-section is supported on this member with its closed maximum width portion extending across the free edge of said member within the mold cavity and with its legs received in the first slot on opposite sides of said member. When an article is then formed in the mold cavity and stripped from the mold, it withdraws both profile strip and the stiffening member from the respective slots, whereupon removal of the stiffening member from the deformable profile strip allows substantial deformability of the profile strip into the space formerly occupied by the stiffening member so that the profile strip may then be withdrawn through the narrow open side of the undercut slot formed by it in the article.

3,720,746

**PROCESS FOR COLOR CODING TFE INSULATED CABLES**

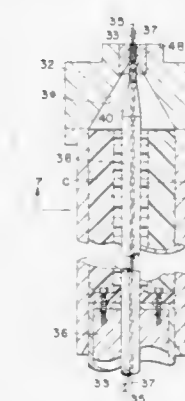
Robert W. Anderson, Burlington, and Aime Joseph Perreault, South Burlington, Vt., assignors to Haveg Industries, Inc., Wilmington, Del.

Filed Sept. 1, 1970, Ser. No. 68,707

Int. Cl. B29c 9/00; B29f 3/10, 3/12

U.S. Cl. 264—246

7 Claims



A TFE extrusion preform is made up of a plurality of colored sections corresponding to the same number of



wires which are to be insulated. The preform is arranged such that each colored section will cover a conductor wire upon extrusion. The resultant product is a multi-conductor cable with the insulation of each conductor integral with the insulation of the other conductor but of different colors for color coding (identification). Modifications of this idea are also disclosed whereby color coding is effected by different colored stripes rather than utilizing the various colors of insulation.

3,720,748

# METHOD FOR RECOVERING URANIUM AS URANIUM HEXAFLUORIDE

Joachim Massonne, Hannover, Rolf Kreutz, Bemerode, and Heinz Friedrich, Konstanz (Bodensee), Germany, assignors to Kali-Chemie Aktiengesellschaft, Hannover, Germany

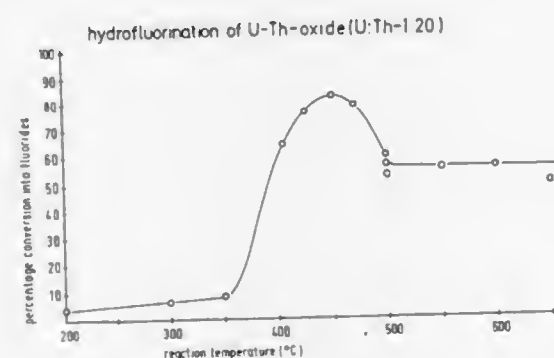
Continuation-in-part of application Ser. No. 805,140, Mar. 7, 1969. This application May 15, 1969, Ser. No. 824,963

Claims priority, application Germany, May 18, 1968, P 17 71 401.1; Mar. 9, 1968, P 16 67 847.0; Mar. 21, 1968, P 17 67 015.4

Int. Cl. C01g 43/06

U.S. Cl. 423—4

12 Claims



Uranium is recovered as the hexafluoride from coated or uncoated nuclear fuel by reacting the fuel at a temperature of at least 500° C. with a mixture of oxygen and gaseous hydrogen fluoride followed by reaction with elementary fluorine at 500 to 750° C.

3,720,749

# TREATMENT OF NICKEL LEACH LIQUOR

Melvin L. Taylor, Arvada, and Nelson J. Ronzio, Golden, both of Colo., assignors to American Metal Climax, Inc., New York, N.Y.

Filed Aug. 26, 1970, Ser. No. 67,249

Int. Cl. C01g 51/04, 53/04

U.S. Cl. 423—141

12 Claims

Nickel and cobalt are recovered from acid leach liquor containing such impurities as iron and aluminum obtained from the acid leaching of nickeliferous materials (such as sulfuric acid or nitric acid leach liquor), e.g. low-grade nickeliferous oxidic materials by adjusting the leach liquor, in the case of a sulfuric acid leach, to a pH range of about 0.5 to 4, or, more advantageously, to about 0.6 to 1.5, or in the case of a nitric acid leach to a pH of about 0.15 to 2.5, at an elevated temperature in excess of 130°C at a pressure ranging from about 225 psig to 1000 psig to precipitate major amounts of the iron and aluminum, which precipitate is then separated from the leach liquor. Thereafter, the nickel and cobalt are separated from the treated leach liquor.

# SELECTIVE RECOVERY OF COBALT FROM AN AMMONIACAL CARBONATE SOLUTION CONTAINING COBALT AND NICKEL

Tadeusz Karol Wiewiorowski, New Orleans, and David James Miller, Gretna, La., assignors to Freeport Minerals Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 143,267, May 13, 1971. This application Oct. 19, 1971, Ser. No. 190,636

Int. Cl. C01g 51/00, 53/00

U.S. Cl. 423—150

12 Claims

When cobalt is precipitated from ammoniacal carbonate solutions containing both cobalt and nickel by addition of a sulfiding agent to the solution, the amount of of nickel co-precipitated with the cobalt is substantially reduced if, after addition of the sulfiding agent, the solution is treated with an oxygen-containing gas. This produces a two-fold desirable result: a precipitate enriched in cobalt and a mother liquor enriched in nickel.

The precipitate is further enriched in cobalt by first thickening the slurry containing the precipitate and then treating the thickened slurry with an oxygen-containing gas. This treatment solubilizes some of the nickel sulfide in the liquid phase of the slurry serving to simultaneously increase the cobalt content of the precipitate and the nickel content of the mother liquor.

3,720,751

# HYDRIDING PROCESS

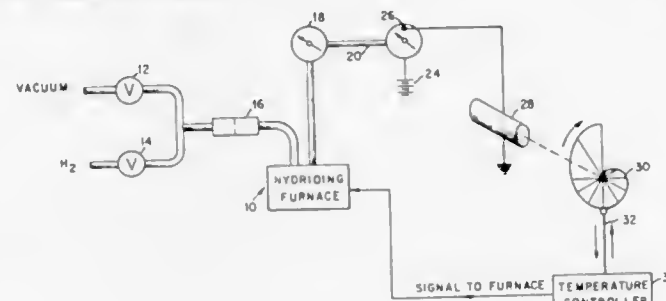
Robert Van Houten, 7685 De Mar Road, Cincinnati, Ohio 45243

Continuation-in-part of application Ser. No. 240,186, Nov. 26, 1962. This application June 15, 1967, Ser. No. 647,261

Int. Cl. C01b 16/00; C01f 15/00

U.S. Cl. 423—252

1 Claim



This invention relates to a method and means for controlling the hydrogen pressure in a furnace system for hydriding a metal or alloy workpiece to a massive hydride structure by (1) controlling the flow of hydrogen into said system at a rate which is less than the maximum rate of hydrogen absorption by the work, and (2) holding the furnace temperature constant during a period of thermal arrest by the work.

3,720,752

# MASSIVE METAL HYDRIDE STRUCTURES AND METHODS FOR THEIR PREPARATION

Robert Van Houten, 7685 De Mar Road, Cincinnati, Ohio 45243

No Drawing. Continuation-in-part of application Ser. No. 240,186, Nov. 26, 1962. This application Apr. 11, 1967, Ser. No. 634,019

Int. Cl. C01g 43/00

U.S. Cl. 423—255

7 Claims

A massive metal hydride, deuteride, or tritide matrix structure selected from at least one metal consisting of a Group III-B metal (Sc, Y, La); a Group IV-B metal (Zr, Ti, Hf); a Group V-B metal (V, Nb, Ta); a 4f rare earth metal having an atomic number 57-71, inclusive; 5f rare earth metal having an atomic number 90-100, inclusive,

and alloys thereof, and a grain growth inhibiting concentration of at least one additive selected from carbon, graphite, boron; a carbide, boride, or hydride of the matrix metal dispersed in the matrix structure.

3,720,753

# METHOD FOR PREPARING A SMALL PORE SYNTHETIC ZEOLITE

Harry E. Robson, Baton Rouge, La., assignor to Esso Research and Engineering Company, Linden, N.J.

Filed Feb. 22, 1971, Ser. No. 117,755

Int. Cl. C01b 33/28

U.S. Cl. 423—329

3 Claims

A synthetic small pore crystalline zeolite having a structure and X-ray diffraction pattern similar to that of synthetic zeolite ZK-5 is prepared by digesting an aqueous reactant mixture containing silica, alumina, and either a mixture of potassium oxide and cesium oxide, or potassium oxide, cesium oxide and sodium oxide at a temperature of from 60° to 120°C. The zeolite product contains cesium cations as well as potassium cations in its as-synthesized form. A substantial portion of the cations is in an inaccessible position in the crystal lattice so that it is essentially unexchangeable. The zeolite product is used as a selective adsorbent or as a catalyst after suitable modification by base exchange and deposition of a catalytically active metal.

3,720,754

# PROCESS FOR THE ENTRAPMENT AND RECOVERY OF SULFUR DIOXIDE GAS

Harold W. Wilson, El Paso, Tex., assignor to The Golden Cycle Corporation

No Drawing. Continuation-in-part of application Ser. No. 777,503, Nov. 20, 1968. This application Dec. 18, 1970, Ser. No. 99,509

Int. Cl. C01b 17/60

U.S. Cl. 423—244

11 Claims

A process is disclosed wherein sulfur dioxide gas or sulfur dioxide containing waste stack gases, are passed into a bed of mixed metallic oxides and silicates which contains not less than about 1% or more than about 10% of its weight in added water to produce a dry, particulate product comprising metallic sulfite salts, meta-silicic acid, adsorbed sulfur dioxide, and unreacted oxidic and siliceous material of a kind and amount dependent upon the chemical nature and reactivity with sulfur dioxide gas of the metallic oxide silicate material processed. The product when subsequently moderately heated releases substantially equimolar amounts of sulfur dioxide in conjunction with the release of only minor amounts of water.

3,720,755

# PROCESS FOR PREPARING A SOLUTION CONTAINING HYDROXYL AMMONIUM PHOSPHATE

Coenraad J. Duyverman, Sittard, and Martin J. Gorgels, Steen both of Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

Filed March 26, 1971, Ser. No. 128,495

Claims priority, application Netherlands, May 24, 1971, 7004350

Int. Cl. C01b 15/16, 25/26, 25/16

U.S. Cl. 423—307

4 Claims

A process for preparing a solution of hydroxylammonium phosphate which includes catalytic reduction of nitrate ions in an aqueous solution containing phosphoric acid using molecular hydrogen.

In order to maintain the activity of the catalyst the phosphoric acid to be fed to the synthesis zone is first freed of heavy metal contaminants by contacting the phosphoric acid for a sufficient time with hydrogen and an absorbent consisting of a metal of the platinum group.

3,720,756

# PRODUCTION OF SYNTHETIC ZEOLITES OF FAUJASITE STRUCTURE

Friedrich Schwochow, Leverkusen, and Gerhard Heinze, Schildgen, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 5, 1971, Ser. No. 104,178

Claims priority, application Germany, Jan. 22, 1970, P 20 02 626.0

Int. Cl. C01b 33/28

U.S. Cl. 423—329

4 Claims

A gel containing Na<sub>2</sub>O, Al<sub>2</sub>O<sub>3</sub>, SiO<sub>2</sub> and H<sub>2</sub>O in the approximate molar ratios:

SiO<sub>2</sub>: Al<sub>2</sub>O<sub>3</sub> = 3.5—5Na<sub>2</sub>: SiO<sub>2</sub> = 2—3H<sub>2</sub>O: Na<sub>2</sub>O = 35—45

is subjected to hydrothermal crystallization at about 60° to 120° C. The gel is formed by combining an aluminate solution and a sodium silicate solution in suitable proportions, the sodium silicate solution having an Na<sub>2</sub>O:SiO<sub>2</sub> mole ratio of at least 1.5:1 and an H<sub>2</sub>O:Na<sub>2</sub>O mole ratio of about 35—45:1. By holding the sodium silicate for at least 15 minutes, preferably about 1 to 4 hours at about 10° to 40° C., the gel subsequently produced may be stirred during crystallization and the crystals will nonetheless have the faujasite structure and the approximate composition Na<sub>2</sub>O.Al<sub>2</sub>O<sub>3</sub>.(2—2.5) SiO<sub>2</sub>.(0—8)H<sub>2</sub>O.

3,720,757

# CLOSED POND SYSTEM FOR WET PROCESS PHOSPHATE PLANTS

Rufus G. Hartig, Dover, Fla. (230 Hillsboro Hotel Bldg., Tampa, Fla. 33602)

Filed Aug. 3, 1970, Ser. No. 60,226

Int. Cl. C01b 33/08

U.S. Cl. 423—341

2 Claims

Closed pond system or process for eliminating the conventional pond systems of wet process phosphoric acid complexes, and to remove fluorine from process gas streams, wherein liquid effluents from wet process phosphoric acid complexes, including scrubber liquor from gas scrubbing operations of the complex, are cooled and clarified, and the liquid from the clarifier recycled to the phosphate complex, the sludge or slurry being filtered to remove solids, the solids being calcined to drive off fluorine-containing gases. The calcined solids consist principally of sodium fluoride (NaF) which is recycled to the clarifier overflow to be mixed with the liquid returned to the phosphate complex. In the phosphate complex the liquid from the clarifier is used to scrub plant gases, and is mixed with other scrubber liquors from the plant, and recycled again to the cooling tower and clarifier. The HF in the effluent plant liquids is converted to SiF<sub>4</sub> by maintaining an excess of SiO<sub>2</sub>, and the NaF reacts with the SiF<sub>4</sub> to form Na<sub>2</sub>SiF<sub>6</sub>. The Na<sub>2</sub>SiF<sub>6</sub> is calcined to produce NaF and gaseous SiF<sub>4</sub>, the latter being scrubbed with water to form H<sub>2</sub>SiF<sub>6</sub> of commercial quality.

3,720,758

# PROCESS FOR THE CONTINUOUS PREPARATION OF AN AQUEOUS SOLUTION OF A HYDROXYLAMMONIUM SALT

Abraham H. De Rooij, Geleen, and Pierre A. M. Aggenbach, Brunssum, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

Filed Sept. 21, 1970, Ser. No. 73,905

Claims priority, application Netherlands, Sept. 20, 1969, 6914306

Int. Cl. C01c 1/24, 1/00; C07c 131/10

U.S. Cl. 423—388

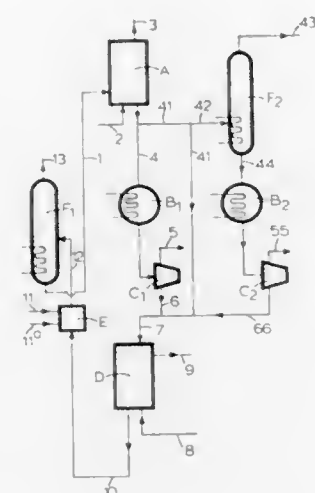
5 Claims

Hydroxylammonium salt solution prepared by catalytically reducing nitrate ions in aqueous solution using molecular



hydrogen in a buffered reaction medium containing at least twice the number of sulphate ions as phosphate ions in which

immunoglobulins or with antibodies against reagin-Ig and reagin-Ig labelled with a radiation emitting atom or group, separating into a liquid phase and a solid phase, and measuring the radiation emitted from at least one of the two separated phases.



the ammonia produced as a by-product of the reaction is removed from the resulting solution as ammonium sulphate is disclosed.

3,720,759

# PROCESS FOR THE PRODUCTION OF CARBON AND GRAPHITE FIBERS

Dietrich Overhoff, Augsburg, Germany, assignor to Sigrig Elektrographit GmbH, Augsburg, Germany

Filed May 21, 1970, Ser. No. 39,517

Claims priority, application Germany, April 7, 1970, P 20 16 445.8

Int. Cl. C01b 31/07

U.S. Cl. 423-447

7 Claims

Carbon fibers are produced by treating synthetic polymeric fibers with a solution of a condensation agent at a temperature of 180° to 230°C to effect cross-linking and/or cyclization within the polymeric fibers and thereafter heating the treated fibers to a temperature between 200°-300°C in an atmosphere containing an oxidizing gas and, subsequently, in an inert or reducing atmosphere, to a temperature of at least about 1,000°C. Titanium tetrachloride, lead tetrachloride, tin tetrachloride, and tin tetrabromide are used as condensation agents, preferably in the form of complexes in a solvent such as high-boiling ethers and esters. Dimethylformamide is used as a complex former. o-nitroanisole, d-n-butylterephthalate, and iso-octadecylbenzoate are used as both solvent and complex former.

3,720,760

# METHOD FOR DETERMINING THE PRESENCE OF REAGIN-IMMUNOGLOBULINS (REAGIN-Ig) DIRECTED AGAINST CERTAIN ALLERGENS, IN AQUEOUS SAMPLES

Hans H:son Bennich, Uppsala, Stig G. O. Johansson, Storvreta, and Leif E. Wide, Uppsala, Sweden, assignors to Pharmacia AB, Uppsala, Sweden

No Drawing. Filed Sept. 6, 1968, Ser. No. 758,131

Int. Cl. A61k 27/04

U.S. Cl. 424-1

26 Claims

An in vitro method for analyzing a body fluid for reagin-immunoglobulins therein that are reactive with allergens which comprises contacting a sample of body fluid with a water-insoluble polymer to which is attached at least one test allergen for a long enough time to allow reaction therebetween and then contacting with either labelled antibodies that are reactive with the reagin

# 3,720,761 INJECTABLE RADIO-PHARMACEUTICAL SCANNING AGENT AND PREPARATION

William W. Hunter, Jr., 313 West Seventh Avenue, Columbus, Ohio

Filed Oct. 14, 1968, Ser. No. 767,480

Int. Cl. A61k 27/04

U.S. Cl. 424-1

6 Claims

A formation for pharmaceutical preparations and method for preparing same which is characterized by the use of the two through seven carbon polyhydric alcohols to stabilize solid particles suspended in a liquid medium. Using the method of the present invention, the particle size may be more closely controlled due to the excellent stabilization properties of the polyhydric alcohols which inhibits aggregation or clumping of the solid particles in the liquid medium.

3,720,762

# SPILANTHOL-CONTAINING COMPOSITIONS FOR ORAL USE

Shigeyoshi Hatasa, Chiba-shi, and Isao Iio, Tokyo, Japan, assignors to Lion Hamigaki Kabushiki Kaisha, Tokyo-to, Japan

Filed July 7, 1971, Ser. No. 160,382

Claims priority, application Japan, July 11, 1970, 45/60,740; July 14, 1970, 45/61,543

Int. Cl. A61r 7/16

U.S. Cl. 424-58

7 Claims

In composition intended for oral use, such as dentifrices, mouthwashes and chewing gum, a cooling effect is obtained by incorporating therein spilanthal, or the essential oil obtained from *Spilanthes oleracea* Jacquin or *Spilanthes acmella* var. *oleracea*. These materials have a mild anesthetic effect, and provide a pleasant flavor which is strong and lasts for a substantial time. They may usefully be combined with conventional materials such as methanol or peppermint oil which also provide a cooling effect.

3,720,763

# PREPARATION FOR REDUCING CEREBRAL EDEMA AND PROCESS OF PREPARING SAME

Shozo Ishii, Tokyo, Japan, assignor to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Continuation of application Ser. No. 829,972, June 3, 1969. This application Oct. 18, 1971, Ser. No. 190,177

Claims priority, application Japan, June 5, 1968, 43/37,969

Int. Cl. A61k 17/00

U.S. Cl. 424-95

5 Claims

A preparation, useful for improving impaired consciousness and electroencephalogram abnormalities caused by cerebral edema is obtained by (a) centrifuging homogenized fresh animal brain suspension to provide mitochondria and supernatant (I) and recentrifuging supernatant (I) to obtain supernatant (III); (b) suspending said mitochondria in a suspension medium; (c) freezing and thawing said mitochondria suspension to decompose said mitochondria; (d) centrifuging said decomposed mitochondria suspension to obtain mitochondria debris and supernatant (II); (e) combining supernatants (II) and (III); and (f) dialyzing the combined supernatant to which a small quantity of albumin has been added to produce a diffusate comprising the active preparation.

3,720,764

# SYNERGISTIC PREPARATION OF RIFAMPICIN AND PENICILLIN G

Edward Alexander Konopka, Murray Hill, and Justus Melchior Gelzer, Summit, both of N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 137,788, Feb. 24, 1970, abandoned, which is a continuation-in-part of Ser. No. 809,967, March 24, 1969, Pat. No. 3,644,616. This application Oct. 15, 1970, Ser. No. 81,112

Int. Cl. A61k 21/00

U.S. Cl. 424-114

1 Claim

Rifamycines or their semisynthetic derivatives, in combination with penicillines or cephalosporines, exhibit synergistic effects against pathogens.

3,720,765

# CROSSLINKED PROTEIN WITH ACID ANHYDRIDE AS A RUMINANT FEED MATERIAL

Robert E. Miller, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 27, 1970, Ser. No. 84,471

Int. Cl. A23k 1/18

U.S. Cl. 424-177

4 Claims

Improved protein feed material for ruminants which is resistant to digestive breakdown in the rumen but not in the abomasum and/or intestines which comprises the reaction product of a protein-containing feed material and an organic acid anhydride capable of crosslinking protein. Exemplary of such organic acid anhydrides is maleic anhydride.

3,720,766

INSECTICIDAL MIXTURES OF O,O-DIMETHYL-O-(2-METHOXY-4-CYANOPHENYL)-PHOSPHOROTHIOATE AND 3,4-METHYLENE DI-OXYPHENYL PROPYNYLOXY CARBAMATES

Peter E. Letchworth, Mountain View, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

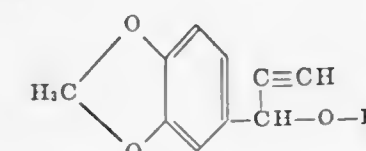
No Drawing. Filed Aug. 3, 1970, Ser. No. 60,718

Int. Cl. A01n 9/02, 9/28, 9/36

U.S. Cl. 424-210

14 Claims

A composition of matter is described herein which is used as a synergist for O,O-dimethyl-O-(2-methoxy-4-cyanophenyl)-phosphorothioate insecticide and methods of use. The composition may be defined by the following generic formula



wherein R can be selected from radicals consisting of N-methyl carbamoyl, N-phenyl carbamoyl, N-p-chlorophenyl carbamoyl, benzoyl, acetyl, and 2-pyranylyl.

3,720,767

# FUNGICIDAL COMPOSITION COMPRISING COPPER 8-OXYQUINOLATE AND COPPER α-AMINO-γ-ETHYLTHIOBUTYRATE

Kaoru Ohmori, Yono-shi, Saitama-ken; Mituo Nakajima, Yatomachi, Saitama-ken; Shuichi Ishida, Ohmiya-shi, and Shiroh Asaka, Yono-shi, Saitama-ken, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed June 6, 1969, Ser. No. 831,252

Claims priority, application Japan, June 21, 1968, 43/42509

Int. Cl. A01n 9/02, 21/00

U.S. Cl. 424-245

1 Claim

The present invention relates to fungicidal compositions for agricultural and horticultural use comprising one or more kinds of metal salts of α-amino-γ-ethylthio butyric acid such as copper α-amino-γ-ethylthio butyrate, or manganese α-amino-γ-ethylthio butyrate and one or more kinds of 8-oxo-

quinoline metal complex, such as copper or zinc 8-oxoquinolate along with adjuvants such as dispersing agent, emulsifier, or wetting agent. The composition of the present invention is remarkably effective when applied at low concentration for black spot of pear (*Alermaria kikuchiana*) or Helminthosporium leaf spot (*Cochliobolus miyabeanus*).

# 3,720,768 ASPERGILLIC ACID AS AN ANTI-HYPERTENSIVE AGENT

Peter Hadley Jones, Lake Forest, and Yvonne Connolly Martin, Waukegan, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

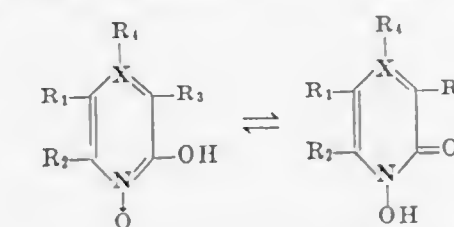
No Drawing. Filed Nov. 22, 1971, Ser. No. 201,176

Int. Cl. A61k 27/00

U.S. Cl. 424-250

1 Claim

Method of treating hypertension by administering to a hypertensive patient a therapeutically effective amount of a compound of the Formula



wherein X is C or N; and R1, R2, R3 and R4 each are hydrogen, alkyl, cycloalkyl or aryl, with the limitation that R4 is present only when X is C.

3,720,769

# FUNGICIDAL SULFINYL-CYANOISOTHIAZOLES

Georg-Alexander Hoyer and Kurt Roder, Berlin, Germany, assignors to Schering AG, Berlin and Bergkamen, Germany

No Drawing. Filed July 10, 1970, Ser. No. 53,987

Claims priority, application Germany, Aug. 16, 1969, P 19 42 372.4

Int. Cl. A01n 9/14

U.S. Cl. 424-270

10 Claims

Fungicidal compositions containing sulfinyl-cyanoisothiazoles.

3,720,770

# 1-(p-CHLORO-m-NITROPHENYL-DIPHENYL-METHYL)-IMIDAZOLE AS AN ANTIFUNGAL AGENT

Karl Heinz Buchel, Leverkusen, Erich Regel, Wuppertal-Kronenberg, and Mandred Plempel, Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application Sept. 9, 1968, Ser. No. 758,594, now Patent No. 3,660,577. Divided and this application Mar. 19, 1971, Ser. No. 126,277

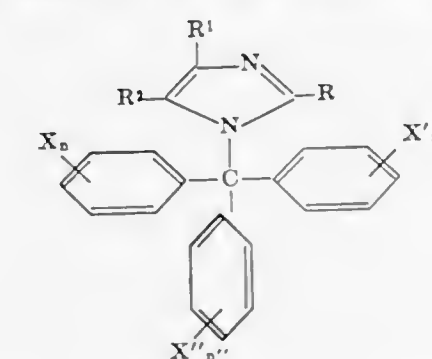
Claims priority, application Germany, Sept. 15, 1967, F 53,504

Int. Cl. A61k 27/00

U.S. Cl. 424-273

2 Claims

N-trityl-imidazoles and salts thereof of the formula:



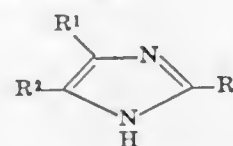
wherein

R, R1 and R2 are hydrogen, lower alkyl or phenyl, or R1 and R2 together form an annellated benzene ring,

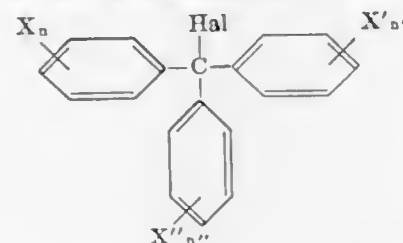


X, X' and X'' are alkyl of 1 to 12 carbon atoms or an electro-negative moiety, and  
n, n' and n'' are an integer from 0 to 2,

or pharmaceutically acceptable acid salts thereof may be produced by reacting a silver salt or alkali metal salt of an imidazole of the formula:



with a trityl halide of the formula:



wherein the substituents are as above defined and Hal is halogen. These compounds are useful as antimycotics.

3,720,771

### 3-SUBSTITUTED-1-PHENYL-INDOLINES AND INDOLINONES IN COMPOSITION FOR ALLEVIATING MENTOL DEPRESSION

Antonio Canas-Rodriguez, and Peter Rodway Leeming, both of Canterbury, Kent, England, assignors to Pfizer Inc. New York, N.Y.

Division of Ser. No. 885,321, Dec. 15, 1969, Pat. No.

3,644,403. This application Feb. 14, 1972, Ser. No. 226,291

Claims priority, application Great Britain, Dec. 18, 1968, 60,083/68

Int. Cl. A61v 27/00

U.S. Cl. 424—274

5 Claims

Novel 3-mono-aminoalkyl-1-phenyl-indolines and 2-indolinones are disclosed.

3,720,772

### METHODS OF CONTROLLING INSECTS OR NEMATODES BY USING S,S-SUBSTITUTED 2,2-THIO-, SULFINYL-, AND SULFONYL-ALKANYL AND ALKANONE N-SUBSTITUTED CARBAMOYLOXIMES AND THEIR CARBONYL DERIVATIVES

Tomas L. Fridinger and Edward L. Mutsch, Woodbury Township, Washington County, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Application July 11, 1969, Ser. No. 841,142, now Patent No. 3,646,062, dated Feb. 29, 1972, which is a continuation of abandoned application Ser. No. 753,752, Aug. 19, 1968. Divided and this application Feb. 9, 1972, Ser. No. 224,955

Int. Cl. A01n 9/00, 9/12

U.S. Cl. 424—277

4 Claims

Methods of controlling insects, acarids and nematodes

by applying to plants or to the soil in which they are growing S,S-substituted thio-, sulfinyl-, sulfonyl- alkanal and -alkanone N-substituted carbamoyloxime derivatives.

3,720,773

### METHOD AND COMPOSITION FOR THE TOPICAL TREATMENT OF HERPETIC KERATITIS

August J. Pacini, San Pedro, Calif., assignor to Purex Corporation Ltd., Lakewood, Calif.

No Drawing. Original application Mar. 22, 1968, Ser. No. 715,167. Divided and this application Jan. 22, 1970, Ser. No. 10,680

Int. Cl. A61k 27/00

U.S. Cl. 424—295

2 Claims

The cobalt salt of trans-dodecenedioic acid has been prepared and found to be a highly effective vulnerary agent.

3,720,774

### METHOD OF TREATING PAIN, FEVER OR INFLAMMATION

Karl Peister, Westfield, Meyer Sletzing, North Plainfield, and David F. Hinkley, Plainfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Original application Apr. 7, 1970, Ser. No. 26,438. Divided and this application July 20, 1971, Ser. No. 164,448

Int. Cl. A61k 27/00

U.S. Cl. 424—303

1 Claim

New acyloxyalkyl esters of indenyl acetic acids. These compounds are useful as in vivo cleavable, long-lasting anti-inflammatory and analgesic agents. Also included are processes for preparing these compounds.

This is a division of co-pending application Ser. No. 26,438, filed Apr. 7, 1970, now abandoned.

3,720,775

### TREATMENT OF A PATHOLOGICAL FIBRINOLYTIC STATE IN PATIENTS

Larry J. Loeffler, North Wales, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Application June 13, 1969, Ser. No. 833,161, now Patent No. 3,634,499, which is a continuation-in-part of abandoned application Ser. No. 690,404, Dec. 14, 1967. Divided and this application June 25, 1971, Ser. No. 157,035

Int. Cl. A61k 27/00

U.S. Cl. 424—319

7 Claims

The compounds 4-aminomethylbicyclo-[2.2.1]-heptane-1-carboxylic acid, 4-aminomethylbicyclo-[2.2.2]-octane-1-carboxylic acid, 5-aminomethylbicyclo-[3.2.2]-nonane-1-carboxylic acid and the corresponding 2,5 and 6,8-diketo compound respectively are useful in anti-fibrinolytic compounds.

## ELECTRICAL

3,720,776

### KEYBOARD TRIGGERED PERCUSSION SOUND PRODUCING DEVICE FOR KEYBOARD ELECTRONIC MUSICAL INSTRUMENT

Takeshi Adachi, and Syoichi Suzuki, both of Hammamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hammamatsu-shi, Japan

Continuation of Ser. No. 859,878, Sept. 22, 1969, abandoned. This application Aug. 9, 1971, Ser. No. 170,359

Claims priority, application Japan, Sept. 25, 1968, 43/83144; Oct. 25, 1968, 43/78073

Int. Cl. G10h 1/00

U.S. Cl. 84—1.13

7 Claims



In an electronic organ including tone generators, key switches associated with playing keys in the keyboard for respectively switching signals from the tone generators, and a mixing circuit for mixing the switched signals; a percussion sound producing device comprises a depressed-key number detecting circuitry for generating a D.C. voltage responsive to the number of simultaneously depressed keys in the keyboard, a trigger signal generating circuitry fed with the D.C. voltage and generating a trigger signal when the D.C. voltage exceeds a predetermined value, and a percussion sound signal generator for generating percussion sound signals triggered by the trigger signal. In an electronic organ, for example, when two or more keys in the keyboard are depressed concurrently, there is produced maracas sound in addition to the musical-scale sounds; but when only one key is depressed at a time, there is produced only a musical-scale sound but no maracas sound.

3,720,777

### LOW LOSS CONDUCTOR FOR A.C. OR D.C. POWER TRANSMISSION

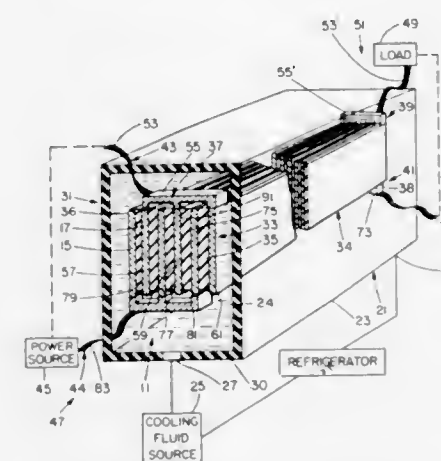
William Boyd Sampson, Bellport, and Meyer Garber, Patchogue, N.Y., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Aug. 25, 1971, Ser. No. 174,745

Int. Cl. H01v 11/00

U.S. Cl. 174—15 C

2 Claims



Compact, easy to fabricate, noninductive, low surface magnetic field superconductor transmission line that has minimal stray fields.

### 3,720,778 ELECTRIC RIBBON CABLE AND CONNECTOR ASSEMBLY

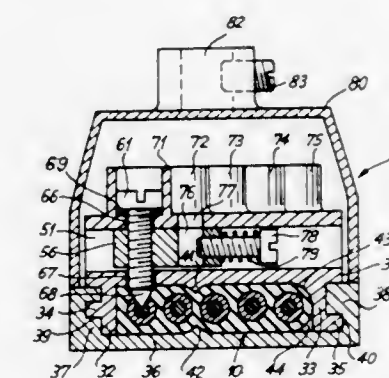
Hans Woertz, Basel, and Oskar Woertz, Riehen, both of Switzerland, assignors to Oskar Woertz, Inh. H. & O., Woertz, Basel, Switzerland

Filed March 28, 1972, Ser. No. 238,781

Int. Cl. H01r 13/46

U.S. Cl. 174—59

12 Claims



An electrical ribbon cable having a plurality of conductors positioned substantially within the same plane is mounted within a connector housing to a plurality of connecting terminals by contact screws having pointed ends for puncturing the insulation surrounding the ribbon cable to contact respective ones of the conductors. The flat surfaces of the ribbon cable include at least one longitudinal groove and a recess is formed in the connector housing conforming to the cross section of the ribbon cable and has at least one projection engaging with the longitudinal groove on the ribbon cable to predetermine the alignment of the conductors with the connecting terminals. The connector housing is provided with an insulating support forming the recess and a removable cover; the insulating support includes rib members and the cover has recesses aligned with the rib members so that the cover is mounted in only one predetermined position. The cover has passages through which external conductors are attached to the respective connecting terminals.

3,720,779

### METHOD AND APPARATUS FOR TRANSLATING COLOR INFORMATION OF A PATTERN INTO RECORDINGS

Johannes Schunack, Berlin-Lichterfelde, Germany, assignor to Franz Morat GmbH, Stuttgart-Vaihingen, Germany

Continuation of Ser. No. 878,996, Dec. 5, 1969, abandoned, which is a continuation of Ser. No. 601,204, Dec. 12, 1966, abandoned. This application March 9, 1971, Ser. No. 122,487

Claims priority, application Germany, Dec. 15, 1965, M 67647; Oct. 19, 1966, M 71331

Int. Cl. H04n 9/02

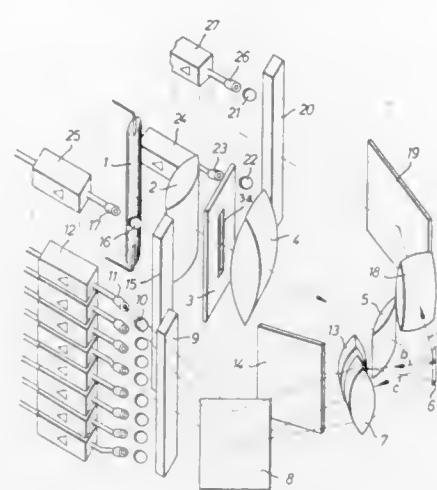
U.S. Cl. 178—5.2 R

14 Claims

The differently colored areas of a sample pattern are automatically translated into control impulses which represent



color and position of the areas of the sample pattern and are



used for controlling recording elements to record on tracks of a record carrier.

3,720,780

## PCM DIGITAL COLOR TELEVISION SYSTEM

Maurice A. Remy, Clamart, and Daniel M. Tartary, Versailles, both of France, assignors to Office De Radiodiffusion-Television Francaise, Paris, France

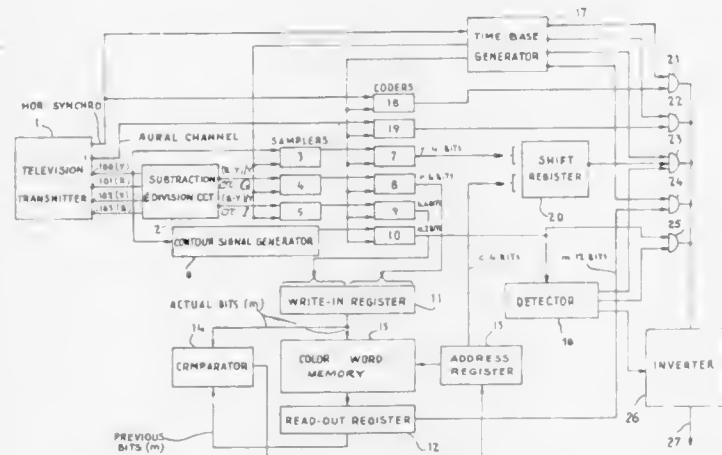
Filed Aug. 30, 1971, Ser. No. 176,195

Claims priority, application France, Aug. 31, 1970, 7031704

Int. Cl. H04n 9/40

U.S. Cl. 178—5.2 R

5 Claims



Digital PCM coded color television system in which the image is transmitted at a rate of two bits per image point. The luminance is transmitted by a word of  $p$  bits every  $p/2$  points and the luminance increments corresponding to the "image contour points" are transmitted by two bits. Color words which are formed of samples of two color components of the image are stored in color transmit storing means and the addresses of the color words in said storing means are transmitted in lieu of the color words themselves. A receive storing means is provided at the receiver station and it is updated from the transmit storing means during the line blanking periods.

3,720,781

## HIGH VOLTAGE SLEWING OF PENETRATION TUBE GUN

Roger F. West, Weston, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Nov. 10, 1971, Ser. No. 197,467

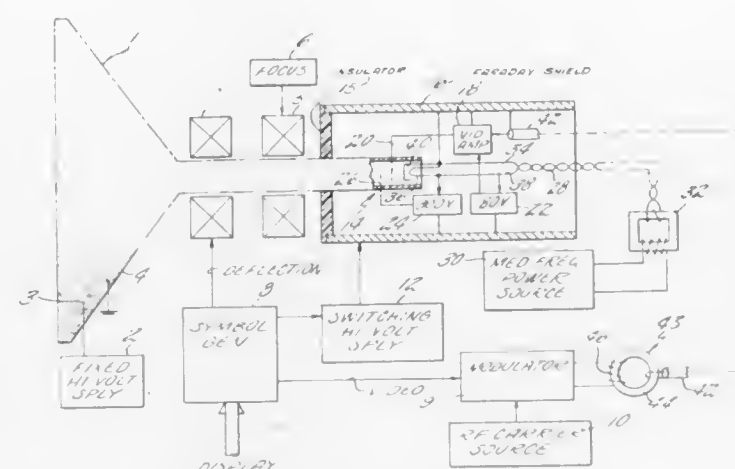
Int. Cl. H04n 9/22; H01j 1/52; H04b 1/08

U.S. Cl. 178—5.4 PE

6 Claims

The electron gun of a multiple penetration type cathode ray tube is completely surrounded by a shield which

houses circuitry for operating the gun with potentials referenced to the shield. The circuitry is coupled through high voltage isolation to external circuitry such as power sources and a source of video. The anode of the CRT is



maintained at a constant high voltage potential, whereas the shield and the gun are slewed many kilovolts between high voltages so as to provide variable to penetration of the CRT beam in order to excite selected phosphors.

3,720,782

## LENSLESS FLYING-SPOT SCANNER FOR GENERATING COLOR SIGNALS

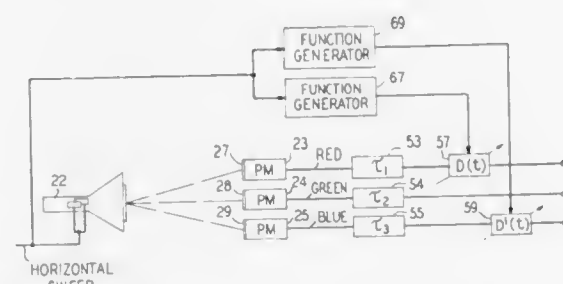
William Kaminski, West Portal, and Herwig Werner Kogelnik, Fair Haven, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 20, 1971, Ser. No. 209,530

Int. Cl. H04n 9/04

U.S. Cl. 178—5.4 R

7 Claims



A color transparency is placed on the face of a flying-spot scanning cathode ray tube whose light spot is raster scanned in a conventional fashion. Three juxtaposed photomultipliers are placed a given distance in front of the cathode ray tube to collect the light transmitted by the transparency. Three primary color signals are selected by the use of appropriate color filters which cover the respective faces of the three photomultipliers. The image parallax resulting from this arrangement is compensated electrically by delay lines at the photomultiplier outputs.

3,720,783

## FIRE RETARDANT GROUNDING MEANS FOR JUNCTION BOXES

Oswin C. Moll, Bethlehem, Pa., assignor to Oswin C. Moll, Bethlehem, Pa.; Leonard H. King, Valley Stream and Campani, Northport, N.Y.

Filed Nov. 26, 1971, Ser. No. 202,324

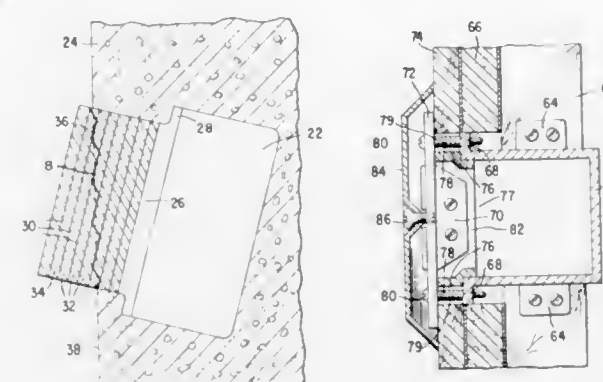
Int. Cl. H02g 3/12

U.S. Cl. 174—51

18 Claims

An electrical receptacle or the like is grounded directly and positively by means of a screw extending through axially short-

tenable spacer means positioned between the metallic frame of the receptacle and a portion of the metallic junction box on which it is mounted. The junction box is also provided with a cover member having a tubular collar whose length can be reduced as required in order to provide a plane that is substantially flush with a finished wall surface. The collar portion pro-



vides a fire retardant enclosure about the electrical receptacle and junction box opening. In an alternate embodiment the collar portion is used to provide a fire retardant grounding means for a previously installed junction box when paneling or the like is added to the wall structure introducing an air gap between the electrical receptacle and the junction box.

3,720,784

## RECORDING AND DISPLAY METHOD AND APPARATUS

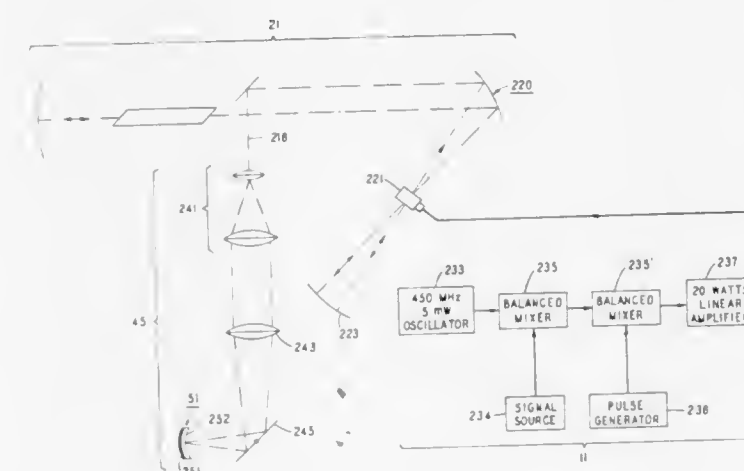
Dan Maydan; Melvin Irwin Cohen, both of Berkeley Heights, and Robert Eugene Kerwin, Westfield, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 12, 1971, Ser. No. 115,029

Int. Cl. G11b 7/00, 11/02

U.S. Cl. 178—6.6 R

25 Claims



An image comprising a multitude of small discrete holes is formed by a laser in a radiation absorbing film. Appropriate means form a large number of brief-duration, amplitude-modulated pulses of optical radiation. These pulses are then deflected and focused to form an array of discrete holes in a film, such as a 500 Angstrom thick layer of bismuth, on a polyester substrate. By varying the energy in each pulse, the size of the holes can be varied to form images having a gray scale.

3,720,785

## RECORDING SYSTEM AND METHOD FOR COPYING MACHINE

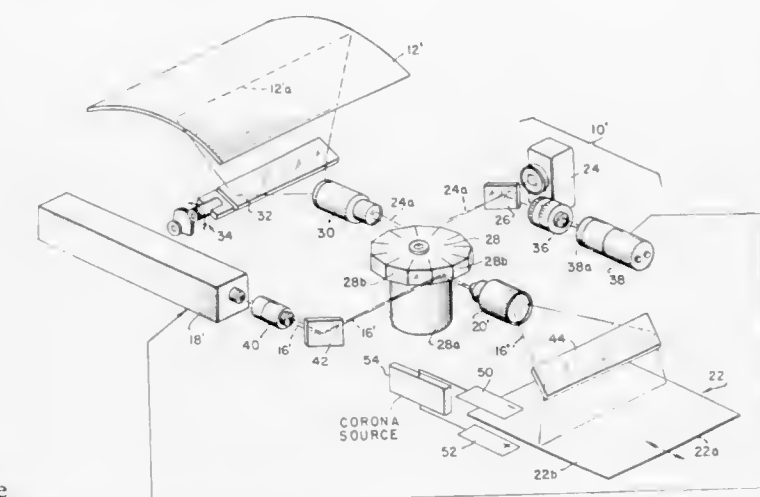
John A. Van Auker, Miami Beach, Fla., assignor to Saxon Industries, Inc., New York, N.Y.

Filed Feb. 25, 1971, Ser. No. 118,838

Int. Cl. G03g 15/04, 15/10, 15/16

U.S. Cl. 178—6.6 A

9 Claims



A high density, high repetition rate recording system including a laser, a high DC voltage supply, and a recording medium. The system further includes modulation and/or directional-controlling means for controlling the laser output in response to signals received from an intelligence-bearing original. The recording medium, upon which the intelligence of the original is received, is described to be an electrostatic copying machine paper having a substrate and a conductive coating. The method of the present invention includes the steps of vaporizing the coating in selected areas by use of a controlled laser beam, applying a corona charge to the recording medium such that the medium is rendered charged and toner-receptive only in the areas vaporized by the laser beam and applying toner to the recording medium.

3,720,786

## CONDITIONAL REPLENISHMENT VIDEO ENCODER WITH PREDICTIVE UPDATING

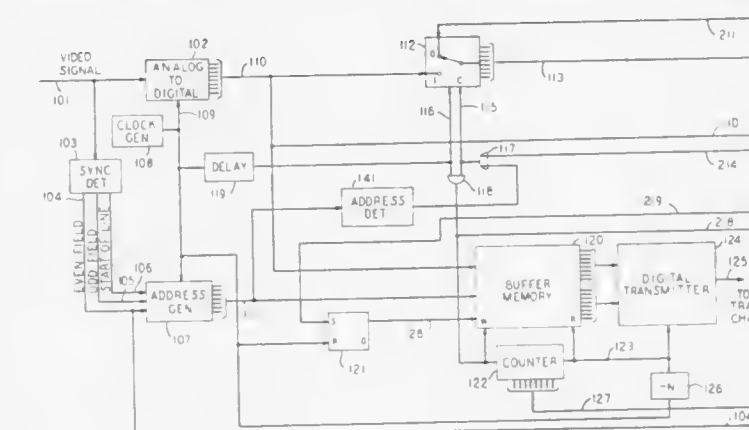
Cassius Chapin Cutler, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed , Ser. No. 144,761

Int. Cl. H04n 7/12

U.S. Cl. 178—7.1

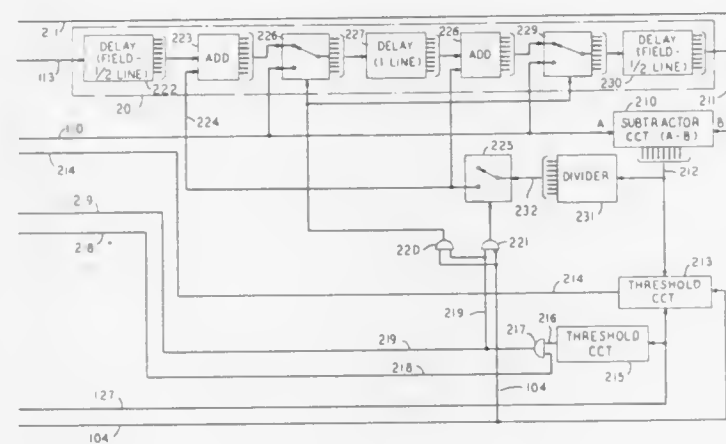
15 Claims



Each new sample from a video signal is compared with a sample derived from a frame memory having the same spatial point location in the video frame. If a significant difference exists, the new sample replaces the old sample in the frame memory and is stored in a buffer memory. The frame memory is composed of three delay lines connected in tandem having delay values such that the samples preceding and following the



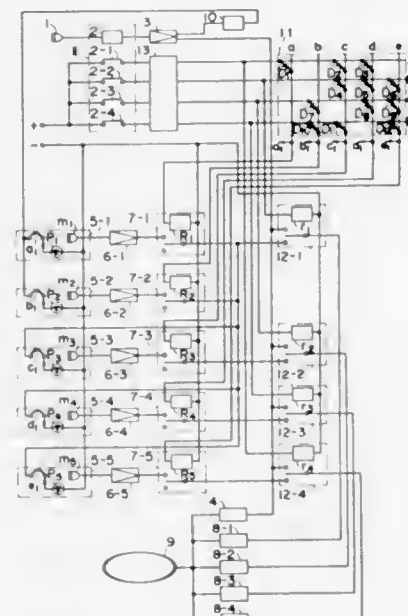
center delay line correspond to spatial points above and below the sample being compared. If a significant difference exists and if the buffer memory is filled to a predetermined level, the samples preceding and following the center delay line are also predictively updated with values derived from the value of the



**3,720,788**  
**SIMULTANEOUS LANGUAGE TRANSLATION SYSTEM**  
Hideaki Hashimoto, Nakano-ku, Tokyo, Japan, assignor to Kabushiki Kaisha Prince Hotel, Tokyo, Japan  
Filed Dec. 29, 1971, Ser. No. 213,257  
Int. Cl. H04b 5/00

U.S. Cl. 179-1 B

2 Claims



new sample. Different functions are used to predictively update during the even and odd fields and greater differences are required to exist before they are deemed to be significant during the even fields in order to avoid the creation of an unstable condition.

**3,720,787**  
**OMNI-DIRECTIONAL GLOBULAR SPEAKER SYSTEM**  
Yoshikazu Ishii, Fujisawa; Masamichi Hayashi, Sagami-hara, and Shunichi Tanaka, Komae, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan  
Filed March 24, 1971, Ser. No. 127,516  
Claims priority, application Japan, March 28, 1972, 45/29654

Int. Cl. G10k 13/00

U.S. Cl. 179-1 E

4 Claims



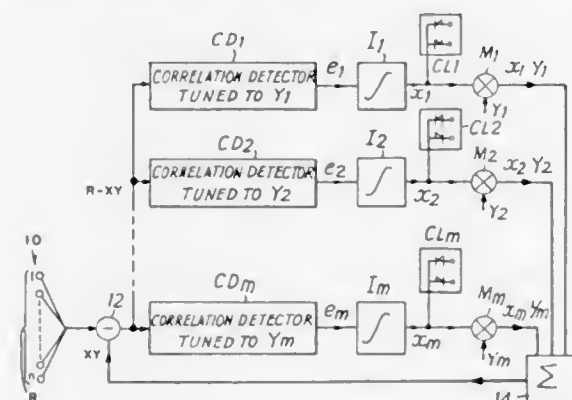
An omni-directional globular speaker system employs a substantially globular speaker baffle, a plurality of speakers attached to an entire peripheral surface of the speaker baffle, and means for variably adjusting the audio output of a preferred speaker out of a plurality of speakers. The directivity characteristic of the globular speaker system is omni-directional and of a spherical form when the adjusting means is not yet variably adjusted. The variable adjusting means adjusts the directivity characteristic so that the speaker system will have a specified directivity characteristic of a non-spherical form.

A simultaneous translation system used to enable interpretation from the language of a speaker into several different languages. A switching system and matrix circuit are used to connect the speaker to appropriate interpretation booths thereby enabling an interpreter to translate the speaker's language into the different appropriate language and a circuit for transmitting the speaker's language and the language of each active interpreter to a conference audience.

**3,720,789**  
**ELECTRICAL SIGNALLING SYSTEMS USING CORRELATION DETECTORS**  
Adrian Percy Clark, Taplow, England, assignor to Plessey Telecommunications Research Limited, Taplow, England  
Filed July 27, 1970, Ser. No. 58,621  
Claims priority, application Great Britain, July 28, 1969, 37,750/69; Dec. 30, 1969, 63,366/69  
Int. Cl. H04b 1/14

U.S. Cl. 179-15 BC

19 Claims



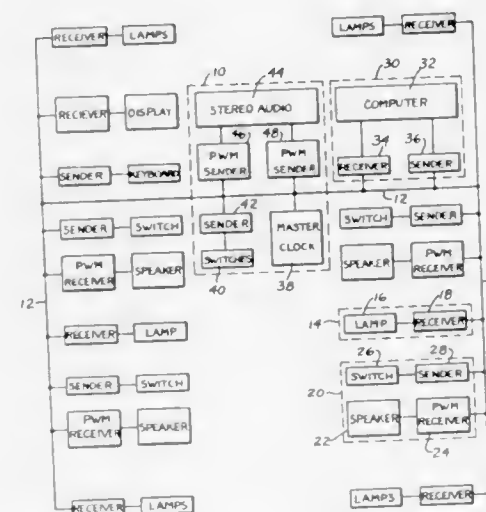
In an electrical signalling system the signals are arranged to be split up into signal groups, each of which contains a predetermined number of signal elements which are linearly independent with respect to each other at the transmitter, corresponding signal elements in successive groups being related to each other and forming a series of signal elements. A

receiver for such a system comprises either one correlation detector successively tuned to receive each series of signal elements or a plurality of correlation detectors each tuned to receive a respective series. Means responsive to the output of said correlation detector or detectors is arranged to produce a respective output signal for each series of signal elements.

**3,720,790**  
**DATA TRANSMITTING SYSTEM**  
George A. Watson, and Arthur H. Hamond, Jr., both of Tustin, Calif., assignors to AMP Incorporated, Harrisburg, Pa.  
Filed Feb. 22, 1971, Ser. No. 96,335  
Int. Cl. H04j 3/08

U.S. Cl. 179-15 AL

17 Claims



The specification discloses a two conductor data transmission system linking a plurality of sending stations to a plurality of receiving stations. A master clock connected to the cable determines consecutive time periods each consisting of three consecutive intervals. The master clock holds the cable at one voltage during the first of each three intervals and at zero voltage during the third thereof and monitors the cable for voltage changes during the second one of the intervals. Each station has a counter which counts the first intervals and when a count designated to the respective station is reached the station is operatively connected to the cable to supply a voltage signal thereto during the respective second interval of the time period, or to receive a voltage signal therefrom.

**3,720,791**  
**PULSE CODE MODULATION SYSTEM FOR HYBRID MULTIPLEX TRANSMISSION OF AUDIO AND DATA SIGNALS**

Yutaka Yada, Tokyo; Tsukumo Higeta, Kawasaki-shi, and Shinichi Mitsui, Yokohama-shi, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan  
Filed March 29, 1968, Ser. No. 717,176  
Claims priority, application Japan, March 31, 1967, 42/20518

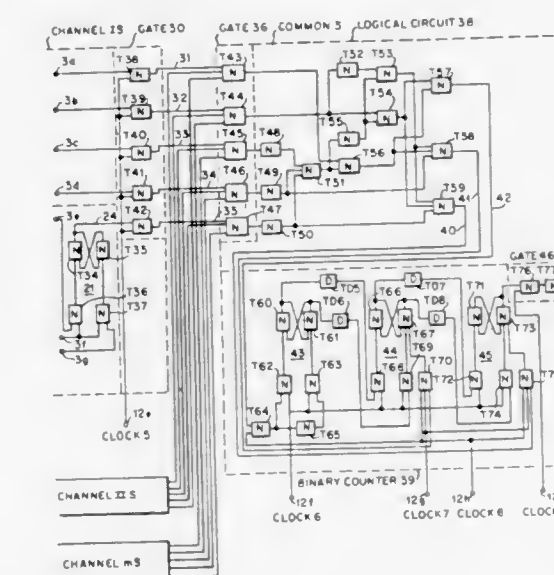
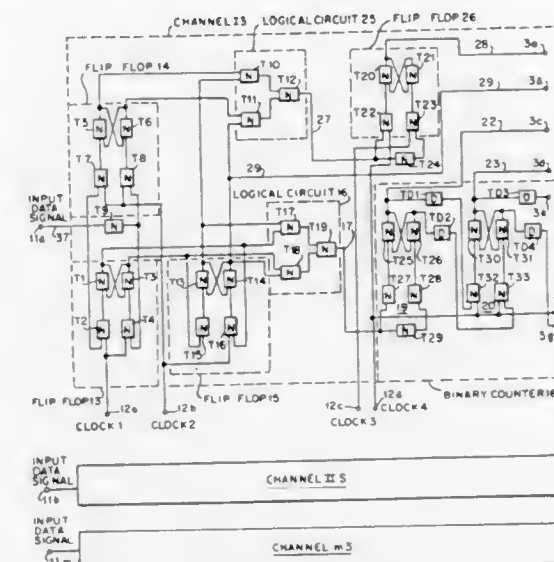
Int. Cl. H04j 3/16

U.S. Cl. 179-15 BM

3 Claims

Clock signals divide asynchronous signals of two levels into equal time slots. The condition of the asynchronous signal is detected at a determined instant in a time slot so that it also

determines a change in condition of the signal. The condition of the signal is indicated in a specific code indication depicting such condition and a change in condition of the signal is in-



indicated in a different code indication depicting the instant of change of condition in a time slot. The code indications are transmitted mixed with PCM signals.

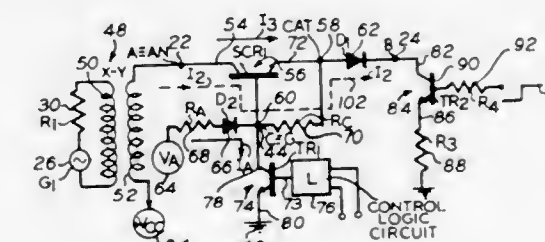
**3,720,792**  
**ELECTRONIC CROSSPOINT NETWORK WITH SEMICONDUCTOR SWITCHING**  
Albert Resta, Milan, Italy, assignor to Telettra-Laboratori di Telefonia Elettronica e Radio S.p.A., Milan, Italy

Filed Mar. 10, 1971, Ser. No. 122,978  
Claims priority, application Italy, Mar. 13, 1970, 21,881/70

Int. Cl. H04q 3/50

U.S. Cl. 179-18 GF

14 Claims

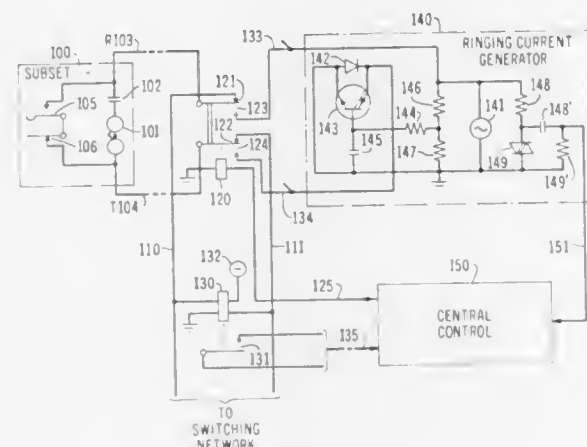


A switching apparatus includes an electronic crosspoint network for providing full electronic connection or disconnection between at least two points whose intercon-



nection provides the particular crosspoint. The network has an open circuit condition, in which a very high OFF impedance is provided, and a closed circuit condition, in which a very low ON impedance is provided. The network includes at least two series connected semiconductor branches and a third parallel connected semiconductor branch, which is coupled to ground, connected in between. In the open circuit condition, the series branches do not conduct and the parallel branch does, providing a short to ground; whereas, in the closed circuit condition, the opposite occurs, providing an open circuit to ground. The parallel branch is controlled in accordance with the desired crosspoint switching function provided via a logic network. If desired, two such crosspoint networks may be coupled together in a two-wire circuit to simultaneously control two crosspoints. The crosspoint network is preferably utilized to interconnect points to which signals, such as telephone speech signals, are applied, a plurality of such networks being provided in the matrix arrays of a space-division telephone switching network.

**3,720,793**  
**SUPERVISORY CIRCUIT ARRANGEMENT FOR TELEPHONE SUBSCRIBER LINES**  
Henry Robert Hofmann, Naperville, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.  
Filed Sept. 1, 1971, Ser. No. 176,828  
Int. Cl. H04m 3/04  
U.S. Cl. 179—18 HB 12 Claims

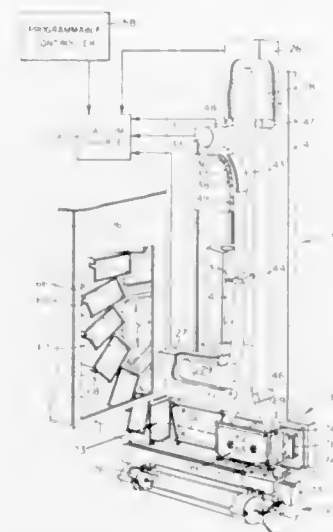


A telephone subscriber supervisory circuit in which a line off-hook condition can be detected during one of periodic reductions in power in the applied ringing current during the typical two-second ringing interval. The ringing current consists of a modified sine-wave having its positive alternations clipped at the leading edge to the zero axis of the wave for a predetermined interval. During this interval the line relay is actuated to connect supervisory direct current to the line for testing for the off-hook condition. The short interruptions in ringing current are inaudible to subscribers.

**3,720,794**  
**DUAL MAGNETIC TAPE CASSETTE TRANSPORT AND CARROUSEL APPARATUS**  
Dale P. Dolby, Los Altos, Calif., assignor to Ampex Corporation, Redwood City, Calif.  
Filed March 29, 1971, Ser. No. 128,966  
Int. Cl. G11b 15/38, 15/56  
U.S. Cl. 179—100.2 PM 16 Claims

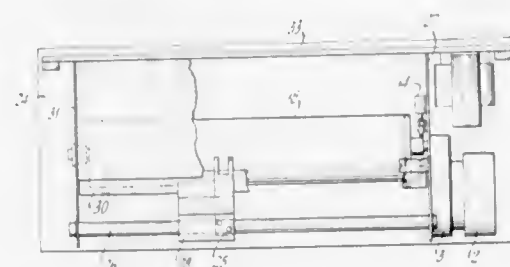
A self-threading transport employs vacuum to pull supply and takeup loops of tape from the side of a tape cassette. A third intermediate loop is also pulled, within which is posi-

tioned a retractable vacuum capstan, and the tape is at the same time engaged with rotary video and longitudinal audio heads. For rewind, the capstan is retracted and the takeup



loop alone is maintained, the heads being spaced away from the takeup loop tape path. Two such transports are provided with a cassette storing carousel therebetween for uninterrupted programmed play.

**3,720,795**  
**MAGNETIC RECORDING SYSTEM FOR REPERTORY DIALER**  
John N. Silsby, Toms River, N.J., assignor to Acron Corporation, Lakewood, N.J.  
Filed April 13, 1971, Ser. No. 133,619  
Int. Cl. G11b 21/08, 5/76  
U.S. Cl. 179—100.2 MD 4 Claims

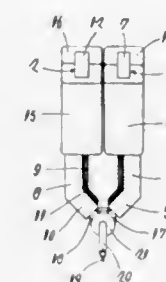


The specification describes a magnetic recording system for use in a repertory dialer. A frame is employed for supporting a rotatable cylinder having magnetic material affixed thereto. Support for the magnetic read/recording head is provided by a rod and a notched rail, which slidably mounts a block formed of a plastic material. The block supports a first spring biased member which carries the magnetic head and a second pivotally mounted spring biased plate having a portion for engaging the notched rail. Depression of a rod against the bias of the spring on the plate causes a portion of the plate to disengage the notched rail thereby permitting the block to be slidably moved along the rod until a new position is established. The rod is disengaged from the plate and engagement of the entire assembly in the notched rail is then accomplished.

**3,720,796**  
**MULTICHANNEL PICKUP CARTRIDGE**  
Kimiyasu Honma, Tokyo, Japan, assignor to Kabushiki Kaisha Audio-Technica, Tokyo, Japan  
Continuation-in-part of Ser. No. 737,998, June 18, 1968, abandoned. This application Aug. 4, 1971, Ser. No. 169,039  
Claims priority, application Japan, June 20, 1967, 42/53200  
Int. Cl. H04r 11/12  
U.S. Cl. 179—100.41 K 9 Claims

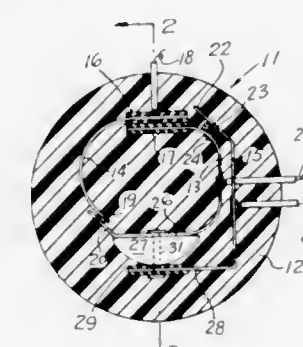
A multichannel pickup cartridge is provided with a cantilever arm having a stylus tip attached to one end thereof and a

pair of magnet armatures attached to the other end thereof so as to extend in a plane perpendicular to the axis of the arm and in a configuration corresponding to the both modulated walls of a groove on a record disk. Each armature is associated with a magnetic gap formed by a pair of pole pieces which are part



of an electromagnetic transducer. A suspension rod is fixed at one end to the other end of the cantilever arm and secured at the other end, under tension, to a cartridge housing to provide a tensioned support to the arm. The rod has flexibility to permit the angular movement of the cantilever arm.

**3,720,797**  
**GAS FUSING SENSING DEVICE**  
Kenneth C. Gunn, 60 Hubbard St., Concord, Mass.; Stephen M. McDonagh, 98 Oak Ave., Riverside, and Robert Rosenholm, 42 Woodward Ave., East Providence, both of R.I.  
Filed Sept. 10, 1971, Ser. No. 179,302  
Int. Cl. H01h 35/00  
U.S. Cl. 200—61.08 9 Claims

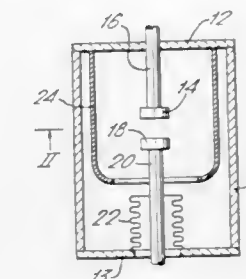


A cut-off and alarm system for detecting the presence of gasoline or similar hydrocarbon liquid in water. The system employs a sensing switch consisting of a mass of material soluble in the gasoline or similar hydrocarbon liquid. Switch contact elements embedded in the mass are biased to move to an alarm state when the material dissolves. When the material dissolves, the associated load device is thereby disconnected from its power source and an alarm device becomes energized.

**3,720,798**  
**VACUUM-TYPE CURRENT INTERRUPTER**  
Sukeaki Kabayama, Masahiro Kume, both of Osaka; Akira Katou, Kyoto; Susumu Yamada, Kyoto, and Masayuki Isei, Kyoto, all of Japan, assignors to Sumitomo Electric Industry Company Ltd., Osaka and Nissin Electric Company, Ltd., Kyoto, Japan  
Filed Sept. 3, 1970, Ser. No. 69,265  
Claims priority, application Japan, Sept. 8, 1969, 44/71090  
Int. Cl. H01h 33/66  
U.S. Cl. 200—144 B 9 Claims

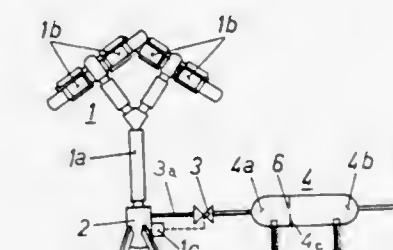
Vacuum-type current interrupter having a shield surrounding the contacts so as to block and condense the metallic

vapor generated by arcing between the contacts upon separation thereof. The shield is made of partially sintered metallic material to increase the effective surface area to catch and



condense the metallic vapor and may be provided on the inner surface thereof with a plurality of generally radially inwardly projecting integral fins to further increase the inner working surface area thereof.

**3,720,799**  
**GAS BLAST CIRCUIT BREAKER**  
Adolf Eidinger, Nussbaumen; Mathias Sanders, Neuenhof, and Jost Schnieder, Baden, all of Switzerland, assignors to Aktiengesellschaft Brown, Boveri Cie, Baden, Switzerland  
Filed Dec. 7, 1970, Ser. No. 95,553  
Claims priority, application Switzerland, Dec. 11, 1969, 18421/69  
Int. Cl. H01h 33/54  
U.S. Cl. 200—148 R 5 Claims



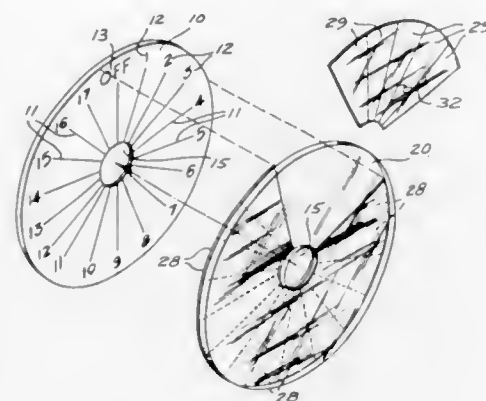
In an electrical power circuit breaker of the gas blast type the switch contacts are subjected to a blast of pressurized gas in order to facilitate extinction of the arc when the contacts disengage under load. The pressure of the gas at the contacts is temporarily increased above the normal operating pressure by supplying additional gas to the switch contact chamber at a higher pressure from two serially connected storage chambers having unequal volumetric capacities in which the gas is stored and which communicate with each other through a constrictor. The larger of the two chambers is connected to a source of the higher pressure gas and the smaller chamber is connected to the circuit breaker for flow to the contact chamber by a pipe line which includes a controllable valve having a flow cross-section greater than that of the flow restrictor which interconnects the higher pressure gas storage chambers. This valve is opened for a brief period, e.g. about 50 milli-seconds when the switch contacts are opened.

**3,720,800**  
**UNIVERSAL SWITCH PLATE INDICATING ASSEMBLY**  
Edward S. Arnold, Oshawa, Ontario, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest  
Filed May 11, 1972, Ser. No. 252,215  
Int. Cl. H01h 9/16  
U.S. Cl. 200—167 R 7 Claims

Each rotary switch plate assembly consists of a circular base plate, with central perforation for the switch shaft and bush-



ing. The base plate is marked with radiated lines representing the full number of angular switch steps in 360° of switching operation. A circular face plate of transparent plastic and of the same dimensions as the base plate is fastened to the external face of the base plate. The rear surface of the face plate is



furnished covered by removable opaque segments of adhesive backed plastic film. The segments of opaque film, representing the actual switch steps employed in a given installation, are removed from the back of the face plate to give visibility to the markings of the base plate governing the segments of operation of the rotary switch of the installation.

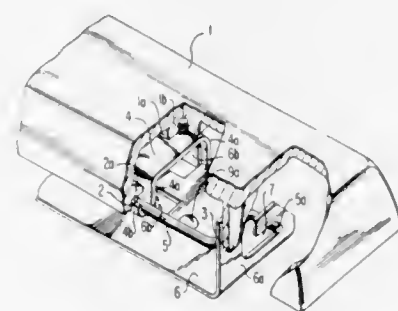
### 3,720,801 SPACE KEY

Makoto Yanaga, Tokyo, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Feb. 3, 1972, Ser. No. 223,217  
Int. Cl. H01h 3/04

U.S. Cl. 200—172 A

5 Claims



A space key includes an elongated upper cover adapted to be touched with fingers, a lower guide plate and a spring disposed between the cover and the guide plate. A stabilizer rod having a center stem portion is rotatably received by the cover and Z-shaped end portions each pointed end of which is pivotably received in a corresponding notch formed in upright portions of the guide plate, whereby upon depressing the upper cover at any portion thereof the cover moves down without inclination toward the guide plate to reliably actuate a switch disposed under the guide plate.

### 3,720,802

#### SWITCH ACTUATION WITH LEVER ACTION

Hubert Fischer, Munich, Germany, assignor to Schaltbau Gesellschaft mit beschränkter Haftung, Munich, Germany

Filed June 7, 1972, Ser. No. 260,426  
Claims priority, application Germany, June 8, 1971, P 21 28 322.7

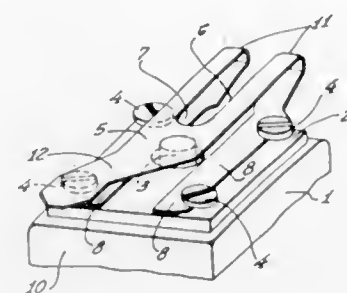
Int. Cl. H01h 3/04

U.S. Cl. 200—172 A

4 Claims

In a combination of a switch and an operating plunger and of an actuator lever for the plunger, wherein the lever is con-

structed from a springy strip with a U-shaped recess in one end; the resulting legs of the U are bent back and clamped in-between holder elements on the switch casing from any of four different directions. The other end of the strip is provided for



engaging an external actuator for deflection of the strip as a whole with the point of bending of the legs serving as fulcrum. The legs together have width smaller than the width of the strip on the other side of the switch plunger.

### 3,720,803

#### METHOD AND APPARATUS FOR INDUCTIVELY HEAT TREATING ELONGATED WORKPIECES

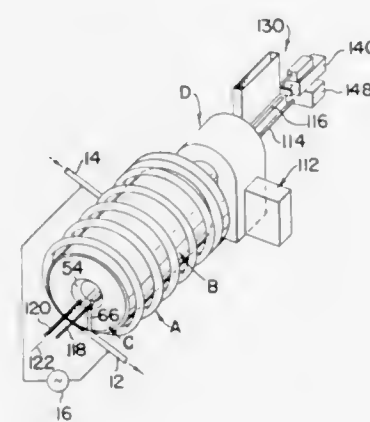
John C. Lewis, Hamilton, Wentworth, Ontario, Canada, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed June 2, 1972, Ser. No. 259,087

Int. Cl. H05b 5/08

U.S. Cl. 219—10.69

24 Claims



A method and apparatus for inductively heating and quenching elongated workpieces wherein the workpieces are longitudinally conveyed along a workpiece pass. The induction heating inductor is positioned within an elongated generally cylindrical transformer secondary winding which is positioned to surround the workpiece pass. During energization of the transformer for resultant energization of the inductor, at least the transformer secondary winding and inductor are continuously rotated about their longitudinal axes, while the workpieces are conveyed along the workpiece pass, to assure even heating of the workpieces. Means are provided adjacent the transformer secondary winding for cooling the secondary and adjacent the inductor for quenching the workpiece immediately following heating.

### 3,720,804

#### THREE-D ELECTRODE MACHINING TOOL

Ferdinand J. Kriz, Fairfield, Conn., assignor to The Product Machine Company, Bridgeport, Conn.

Continuation of abandoned application Ser. No. 47,280, June 18, 1970. This application Dec. 23, 1971, Ser. No. 211,745

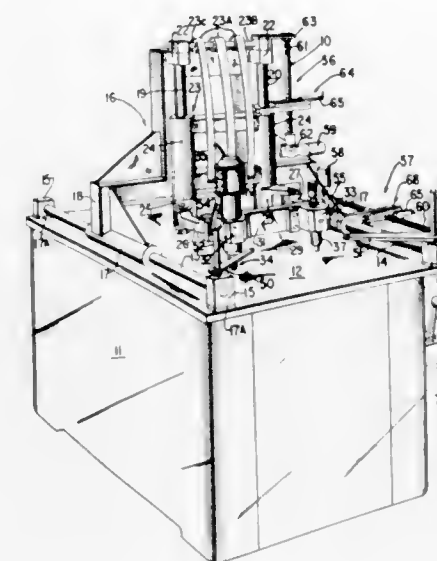
Int. Cl. B23k 9/16

U.S. Cl. 219—69 V

10 Claims

A contour-following apparatus has a first frame which is movable horizontally, a second frame movable vertically

on the first frame, and a third frame attached to the second frame and pivotally movable in a horizontal plane. ble latent images which provides a high level of intensity of radiation uniformly distributed over the optical development



A tracer and a cutter are mounted on the third frame with each being individually pivotably adjustable.

### 3,720,805

#### APPARATUS FOR THE MANUFACTURE OF COMPOSITE ELECTRICAL CONTACTS

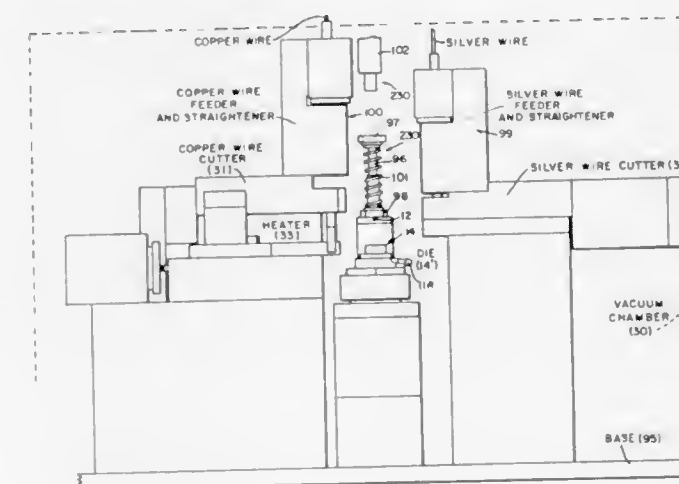
William M. B. Fitzgerald, Toronto, Ontario, Canada, assignor to Johnson Matthey and Mallory, Ltd., Toronto, Ontario, Canada

Application Dec. 26, 1968, Ser. No. 786,971, now Patent No. 3,634,934, which is a continuation-in-part of abandoned application Ser. No. 507,173, Nov. 10, 1965. Divided and this application Nov. 4, 1971, Ser. No. 86,934

Int. Cl. H05b 1/00

U.S. Cl. 219—152

62 Claims



A welded composite formed by cutting and heating continuous lengths of wire and immediately transferring the lengths to a die where the lengths are joined by pressing at high pressure and the joined lengths are then forced at least a portion of the way out of the die where heading operations are performed.

### 3,720,806

#### OPTICAL DEVELOPMENT APPARATUS

Richard A. Fotland, Warrensville Heights, Ohio, assignor to Horizons Incorporated, a Division of Horizons Research Incorporated, Cleveland, Ohio

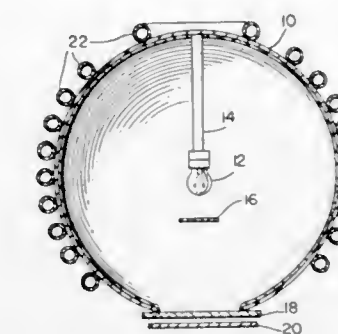
Filed June 18, 1971, Ser. No. 154,552

Int. Cl. H05b 11/00

U.S. Cl. 219—216

5 Claims

An apparatus for optical development of very faint or invis-



area, and having a high collection efficiency from a radiation source.

### 3,720,807

#### FOOD WARMING APPARATUS

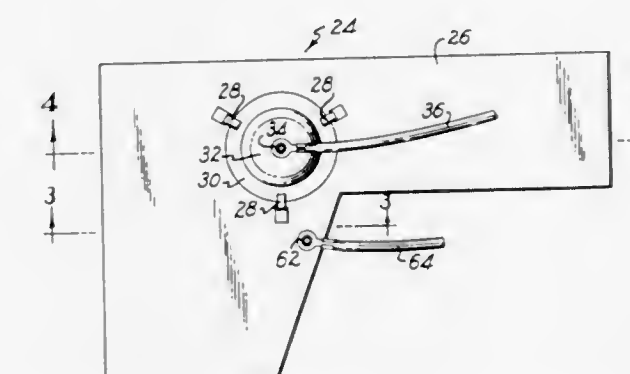
Youn H. Ting, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 1, 1972, Ser. No. 248,827

Int. Cl. F27d 11/02

U.S. Cl. 219—441

12 Claims



A food warmer comprising a tray portion having several compartments mounts a heater assembly in heat transfer relationship with some but not necessarily all the compartments. The heater assembly comprises a heat transfer plate of thermally and electrically conductive material to which is secured a wafer of positive temperature coefficient of resistance material. The wafer is provided with an electrically conductive coating on its two opposite faces. An electrically conductive spring is mounted by an eyelet on a saucer-like cover of electrically insulative material. The spring is biased into electrical contact with the wafer with the cover clamped in place on the heat transfer plate by a plurality of tabs. Electrical connection is made to the heat transfer plate and to the eyelet to provide a current path through the wafer. A ring of heat shrinkable material is shrunk around the periphery of the wafer to increase the effective electrical distance between the two faces of the wafer.

### 3,720,808

#### CERAMIC CORE LAMINATING ROLL

Neal J. Morrissey, Chicago, Ill., assignor to General Binding Corporation, Northbrook, Ill.

Filed Nov. 8, 1971, Ser. No. 196,384

Int. Cl. H05b 1/02

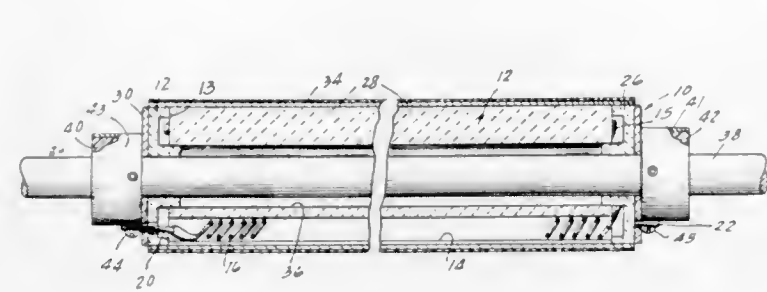
U.S. Cl. 219—469

11 Claims

This invention provides a laminating roll for laminating thermoplastics and the like. The laminating roll comprises an



extruded ceramic or pressed cylindrical core, a series of equally spaced holes extending longitudinally through the core, the holes being positioned near the outer periphery of the ceramic core, a helically wound electrical resistance heat-



ing coil extending from one end of the core, the holes being arranged so the heating coil can be inserted in the holes only at their ends, and a highly conductive metal tubing surrounding and contacting the core.

3,720,809

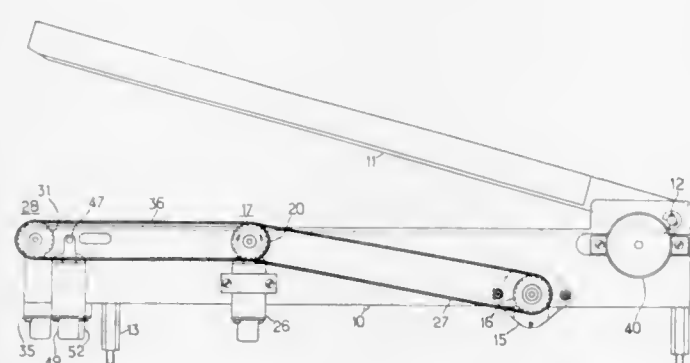
**APPARATUS FOR READING RECORD CARDS**  
Jacob Peter Pot, Amsterdam, Netherlands, assignor to Bull General Electric (Nederland) N.V., Amsterdam, Netherlands

Continuation of application Ser. No. 796,320, Jan. 31, 1969. This application Oct. 16, 1970, Ser. No. 81,552  
Claims priority, application Netherlands, Feb. 12, 1968, 6801931

Int. Cl. G06k 7/10; H01h 43/08

U.S. Cl. 235-61.11 E

21 Claims



An apparatus for reading punched cards co-operating with a control arrangement and provided with a synchronous motor having two directions of rotation adapted to drive rollers for advancing a card, either for the complete introduction of a card or for its ejection, with a step-by-step motor having two directions of rotation which is adapted to drive a conveyor band guiding an introduced card, the said band being supported by two rolls, one of which is retractable during the introduction and the ejection of a card. Logical circuits control the feeding of a number of actuating electromagnets of the synchronous motor and of the step-by-step motor, whereby a card is advanced columnwise in the forward direction and in the rearward direction as a result of pulses supplied by the control arrangement, which finally provides an ejection control pulse.

3,720,810

**CARD MARKING APPARATUS**

Ralph H. Schultz, Norristown, Pa., assignor to Peripheral Sciences, Inc., Norristown, Pa.

Filed Mar. 5, 1971, Ser. No. 121,417

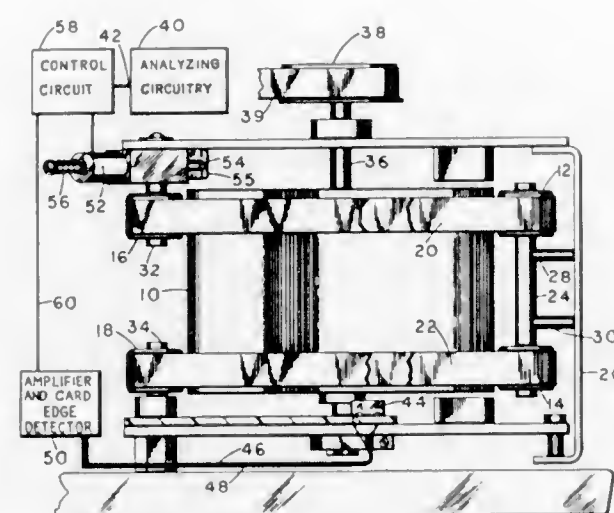
Int. Cl. G06b 7/02; G06k 1/12, 15/18

U.S. Cl. 235-61.11 R

8 Claims

Apparatus for deforming selected data processing cards so that these cards are readily distinguishable from other

cards. A marking device, movable into and out from a path along which a series of cards is moved, is selectively ac-



tuated to move into the path of the cards to engage selected cards to bend these cards as they move past the marking device.

3,720,811

**ELECTROMAGNETIC COUNTERS**

Tohru Takeda, Tokyo, Japan, assignor to Tamura Electric Works Limited, Tokyo, Japan

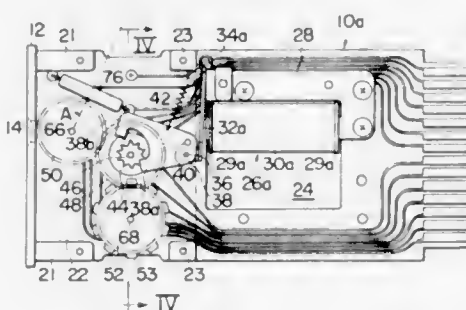
Filed Aug. 12, 1970, Ser. No. 63,067

Claims priority, application Japan, Aug. 13, 1969, 44/63,747

Int. Cl. G06n 1/02

U.S. Cl. 235-92 C

3 Claims



In an electromagnetic counter comprising an electromagnet connected to a source of input pulses, an intermittent advance mechanism driven by the electromagnet, a stepping mechanism including electrical read out means and driven by the intermittent advance mechanism, and a digit wheel stepping with the stepping mechanism to visually display the number of input pulses applied to the electromagnet, there are provided a reed switch disposed closely adjacent the digit wheel and a permanent magnet in the digit wheel to operate the reed switch by the rotation of the digit wheel to provide an output pulse. Where a pair of unit electromagnetic counters are juxtaposed in a pair the electromagnet of each unit is partially disposed in the casing of each unit and partially protrudes from the casing and the two units are combined such that the protruding portion of the electromagnet of one unit is received in the casing of the other.

### 3,720,812 METHOD AND APPARATUS FOR DETECTING AND COUNTING OBJECTS BY TRANSLATION OF VIDEO SIGNALS

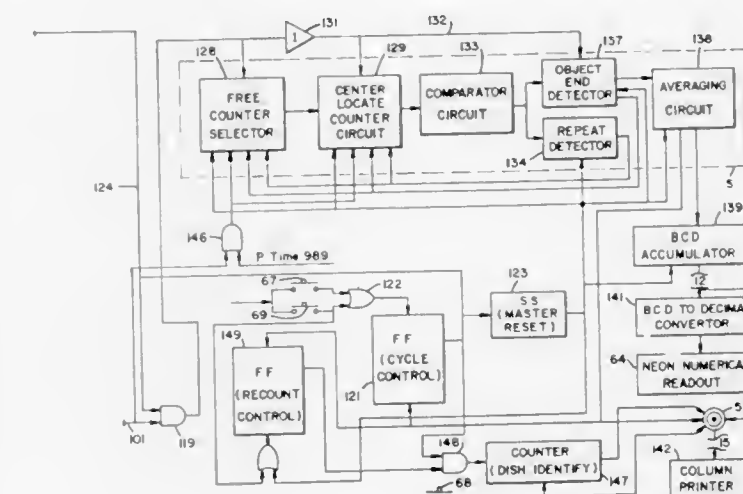
Raymond F. Downs, Pleasanton, Calif., assignor to DHM Research & Development Corporation, San Francisco, Calif.

Filed April 9, 1971, Ser. No. 132,659

Int. Cl. G06m 11/04

U.S. Cl. 235-92 PC

13 Claims



Optically distinguishable objects in a specimen area, such as bacteria colonies cultured on a petri dish, are scanned by a vidicon tube which transmits a video signal to a data processing circuit for detecting and counting objects including overlapping objects. Horizontal and vertical sweeps of the tube are controlled by the video signal processing circuit clock at a rate slower than television sweep frequencies to provide broad bandwidth and to enable the use of low cost components in the data processing circuit. The circuit identifies the center line of each object encountered in a scan by counting clock pulses at one half the normal rate between the video signal transitions which demark opposite edges of the object and temporarily stores the centerline position. Signals from subsequent scans identifying an object intersected by the same centerline are erased from the storage until a subsequent scan fails to detect an object at the centerline position at which time the data is erased and an additional object count is added to the accumulated total. The count for each specimen is displayed visually and may be recorded by a printer together with a specimen identification number. Provisions are present for selecting the minimum sized object to be counted, for making multiple counts of the specimen at the same or different scan orientations to increase accuracy and sweep speeds of the tube may be temporarily restored to television frequencies to provide for a display of the specimen on a TV monitor. The apparatus has provisions for avoiding false counts from objects outside the area of interest and may be coupled to a general purpose computer or compact special purpose computer components for further analysis of object parameters, such as size, growth and the like.

3,720,813

**INTERPOLATIVE READOUT APPARATUS**

Rosario S. Badessa, Dedham, Mass., assignor to Damon Corporation, Needham Heights, Mass.

Continuation-in-part of Ser. No. 105,878, Jan. 12, 1971. This application Aug. 23, 1971, Ser. No. 173,790

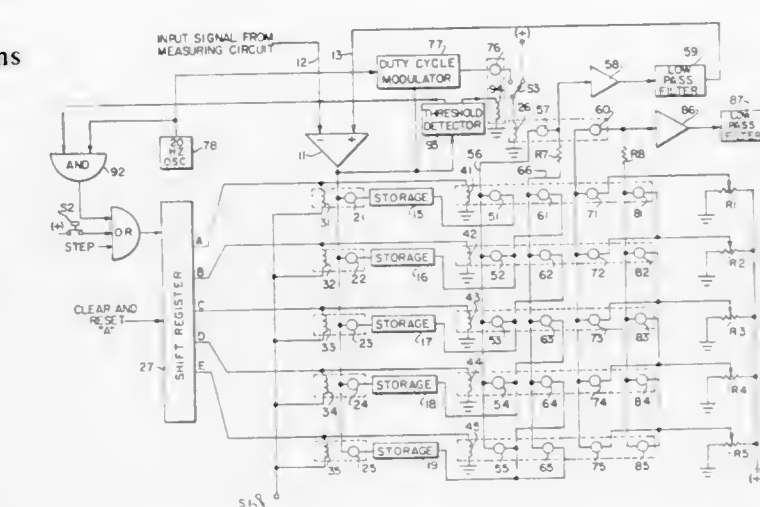
Int. Cl. G06g 7/30; G12b 13/00

U.S. Cl. 235-151.3

15 Claims

In the readout apparatus disclosed herein, the output signal level of a measuring circuit is, by interpolation, located or determined in relation to a pair of stored calibration voltage levels. The stored calibration voltage levels in turn correspond

to measuring circuit output levels previously obtained in response to respective calibration samples applied to the same measuring circuit. The same interpolation process is simultaneously applied to position or derive a readout signal in rela-



tion to a pair of preselectable reference signals, the reference signal levels being preselected to correspond with the calibration samples which were previously used to establish the stored calibration signal levels.

3,720,814

**DIRECT NUMERICAL CONTROL SYSTEM**

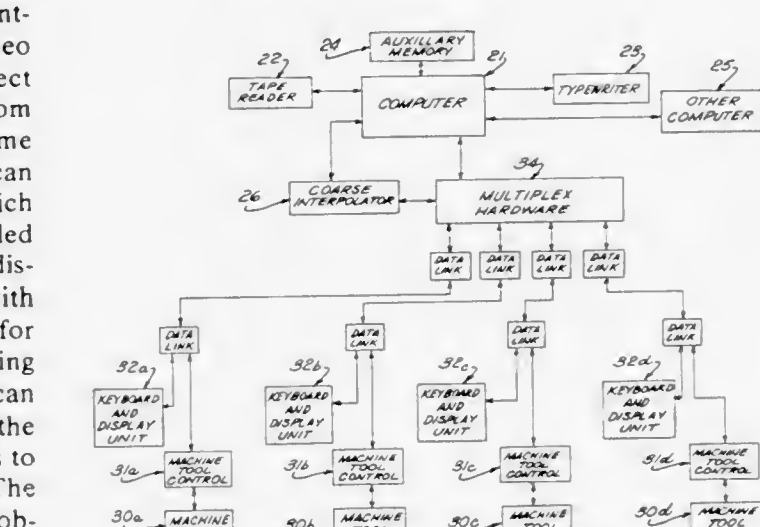
John Klein, Fairview Park, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed Sept. 18, 1970, Ser. No. 73,567

Int. Cl. G06f 15/46

U.S. Cl. 235-151.11

9 Claims



A control system for a plurality of numerically controlled machine tools having a coarse interpolator for generating from parametric data a plurality of signals defining the absolute magnitude of vector components along two orthogonal axes of a plurality of straight line segments closely approximating a mathematical curve defined by the parametric data. Multiplex hardware is provided for time-sharing the coarse interpolator among the plurality of machine tools, a digital computer supplies the coarse interpolator with the parametric data and acts as high-speed buffer storage to assist in time-sharing the coarse interpolator, and data link equipment is provided for transmitting signals between the controls of the plurality of the machine tools and the coarse interpolator or the computer.



3,720,815

# **APPARATUS FOR EVALUATING THE OUTPUT OF MACHINES FOR THE PRODUCTION AND/OR PROCESSING OF SMOKERS PRODUCTS**

Heinz-Christen Lorenzen, Hamburg, Germany, assignor to Hauni-Werke Korber & Co. KG, Hamburg-Bergedorf, Germany

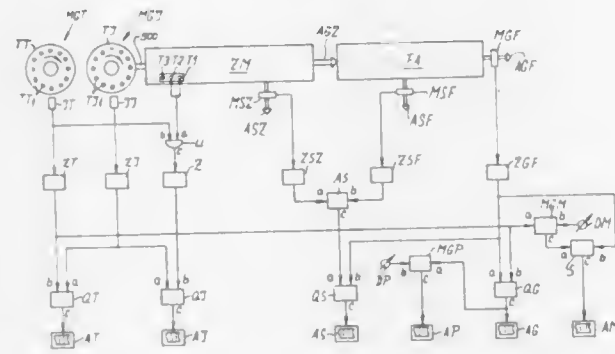
Filed April 7, 1971, Ser. No. 131,960

Claims priority, application Germany, April 16, 1970, P 20 18 195.7

Int. Cl. G06f 15/36; A24c 5/34

U.S. Cl. 235-151.13

26 Claims



The output of a single machine or a group of cooperating machines for the production and/or processing of smokers' products is monitored by signal generating devices which determine the number of satisfactory and unsatisfactory products produced within a given period of time. The signals which are generated by such devices are fed into a system of calculating circuits which carry out automatic computing operations and feed information to recording devices which record the actual output at any particular stage of operation, the potential output within a given period of time, the output of satisfactory and unsatisfactory products and/or other data which can be evaluated to gain information concerning all phases of the output or lack of output and the probable cause or causes of unsatisfactory output.

3,720,816

# **METHOD FOR FOURIER ANALYSIS OF INTERFERENCE SIGNALS**

Toni W. Keller; Gunther R. Laukien, and Werner H. Tschopp, all of Zurich Faellanden, Switzerland, assignors to Spectrospin AG, Zurich-Faellanden, Switzerland

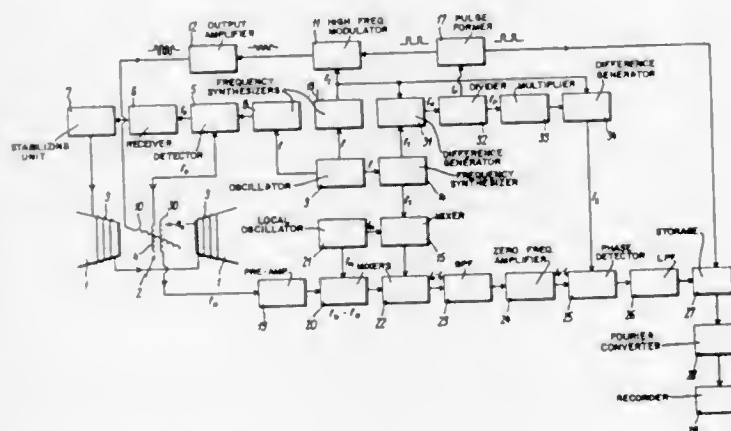
Filed Nov. 6, 1970, Ser. No. 87,418

Claims priority, application Germany, Nov. 8, 1969, P 19 56 331.6; April 10, 1970, P 20 17 139.5

Int. Cl. G06f 15/34; G06g 7/19

U.S. Cl. 235-151.3

28 Claims



Interference signals such as those obtained in nuclear spin spectrometry are subjected to a Fourier analysis in which the

frequencies and amplitudes of the interference signals are determined mathematically. The excitation of the sample produces interference signals, all the oscillations of a definite frequency band are filtered out, and the Fourier analysis is performed on this frequency band. The selected portion of the interference oscillations is varied by varying the frequency band and the center frequency thereof in reference to the frequency content of the whole interference signal. One frequency may be produced in a fundamental oscillator and various frequencies, for example for use in mixing circuits, are obtained by frequency multiplication and division.

3,720,817

# **AUTOMATED RADIATION THERAPY MACHINE**

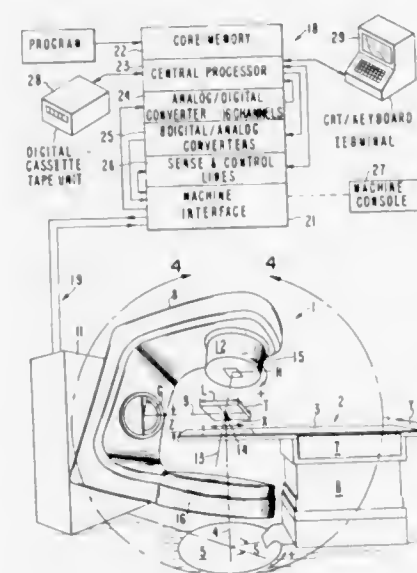
Kendall L. Dinwiddle, Palo Alto, Calif., assignor to Jarian Associates, Palo Alto, Calif.

Filed Nov. 27, 1970, Ser. No. 93,327

Int. Cl. G05d 3/04

U.S. Cl. 235-151.11

6 Claims



A computer assisted radiation therapy machine is disclosed. The machine includes a rotatable gantry having a radiation source portion and a beam stopping portion. The gantry is rotatable about a patient treatment couch which is rectilinearly translatable in three orthogonal directions as well as being rotatable about the vertical axis. A computer controls the operations of the machine to automatically set the position of the gantry relative to the couch for treatment of a patient. The automated motions of the gantry and the couch are simultaneous for decreasing the setup time. In addition, the computer includes a collision avoidance program which averts collision between the couch or patient, and the gantry.

3,720,818

# **METHOD OF MEASUREMENT AND APPARATUS THEREFOR**

Robert Claude Spragg, and David John Whitehouse, both of Leicester, England, assignors to The Rank Organization Limited, London, England

Filed Jan. 29, 1971, Ser. No. 111,070

Claims priority, application Great Britain, Jan. 30, 1970, 4,581/70

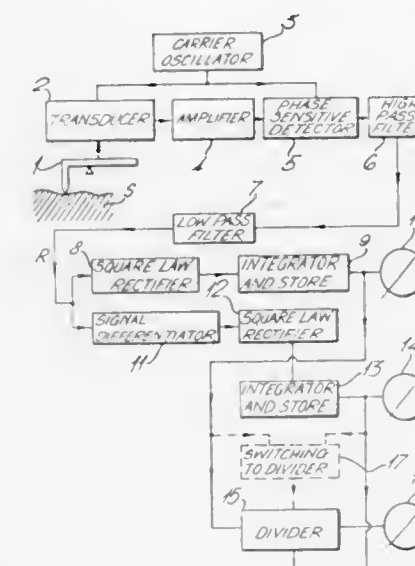
Int. Cl. G01b 7/34

U.S. Cl. 235-151.32

52 Claims

Apparatus and method for determining a parameter which will effectively characterize the fluctuations of a dependent variable with respect to an independent variable, such as the height of a surface profile with respect to position along the

surface. The apparatus includes means for detecting the variations of the independent variable such as a transducer for detecting the variations of the height of the surface profile along a line in the surface to obtain a signal representing the said variations, and means for differentiating the signal represent-



ing the said variations to provide a rate signal depending on the rate of change of the profile height, and means for combining the two signals, such as by integrating each and then dividing one by the other, to provide the said parameter which characterizes the fluctuations.

3,720,819

# **DIRECT DIGITAL COMPUTER CONTROL ERROR DETECTOR SYSTEM**

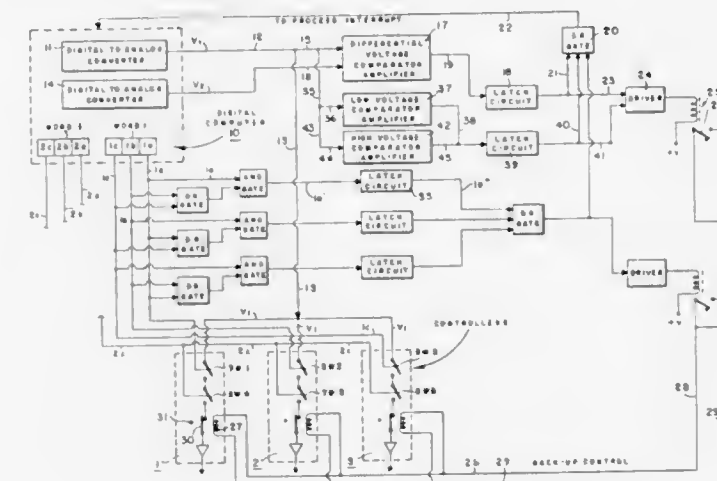
Cecil J. V. Newton, Baytown, Tex., and Ernest W. Harrison, Tripoli, Libya, assignors to Esso Research and Engineering Company, Linden, N.J.

Continuation of Ser. No. 25,254, March 31, 1970. This application Nov. 26, 1971, Ser. No. 202,551

Int. Cl. G06f 11/00

U.S. Cl. 235-153 AE

9 Claims



An error detection device for a direct digital process control computer detects at least two common computer output errors and immediately informs the computer and the operator of such error. The two types of errors are (a) a difference between two digital-to-analogue converter (DAC) outputs that is larger than a predetermined limit, and (2) two or more bits in an ECO word at the same time. Preferably it also detects (3) a DAC output that is less than a predetermined limit, and (4) a DAC output that is greater than a predetermined limit. On detecting an error, the device sends a process interrupt signal to the computer, switches the affected controller to backup controls, and operates an alarm to alert the operator.

3,720,820

# **CALCULATOR WITH A HIERARCHY CONTROL SYSTEM**

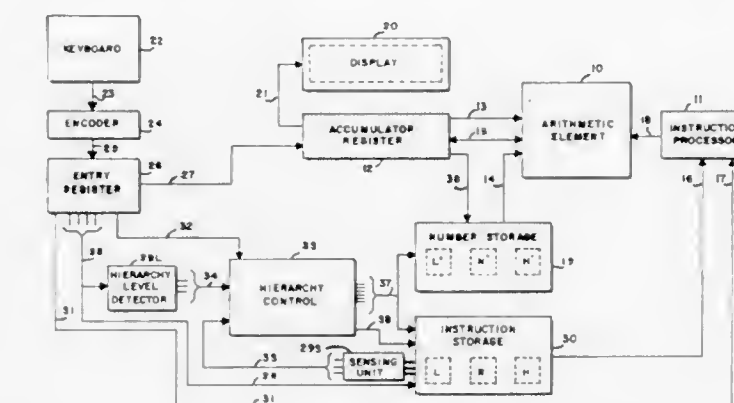
Michael J. Cochran, Sunnyvale, Calif., assignor to Tektranex, Inc., Beaverton, Oreg.

Filed March 18, 1971, Ser. No. 125,511

Int. Cl. G06f 7/38

U.S. Cl. 235-156

20 Claims



An electronic calculator in disclosed having a keyboard in which numbers and hierarchal mathematical instructions are entered to produce corresponding numerical and instruction signals to be operative to perform sequential calculations in accordance with mathematical rules of hierarchy. Instruction storage means are included with a plurality of storage sections, each storage section temporarily stores an instruction signal of a designated hierarchal level. Numerical storage means with a corresponding plurality of storage sections are also included to operate with the instruction storage means to temporarily store the numerical signals associated with the hierarchal mathematical instructions. A hierarchy control unit is provided to automatically transfer the contents of the instruction and numerical storage means to an arithmetic unit to enable sequential calculations to be performed in accordance with hierarchal rules of mathematics as each hierarchal instruction is entered in the calculator.

3,720,821

# **THRESHOLD LOGIC CIRCUITS**

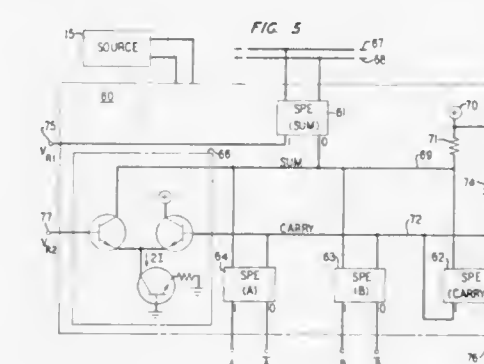
John Donnell Heightley, Basking Ridge, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed March 4, 1971, Ser. No. 120,834

Int. Cl. G06f 7/50

U.S. Cl. 235-172

16 Claims



The invention is a threshold logic circuit including a pair of busses and a plurality of storage-processor elements connected to the busses. Each element is arranged to decide which one of a pair of double-rail input signals has a higher potential and to store the result of that decision. Information read out of storage directs a unit of current alternatively to one or the other of the two busses.

A threshold logic adder circuit and a threshold logic two's-complement circuit are included.



3,720,822

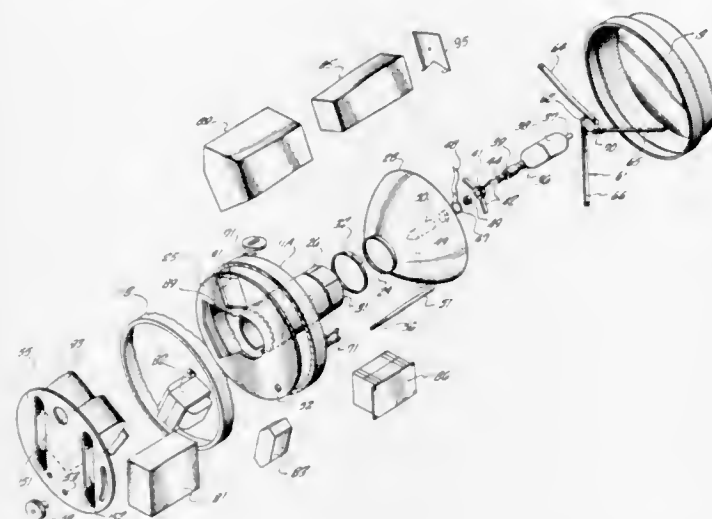
**XENON PHOTOGRAPHY LIGHT**

James R. Rochester, Chatsworth; Fenton D. Hamilton; Felipe Navarro, both of Los Angeles, and Neal R. McCurdy, Granada Hills, all of Calif., assignors to Xenotech, Inc., Irvine, Calif.

Filed Jan. 29, 1971, Ser. No. 110,832  
Int. Cl. G03b 15/02

U.S. Cl. 240—1.3

14 Claims



A D.C. cinematography light source of 85,000 lumens with a color temperature of approximately 6,000° Kelvin uses a xenon lamp mounted adjacent a ray collector so that collector and lamp are relatively movable to achieve focus. An air duct supports the lamp and an air blower discharges into the duct and about the lamp. A shroud at the front end of the lamp housing supports a light mixer or diffuser and directs exhaust air rearwardly, exteriorly of the housing. A central board in the housing supports air blowers and other electrical and electronic components away from the housing for efficient cooling air circulation to them and the ray collector. The ray collector has a reflective contour generated preferably by a modified skewed ellipse. The light mixer achieves controlled diffusion by means of a shallowly etched rear surface. The housing is supported from conventional lighting brackets and stands.

3,720,823

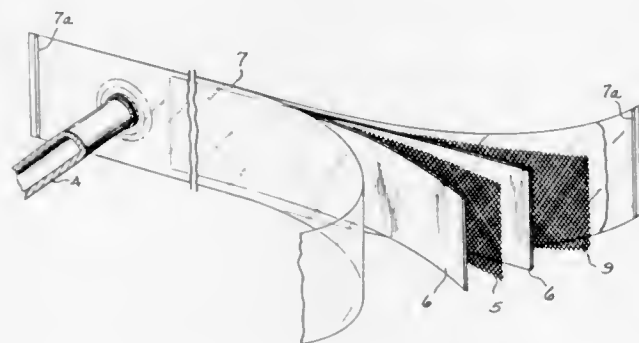
**CHEMILUMINESCENT LIGHTING CONSTRUCTION**

Richard I. Black, Closter, N.J., and Edward M. Yacko, Bridgeport, Conn., assignors to Remington Arms Company, Inc., Bridgeport, Conn.

Filed July 6, 1970, Ser. No. 52,281  
Int. Cl. F21v 9/16

U.S. Cl. 240—2.25

11 Claims



The invention relates to an improved chemiluminescent lighting construction. The new construction affords a highly substantial increase in light intensity and an increase in the workable temperature range for the light reaction, with a cor-

respondingly small increase in material and dimensionality over prior constructions. The construction contemplates disposing a plurality of light producing layered elements within a transparent or translucent encapsulating envelope. The elements are separated by mesh-fabric spacers which allow an activating fluid to flow through the spacers to activate a chemiluminescent substance contained within the layered elements and thereby cause the layered elements to luminesce.

3,720,824

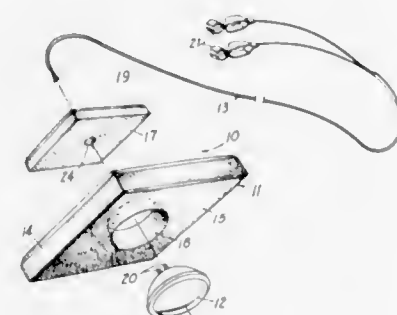
**FISHING FLOAT LIGHT**

Render B. Callahan, 2200 Enon Road S.W., Atlanta, Ga.  
Filed June 4, 1971, Ser. No. 150,136

Int. Cl. F21v 33/00

U.S. Cl. 240—6.4 F

4 Claims



A fishing float light including a support member capable of floating on the surface of a body of water, illuminating means located on said support member so as to direct light under said water surface, and means electrically associated with said illuminating means for connecting said illuminating means to a power source.

3,720,825

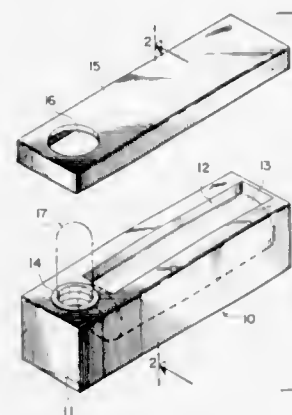
**MOUNTING APPARATUS FOR ILLUMINATED GIFT PACKAGES, GREETING CARDS, OR THE LIKE**

Charles Franc, 1501 First Avenue, New York, N.Y.  
Filed Feb. 29, 1972, Ser. No. 230,251

Int. Cl. F21v 21/00

U.S. Cl. 240—10.65

18 Claims



Apparatus for mounting and holding a lamp and battery on a gift package, greeting card or the like. In one embodiment of the invention, the apparatus comprises an elongated rectangular-shaped housing in which the battery and a lamp socket are disposed. A metallic strip disposed on the bottom surface of a recess in the housing engages the battery casing and electrically couples it to the base of a lamp inserted in the socket. In another embodiment of the invention, a planar sheet of flexible material is scored and cut at its center to provide a pair of foldable flaps. A thin sheet of electrically conductive material is disposed over the planar sheet, and adhesive strips are placed on the conductive sheet adjacent the flaps. The flaps are folded so as to form a pair of parallel, triangular-shaped

support members between which the battery is disposed. Adhesive strips secure the battery casing to the sheet of material, and a conductive ring or strip of material having a circular aperture for receiving the lamp is disposed over the positive terminal of the battery. When a lamp is inserted in the conductive holder, it engages the metallic sheet of material and the lamp is illuminated.

Described in disclosure Document 6757 filed Sept. 22, 1971.

3,720,826

**TUBULAR ELECTRIC DISCHARGE LAMP WITH INTEGRAL PROTECTIVE-INSULATING SLEEVE**

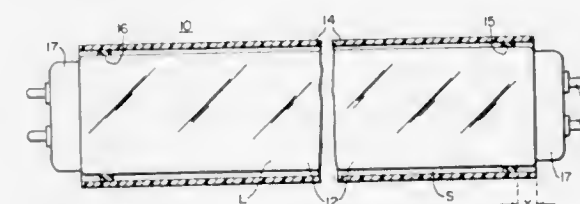
John F. Gilmore, Verona, and Roy W. Epting, Parsippany, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 5, 1970, Ser. No. 34,806

Int. Cl. F21v 15/00

U.S. Cl. 240—11.4 H

4 Claims



A rigid open-ended sleeve of plastic or other light-transmitting material is suspended in telescoped spaced-apart relationship with the glass envelope of an electric lamp by slipping the sleeve over a pair of spaced rubber grommets that compressively grip the envelope. The grommets effect a force fit with the sleeve and the latter is retained in place on the lamp solely by the grommets. In the case of a fluorescent lamp or other type of low-pressure electric discharge lamp, the sleeve serves both as a protective shield against accidental breakage of the envelope and as an insulating jacket which permits the lamp to operate efficiently at low ambient temperatures (−18°C for example). The sleeve can be fabricated from colored plastic or glass to provide a low-cost fluorescent lighting unit that emits light of a selected color and is thus especially adapted for use in outdoor decorative lighting applications.

3,720,827

**LIGHT TRANSMITTING FOAM PLASTIC LENSES**

John M. Hemphill, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Dec. 28, 1970, Ser. No. 101,459

Int. Cl. F21v 9/08

U.S. Cl. 240—46.59

1 Claim



Foam plastic lenses may be used to form lenses for light fixtures. The voids in the lens tend to diffuse the light. By selectively affecting the voids in different areas of the lens, a wide range of unique patterns can be created from an otherwise

uniform and visually and stylistically uninteresting foam sheet. Patterns are provided by embossing or vacuum forming the lens in selected portions.

3,720,828

**APPARATUS FOR AND METHOD OF CONTROLLING RELATIVISTIC CHARGED PARTICLE BEAM DISTRIBUTION AND TRANSPORT**

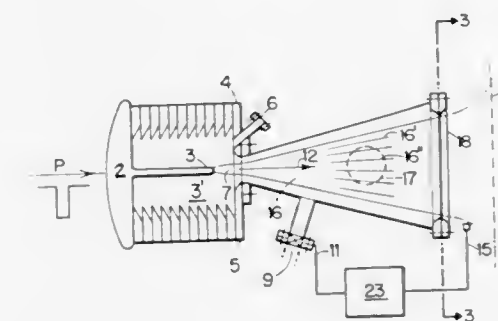
Sam V. Nablo, Lexington, Mass., assignor to Energy Sciences, Inc., Burlington, Mass.

Filed Aug. 18, 1970, Ser. No. 64,734

Int. Cl. H01j 35/00

U.S. Cl. 250—49.5 R

12 Claims



The present disclosure involves methods and apparatus for actively controlling the charged particle density in a controlled pressure region or in the ambient atmosphere, from an accelerator capable of producing high intensity relativistic charged particle streams in a pulsed manner. The techniques are applicable to both high repetition rate applications, typical of industrial processors, electron tubes or accelerator/fusion reactor injectors, and to single pulse or low repetition rate systems. These methods utilize the self-magnetic forces of relativistic beams to accomplish controlled distribution, and avoid the complexities of electromagnetic scanners or lenses heretofore used for this purpose. Methods are also disclosed which utilize force control in partially charged neutralized beams as well as plasma conductivity control in freely drifting beam systems.

3,720,829

**SAMPLE FRACTURING APPARATUS**

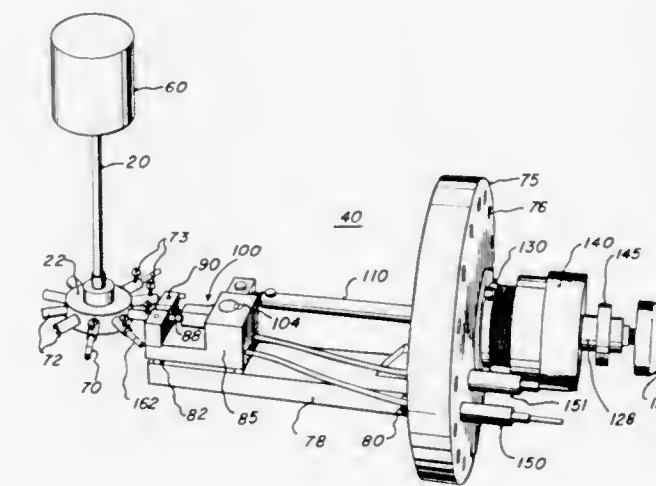
Paul W. Palmberg, Minneapolis, Minn., assignor to Physical Electronics Industries, Inc., Edina, Minn.

Filed Feb. 28, 1972, Ser. No. 229,744

Int. Cl. H01j 37/20

U.S. Cl. 250—49.5 B

11 Claims



A sample fracturing apparatus especially adapted for use in a high vacuum enclosure for the preparation of samples in performing surface chemistry analysis on fresh surfaces of the



same is disclosed. The same fracturing apparatus is a mechanical linkage system operating through the walls of an enclosure and sealed therein to pivot a breaker member with respect to a sample being held in a portion of the breaker member to effectively snap the sample and provide a clean surface upon which analysis can be made. Suitable cooling of the samples is effected by transmitting the flow of a cooling medium through the sample holder via tube lines sealed within the fracturing frame.

3,720,830

### X-RAY SPECTROMETRY APPARATUS HAVING A CONTROLLED X-RAY SOURCE

Etienne Larribau, Lons par Pau, Bernard Grubis, Paris, and Jean Sahores, Burros, France, assignors to Societe Nationale des Petroles d'Aquitaine, Paris, France

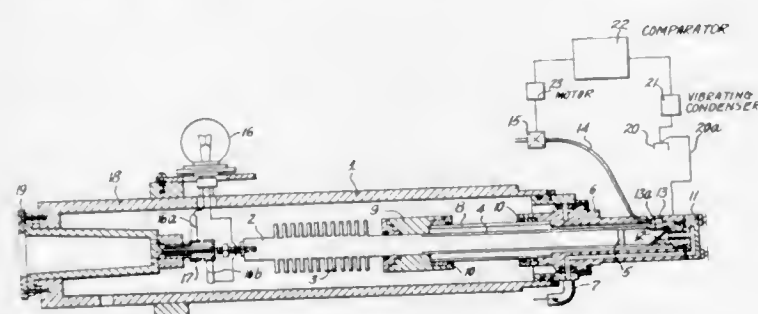
Filed Sept. 9, 1970, Ser. No. 70,859

Claims priority, application France, Sept. 12, 1969, 6931060

Int. Cl. G01n 23/22

U.S. Cl. 250—51.5

6 Claims



Spectrometry apparatus consists of a vacuum chamber, an electron and X-ray emission tube, a sample-holder, a device provided with slots, an analyzer crystal and means for measuring an electrical value, a vacuum pump and means for introducing a gas inside the tube. The external envelope of the emission tube contains a quartz tube placed concentrically and a cathode and an anode both centred by means of said quartz tube; a tubular socket closes the open end of the external envelope while the quartz tube and the socket are provided, adjacent of the anode, with lateral apertures on the same axis; a capillary duct permits the introduction of a gas to the neighbourhood of said apertures; and servo-operating means permits the control of the flow of gas by the flux of electrons emitted by the anode.

3,720,831

### SCINTILLATION CRYSTAL STRUCTURE COMPRISING A SERIES OF RECTANGULAR WAFERS FORMING A BAR

Florio D. Miraldi, 2660 Edgehill Road,

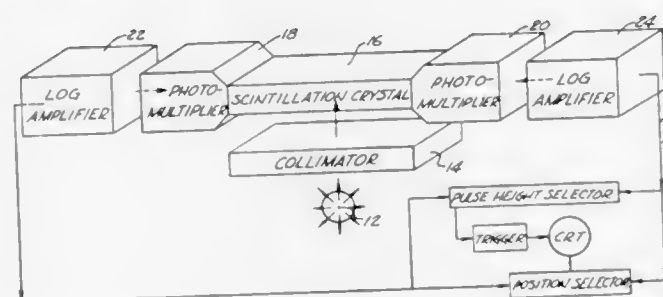
Cleveland Heights, Ohio 44106

Filed Mar. 9, 1971, Ser. No. 122,440

Int. Cl. G01t 1/20

U.S. Cl. 250—71.5 R

9 Claims



A scintillation crystal including a series of rectangular wafers having their adjacent faces adhered to one another

with optical adhesive to form a bar. Radiation is received through a side of the crystal bar. Scintillations in the crystal are detected at the ends of the bar by means of photosensitive devices.

3,720,832

### INFRARED SCANNING SYSTEM FOR MATERIAL TESTING

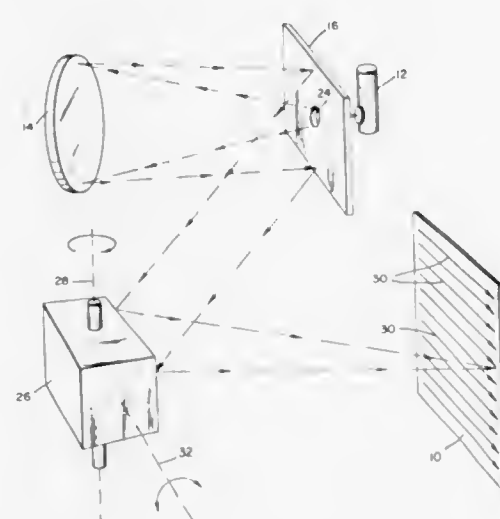
Wayne Richard Apple, Boulder, Colo., assignor to Automation Industries, Inc., Los Angeles, Calif.

Filed Feb. 3, 1971, Ser. No. 112,119

Int. Cl. G01j 1/04

U.S. Cl. 250—83.3 H

4 Claims



Herein described is an infra-red scanning system which includes a rotating scanning block. Reflecting mirrors are disposed about the vertical periphery of the block and are adapted to rotate therewith. A motor including a cam and follower causes the scanning block to continuously nod during the scanning thereof. A workpiece may then be disposed in the path of the scanner and thermal radiations therefrom are reflected to an infra-red detector. A folding mirror system is disposed between the detector and the workpiece and is used to focus the thermal energy to the detector. To decrease the obscurations within the field of view an aperture is placed in the center of the folding mirror and the detector is placed behind the aperture in the folding mirror in alignment with the primary mirror. The thermal energy is then focused from the reflective scanner through the hole in the folding mirror to the detector.

3,720,833

### RADIATION BACKSCATTER MEASURING INSTRUMENT

William D. Hay, Peekskill, N.Y., assignor to Unit Process Assemblies, Inc., Woodside, N.Y.

Filed May 10, 1971, Ser. No. 141,496

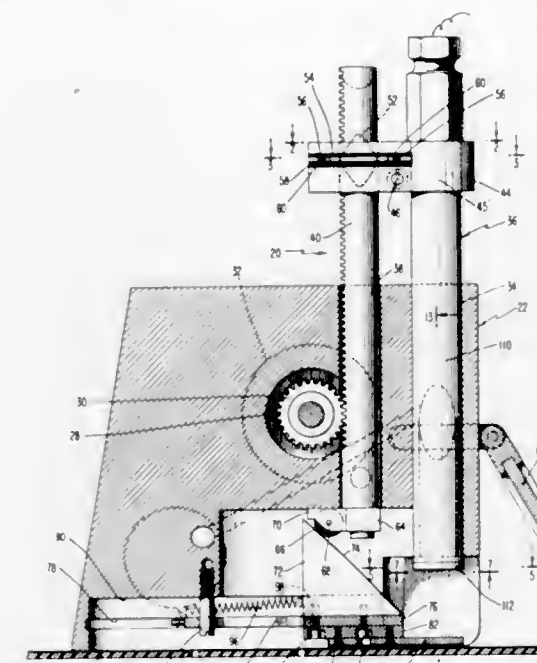
Int. Cl. G01t 1/16

U.S. Cl. 250—83.3 D

10 Claims

A radiation backscatter measuring instrument is provided for use with a portable probe assembly having an elongated casing with an opening at one end thereof and containing a radiation source positioned in predetermined relation therewith and a radiation detector for detecting radiation backscattered from a workpiece exposed to radiation from the source through the casing opening. The radiation backscatter measuring instrument includes a planar, horizontally disposed, transparent locator with a series of guide lines on the bottom surface thereof which is positioned over the selected locus of

measurement on the horizontally supported workpiece. The locator is then horizontally retracted from its locating position in doped germanium while applying voltage across a load resistor to the intensity modulation of an oscilloscope, the cur-



rent passing through the load resistor being proportional to the intensity of infrared radiation incident on the P-type surface.

3,720,834

### HIGH POWER INFRARED IMAGING DEVICE

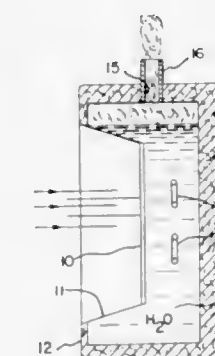
Philip J. Allen, North Forestville, Md., assignor to the United States of America as represented by the Secretary of the Navy

Filed June 15, 1971, Ser. No. 153,325

Int. Cl. G01t 1/16

U.S. Cl. 250—83.3 H

4 Claims



This disclosure is directed to a liquid crystal detector for imaging high power infrared laser beams. The system includes at least one detector screen associated with a container including boiling a solution therein to maintain a constant temperature for the detector screen. The detector screen is operative to produce a visible image of incident infrared laser light. The boiling solution not only maintains a constant temperature for the liquid crystal medium but provides a means for dissipating the heat of the laser beam which further heats the solution to form a vapor or steam at a controlled constant pressure.

3,720,835

### SCANNING INFRARED RADIATION SENSOR

George R. Pruett, Richardson, Tex., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

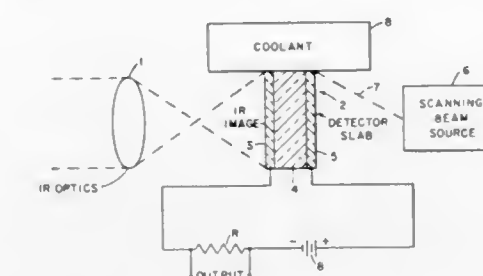
Filed Feb. 24, 1967, Ser. No. 619,138

Int. Cl. H01j 39/00; H01l 15/00

U.S. Cl. 250—83.3 HP

4 Claims

An infrared image is generated on an oscilloscope by sweeping a spot of short wavelength radiation across a P-N junction



rent passing through the load resistor being proportional to the intensity of infrared radiation incident on the P-type surface.

3,720,836

### PROTECTION FROM LASER RADIATION

Ernst Donges, Westheim bei Augsburg, and Fritz Wagner, Gersthofen bei Augsburg, both of Germany, assignors to Sigr Elektrographit GmbH, Meitingen, Germany

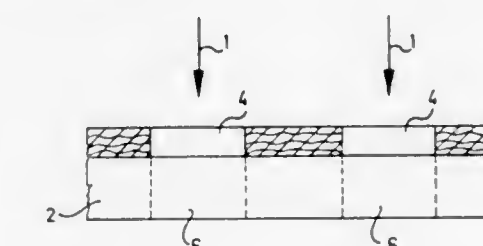
Filed March 12, 1971, Ser. No. 123,589

Claims priority, application Germany, April 7, 1970, P 20 16 452.7

Int. Cl. G21f 1/12

U.S. Cl. 250—108 FS

8 Claims



For protection from laser radiation, a shielding material composed of a sheaf of fabric-like, flexible graphite foils is placed between the radiation source and the object to be shielded.

3,720,837

### MEASURING AND INDICATING APPARATUS

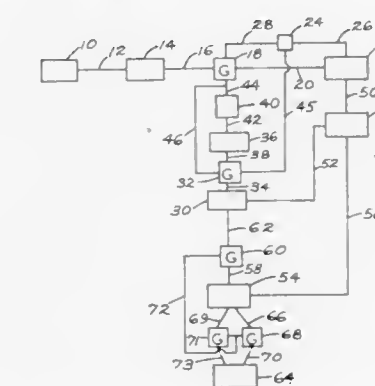
Anton Hubert Clemens and Richard La Verne Hurtle, Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Dec. 20, 1971, Ser. No. 210,068

Int. Cl. H01j 39/12

U.S. Cl. 250—206

10 Claims



Apparatus circuitry for measuring and providing an indication of a sensed characteristic, such as reflected light, is described. It comprises in combination a sensor, a voltage controlled oscillator functioning as an analog-to-digital converter, scalars to provide certain count values, a computation unit connected to such scalars to provide an



output count which is directly related to a function of the sensed characteristic being measured, and a decoder scaler and indicator capable of converting the computation unit output to a suitable signal so as to provide an indication, such as a printed symbol, of the sensed characteristic.

3,720,838

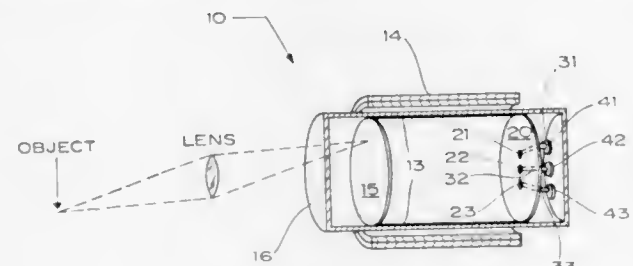
## MULTI-APERTURE IMAGE DISSECTOR TUBE

Clive E. Catchpole, Southfield, Mich., assignor to The United States of America as represented by the Secretary of the Navy

Filed Nov. 3, 1971, Ser. No. 195,326  
Int. Cl. H01j 39/12

U.S. Cl. 250—207 R

2 Claims



An image dissection tube is provided with a plurality of apertures in which each aperture is a different size. Each aperture is associated with an independent photomultiplier channel, and the individual channels are packaged in the same tube. This permits the flexibility possible when different resolutions are desired without having to use several image dissector tubes.

3,720,839

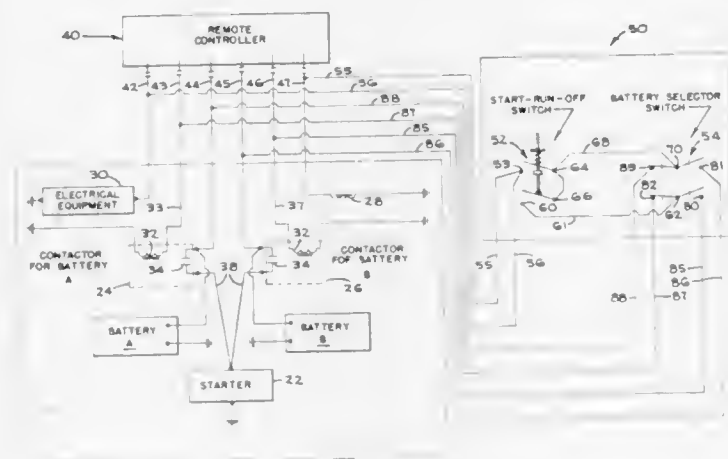
## AUXILIARY MOTOR STARTER CONTROL CIRCUITRY INCLUDING REMOTE AND LOCAL CONTROL OF PLURAL BATTERIES

Gene L. Spahr, Zionsville, Ind., assignor to FMC Corporation, San Jose, Calif.

Filed March 17, 1972, Ser. No. 235,737  
Int. Cl. F02h 11/00

U.S. Cl. 290—37

3 Claims



An auxiliary starter circuit for an engine-driven fire pump which circuit is located upon the engine itself while the primary automatic starting circuit is located at a distance therefrom whereby the engine may be easily started manually if desired. The circuitry components for starting the engine include two alternatively usable batteries which are arranged to be selectively connected in series with an engine starter. The auxiliary starter circuit includes a double pole, two-position toggle switch which selects the desired battery and a three-position (start-run-off) toggle switch which is manipulated to momentarily connect the starter in series with the selected battery

until the engine has been started and to thereafter permit the engine to continue to run until it is switched to the "off" position.

3,720,840

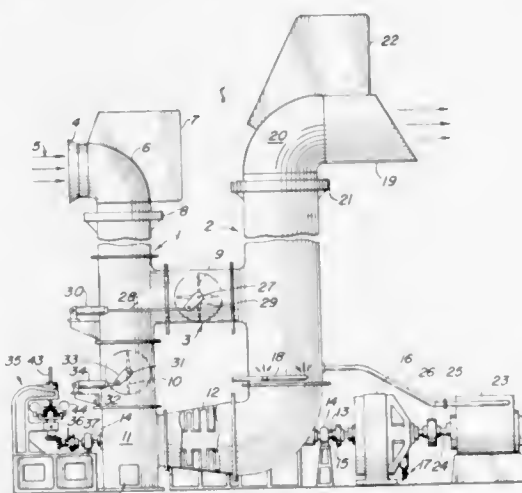
## WIND TURBINE GENERATOR WITH EXHAUST GAS HEATER

Hendrick J. Gregg, 625 S. Alton Way, Denver, Colo.  
Filed Oct. 6, 1971, Ser. No. 186,860

Int. Cl. F03d 9/00

U.S. Cl. 290—55

10 Claims



A gas turbine driven electric generator system is provided which makes it possible to utilize wind as the motive force and to reduce or eliminate pollution.

3,720,841

## LOGICAL CIRCUIT ARRANGEMENT

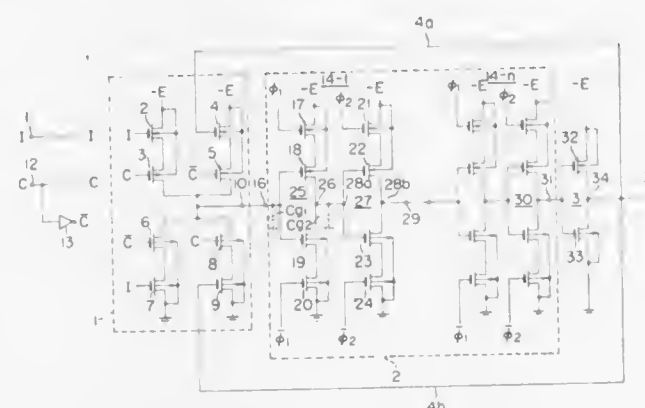
Yasoji Suzuki, Kawasaki-shi, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Dec. 28, 1971, Ser. No. 212,936

Int. Cl. G11c 19/00

U.S. Cl. 307—221 C

4 Claims



A logical circuit arrangement is comprised by a switching circuit including a first logic unit constituted by insulated gate field effect transistors of one conductivity type channel and a second logic unit constituted by insulated gate field effect transistors of the other conductivity type channel; a shift register applied with the output switching circuit and including a plurality of bit elements, each constituted by first and second cascade connected complementary inverters which are composed of insulated gate field effect transistors of the complementary conductivity type channel; a complementary buffer circuit connected to the output from the buffer circuit to the first and second logic units; and a circuit for applying a logical input data signal, a control pulse and a complement signal of the control signal to the gate electrodes of the insulated gate field effect transistors of the switching circuit respectively for

selectively switching the polarity of the logical output of the first and second logic units to supply said shift register with said input data signal or an output signal of said buffer circuit in accordance with said control pulse and the complemental pulse of the control pulse.

3,720,842

## TRANSPORTABLE REFRIGERATION UNIT HAVING INDUCTION ALTERNATOR-INDUCTION MOTOR RECONNECTION AND CONTROL SYSTEM

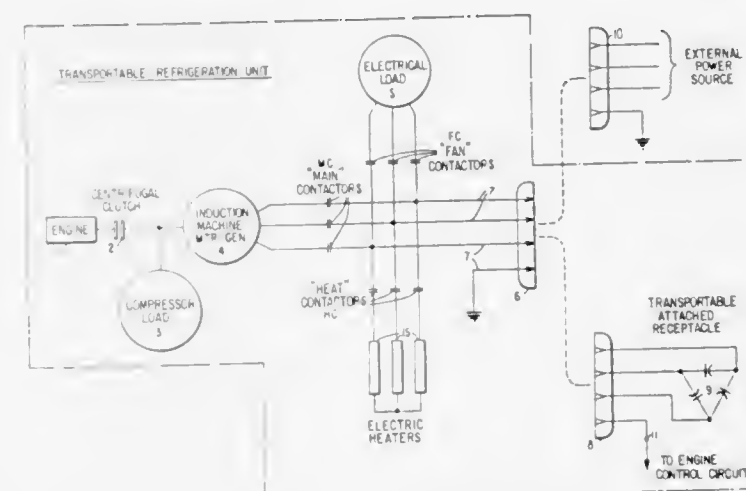
Robert L. Martin, Excelsior; Leland L. Howland, Rosemount, and LeRoy J. Eichinger, St. Paul, all of Minn., assignors to Thermo King Corporation, Minneapolis, Minn.

Filed Oct. 7, 1971, Ser. No. 187,434

Int. Cl. H01f 1/00

U.S. Cl. 307—68

5 Claims



This invention relates to a transportable refrigeration unit having two modes of operation and more particularly to such a refrigeration unit having an induction machine that may function as a prime mover or as a generator of electric power after the proper connection to an appropriate receptacle has been made with a power cord which is connected to the induction machine and is adapted to be received by either a receptacle that is attached to the unit and has passive electrical components so connected thereto for converting the induction machine to an electric generator or to be received by an external electric power source receptacle without passive components connected thereto when the induction machine is to function as a prime mover.

3,720,843

## NONLINEAR DEVICE FOR FREQUENCY SHIFTING X-RAYS

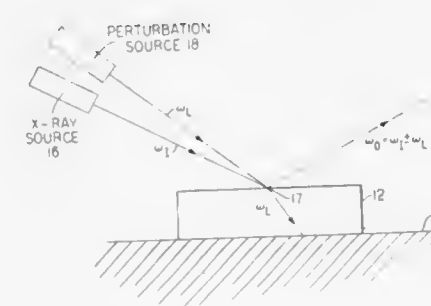
Peter M. Eisenberger, Morristown, and Samuel Leverte McCall, Jr., Gillette, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 10, 1971, Ser. No. 122,702

Int. Cl. H03f 7/00

U.S. Cl. 307—88.3

6 Claims



A nonlinear device includes a medium (preferably characterized by a low X-ray absorption constant and

near structural perfection) in which is established a time-varying microscopic charge density "cloud" by the application thereto of a perturbation signal of frequency  $\omega_L$ . An input X-ray signal of frequency  $\omega_1$  is incident on the medium coincident with the perturbation signal and is thereby frequency shifted producing an output X-ray signal at the sum and/or difference frequencies  $\omega_1 \pm \omega_L$ .

3,720,844

## CONTROL CIRCUIT FOR TRASH COMPACTOR

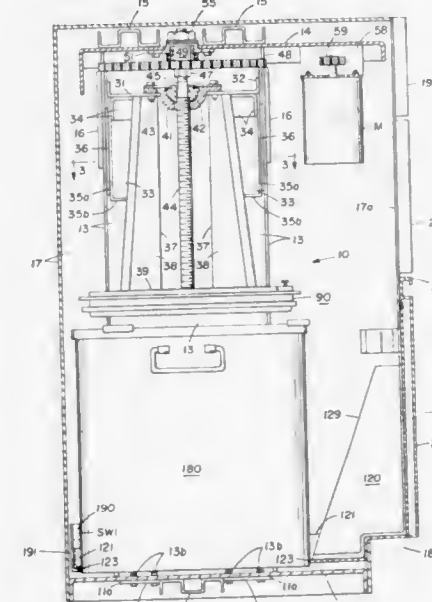
Leonard J. Sals, Cedar Rapids, Iowa, assignor to Amana Refrigeration, Inc., Amana, Iowa

Filed July 6, 1971, Ser. No. 159,680

Int. Cl. H02b 1/24

U.S. Cl. 307—112

3 Claims



Initial movement of the ram of a trash compactor actuates a switch which prepares a circuit for reverse flow of current through the start windings of an electric drive motor after a centrifugal switch incorporated therein has opened. When compaction of the trash has slowed the motor to a predetermined speed, the centrifugal switch recloses and the ram is automatically reversed. Other switches and means for controlling the ram's movement, as well as for safety purposes, are also disclosed, together with details of the structure of the trash compactor generally, the ram and the mounting of the container in which the trash is compacted.

3,720,845

## LIMIT SWITCH WITH HIGH HYSTERESIS

John R. Reeves, Trafford, Pa.; Bruce R. Dow, Altamonte Springs, Fla., and Francis T. Thompson, Murrysville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 7, 1971, Ser. No. 150,575

Int. Cl. H01h 36/00

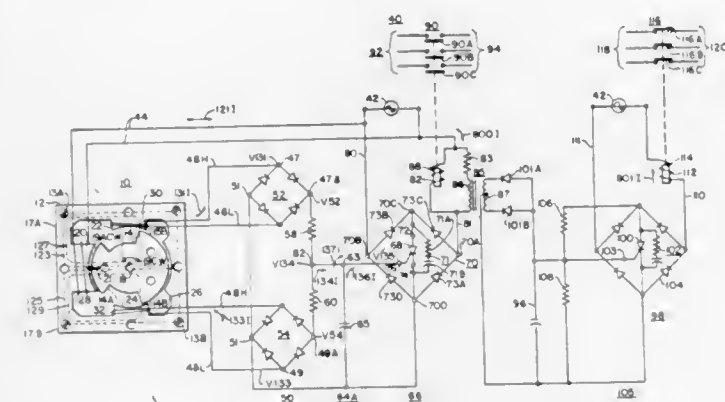
U.S. Cl. 307—116

23 Claims

A limit switch means including a magnetic transducer comprising a stator and rotor which supplies electrical energy to an associated comparator circuit. The output of the comparator circuit is connected to the gate of a silicon controlled rectifier and a voltage boosting device. The magnetic transducer is sensitive to changes in angular position of the rotor which is coupled mechanically to an associated cam, lever or similar component. When the relative position of the associated component is changed, the rotor is moved to such a position as to cause the voltage comparator circuit to supply a signal to the silicon controlled rectifier's gate sufficient to energize or turn on the silicon controlled rectifier. This allows current to flow through one or more circuits to which the silicon controlled



rectifier is connected. In addition, where desired transformer coupling may be provided to drive or control other circuits whose functions may be complementary to that of the circuit which is primarily controlled. A voltage boosting means responds to the turning on of the silicon controlled rectifier in such a manner as to create a hysteresis effect by making use of



an increase in the voltage at the gate of the silicon controlled rectifier so that the rotor of the associated magnetic transducer must move a substantial amount in the opposite direction to deenergize the silicon controlled rectifier and consequently change the operating condition of any circuits which it controls.

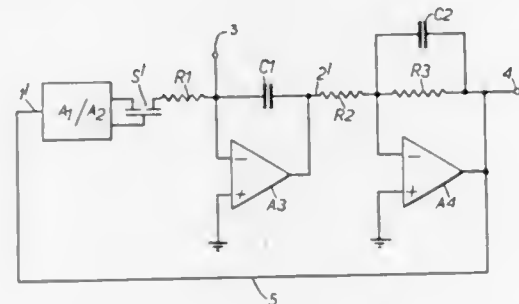
3,720,846

## INTEGRATING AMPLIFIER CIRCUITS

Alan John Borer, Crowborough, England, assignor to Servomex Controls Limited, Crowborough, England  
Filed June 4, 1971, Ser. No. 150,153  
Int. Cl. H03k 5/00

U.S. Cl. 307—238

6 Claims



An integrating amplifier circuit is provided which overcomes the problem of input voltage offset and enables a cheaper amplifier to be employed in a given situation. Input circuits are disclosed which behave as current generators to achieve the desired result.

3,720,847

## POWER CURRENT CRYOTRON WITH FLAT GATE CONDUCTOR

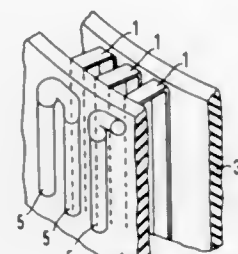
Ernst Massar, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany  
Continuation-in-part of Ser. Nos. 805,701, March 10, 1969, abandoned, and Ser. No. 805,606, March 10, 1969, abandoned. This application Oct. 13, 1971, Ser. No. 188,912  
Claims priority, application Germany, March 12, 1968, P 22 88 701.3; March 15, 1968, P 16 39 427.7  
Int. Cl. H03k 17/00

U.S. Cl. 307—245

25 Claims

A power current cryotron comprises an insulating carriage structure and a flat gate conductor of superconducting material on the carrier. The gate conductor may form continuous flat winding turns beside one another on the carrier. The winding

turns are distributed along the carrier for substantially uniform magnetic field strength along the predominant portion of the gate conductor length. The conductor may be of



meander configuration so that during operation of the cryotron adjacent portions of the conductor conduct current in opposite directions.

3,720,848

## SOLID-STATE RELAY

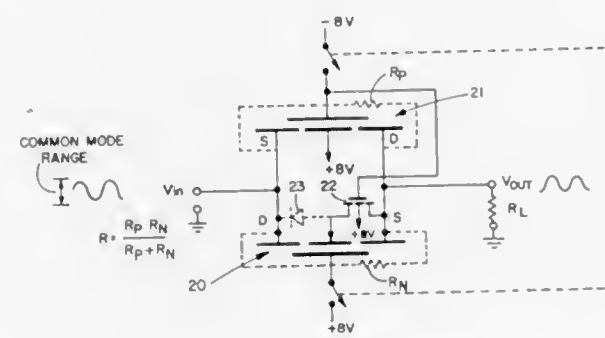
Bernard H. Schmidt, Jr., Mesa, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed July 1, 1971, Ser. No. 158,761

Int. Cl. H03k 17/00

U.S. Cl. 307—251

13 Claims



There is disclosed an improved solid-state relay comprising a C-MOS analog switch or transmission gate in which the change in input-output resistance for variations in the input signal is minimized by maintaining the substrate of the N-channel device at the same potential as that of the source of the N-channel device. The N-channel substrate provision source are maintained at the same potential by the provision of an additional P-MOS device located on the same integrated circuit chip in which the additional P-MOS device is rendered conductive during that period of time which the switch is in its conducting mode.

## ERRATUM

For Class 307—141 see:  
Patent No. 3,720,858

3,720,849

## MAGNETIC-KINEMATIC PRECISION STAGES

Arpad Bardocz, Rumannstrasse 57, 8 Munich 23, Germany  
Filed June 7, 1971, Ser. No. 150,272

Claims priority, application Germany, June 16, 1970, P 20 29 715.8

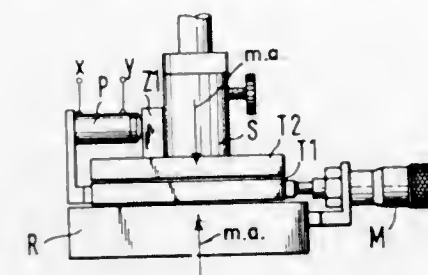
Int. Cl. H01v 7/00

U.S. Cl. 310—8

10 Claims

The application deals with a magnetic-kinematic precision stage system. The essence is, that stages with linear or angular movement are composed of at least two plates, which move with respect to each others on ball joints. The two plates are

held together with retaining magnets. This solution guarantees the complete elimination of the backlash. The plates may move very freely, practically without force, with respect to



each other. Because practically there is no force, as consequent there is very low friction, and thus adjustment with the greatest precision is possible.

3,720,850

## MAGNETOHYDRODYNAMIC POWER SYSTEM WITH SEMI-CLOSED CYCLE

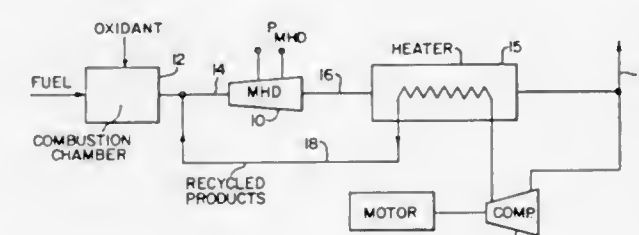
Stewart Way, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed April 30, 1970, Ser. No. 33,430

Int. Cl. H02n 4/02

U.S. Cl. 310—11

11 Claims



An MHD power system is provided in which the working fluid consists of combustion gases that are recycled through an MHD generator with new fuel and oxidant being added and an equal mass of gas being discharged at some point in the cycle to provide what may be called a "semi-closed cycle." Such a cycle provides improved electrical conductivity of the working fluid as compared with open cycle systems that are operated with excess oxidant while it also provides increased mass flow as compared with open cycle systems that are operated without excess oxidant.

3,720,851

## RECIPROCATING MANICURE DEVICE

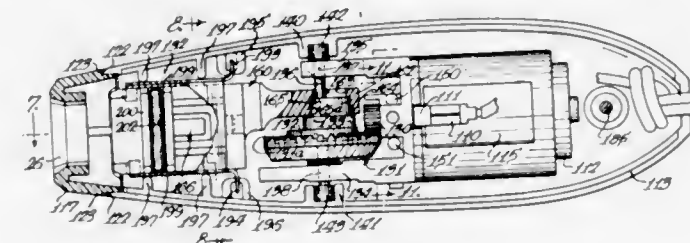
Robert S. Waters, Oak Brook, and Albert R. Spohr, Park Ridge, both of Ill., assignors to Sunbeam Corporation, Chicago, Ill.

Filed Jan. 11, 1971, Ser. No. 105,581

Int. Cl. H02k 7/14

U.S. Cl. 310—50

5 Claims



A manicure device is provided which imparts reciprocating motion to a removable manicure tool. An electric motor

drives a pinion gear which in turn drives a ring gear which has an integral eccentric. A tool holder is moved in a reciprocating motion by the eccentric and at its end receives the manicure tool. The tool holder is guided in its reciprocating motion by means of roller bearings which ride on the inner surfaces of a hollow enclosure. A handle containing the motor and the tool holder is stored in the upper portion of a plastic case along with the manicure tools, and the line cord is stored in a recessed enclosure that is accessible from the bottom of the case.

3,720,852

## DEVICE FOR DAMPENING OSCILLATIONS IN A MIDGET MOTOR

Gunther Eibach, Nuremberg, Friedrich Kappius, Nuremberg-Eibach, and Hans Ott and Jurgen Wenk, Nuremberg, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

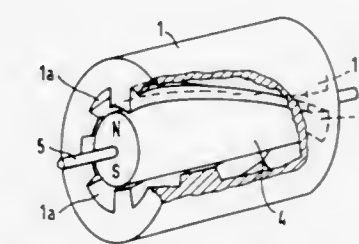
Filed Mar. 30, 1971, Ser. No. 129,539

Claims priority, application Germany, Apr. 9, 1970, P 20 16 866.5

Int. Cl. H02k 5/16

U.S. Cl. 310—90

3 Claims



A midget motor comprises a rotor, a stack of slotted stator laminations, the rotor being obliquely inclined with respect to the slots of the stator, a stop means for the rotor and a bearing means bearing against one end of the shaft of the rotor, the stop and bearing means connected to the housing of the motor for elastic members for isolating the oscillatory movement of the rotor from the housing.

## ERRATUM

For Class 310—43 see:  
Patent No. 3,720,914

3,720,853

## BEARING STRUCTURE FOR X-RAY TUBE WITH ROTATING ANODE

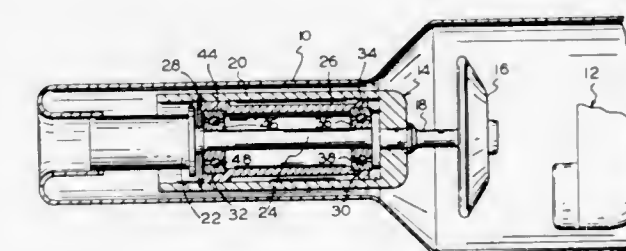
Zed J. Atlee, and Roy F. Kasten, Jr., both of Elmhurst, Ill., assignors to Picker Corporation, Cleveland, Ohio

Filed March 2, 1971, Ser. No. 120,212

Int. Cl. H01j 35/10

U.S. Cl. 313—60

4 Claims



An X-ray tube having a rotating anode supported by a refractory carbide ball bearing structure.



3,720,854

**TWO COLOR, SHADOW MASK-TYPE CATHODE RAY TUBE**

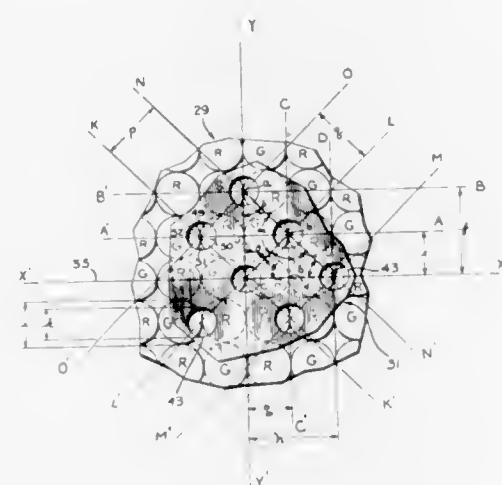
Donald L. Say, Seneca Falls, N.Y., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed June 16, 1971, Ser. No. 153,695

Int. Cl. H01j 25/06, 31/20, 29/32

U.S. Cl. 313—92 B

4 Claims



An improved aperture mask is provided for use in a two beam shadow mask type of color cathode ray tube. The mask is utilized in the formation and subsequent operation of a patterned screen including a repetitive array of two phosphor areas. The multitude of apertures defined by the interstitial webbing of the mask member are arrayed in a plurality of parallel rows having given directional orientations. Any three mutually adjacent apertures in any two adjacent parallel rows are oriented to form an isosceles right triangular relationship. The resultant screen associated therewith exhibits enhanced resolution and brightness.

3,720,855

**ELECTRIC DISCHARGE LAMP**

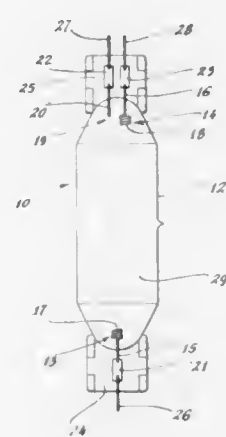
Phillip J. Gardner, Bayside; H. Graham Silver, Kings Point; Samir A. Ahmed, New York, all of N.Y., and Adam Heller, Sharon, Mass., assignors to GTE Laboratories Incorporated, Bayside, N.Y.

Filed Feb. 28, 1972, Ser. No. 229,933

Int. Cl. H01j 17/20

U.S. Cl. 313—229

23 Claims



An electric discharge lamp comprising a sealed light-transmissive envelope and a fill within the envelope; the fill including, as the primary light-emitting material, at least one oxytrihalide of a Group VB element, such as vanadium, niobium, and tantalum. The partial pressure of the oxytrihalide is in the range of from about 0.001 torr to about 200 torr.

3,720,856

**BINARY MATERIAL FIELD EMITTER STRUCTURE**

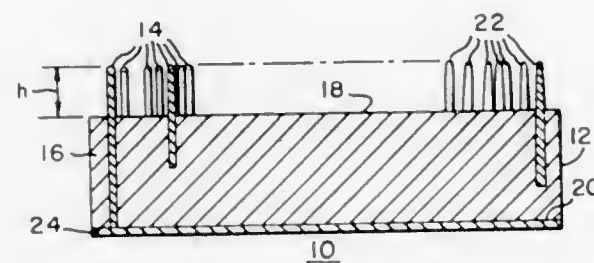
Thomas P. Brody, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 29, 1970, Ser. No. 59,178

Int. Cl. H01j 1/02

U.S. Cl. 313—309

5 Claims



A field emitter structure comprises a body of a binary eutectic alloy wherein thin filaments of the minor component of the alloy are embedded in, and a plurality of the thin filaments project above, a surface of a matrix enriched by the major component of the alloy thereby providing a highly effective and inexpensive non-thermionic source of electrons for a variety of vacuum and other applications.

3,720,857

**APPARATUS FOR DETECTING A POSITION OF ELECTRON BEAM FOR USE WITH A CATHODE-RAY TUBE**

Tetsuji Shimizu, Nagoya, Aichi; Sohei Hibino, Nagoya, Aichi; Hajime Sumida, Showa-ku, Nagoya; Shinichi Ueno, Nagoya, and Tateki Muraoka, Matsushincho, Kasugai, all of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishi-Kasugai-gun, Aichi Prefecture, Japan

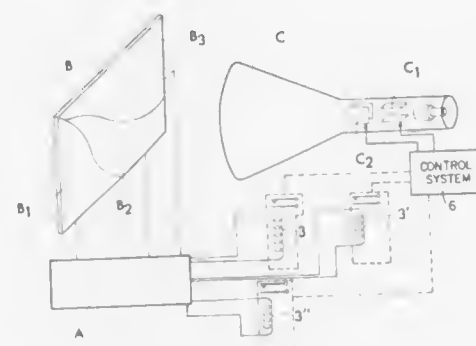
Filed Feb. 2, 1970, Ser. No. 7,708

Claims priority, application Japan, Feb. 7, 1969, 44/8666

Int. Cl. H01j 39/12, 31/26

U.S. Cl. 315—10

10 Claims



The present invention discloses comprising a cathode-ray tube having a fluorescent screen and a plurality of deflecting plates, a light sensitive means consisting of two or more photocells arranged so as to exactly confront the fluorescent screen of the cathode-ray tube, and an electric circuit connected to said light sensitive means and selecting a maximum signal out of signals applied from said cathode-ray tube, thereby detecting a position of signal. As the electric circuit connected to the light sensitive means and selecting the maximum signal, there may be employed an electric circuit which comprises operational circuits, relays and diodes and is adapted to select two signals in combination out of three signals produced on the signal source and provide an output of positive, negative or zero voltage, thereby operating any of relays through the diode to indicate the maximum signal, thereby improving the operational reliability and reducing the manufacturing cost.

3,720,858

**RELAY TIMING SYSTEM**

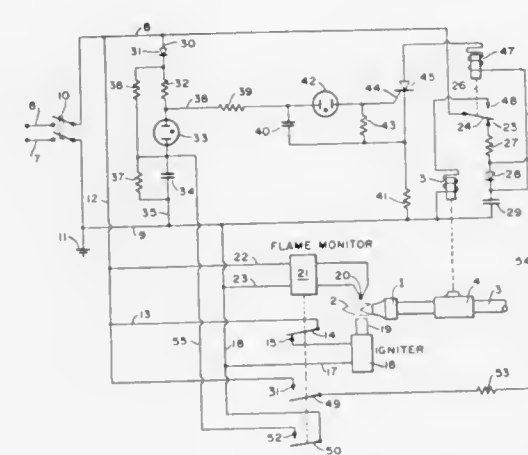
Gary M. Mercier, Columbus, Ohio, assignor to Columbia Gas System Service Corporation, Columbus, Ohio

Filed July 20, 1971, Ser. No. 164,291

Int. Cl. H01h 37/00

U.S. Cl. 307—141

8 Claims



A timing system having a pair of conductors connected to an alternating voltage source through a switch. The system includes a first charging circuit across the pair of conductors consisting of a first condenser, a diode and an impedance whereby the condenser charges at a given rate. A second charging circuit across the pair of conductors, consisting of a rectifier, a trigger tube and a second condenser and current limiting resistance, acts as a timing circuit. The second condenser receives incremental charges and after a predetermined delay charges above a predetermined minimum value. A third charging circuit is connected across the trigger tube and second condenser and includes a resistance and a third condenser, with a second trigger tube and a resistance across the third condenser. When the second condenser reaches the above predetermined minimum value, the voltage on the third condenser fires the second trigger tube and generates a voltage pulse across its resistance which is supplied to the igniting electrode of a silicon control rectifier which conducts to discharge the first condenser through the operating coil of a relay. The discharge current from the first condenser rises above the pull-in value for the relay and remains above the hold-in value for the relay for a predetermined time after which it drops below such hold-in value. The relay is shown controlling the solenoid valve for a gas burner system.

The gas burner system is provided with flame igniter and flame monitoring means. The flame monitoring means is provided with switches which cause the relay to remain closed in the presence of the flame, to remain in an open state upon failure of the flame to ignite and to recycle the system once upon a subsequent flame failure. The entire system can be recycled by opening the switch to the voltage source and then reclosing it.

3,720,859

**IMAGE DISPLAY SYSTEM**

Richard H. Hilden, Minneapolis, Mich., assignor to Dicom Corporation, Minneapolis, Minn.

Filed May 4, 1970, Ser. No. 34,120

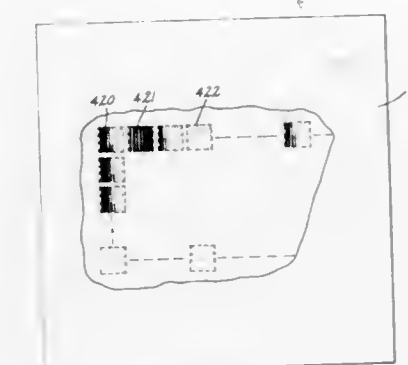
Int. Cl. H01j 29/70

U.S. Cl. 315—23

18 Claims

An image display system wherein control means are connected to a dark trace storage cathode ray tube to control the electrode beam deflection of the cathode ray tube to produce plurality of individually-spaced, dot-sized, minor rasters. The minor rasters are spaced uniformly over the face of the cathode ray tube to produce a major raster. The intensity of the cathode ray tube electron beam is switched between an off

condition and an on condition in response to input intensity signals. An input intensity signal is supplied to control the intensity level of each minor raster. The input intensity signal controls the amount of time that the electron beam is on during each minor raster so that the electron beam paints a par-



ticular intensity level for each minor raster. The picture displayed on the cathode ray tube is formed from the plurality of minor rasters, each having its own light absorption characteristic to alter the transmission of light to form an overall picture.

3,720,860

**DYNAMIC ROTATION OF CATHODE RAY TUBE DISPLAY**

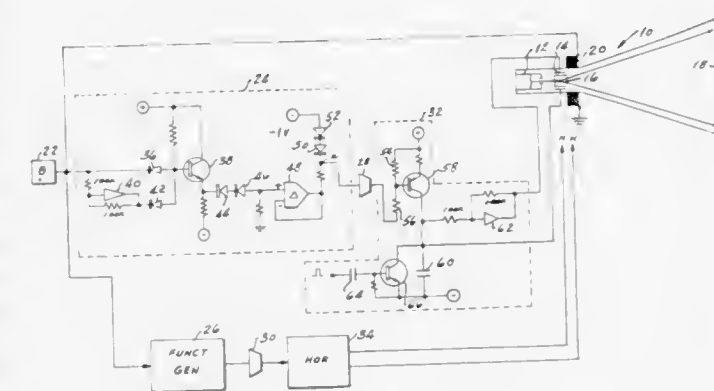
David E. Wadlow, Middle Barton, England, assignor to United Aircraft Corporation, Hartford, Conn.

Filed Jan. 12, 1971, Ser. No. 105,918

Int. Cl. H01j 29/70

U.S. Cl. 315—26

12 Claims



A system for rotating a cathode ray display in which a signal proportional to the desired degree of rotation is applied to an auxiliary rotating coil on the display tube at a location beyond the deflection system and to a function generator providing an output signal which is applied to the display sweep circuit to compensate for non-linear variations in size of the display occasioned by the rotation thereof.

3,720,861

**FLUORESCENT LAMP IGNITING CIRCUIT**

Francis P. Kahanic, Arlington Heights, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Dec. 21, 1970, Ser. No. 99,934

Int. Cl. H05b 37/00, 41/14

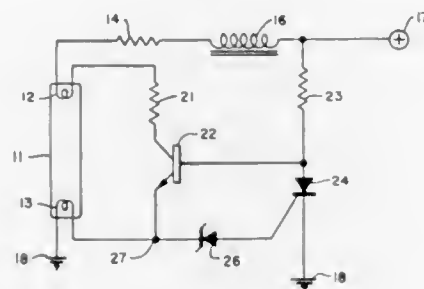
U.S. Cl. 315—101

14 Claims

A transistor is between, and in series with, the heating filaments of a fluorescent lamp, to allow current flow therethrough when power is initially applied to the circuit. A predetermined time after power is applied to the circuit, determined either by the time required to charge a capacitor to a predetermined potential or by the time required to in-



crease the impedance of one of the heating filaments to a predetermined impedance as a result of heating caused by I<sup>2</sup>R losses, the transistor is rendered nonconductive. When the



transistor is rendered nonconductive an induction coil, in series with the filaments, provides a momentary additive transient voltage to ignite the lamp.

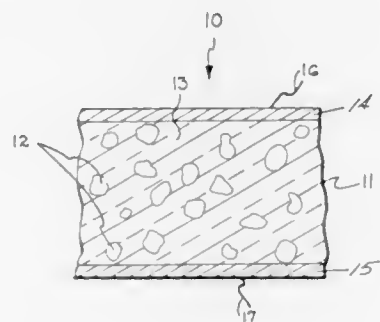
3,720,862

**CAPACITOR WITH HIGH K DIELECTRIC MATERIALS**  
Daniel W. Mason, West Peabody, Mass., assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 107,566, Jan. 18, 1971, Pat. No. 3,679,440, which is a continuation-in-part of Ser. No. 54,591, July 13, 1970, abandoned. This application Jan. 27, 1972, Ser. No. 221,425

Int. Cl. H01g 3/06

U.S. Cl. 317-258



Unique dielectric compositions may be used to formulate thick film pastes for printing microelectronic capacitors. The resulting dielectrics exhibit dielectric constants greater than about 500 and capacitances greater than about 80,000 picofarads per square inch at a thickness of at least about 1.0 mils. The unique dielectric compositions comprise about 55-76 percent by weight of a ferroelectric material and 45-24 percent of a glass binder. The glass binder employed comprises a lead barium borosilicate glass and a ferroelectric material previously dissolved therein. The composition is formulated into a printing paste by first dissolving 20-30 percent by weight ferroelectric into 70-80 percent by weight lead barium borosilicate glass binder, cooling the newly formed glass to a solid state, comminuting the glass to a particle size of less than about 1 micron and thereafter admixing the comminuted glass with the same particulate ferroelectric in an amount as indicated. This admixture is then added to a liquid organic carrier vehicle to formulate the printing paste. The printing paste is then printed into a chosen design and fired at a temperature of approximately 1,000°-1,050° C. to produce a highly dense, uniform, and substantially crack-free dielectric material.

### 3,720,863 ELECTRICALLY DRIVEN VEHICLE STEERED BY CONTROL OF POWER AND SPEED OF TRACTIVE ELEMENTS

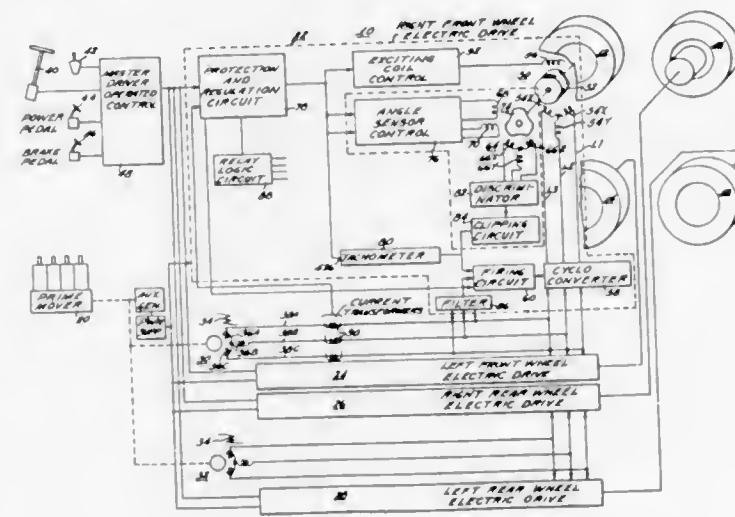
William L. Ringland, Greendale; Manfred E. Neumann, New Berlin; Ernst K. Kaeser, West Allis; Thomas P. Gilmore, Wauwatosa, and Alois F. Geiersbach, Milwaukee, all of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Division of Ser. No. 853,462, Aug. 27, 1969, Pat. No. 3,577,050, which is a continuation-in-part of Ser. No. 824,223, May 13, 1969. This application Nov. 19, 1970, Ser. No. 91,115

Int. Cl. H02p 7/74

U.S. Cl. 318-52

13 Claims



10 Claims

The wheels of a vehicle are driven by inductor type synchronous motors having solid rotors without windings and commutators. A diesel on the vehicle drives a pair of high frequency rotating generators each of which supplies power to a pair of the synchronous motors. Power pedal means actuated by the operator derive a power signal proportional to the desired tractive effort for the vehicle. A separate electric drive for each motor includes means for deriving a control signal modulated at motor speed, a cycloconverter between each motor and its generator regulated by the control signal, tachometer means for deriving a speed signal which is a function of motor speed, and control means responsive to both the power signal and speed signal for regulating the magnitude and phase of the control signal so that the motor output power is constant over the speed range at a level in accordance with the power pedal setting.

Brake means actuated by the operator derive a brake signal, and the vehicle has means for shifting the phase of the control signals for all the motors to regeneratively brake them when the brake signal exceeds the power signal. The vehicle has travel direction selector means for shifting the phase of all the control signals to reverse the direction of motor rotation and thus propel the vehicle backward. The vehicle has manually operated means for setting a speed limit for the vehicle and means for deriving a speed limit signal which is additive to the brake signal to regeneratively brake the motors when vehicle speed exceeds the set speed limit. Turn compensation means increase the power supplied to the motors of the wheels on the outside of a turn and decrease the power supplied to the motors of the wheels on the inside of the turn as a function of the degree of turn and the magnitude of the power signal.

3,720,864

### STEP MOTOR CONTROL CIRCUIT

Walter Kolhagen, 818 Oakley Ave., Elgin, Ill.  
Filed May 6, 1970, Ser. No. 35,066

Int. Cl. H02k 29/00

U.S. Cl. 318-138

18 Claims

A permanent magnet step motor rotor is driven in response to oppositely directed magnetic fluxes coupled by a magnetic

core to the rotor. The flux in one direction is derived by selectively feeding D.C. current in one direction through a winding means on the core and a transistor emitter collector path while a switch is open circuited to forward bias the transistor base emitter junction. Flux in the other direction is derived by closing the switch and thereby back biasing the transistor so that D.C. current flows in the winding means in the opposite direction. The rotor is locked in place under steady state conditions with a D.C. current derived from the circuit including

of switches in such a manner that these windings are permanently fed and that the current is reversed in the windings at the moment when no counterelectromotive force is induced therein, this winding being at this moment put in series with at least one other winding in which the counterelectromotive force induced is not zero.

3,720,866

### METHOD AND SYSTEM FOR DETERMINATION OF ROTOR ANGLE OF SYNCHROMECHANISM

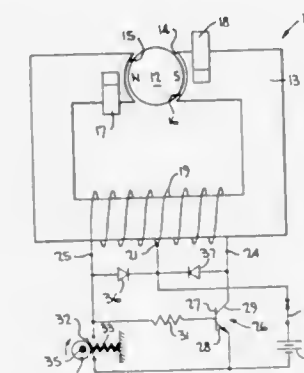
Karl B. Avellar, Ellicott City, Md.; James E. Buchanan, Bowie, Ohio, and Edward R. Higgins, North Linthicum, Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 2, 1972, Ser. No. 222,764

Int. Cl. G05b 1/06

U.S. Cl. 318-654

16 Claims



the transistor and switch. The steady state current is less than the current required to drive the rotor and is maintained at the lower level by including capacitors in bias circuits for the transistor. To drive the rotor in response to changing magnetic fluxes there may be provided either shading rings, extended, segmented core pole faces, or a rotor having major and minor permanent magnet poles. To provide balanced magnetic flux in opposite magnetic core pole faces coupling flux to the rotor a low resistivity slotted ring is provided.

3,720,865

### BRUSHLESS D.C. MOTOR

Marc Bregeault, Paris, France, assignor to Thomson-CSF, Paris, France

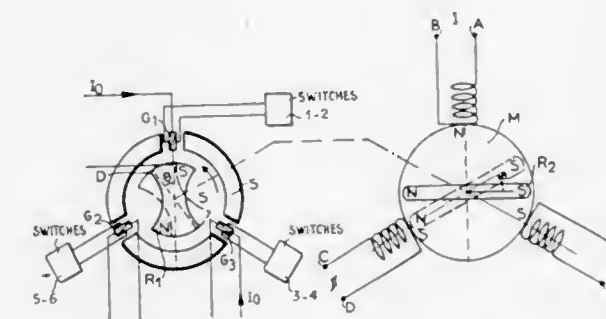
Continuation-in-part of Ser. No. 30,460, April 21, 1970, abandoned. This application March 24, 1972, Ser. No. 237,629

Claims priority, application France, April 29, 1969, 6913570

Int. Cl. H02k 29/00

U.S. Cl. 318-138

7 Claims



A brushless D. C. motor has a stator, the windings of which are connected to a D. C. source through the medium of pairs

### ERRATUM

For Class 321-47 see:  
Patent No. 3,720,868

3,720,867

### FAIL SAFE VACUUM TYPE CIRCUIT INTERRUPTER AND ASSOCIATED LOAD CURRENT TAP CHANGER FOR ELECTRIC INDUCTION APPARATUS

William H. Rathbun, Pittsfield, Mass., assignor to General Electric Company

Filed Feb. 4, 1972, Ser. No. 223,631

Int. Cl. H02p 13/06; H01h 9/30

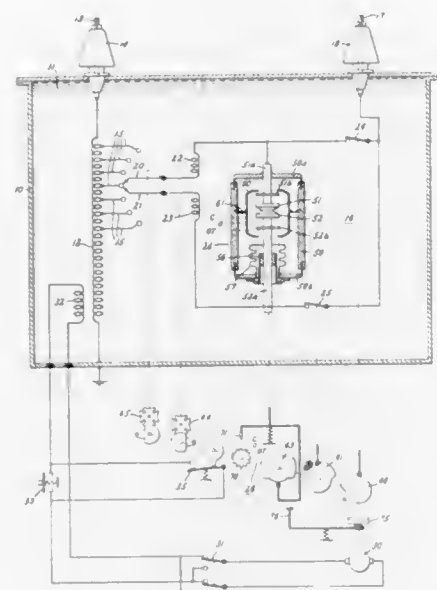
U.S. Cl. 323-43.5 R

12 Claims

A load current tap changer for electric power transformers includes a vacuum type arcing-duty current interrupter immersed in dielectric fluid and biased to closed position by dif-



ferential pressure. Overtravel limit switch means is actuated to shunt the vacuum arc gap upon excessive contact separation. The measurement is taken of the



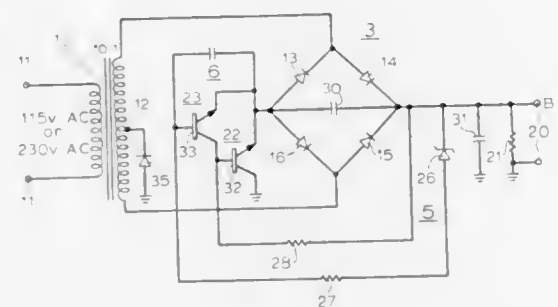
tion due to loss of vacuum and contact bias force. Limiting contact overtravel also disables the tap selector driving means.

3,720,868

**MULTIPLE INPUT VOLTAGE SOURCE POWER SUPPLY**  
Clarence M. Lee, Evanston, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Jan. 10, 1972, Ser. No. 216,519  
Int. Cl. H02m 7/20

U.S. Cl. 321-47



A power supply for supplying a predetermined d.c. output voltage notwithstanding its connection to external a.c. voltage sources of different voltage magnitudes operates in either a full wave rectifying or diode ridge rectifying mode to accommodate the different source voltage. A zener diode senses the source voltage magnitude and a mode control voltage controls a switching circuit for establishing the power supply in the proper rectifying mode.

3,720,869

**BATTERY CELL STRUCTURE AND METHOD OF DETERMINING STATE OF CHARGE**

John J. Rowlette, Arcadia, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

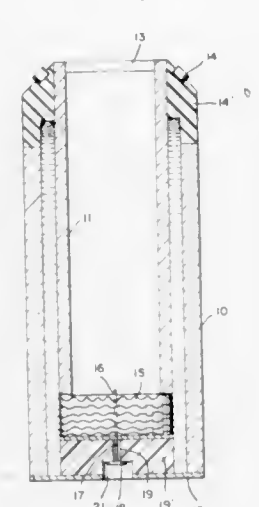
Filed Aug. 18, 1970, Ser. No. 64,718  
Int. Cl. G01n 27/42

U.S. Cl. 324-29.5

3 Claims

The method of directly determining or monitoring a state-of-charge or condition of an electrode contained in an electric cell and modified cell structure provided therefor by making a resistance measurement in a direction at right angles to the interface between the electrode and a separator. The method

provides a measure of the conductivity or resistance of an electrode in a cell assembly. The measurement is taken of the



resistance of a cell electrode, preferably the anode, by its conversion between a metallic and nonmetallic phase during the course of its charge or discharge.

3,720,870

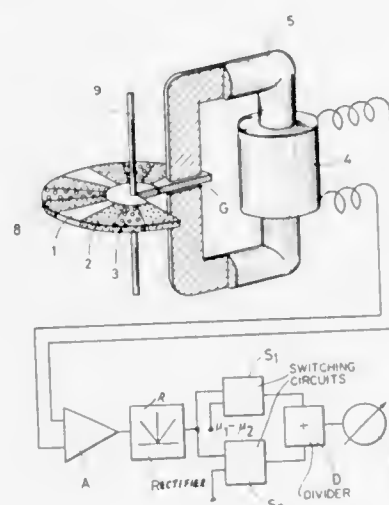
**APPARATUS FOR DETERMINING THE PERMEABILITY OF A NON-MAGNETIC MEDIUM**

Osamu Sueda, 340-2, Sakuro, Minoo-shi, Osaka, Japan

Filed July 19, 1971, Ser. No. 163,822  
Int. Cl. B01r 33/12

U.S. Cl. 324-34 R

12 Claims



A plurality of non-ferromagnetic bodies having a poor conductivity and different magnetic permeabilities are positioned in a gap formed in a magnetic circuit biased by a DC magnetic flux. The bodies are displaced relatively within the gap to cause a change of the flux, thereby providing alternate outputs in the coil.

These alternate outputs are proportional to the difference between the magnetic permeabilities of these bodies. If one body is a sample of known permeability and the other body is sample of unknown permeability to be measured, the unknown permeability of the sample to be measured may be determined instantaneously by suitably processing or evaluating the alternate output or outputs.

3,720,871

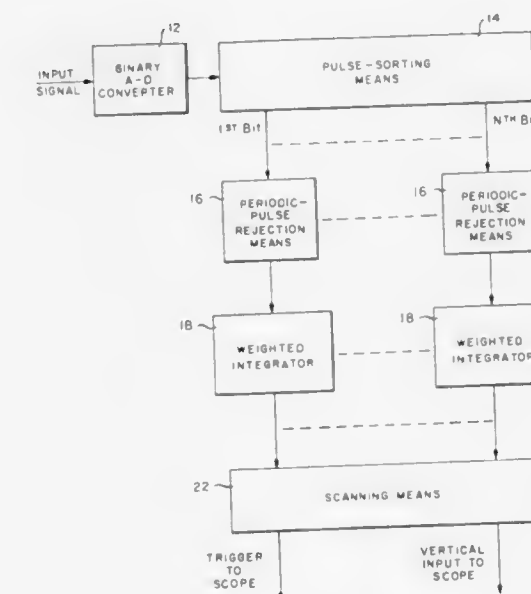
**DIGITAL FUNDAMENTAL PRP ANALYZER FOR PULSE TRAIN SIGNALS**

Bruce J. Brown, 4801 Kenmore Avenue, Apt. 1022, Alexandria, Va.

Filed Dec. 14, 1971, Ser. No. 207,757  
Int. Cl. G06f 15/20; G01r 23/02; H03b 1/04

U.S. Cl. 324-78 D

7 Claims



A pulse-repetition-period and analyzer comprising binary converter means for converting an input waveform into a series of equal-amplitude binary pulses, shift register means for sorting the pulses into a series of pulse trains ordered according to their pulse repetition periods, shift register means for rejecting from each pulse train any pulses constituting a harmonic rather than a fundamental signal at the input weighted integrator means for individually integrating said fundamental pulse trains and, scanning means for sampling the integrator means outputs in time sequence.

3,720,872

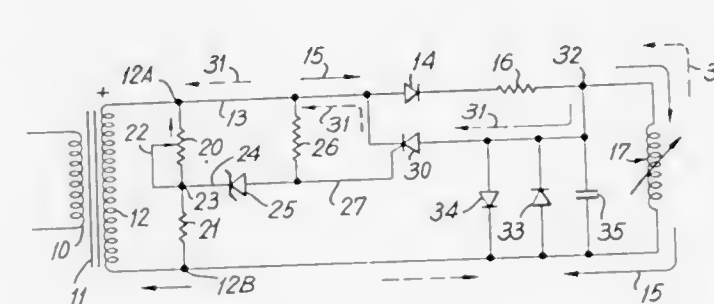
**POWER TRANSMISSION FAULT INDICATOR WITH AUTOMATIC RESET MEANS**

Taft Birch Russell, Edison, and John Gracie, Piscataway, both of N.J., assignors to Taft Electrosystems, Inc., Metuchen, N.J.

Filed Sept. 4, 1970, Ser. No. 69,563  
Int. Cl. G01r 19/16, 31/02

U.S. Cl. 324-133

3 Claims



A fault indicator is provided which, in the event of normal power line operation, maintains itself in a status that reflects this normal condition. A surge or abnormal increase in the transmitted current reverses the direction of the current flow in at least a part of fault indicator circuit and causes the indicator to reflect the abnormal condition until the restoration of normal line conditions returns the current flow within the fault indicator circuit to its original direction to reestablish a normal condition indication.

908 O.G.-18

3,720,873

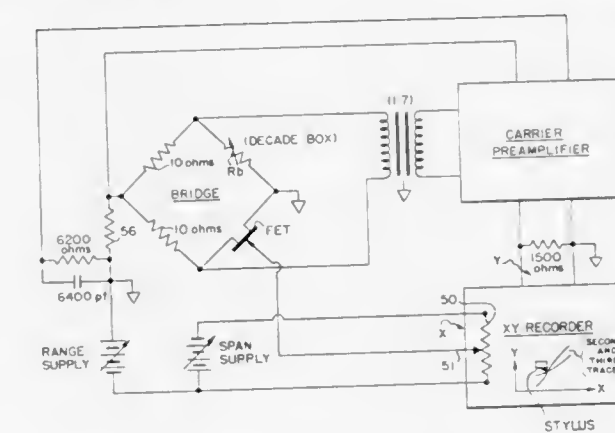
**AMPLIFIER SYSTEMS AND MODULATION**

Martin J. Morgan, Rochester; William C. Evans, Brighton; Richard A. Rappaport, Henrietta, and Alfred N. Gutzmer, Webster, all of N.Y., assignors to Sybron Corporation Division of Ser. No. 673,702, Oct. 9, 1967, Pat. No. 3,559,107. This application Dec. 21, 1970, Ser. No. 100,515

Int. Cl. G01r 31/22; H03k 17/00

U.S. Cl. 324-158 T

4 Claims



A direct current voltage is applied to the gate electrode of an FET (field effect transistor) to modulate a carrier passing through the FET between its drain and source electrode. The carrier is an alternating current from a fixed amplitude source. The resistance between drain and source of the FET varies in accordance with the amplitude of the modulating voltage, hence, the carrier becomes amplitude modulated thereby. Bias voltage is applied to the FET's gate electrode at the value required for zero temperature coefficient operation of the transistor. Variation in the net gate bias due to the modulating voltage is substantially prevented by negative feedback of the amplified and demodulated carrier voltage to the gate electrode. Further temperature compensation is provided by a zener diode made of the same semi-conductor material as the FET and incorporated in the supply of bias voltage. The bias voltage for zero temperature coefficient operation is determined by means of the relation  $R_{ds}G_m = K$ , where  $R_{ds}$  is the value of the FET's drain-source resistance at the zero temperature coefficient point,  $G_m$  is the FET's forward transfer transconductance and  $K$  is a constant having the value of about 0.184.

3,720,874

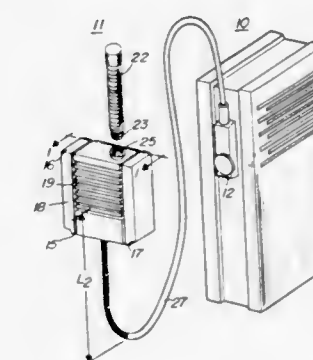
**DIPOLE ANTENNA ARRANGEMENT FOR RADIO WITH SEPARATE SPEAKER-MICROPHONE ASSEMBLY**

Stanley W. Gorkik, Des Plaines; Richard A. Kamysz, Roselle, both of Ill.; Charles T. Hilton, Jr., and John W. Faltz, both of Fort Lauderdale, Fla., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Nov. 8, 1971, Ser. No. 196,433  
Int. Cl. H04b 1/04

U.S. Cl. 325-16

16 Claims



A speaker microphone assembly, used with a portable radio unit containing receiving and transmitting equipment for



receiving and transmitting radio signals, includes a housing with a helical antenna element mounted to the top wall to form one element of a dipole antenna. A coaxial cable having inner and outer conductors is connected from the portable unit equipment to the speaker microphone housing. The center conductor is connected to the helical antenna and the outer conductor is terminated in the housing at a first point which is ground potential. A second outer conductor surrounds and is insulated from the first outer conductor, and is connected to the first outer conductor at the first point. The second outer conductor extends for a predetermined length along the first outer conductor to form the other element of the dipole antenna.

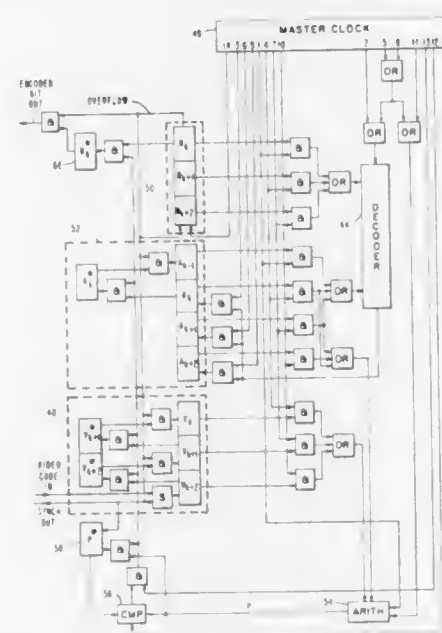
### 3,720,875 DIFFERENTIAL ENCODING WITH LOOKAHEAD FEATURE

Peter A. Franaszek, Mt. Kisco; David D. Grossman, Yorktown Heights, both of N.Y., and Peter M. Will, Norwalk, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 3, 1971, Ser. No. 195,398  
Int. Cl. H03r 13/22

U.S. Cl. 325-38 B

8 Claims



Analog input information is compacted by a differential encoding process that anticipates abrupt transitions in signal levels and initiates compensatory action in time to prevent the encoded representations of such transitions from being shifted out of phase due to slope overload. Digitized analog signal representations which are to be encoded are first passed through a shift register having L stages, the number L signifying the amount of "lookahead", i.e., the number of sampled analog elements that are to be analyzed as a group prior to encoding. The contents of the shift register at any instant will furnish the "history" of variations in the respective levels of the first L signal elements which currently await encoding. By a judicious interpretation of this history, the system is able to select an optimal encoded bit pattern which would most nearly represent in compact digital code form the apparent trend of these variations, and the leading bit or bits of this pattern will be fed out by the encoder. The optimal bit pattern is continually updated as the makeup of the lookahead code group changes. By anticipating rapid changes of level, the phase shift of elements having highly contrasting levels is avoided.

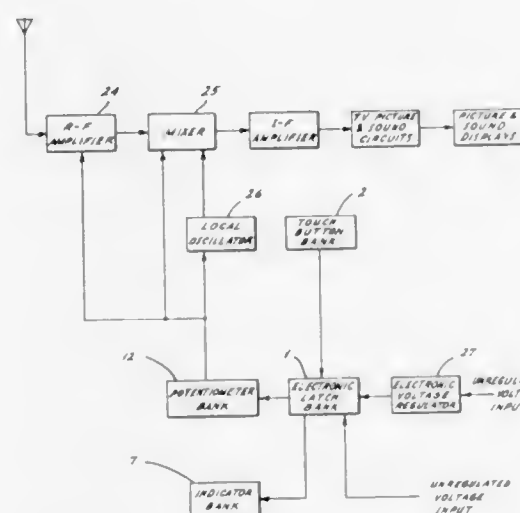
### 3,720,876 TOUCH-BUTTON ACTUATED ELECTRONIC LATCHING DEVICE WITH MEANS FOR ENSURING LATCH OPERATION UPON THE APPLICATION OF POWER

Andrew P. Montgomery, deceased, late of Glenside, Pa. (by Ann P. Montgomery, executrix), assignor to Philco-Ford Corporation, Philadelphia, Pa.

Filed April 28, 1971, Ser. No. 138,211  
Int. Cl. H04b 1/06

U.S. Cl. 325-465

6 Claims



An improvement in the circuits used in touch-button operated electronic latches for tuning voltage variable capacitor tuned UHF television tuners. When a bank of electronic latches operating from a common power source is first energized by the application of input power, all latches will remain in the off state. In the case of a television receiver no signal will be received and the picture and sound displays will contain only noise. The improvement here is the inclusion of circuits that ensure the operation of one latch when power is first applied. This means that when the receiver is first energized it will be tuned to an occupied channel.

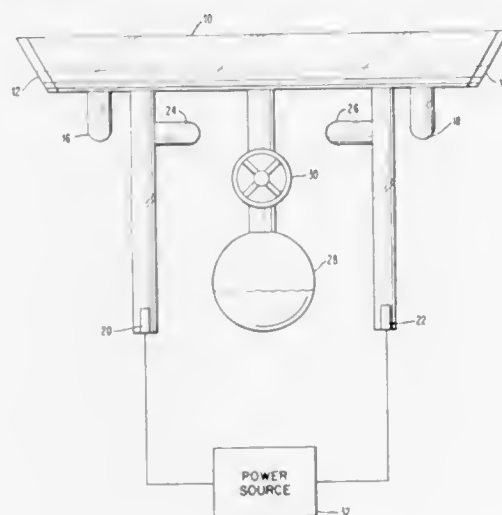
### 3,720,877 METAL VAPOR DISCHARGE TUBE USING METAL AND SEMI-METAL COMPOUNDS IN A DISCHARGE TUBE

Charles B. Zarowin, Tarrytown, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 25, 1970, Ser. No. 75,589  
Int. Cl. H01s 3/09

U.S. Cl. 330-4.3

3 Claims



A metal vapor discharge tube device including a discharge tube and means for introducing a metal or semi-metal into the discharge tube without auxiliary heating. The metal or semi-metal is introduced as a compound of a metal or semi-metal.

and a non-metallic radical having a vapor pressure greater than one torr at the temperature of the discharge tube (which for most discharge tubes can be as high as about 300° C). The discharge in the tube causes the decomposition of the compound, thereby releasing the metal or semi-metal into the discharge for excitation. If desired, the excitation can produce lasing and the device may be used as a metal vapor laser.

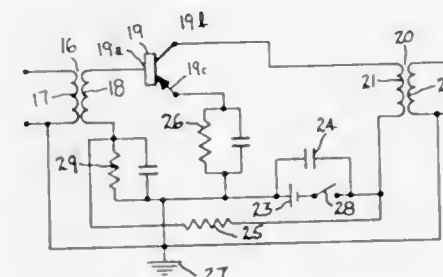
### 3,720,878 TRANSMISSION LINE IMPEDANCE MATCHING CIRCUIT

Raymond A. Rosenberry, 6645 Rochelle Boulevard, Parma Heights, Ohio

Continuation-in-part of Ser. No. 738,969, June 21, 1968, abandoned. This application May 21, 1971, Ser. No. 145,926  
Int. Cl. H03f 3/04

U.S. Cl. 330-12

7 Claims



An impedance-matching solid state amplifier circuit for an antenna circuit in which the impedance matching circuit can be connected at either terminus of the transmission circuit or at any point therebetween and in which the amplifier circuit need not be relied upon for any tuning effect as it relies upon the reflected impedance of the load in the matched impedance transmission circuit.

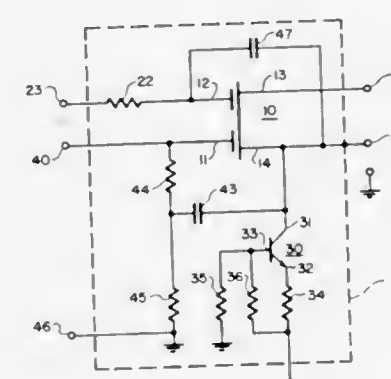
### 3,720,879 LOW-CAPACITY, HIGH IMPEDANCE CIRCUIT

Randolph A. Reitmeyer, Jr., Oakhurst, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed April 17, 1972, Ser. No. 244,686  
Int. Cl. H03f 3/16

U.S. Cl. 330-26

3 Claims



This invention relates to amplifiers and particularly to low-input-capacitance, high-input-impedance amplifiers. More particularly, this invention relates to an amplifier using a dual-gate, field-effect transistor with circuitry for increasing the effective input impedance and reducing the effective input capacitance of the dual-gate field-effect transistor to an extremely low value.

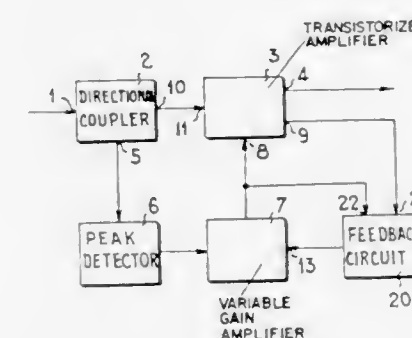
### 3,720,880 POWER AMPLIFYING DEVICE FOR AMPLITUDE MODULATED HIGH FREQUENCY SIGNALS

Pierre Le Seigneur, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Oct. 13, 1971, Ser. No. 188,812  
Claims priority, application France, Oct. 3, 1970, 7036925  
Int. Cl. H03g 3/30

U.S. Cl. 330-29

2 Claims



In a power amplifying device comprising a linear push-pull amplifier the transistors of which are mounted in a common emitter arrangement, the difference between the d.c. supply voltage and the variable peak voltage  $V_m$  appearing on the collectors of the transistors for each period of the input signal, is maintained constant through supplying to the amplifier a d.c. supply voltage  $V_a$  equal to  $V_m + V_D$  where  $V_D$  is a predetermined voltage.

This is obtained through detecting the peak values of the input signal by means of a peak detector whose output signal is amplified by an auxiliary amplifier, the output voltage of which is supplied as a d.c. supply to the push-pull amplifier.

A feedback circuit maintain the relation  $V_a = V_m + V_D$  when the gain of the transistors of the push-pull amplifier varies.

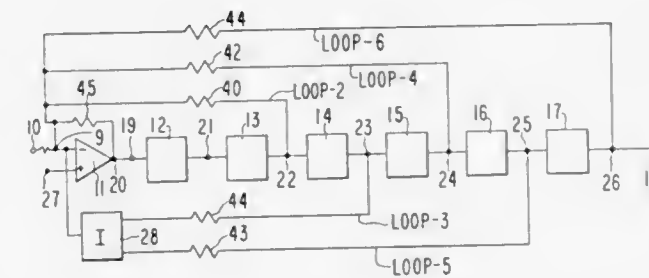
### 3,720,881 FILTER NETWORK HAVING NEGATIVE FEEDBACK LOOPS

Gunnar Hurlig, III, Santa Clara, Calif., assignor to Kinetic Technology, Inc., Santa Clara, Calif.

Filed Jan. 17, 1972, Ser. No. 218,162  
Int. Cl. H03f 1/36

U.S. Cl. 330-107

16 Claims



A filter network having an input terminal and an output terminal and a plurality of cascaded filter sections, each section having a designated frequency response, the bandpass or low-pass characteristics of each section being calculated by a formula, and including a plurality of negative feedback loops, one for each filter section except the first, each loop being coupled between the output terminal of the respective filter section and the input terminal of the filter network through a summing means, the gain of each feedback loop being calculated by a formula.



3,720,882

## PARAMETRIC FREQUENCY CONVERSION

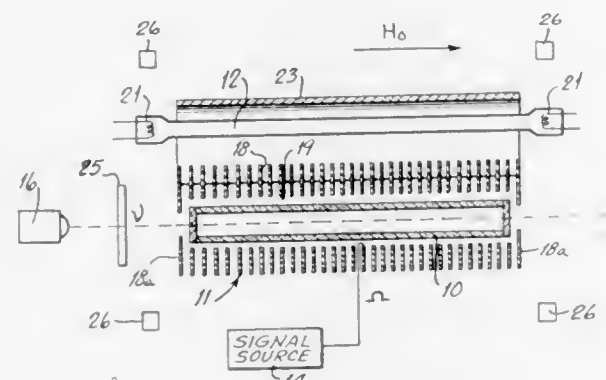
Henry Tang, and William Happer, Jr., both of New York, N.Y., assignors to Research Corporation, New York, N.Y.

Filed Aug. 3, 1970, Ser. No. 60,389

Int. Cl. H03F 7/00; H03b 3/17

U.S. Cl. 331-3

15 Claims



Parametric frequency conversion is effected in a sample of material, such as an alkali vapor, having an energy level system including first and second energy levels with a first transition frequency between them, and a third energy level with a second transition frequency between the third level and one of the first and second levels. The sample of material is disposed in a resonant structure resonating at a frequency substantially equal to the first transition frequency, so as to be within an oscillating electromagnetic field of frequency substantially equal to the first transition frequency, established and maintained by application of a signal to the resonant structure. With a population imbalance between the first and second levels established in the sample as by optical pumping, a carrier beam of energy at a frequency substantially equal to the second transition frequency is directed through the sample. The resonant structure is designed to provide a wavelength within the structure for the field frequency that satisfies a phase-matching condition such that sidebands of the carrier beam are produced by modulation of the index of refraction of the sample, these sidebands differing from the carrier frequency by integral multiples of the field frequency. By appropriate polarizing means, the generated sidebands can be detected, or alternatively, a polarized component of the carrier beam modulated in intensity at the field frequency can be detected. Devices providing this parametric frequency conversion may be arranged to operate as stable, self-oscillating frequency standards or for other purposes such as microwave photon detection.

3,720,883

## TUNED OSCILLATOR CIRCUIT FOR PROVIDING A ROTATING MAGNETIC FIELD

William Emil Hess, Jr., Hillside, and George Philip Vella-Coleiro, North Plainfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 19, 1971, Ser. No. 163,938

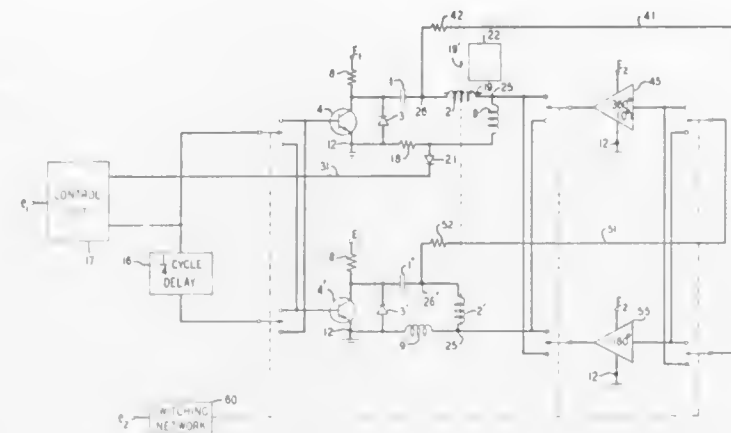
Int. Cl. H03b 3/00

U.S. Cl. 331-55

11 Claims

A tuned field drive circuit for use in magnetic domain apparatus is provided for generating a reversible, rotating, magnetic field in a plane. The circuit is capable of initiating, maintaining and terminating the rotating field with a predetermined phase and with a field strength envelope having a substantially constant amplitude. The basic circuit includes a high-speed transistor switch, a tuned L-C resonant circuit, and a feedback field current amplifier, for compensating for re-

sistive loss in the resonant circuit. Two of the basic circuits are "slaved" together to form the resultant field drive circuit,





the sub-cavity is provided by means of a diaphragm which is shielded from electromagnetic energy by part of the choke-forming surfaces of a ditch choke. The shielding surface may be in the form of another diaphragm.

3,720,890

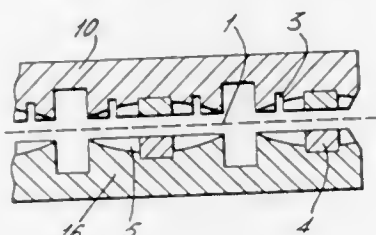
## WAVEGUIDE FOR MOISTURE MEASUREMENT

John Gordon Anderson, Northumberland, England, assignor to The Rank Organisation Limited, London, England  
Filed July 8, 1971, Ser. No. 160,928  
Claims priority, application Great Britain, July 8, 1970, 33,115/70

Int. Cl. H01p 1/00; G01r 27/04

U.S. Cl. 333—98 R

7 Claims



Waveguide for use in moisture measurement comprises two plates with the propagation channel partly formed in each. Preferably both plates have a series of spaced grooves or slots at preferably both sides of the channel and transverse thereto to reduce longitudinal excitation of electromagnetic waves outside the channel.

3,720,891

## CIRCUIT BREAKER WITH IMPROVED AUXILIARY SWITCH ACTUATOR

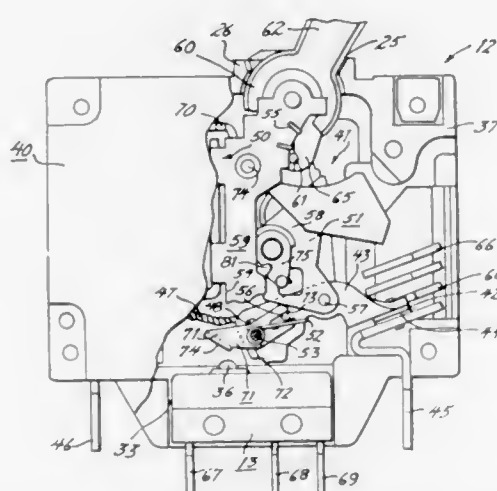
Ronald Nicol, Trenton, N.J., assignor to Heinemann Electric Company, Trenton, N.J.

Filed Dec. 6, 1971, Ser. No. 204,850

Int. Cl. H01h 73/12

U.S. Cl. 335—13

13 Claims



A circuit breaker including an actuator for operating an auxiliary switch prior to the closing of the main contacts of the circuit breaker. The circuit breaker operating mechanism is of a known type having a movable contact mounted on a movable arm, the movable arm being coupled to a manual operating handle via a collapsible linkage and pivotally supported from a main frame. The actuator comprises a member coupled to the movable arm adjacent one end thereof by a slotted connection, engageable with an auxiliary switch at its other end depending on the position of the movable arm, and pivotally supported from the circuit breaker main frame intermediate its ends.

3,720,892

## CONSTRUCTION FOR A RELAY

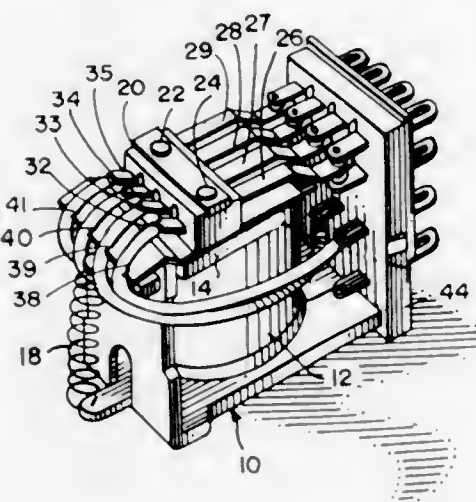
Leon R. Britton, Chicago, Ill., assignor to Guardian Electric Manufacturing Company, Chicago, Ill.

Filed March 9, 1972, Ser. No. 233,074

Int. Cl. H01h 50/00

U.S. Cl. 335—135

1 Claim



A sheet of insulating material is positioned between the contact block and the pivotal armature of a relay. The insulating material extends beyond the pivot axis of the armature and engages the lead wires of the relay to maintain the length of the lead wire between the sheet and contact terminals on the block in a substantially fixed position whenever the armature is pivoted.

3,720,893

## ROTARY SWITCH

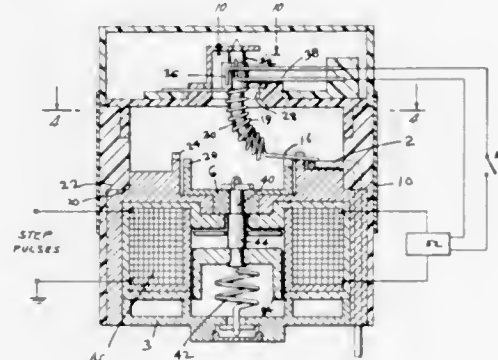
Kenneth F. Elliott, Bexley, Kent, England, assignor to GTE International Incorporated, New York, N.Y.

Filed Nov. 26, 1971, Ser. No. 202,312

Int. Cl. H01h 51/08

U.S. Cl. 335—138

3 Claims



A rotary switch comprising: a plurality of  $n$  different fixed contacts where  $n$  is an integer at least equal to 2, said contacts being disposed in spaced position along a circle and designated as the first, second, . . . and  $n$ th contacts respectively; an electrically conductive wiper extending radially outward from the center of the circle and fixed in position at the center, the opposite end of the wiper making electrical connection with any fixed contact when the wiper is properly positioned; first means responsive to incoming pulses to cause said wiper to rotate through a selected arc each time a pulse is received whereby said wiper can be successively advanced to make electrical connection with each of the first, second . . . and  $n$ th contacts in turn and thereafter to repeat the sequence as required, said wiper when connected to said first contact being in the home position; a pair of normally closed contacts; and second means responsive to the rotation of the wiper to separate the contact in said pair when and only when the wiper is in home position.

3,720,894

## CURRENT MONITORING MEANS

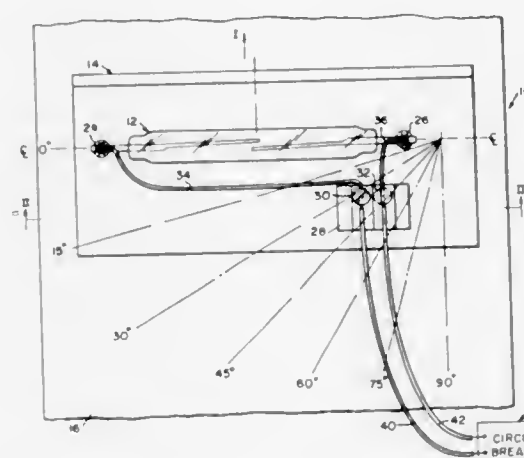
Albert C. Greenwood, Angola, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 3, 1971, Ser. No. 195,343

Int. Cl. H01h 51/28

U.S. Cl. 335—204

6 Claims



A current monitoring device is disclosed for determining when a known maximum magnitude of direct current has been exceeded. A switching element operatively responsive to a given magnetic flux density vector  $B_1$  to indicate that the maximum direct current has been exceeded, is adapted to be oriented at an angle  $\alpha_1$  (including  $0^\circ$ ) with respect to the magnetic flux density vector  $B_2$  resulting from the direct current being monitored. Magnetic shielding is arranged in proximity to the switching element, the degree of proximity determining the magnitude of the magnetic flux  $B_2$  which is diverted from the switching element.

The joint selection of the angle  $\alpha_1$  and the positioning and selection of the magnetic shielding enables a wide range of direct currents to be monitored.

3,720,895

## MAGNETICALLY ACTUATED REED SWITCH ASSEMBLY

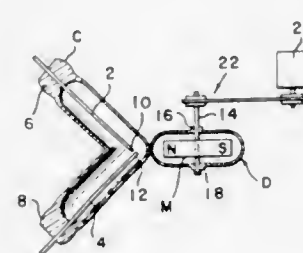
Bernard Edward Schlesinger, Jr., 9411 Macklin Court, Alexandria, Va.

Filed March 21, 1972, Ser. No. 236,598

Int. Cl. H01h 51/28

U.S. Cl. 335—205

29 Claims



A magnetically actuated reed switch assembly comprising contact means including first and second cooperating magnetically actuated reeds in spaced relation to each other, a permanent magnet rotatable about an axis transverse to the longitudinal axis of the reeds and positioned with respect to the contact means so that its force field at certain positions of its rotation operates to influence the contact means to open or close, the contact means and magnet being encased in a housing assembly including contact and magnet supporting chambers.

3,720,896

## HANDLE FOR HIGH FREQUENCY ELECTRODES

Reiner Belerlein, Nurnberg, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany

Filed May 18, 1971, Ser. No. 144,476

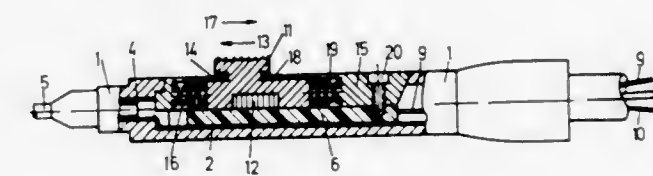
Claims priority, application Germany, June 23, 1970, P 20

30 776.0

Int. Cl. H01h 15/00

U.S. Cl. 335—206

4 Claims



A handle for high frequency electrodes, particularly for use in high frequency surgery has built-in switches for operating a high frequency generator so as to change its outgoing energy, frequency etc. The device is particularly characterized in that contact elements depending from a magnetic field are used as the operating switches and that a permanent magnet is located in the handle.

3,720,897

## ELECTRICAL INDUCTIVE APPARATUS

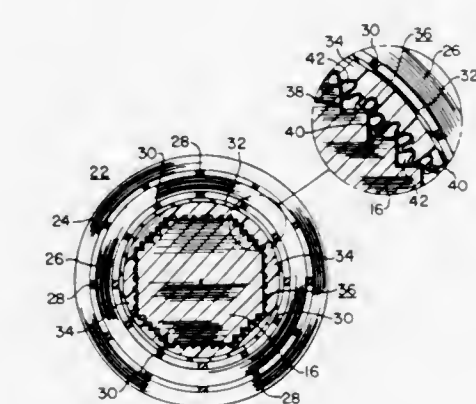
Landis E. Feather, Sharon, Pa., and Louis Morris, Campbell, Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 9, 1971, Ser. No. 170,005

Int. Cl. H01f 27/08

U.S. Cl. 336—60

18 Claims



An arrangement for supporting a winding tube of a power transformer. The winding tube is supported and held in position by a supporting structure constructed of rigid plastic foam. Spaces or openings in the supporting structure, which are created by suitably shaped members, permit the liquid dielectric of the transformer to flow through the supporting structure to cool adjacent structures. The suitably shaped members are inserted between the winding tube and its supporting member before the plastic foam is placed therein, thereby defining the shape of the spaces or openings in the supporting structure.

3,720,898

## TEMPERATURE-SENSITIVE ASSIST FOR TEMPERATURE-CONTROLLED SWITCH

Robert N. Levinn, Catskill, N.Y., assignor to American Thermostat Corporation, South Cairo, N.Y.

Filed Dec. 29, 1970, Ser. No. 102,301

Int. Cl. H01h 51/34

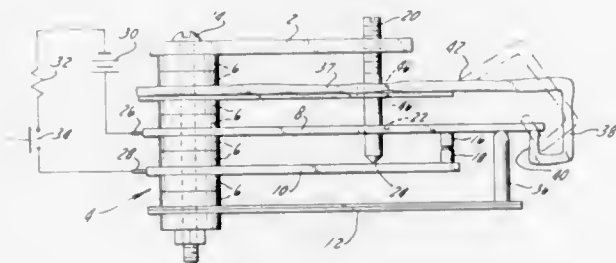
U.S. Cl. 337—95

8 Claims

In a conventional type of thermostat the temperature-sensing element, usually in the form of a bimetal strip, acts



against a resiliently loaded switch contact, tending to move that contact to switch-open position against the action of the spring loading thereof. In most instances as the bimetal changes its shape progressively in accordance with changes in temperature, the force exerted thereagainst by the switch contact that it is tending to open will increase, thereby making the bimetal strip work harder and harder as the temperature changes, and in any event the force against which the bimetal works is comparatively great. These are sources of inaccuracy. To eliminate them an additional temperature-sensitive ele-



ment is provided, one which normally is comparatively inactive on the switch. However, when a temperature is reached which is close to the desired operating temperature of the switch, that element becomes active on the switch with a force which is not strong enough in and of itself to move the switch to open position. Hence the element, when active, will act to assist the bimetal, thereby enabling the bimetal to work against a relatively low opposing force and thus increasing the accuracy with which the bimetal can control the opening and closing of the switch.

3,720,899

**THERMOSTAT WITH OVERLOAD INDICATOR**

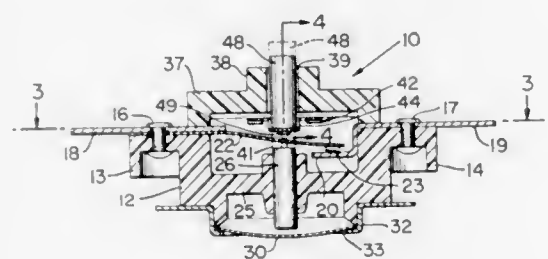
Charles John Hire, Pittsford, and George C. Luke, Irondequoit, both of N.Y., assignors to Fasco Industries, Inc., Rochester, N.Y.

Filed May 28, 1971, Ser. No. 147,739

Int. Cl. H01h 37/70

U.S. Cl. 337—348

8 Claims



The housing of this thermostat contains a normally closed switch arm, and a bimetallic, temperature-responsive disc, which flexes to open the switch arm and interrupt the associated circuit when the ambient temperature exceeds a predetermined value. An indicator pin, which is mounted to reciprocate in an opening in one end of the housing, may be attached at its inner end to an over-center, snap-acting spring which is mounted in the housing, or the pin may carry a flexible spring member engageable in spaced recesses in the housing. When the metal disc opens the switch arm, the arm shifts the indicator pin outwardly to indicating position against the

resistance of the over-center spring, or the flexible spring member, where it is readily viewable. The indicator pin must be manually reset, but the switch are reclosed independently of the indicator pin.

3,720,900

**THIN-FILM RESISTANCE THERMOMETER HAVING LOW OHMIC CONTACT STRIPS**

Drost M. Von Bruning, Zurich, Switzerland, assignor to Mettler Instrumente AG, Zurich, Switzerland

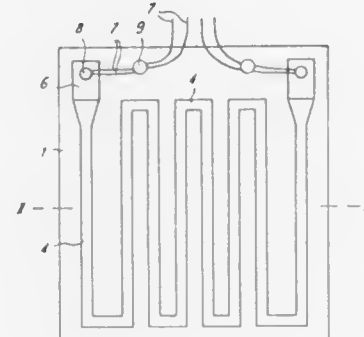
Filed June 25, 1970, Ser. No. 49,803

Claims priority, application Switzerland, July 8, 1969, 10425/69

Int. Cl. H01c 7/00

U.S. Cl. 338—25

10 Claims



Temperature-responsive thin-film resistor of the type including a ribbon of resistive material supported on a base layer, characterized in that the composition and cross-sectional dimensions of said resistive ribbon are such as to produce a positive variation in electrical resistance of at least 5 percent per degree Kelvin at any point within a 10° interval up to 30° Kelvin and further that low ohmic contact strips are provided at the ends of the resistive ribbon. Preferably the resistive material is selected from the group consisting of lead, cadmium, indium, thallium, gold and stabilized β-tin.

3,720,901

**CONTACTLESS PROGRAM MONITOR**

Adolf Albrecht; Ulrich von Borcke; Paul Hini, and Hans Hieronymus, all of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

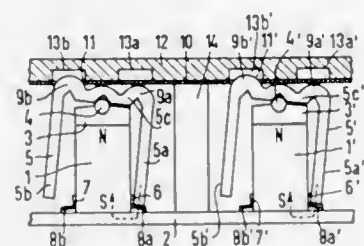
Filed June 30, 1970, Ser. No. 51,046

Claims priority, application Germany, July 19, 1969, P 19 36 900.7

Int. Cl. H01c 7/14

U.S. Cl. 338—32 R

3 Claims



A pole shoe is rigidly affixed to one pole of a magnet and a yoke is pivotally mounted on the other pole of the magnet about an axis. The yoke is of substantially inverted U-shaped configuration having a pair of spaced yoke legs joined at one end by a head portion pivotally mounted on the other pole of the magnet in a manner whereby the yoke is pivotable from one stable state to another in a plane, formed by the yoke legs.

Each of a pair of galvanomagnetic resistors is mounted on the pole shoe on a corresponding side of the magnet in a manner whereby when the yoke is in one stable state one yoke leg thereof is in close proximity with one of the galvanomagnetic resistors and the other yoke leg thereof is spaced from the other of the galvanomagnetic resistors and vice versa. A pair of spaced transmitter members movably mounted adjacent the head portion of the yoke for movement in the plane of the yoke legs controls the pivotal movement of the yoke into a selected one of its stable states.

3,720,902

**HELICOPTER SLING LOAD ELECTRICAL ADAPTER**

Charles W. Becker, Baltimore, and Royale R. Crabtree, Towson, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

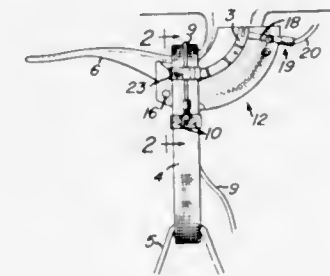
Division of Ser. No. 34,291, May 4, 1970, Pat. No. 3,647,170.

This application Aug. 11, 1971, Ser. No. 170,865

Int. Cl. H01r 39/64

U.S. Cl. 339—2 R

3 Claims



A means for electrically connecting the electrical system of a load means to the electrical power supply of a lifting means.

3,720,903

**FILTER ASSEMBLY FOR PRINTED CIRCUIT BOARD CONNECTOR**

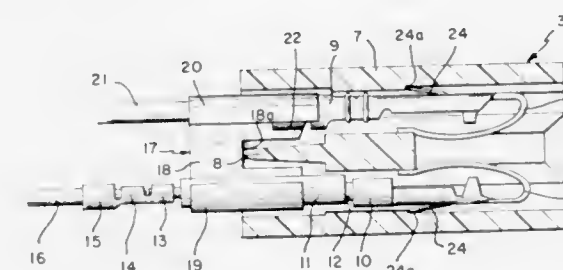
Ferdinand William Schor, Alhadena, Calif., assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 27, 1971, Ser. No. 147,570

Int. Cl. H01r 3/06

U.S. Cl. 339—14 R

3 Claims



A filter assembly for a printed circuit board connector having spring contacts with crimp barrels for connecting flexible loads. The assembly includes a ground strap having a first curved surface at one side resiliently engaging the crimp barrel of one spring contact connected to a grounded flexible lead. A second curved surface at the other side of the ground strap resiliently engages the exterior (i.e., the ground side) of a cylindrical filter. A connecting pin extending through the filter is engaged by a crimp barrel of an adjacent ungrounded spring contact. By recessing the second curved surface with respect to the first, the second curved surface will not contact the intermediate portion of the strap to receive a wall of the connector housing separating the spring contacts. The filter need not in every instance be connected to a grounded circuit.

3,720,904

**SELF-ACTUATING LOADBREAK CONNECTOR**

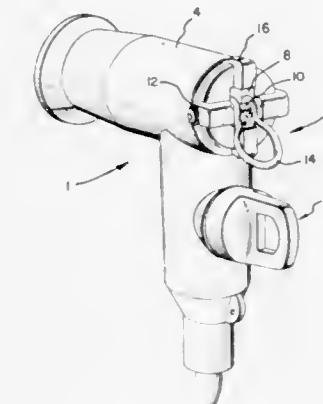
Frederick Carl De Sio, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 4, 1971, Ser. No. 112,646

Int. Cl. H01r 13/52, 13/54, 13/62

U.S. Cl. 339—34

10 Claims



A loadbreak connector having a male contact retractable to a cocked position and positively actuated to an extended position for positive engagement with an associated high voltage connector. Trigger apparatus initially retains the contact in a retracted position. The contact includes venting structure to dissipate and cool arc generating gases evolved upon connection of the contact to the high voltage connector.

3,720,905

**PIN FOR ELECTRICAL CONNECTORS AS WELL AS CONNECTORS PROVIDED WITH THIS PIN**

Pierre Louis Marie Drogo, 104, rue Garibaldi, Saint Maur (Val de Marne), France

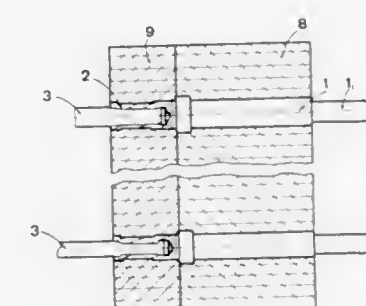
Filed May 21, 1971, Ser. No. 145,806

Claims priority, application France, June 2, 1970, 7020210

Int. Cl. H01r 11/20

U.S. Cl. 339—97 R

1 Claim



The invention relates to a pin for electrical connectors consisting of a metallic body made of a material which can be deformed by the application of pressure, said body being provided with a cylindrical axial opening for receiving the cable to be connected mechanically and electrically to the pin, this invention is characterized in that the wall of the orifice for receiving the wire comprises at least one rib forming a sharp-angled inner projection, made in the material constituting the pin and placed virtually transversally across the axis of the opening.



3,720,906

**ELECTRICAL CONNECTOR WITH EXTENDED CABLE SUPPORT**

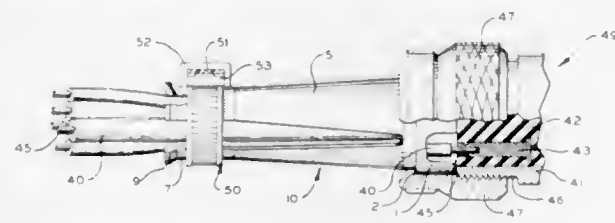
Stephen Punako, Bainbridge, and George J. Swanson, Sidney, both of N.Y., assignor to the Bendix Corporation, Southfield, Mich.

Filed June 25, 1971, Ser. No. 156,640

Int. Cl. H01r 13/58

U.S. Cl. 339-101

7 Claims



A plastic conduit affixed to and extending from the end of an electrical connector to transmit radial and axial forces, acting on the electrical wires leading to the connector, away from the connection of the connector contacts and electrical wires. The plastic cable support includes a plurality of axial slots that permit the cable support to be compressed into the wires passing through the conduit so that the wires may be retained in a fixed position. The plastic cable support transmits the radial and axial forces away from the connection of the wires to the contacts at least the distance of the cable support.

3,720,907

**PANEL CONNECTOR EMPLOYING FLAG-TYPE TERMINALS AND TERMINAL EXTRACTING TOOL FOR THE SAME**

John Carl Asick, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

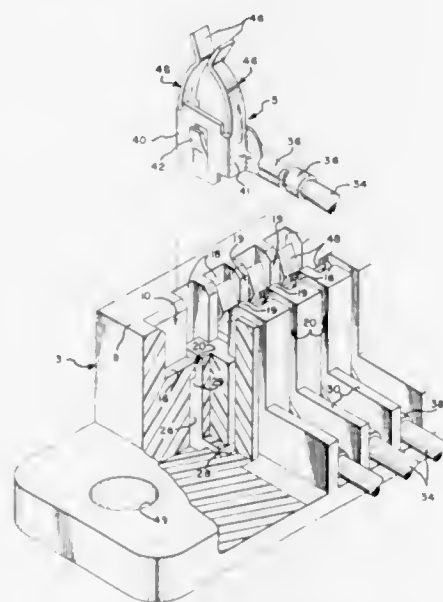
Continuation-in-part of Ser. No. 114,793, Feb. 17, 1971,

abandoned. This application July 12, 1971, Ser. No. 161,809

Int. Cl. H05k 1/07; H01r 13/12

U.S. Cl. 339-176 MP

14 Claims



A dielectric block carrying a longitudinally extending trough on one side and a plurality of spaced slots from the same side and intersecting the trough, have the root portions of the slots longitudinally enlarged at one side to define first and second shoulders. A FLAG-type terminal inserted into the trough in the same direction as the subsequently received printed circuit board has a tang within the web portion which contacts the second shoulder to resist removal forces in the plane of card insertion. The flag-type terminal is bent to longitudinally offset the web portion from the wire crimping portion to form an abutment which contacts the first shoulder and

resists forces extending along the axis of the wire crimped thereto. A multi-armed extracting tool is inserted within the slot adjacent to the terminal arm for releasing the tang from the second shoulder for extraction of the terminal in the plane of the printed circuit board and in the direction of board extraction.

3,720,908

**ELECTROMECHANICAL ACOUSTIC NOISE SOURCE**

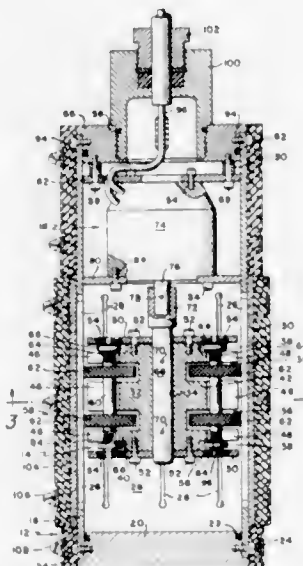
Bernard J. McCoy, Herndon, Va., and Frank O. Rans, Rockville, Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed Dec. 3, 1970, Ser. No. 94,925

Int. Cl. H04b 11/00

U.S. Cl. 340-8 R

14 Claims



An acoustic noise source wherein the noise is generated electromechanically by the rotation of a mass within and in rolling contact with a slotted thin-walled cylinder.

3,720,909

**DIRECTIONAL HYDROPHONE BUOY SYSTEM**

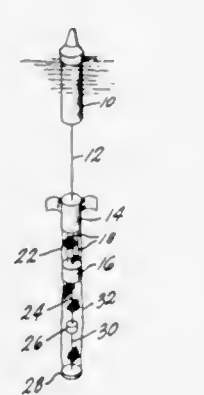
Joseph A. Sikora, Jackson, Mich., assignor to Spartan Corporation, Jackson, Mich.

Filed Feb. 1, 1971, Ser. No. 111,410

Int. Cl. H04b 13/00

U.S. Cl. 340-8 R

11 Claims



A system for supporting a highly sensitive submerged hydrophone sensing underwater sound pressure waves by physical displacement, primarily in the horizontal direction, wherein the hydrophone comprises a buoyant body maintained in a submerged condition by compliant suspension and anchor means. The displaceable hydrophone is relatively lightweight, increasing sensitivity to sound pressures, and the compliant suspension and anchor means employed include elastic strands having a natural resonance frequency significantly less than the hydrophone operating frequency, and im-

proved sensitivity is achieved due to the low mass and inertia of the hydrophone and adjacent system components.

3,720,910

**HIGH RESOLUTION TELEMETRY FOR RANDOM PULSE OUTPUTS**

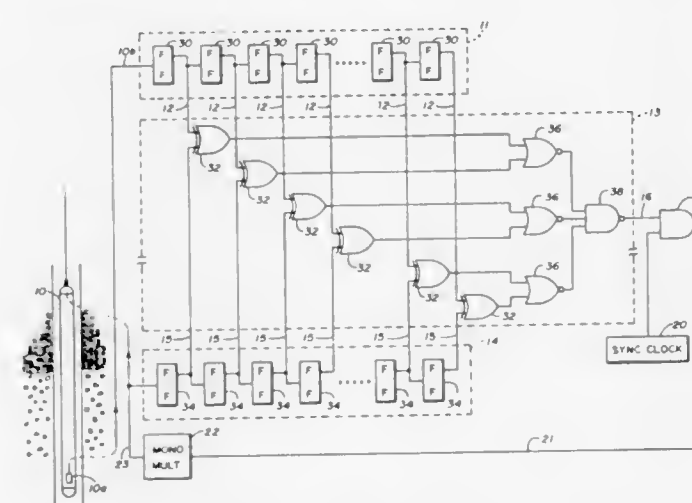
Charles R. McLaughlin, and Jerry B. West, both of Dallas, Tex., assignors to Century Geophysical Corporation, Tulsa, Okla.

Filed Feb. 25, 1970, Ser. No. 13,930

Int. Cl. G01v 1/40

U.S. Cl. 340-18 R

14 Claims



A system for accommodating random pulses having frequencies above the passband of the pulse transmission channel includes a first accumulating register into which the random pulses are fed. A second accumulator register accumulates the output pulse count of the system, and a comparator produces an output level when the counts stored in first and second registers are at a predetermined relation to one another. A synchronizing clock has an output pulse rate within the passband of the pulse transmission channel and controls the output from the comparator according to the pulse rate, such that pulses applied to the pulse transmission channel are uniformly spaced apart at a frequency within the passband of the transmission channel.

3,720,911

**MOTOR VEHICLE IDENTIFICATION AND SPEED CONTROL SYSTEM**

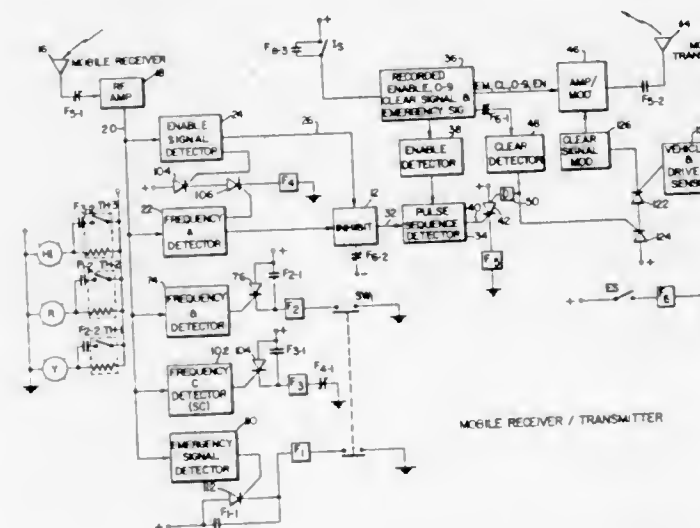
Troy W. Bomar, Jr., 1015 Parkside Drive, Wilmington, Del.

Filed June 15, 1971, Ser. No. 153,278

Int. Cl. G08b 29/00

U.S. Cl. 340-52 F

10 Claims



A mobile transmitter/receiver in each motor vehicle and each including a unique identification signal. One or more

base stations including a receiver and transmitter which includes means to ascertain the unique identification number of a given vehicle at a given place and time. Systems are provided for ascertaining, along with the identification of the vehicle; its speed or if it is stolen, conditions such as if the vehicle is polluting the air or other maintenance problems; if the driver is intoxicated or has not fastened his seat belt. Also, the same system may be used in signalling the occurrence of an accident or other emergency situation; controlling entry into limited access areas, together with "operating" toll stations in parking lots, on toll roads, bridges, etc.

3,720,912

**METHODS FOR INVESTIGATING EARTH FORMATIONS**

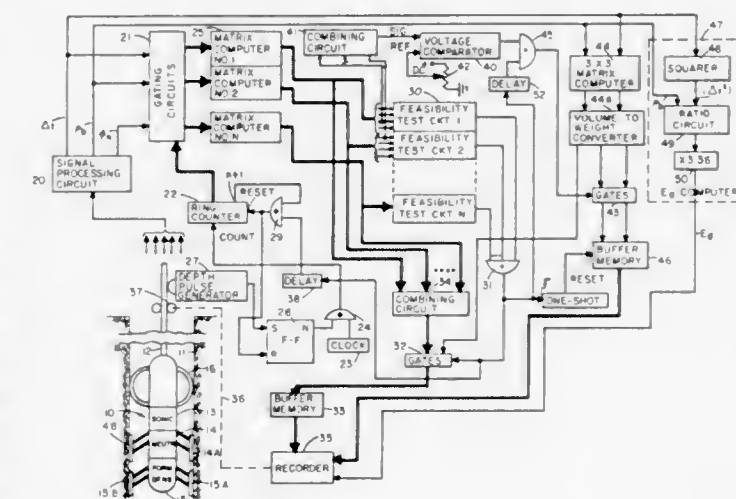
Arthur W. Schmidt, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Dec. 11, 1969, Ser. No. 884,100

Int. Cl. G01v 1/22

U.S. Cl. 340-15.5 BH

9 Claims



In accordance with illustrative embodiments of the present invention, measurements of the acoustic travel time, bulk density and hydrogen content of a formation are obtained over a section of a borehole and used to compute parameters relating to coal deposits and to the strength or competence of formations. These measurements are first combined in a  $4 \times 4$  matrix to enable the detection of the presence of an appreciable coal deposit. Once such a deposit is discovered, the travel time and bulk density measurements are combined in a  $3 \times 3$  matrix to provide computed parameters relating to the quality of coal in such a deposit. Additionally, the travel time and density measurements are used to determine the strength or competence of the coal bearing bed as well as adjacent earth formation beds to enable evaluation relating to the construction of a mine.

3,720,913

**WARNING AND COURTESY DISPLAY SYSTEM FOR MOTOR VEHICLE OPERATORS**

Richard H. Bradford, 3206 Edgewood Road, Kensington, Md.

Filed June 25, 1971, Ser. No. 156,888

Int. Cl. G08g 1/09

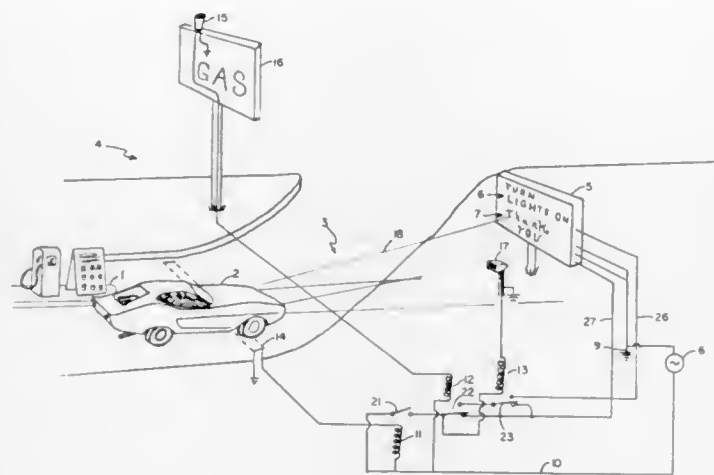
U.S. Cl. 340-31 R

5 Claims

A display for notifying a motorist that his headlights are not on and/or for conveying other courtesy information comprises means for sensing proximity of a vehicle, means for sensing ambient light, and means for sensing illumination from the



vehicle headlights. When a vehicle is present under poor ambient light conditions and headlight illumination is not sensed,



a display advises the motorist to turn headlights on. When illumination is sensed, the display may change to a courtesy message.

### 3,720,914 ELECTRIC MOTORS

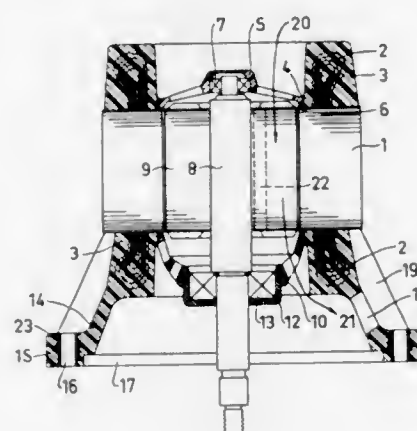
Stig Lennart Hallerback, Vastra, Sweden, assignor to SKF Industrial Trading and Development Company N.V., Amsterdam, Netherlands

Filed July 14, 1971, Ser. No. 162,596

Int. Cl. H02k 1/04

U.S. Cl. 310-43

10 Claims



An electric flange motor particularly for driving circulation pumps for heating systems and having the mounting flange formed as an extension of a plastic moulding encapsulating the stator windings. The flange is provided with metallic fastening means lacking metallic connection with the stator core, to minimize the transmission of heat from the pump to the motor. Rotor bearing support means are supported by the stator core independently of the plastic moulding.

### 3,720,915 VEHICLE CRASH SENSOR CONDITION TESTER

David P. Hass, Detroit, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Dec. 6, 1971, Ser. No. 205,078

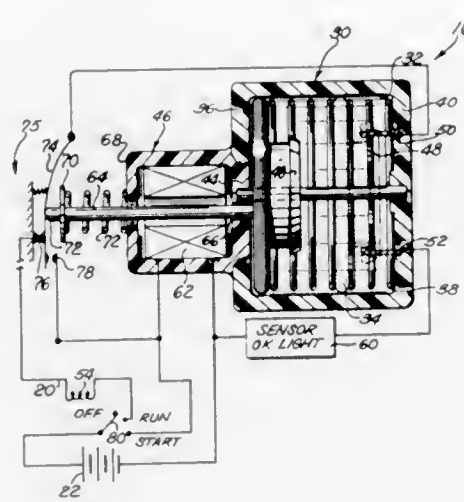
Int. Cl. G08b 21/00

U.S. Cl. 340-52 H

11 Claims

A crash sensor condition tester for use with a sensor assembly employed for actuating a vehicle safety apparatus upon the occurrence of a collision. The sensor assembly includes an inertia member positioned for movement in response to vehicle deceleration of a predetermined magnitude to actuate an electrical switch means. The switch means, in turn, serves to complete an electrical circuit to ener-

gize a detonator. This actuates the safety system which employs a confinement which, upon energization of the detonator, is inflated to an expanded condition. The sensor testing



device includes a mechanism to move the inertia member to actuate the switch means. The detonator means is electrically deactivated and an indicator means provides an indication when the switch means is actuated.

### 3,720,916 VEHICLE DETECTION AND INDICATION APPARATUS FOR OVERHEAD OBSTRUCTIONS

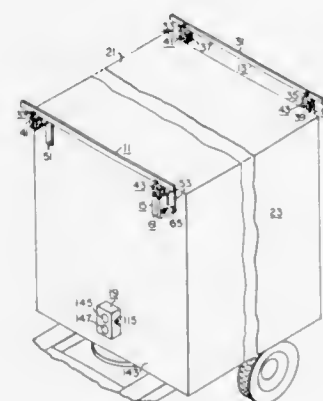
William H. Edgar, Pittsburgh, Pa., assignor to Exhibitors Service Company, McKees Rocks, Pa.

Filed Oct. 21, 1971, Ser. No. 191,411

Int. Cl. G08b 21/00

U.S. Cl. 340-61

11 Claims



Apparatus indicates damage to the roof of a vehicle from an overhead obstruction under which the vehicle has been moved and also for identifying the operator of the vehicle who is responsible for the damage. The roof of the vehicle is provided with feelers front and rear. Each feeler is connected to a toggle switch which is actuated from a standby setting to an actuated setting when its associated feeler is actuated by an obstruction under which the vehicle has moved. In the standby setting each switch closes a circuit through a standby visual signal which indicates that the apparatus is in proper operating condition. In the actuated setting each switch closes a circuit through a visual signal which indicates that the roof of the vehicle has engaged an obstruction. The switches are connected in parallel to the visual signals so that actuation of either feeler produces the engagement-indicating visual signal. The actuated switch can only be reset from the actuated setting to the standby setting by a key or the like which is in the custody of the supervisor or dispatcher who can assign guilt of causing the damage when he dispatches the vehicles to the next destination.

### 3,720,917 DIRECTIONAL SIGNAL APPARATUS

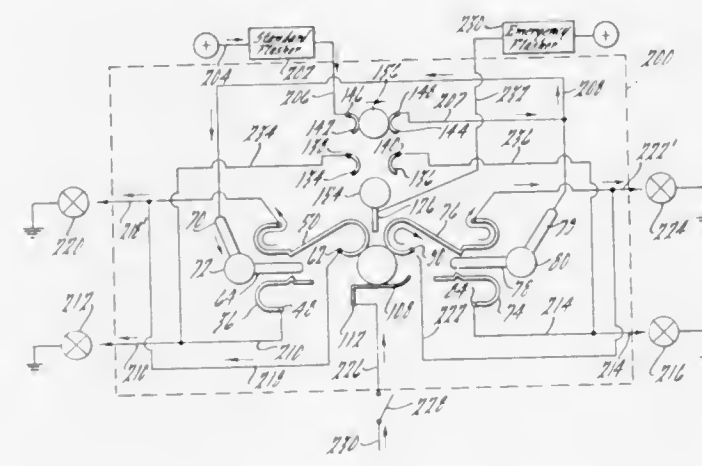
Robert M. Dyksterhouse, Blue-Dot Farms, Route 3, Charlevoix, Mich.

Filed Aug. 14, 1970, Ser. No. 63,838

Int. Cl. B06q 1/38

U.S. Cl. 340-67

16 Claims



A switch which is mounted on the steering column of a vehicle and may be actuated to indicate either right or left turn information, right or left lane changing information or emergency information. The switch is transferred to the lane-change or turn mode by an actuator member which moves ball contact assemblies into various contact relations thereby making electrical contact to the various lights of the vehicle. The system also includes a circuit interconnecting the various lamps on the vehicle through a flasher, the energization of the lights being controlled by the turn signal switch. In one case a standard and emergency flasher are utilized and in the other case two standard flashers are utilized and a system is provided to short one of the lamps by means of the flasher thereby giving a sequential affect to the energization of the inboard and outboard lamps.

### 3,720,918 VEHICLE INDICATOR BELT

Sidney Perl, 13510 Hart Street, Van Nuys, Calif.

Filed Aug. 12, 1971, Ser. No. 171,125

Int. Cl. B62j 5/00

U.S. Cl. 340-81 R

4 Claims



A vehicle indicator belt to be worn by a vehicle operator. The belt contains indicator lights which are positioned on the belt. A power supply is also positioned on the belt. Electrical wiring is used to interconnect the indicator lights to the power supply through an activating switch. Further, the belt may contain a channel formed by the belt material for use as a housing for the electrical wiring.

### 3,720,919 PHOTONICALLY PARTITIONED CONTINUOUS GAS ENVELOPE AND TRANSIENTLY ENERGIZED PILOT DISCHARGE AREAS USED IN ADDRESS SELECTION OF DISPLAY FIRING COORDINATES

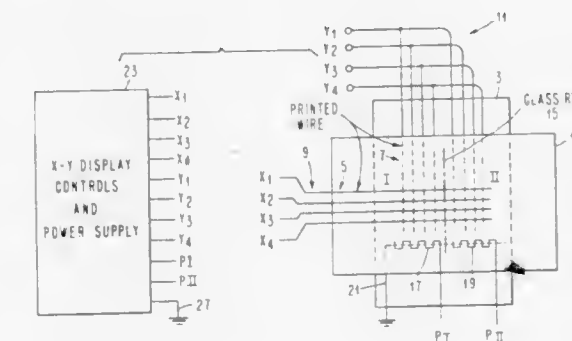
William Roger Lamoureux, Kingston, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1971, Ser. No. 214,126

Int. Cl. H01j 1/00, 7/30

U.S. Cl. 340-166 R

8 Claims



Plural pilot cells in a gas panel envelope are energized selectively and transiently to effect partial control of firing coordinate selection. The pilot cells remain unenergized during normal sustaining periods and firing potentials are chosen to preclude sustaining discharge of pre-ignited unselected points so that pilot bias is produced exclusively by the pilot cell operations. The pilot cells and associated display coordinates receiving pilot bias therefrom are photonicly isolated from each other by suitably spaced glass spacing rods. Since the pilot cells are only transiently energized less power is consumed and the pilot light emissions do not interfere with the apparently continuous light at the sustained display coordinates. Hence the pilot emissions need not be masked from view. Since the pilot lights have dual usage as a coordinate factor of firing selection other parameters of firing coordinate selection (i.e. voltages directly applied to the coordinates) and associated selection circuits may be simplified and reduced in size to effect cost and power economies.

### 3,720,920 OPEN-ENDED COMPUTER WITH SELECTABLE I/O CONTROL

William J. Watson, and Edwin H. Husband, both of Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

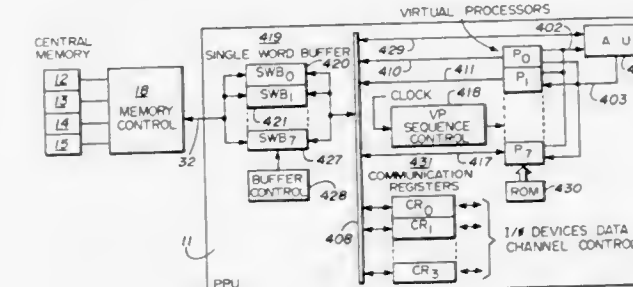
Continuation of Ser. No. 838,081, Sept. 1, 1969, abandoned.

This application March 1, 1971, Ser. No. 119,861

Int. Cl. G06f 3/00

U.S. Cl. 340-172.5

1 Claim



An automatic data processing machine of open-ended construction having communication register units in a peripheral process that are addressable by means of a single instruction in the bit, byte, half-word or full-word level for implementing a broad range of I/O operations.

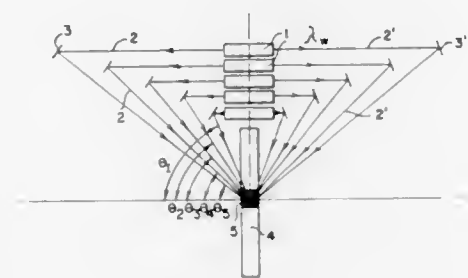


### 3,720,921 RECORDING IN REVERSIBLE, PHOTOCROMIC MEDIUM

Rodman S. Schools, Poughkeepsie, and Glenn T. Sincerbox, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.  
Continuation of Ser. No. 517,597, Dec. 30, 1965, abandoned.  
This application July 14, 1970, Ser. No. 56,219  
Int. Cl. G11c 13/04

U.S. Cl. 340—173 LM

8 Claims



Interfering radiations of substantially coherent electromagnetic radiation of a wave length within a range to which a layer of photochromic material is sensitive are transmitted in different directions through a layer of the material in selected regions. The interfering radiations in each region produce antinodes which form peak energy levels to sensitize the photochromic material in spaced, parallel surfaces of a periodic structure having altered transmission and reflective properties.

The sensitized regions constituting the recorded information may be read by radiation of a lower energy level or of a wave length outside the range of sensitivity directed to the regions, the reflected radiation being detected to represent the recorded information.

A plurality of interfering beams may be transmitted in different directions in the same region to produce different recordings and may be detected by the same radiations.

The photochromic material may be restored to its original state by radiation of a wave length in a third range, so that such radiation may be used to erase recording in any region.

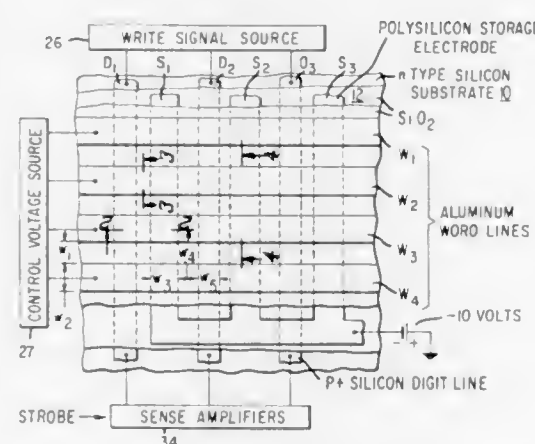
### 3,720,922 CHARGE COUPLED MEMORY

Walter Frank Kosonocky, Skillman, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed March 17, 1971, Ser. No. 125,303  
Int. Cl. G11c 11/34, 5/04; H0113/00

U.S. Cl. 340—173 R

4 Claims



A plurality of storage electrodes, extending in the column direction, each electrode coupled to a common semiconductor substrate at spaced regions along its length, each such re-

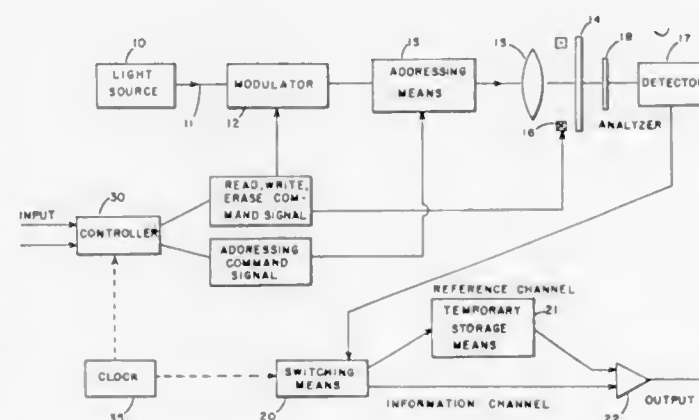
gion comprising a minority carrier storage location. A plurality of digit lines are formed in the substrate, each such line being coupled to a column of locations. These lines serve as sources of minority carriers and as sense lines. A plurality of word lines extending in the row direction are located one over each row of locations. Each word line can be operated to create conduction channels between the digit lines and the storage locations, respectively, along that word line.

### 3,720,923 OPTICAL MEMORY WITH REFERENCE CHANNEL TO COMPENSATE FOR DETERIORATION

Di Chen, Minnetonka, and James Davis Zook, Burnsville, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.  
Filed July 6, 1971, Ser. No. 159,896  
Int. Cl. G11c 13/04, 29/00, 7/00

U.S. Cl. 340—173 LM

9 Claims



A beam addressed optical mass memory utilizes an alterable memory medium which exhibits a change in its optical properties as a function of time or as a function of write-rewrite cycles. A reference bit is recorded on the memory medium and one or more information bits are similarly recorded. The reference and information bits are subjected to essentially the same number of write-rewrite cycles, and therefore exhibit essentially identical changes in optical properties. Information is read out by sequentially directing the light beam to the reference bit and the information bits. A detector produces a reference signal indicative of the intensity of the light beam received from the reference bit and produces information signals indicative of the intensity of the light beam from each of the information bits. The reference signal is directed to a reference channel and temporarily stored. Each of the information signals is directed to an information channel. The reference signal is compared to each of the information signals and readout signals are produced which are indicative of the difference between or the ratio of the reference signal and each of the information signals.

### 3,720,924 OPTICAL MASS MEMORY

Roger L. Aagard, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed March 9, 1972, Ser. No. 233,200  
Int. Cl. G11c 13/04

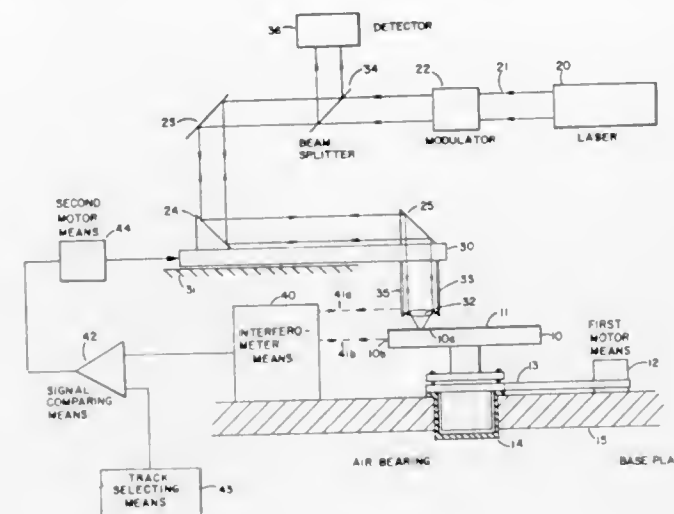
U.S. Cl. 340—173 LM

14 Claims

An optical mass memory utilizing a rotatable substrate is provided with improved tracking. An interferometer measures the distance between a reflective edge surface on the rotatable substrate and a reflective surface on a movable arm. The final lens for focusing the read-write light beam to a focused light spot on the memory medium is mounted on the movable arm. The electrical signal produced by the interferometer is compared to a track selection signal which is indicative of the desired distance between the reflective edge surface and the

reflective surface, and a servo control signal is produced which is indicative of the difference of the electrical signal and

the center. An information state is related to the particular orientation of the color centers and is subsequently read-out by detecting and interpreting the degree of absorption of incident polarized optical radiation thereon or its induced



the track selection selection signal. The movable arm is positioned in response to the servo control signal.

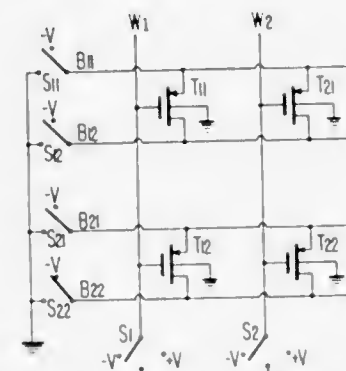
### 3,720,925 MEMORY SYSTEM USING VARIABLE THRESHOLD TRANSISTORS

Edward Charles Ross, Hightstown, N.J., assignor to RCA Corporation, Somerville, N.J.

Filed Oct. 19, 1970, Ser. No. 81,713  
Int. Cl. G11c 7/00, 11/40

U.S. Cl. 340—173 R

9 Claims



A word-organized memory array employing at each storage location only a single metal-insulator-semiconductor device. Information is written into selected devices by causing them to assume either a high or a low voltage threshold state while non-selected devices are undisturbed. During the write cycle, the source and drain electrodes of each element are maintained at the same potential having either a first or a second value whereby there is no steady state current flowing through the devices and no steady state power dissipation on the memory array.

### 3,720,926 INFORMATION STORAGE USING M COLOR CENTERS IN ALKALI FLUORIDES

Irwin Schneider, 2402 Daphne Lane, Alexandria, Va.

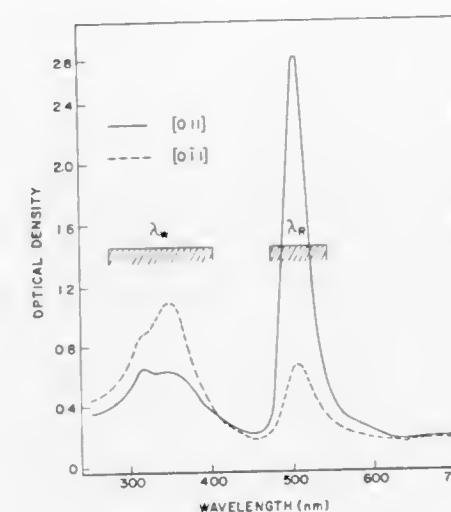
Filed March 31, 1971, Ser. No. 129,709

Int. Cl. G11c 11/34, 13/04; G02f 1/36

U.S. Cl. 340—173 CC

17 Claims

Anisotropic color centers, such as M and M<sub>4</sub> centers in alkali fluoride crystals such as sodium fluoride (NaF), are used for the storage of information. Polarized optical irradiation is used to align the color centers along discrete crystallographic directions. Reorientation of a center can occur whenever the incident irradiation is of proper wavelength and is absorbed by



polarized emission. Unlike other materials for which this technique is applied, the operational temperature of the NaF is much higher (above 200°K) than has ever previously been required.

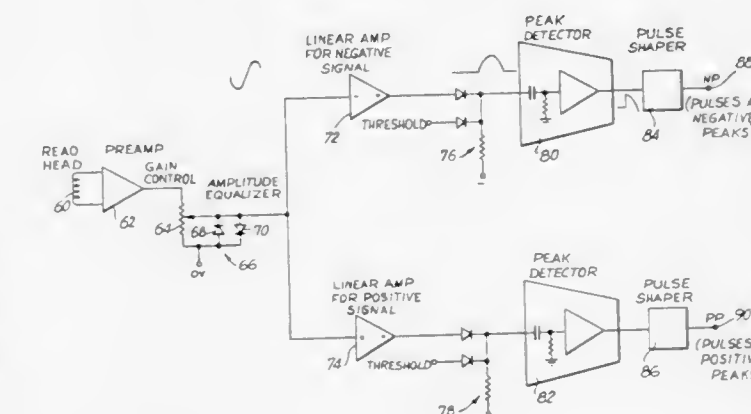
### 3,720,927 SPEED INSENSITIVE READING AND WRITING APPARATUS FOR DIGITAL INFORMATION

Edgar Wolf, New Hyde Park, N.Y., assignor to Redatron Corporation, Hauppauge, N.Y.

Filed Jan. 25, 1971, Ser. No. 109,521  
Int. Cl. G11b 5/02

U.S. Cl. 340—174.1 H

13 Claims



A digital data handling process in which 0's and 1's are represented or distinguished by the use of time ratios within respective and sequential periods in a signal. The periods are determined by sequential clock pulses and, between the clock pulses of each period, there occurs a transition from one voltage level to another. The transition divides the related period into two sections, the comparative durations of which establish the aforesaid ratio. The transitions and clock pulses correspond with the leading and trailing edges of rectangular or square-wave pulses which are magnetically recorded. For reading, the aforesaid durations control the charging and discharging of a capacitor or the counting up and down of a binary counter. The algebraic result of the charging and discharging or counting identifies a 1 or a 0. Reading and writing may be in the same or opposite directions.



3,720,928

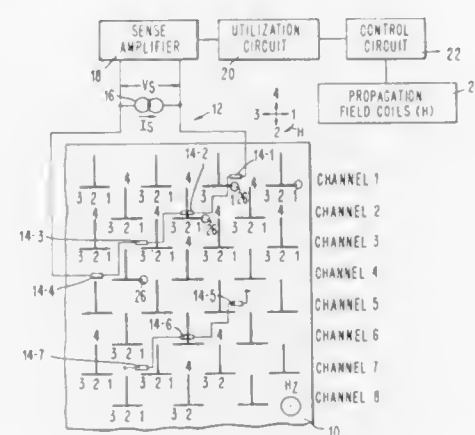
**SENSING OF CYLINDRICAL MAGNETIC DOMAINS**  
Hsu Chang, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 21, 1971, Ser. No. 145,656

Int. Cl. G11c 11/14, 5/06

U.S. Cl. 340—174 TF

14 Claims



An apparatus for cylindrical magnetic domains in which the sensing elements for detecting the presence and absence of cylindrical domains are spatially staggered in each information channel so as to effect a time phase between successive output signals. In contrast with previous sensing devices for cylindrical domains, an increased number of information channels can be read during each cycle of propagation (the time for a domain to move one bit position). A plurality of information channels is provided on the magnetic sheet, and the sensing means for detection of domains in each channel is staggered spatially with respect to the sensing means in the adjacent channels. A single sense amplifier can be used for all sensing means, and the data rate per channel is correspondingly increased.

3,720,929

**MAGNETIC CORE MEMORIES**

Ralph Edwin Jones, London, England, assignor to Thorn Electrical Industries Limited, London, England

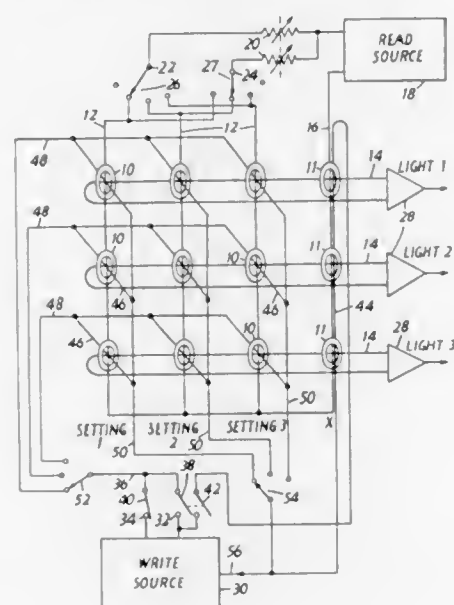
Filed March 19, 1971, Ser. No. 126,058

Claims priority, application Great Britain, March 20, 1970, 13,738/70

Int. Cl. G11c 5/02, 11/06

U.S. Cl. 340—174 PA

14 Claims



In a magnetic core memory non-destructive read-out is achieved by a read pulse of insufficient amplitude to reset the core to the 0 state while of sufficient amplitude to induce a significant output for a core in the 1 state, which is preferably

not fully saturated. Digital information read out from a matrix memory can be amplitude modulated by varying the amplitude of the read pulses. The memory can be used to control a stage lighting system, the amplitude modulation controlling fades and cross-fades.

3,720,930

**THERMAL EXPANSION COMPENSATOR**

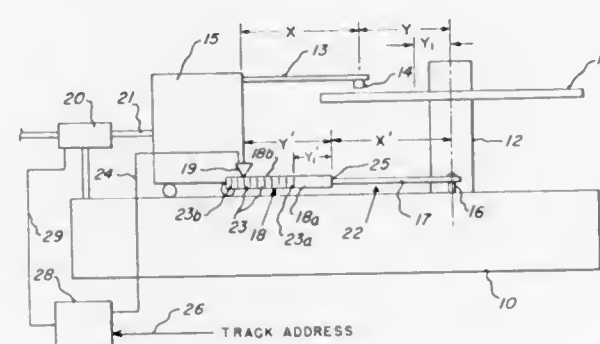
John W. Elsing, Edina, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed June 5, 1972, Ser. No. 259,936

Int. Cl. G11b 5/48

U.S. Cl. 340—174.1 B

24 Claims



Apparatus for compensating for the thermally induced dimensional variations in an arm carrying the read/write head and the recording disc having tracks on its flat surface which are accessed by the head in storing and retrieving data. The device has expansion members which simulate the dimensional variations in the arm and disc, thereby providing an accurate signal correction.

3,720,931

**AIRFLOW CONTROL SYSTEM**

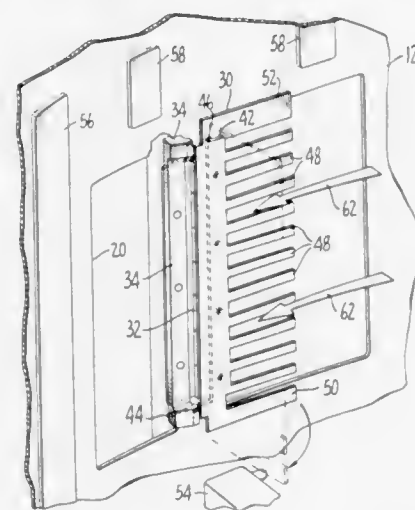
William F. Andersen, San Jose, Calif., assignor to Memorex Corporation, Santa Clara, Calif.

Filed Jan. 13, 1972, Ser. No. 217,607

Int. Cl. G11b 5/60, 23/04

U.S. Cl. 340—174.1 E

6 Claims



An air circulation control system for a magnetic recording disc drive employing a baffle pivotally mounted near the shroud which encircles the disc pack. A torsion spring holds the baffle in a retracted position against the shroud adjacent to the head access opening in the shroud for insertion and removal of disc packs. Rotation of the disc packs causes air flow across the baffle until the air flow pulls the baffle into the spaces between the discs of the disc pack. Thereafter the baffle causes an air pressure differential around the periphery of the disc pack which is used to pump cooling air through the disc drive.

3,720,932

**MAGNETIC RECORDING ARRANGEMENT UTILIZING A GAS FILM BEARING**

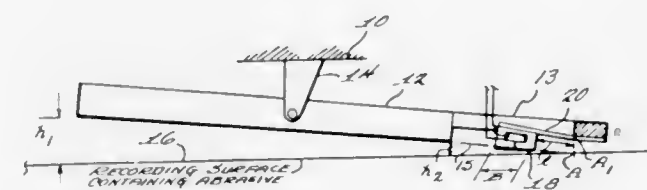
Robert L. Perkins, 680 Arcadia Drive, St. Paul, Minn., and Beat G. Keel, Route 1, Prior Lake, Minn.

Filed Feb. 13, 1967, Ser. No. 615,825

Int. Cl. G11b 5/60

U.S. Cl. 340—174.1 E

6 Claims



The present disclosure relates to a magnetic recording arrangement utilizing a head assembly which during operation bears on a thin film of gas, such as air, in spaced relationship from a magnetic recording medium. The head itself is positioned at the end of a cantilevered spring arrangement to achieve a very small clearance between the head and the record surface.

3,720,933

**SIGNALING SYSTEM WITH SIGNAL LEVEL DIFFERENTIATION**

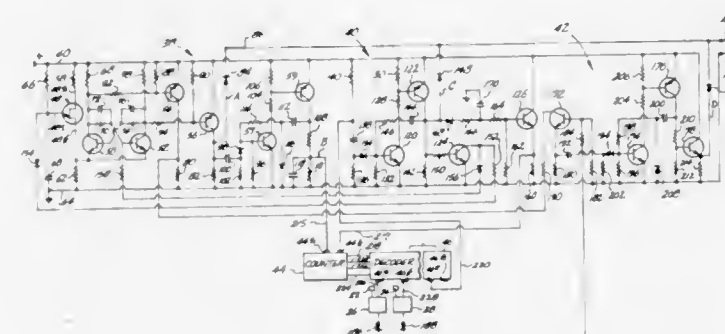
Joseph Schulein, and Joe M. Kortman, both of Vancouver, Wash., assignors to Hayward H. Dutton, Tacoma; Joseph Schulein and Margaret A. Schulein, Vancouver, Wash., part interest to each

Filed July 6, 1971, Ser. No. 159,755

Int. Cl. H04j 3/06

U.S. Cl. 340—183

15 Claims



A time-division signaling system employing a transmitter and a receiver which communicate in recurrent operating cycles over a common transmission medium. The transmitter is constructed to transmit during an operating cycle time-spaced interleaved indexing and signaling voltage pulses which differ in respective maximum voltage levels. Discrimination between these two different kinds of pulses at the receiver is made on the basis of a comparison of their respective maximum voltage levels with a reference voltage level which has been generated by preceding pulses. The system includes circuitry which assures synchronization between the transmitter and receiver; and a modification of the system further includes circuitry which prevents the receiver from producing a responsive output to any signaling pulse which is received at the time that the transmitter and the receiver are out of synchronization.

3,720,934

**PICK-UP DEVICES FOR DETECTING THE PASSAGE OF A MOVABLE MEMBER OF A SCALE ASSEMBLY OF AN APPARATUS FOR ACCURATELY MEASURING THE SPECIFIC CONSUMPTION OF INTERNAL COMBUSTION ENGINE**

Jean Paul Sibeud, Lyon, France, assignor to Automobiles M. Berliet, Lyon, France

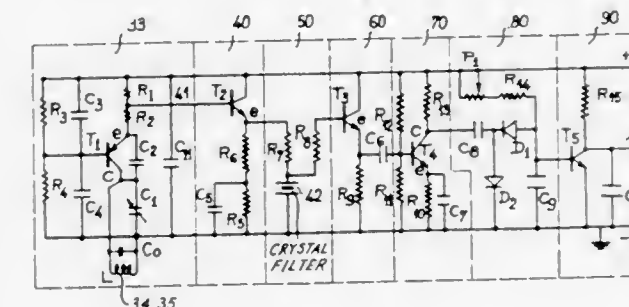
Filed June 5, 1970, Ser. No. 43,790

Claims priority, application France, June 6, 1969, 6918802; Feb. 11, 1970, 7004845.

Int. Cl. G08c 19/12, 19/06

U.S. Cl. 340—207

2 Claims



A pick-up device, used with a scale having a pointer movable in front of a dial, the measuring scale carrying a plurality of pick-ups, which comprises a transistorized circuit with a frequency modulated inductance-capacitance circuit, an impedance changer with a quartz filter to which it transmits the oscillator signal, an impedance changer interposed between said filter and an amplifier stage, and transmitting to said stage only the signals generated by said oscillator which correspond to the inherent frequency of quartz, a signal detector rectifying through a doubler the HF voltage having passed through said quartz filter and amplified through said amplifier, and a shaping device for delivering at a low impedance value a high-amplitude logic signal.

3,720,935

**FAULT DETECTION SYSTEM**

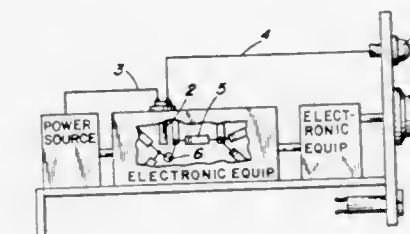
Garland L. Tomlin, Jr., Falls Church, Va., assignor to The United States of America as represented by the Secretary of the Navy

Division of Ser. No. 832,565, June 12, 1969. This application Dec. 30, 1970, Ser. No. 102,625

Int. Cl. G08b 21/00

U.S. Cl. 340—248 R

10 Claims



An alarm or fault detection system for in service electronic equipment which is not electrically connected to the equipment. A chemical tracer element which is responsive to the application of a certain force, physical stress, electrical stress, or heat, for example, is embedded in the equipment or portion thereof that is to be monitored. When the equipment's functional tolerance limit of the certain force is reached, the tracer element is released in a gaseous form. Presence of the tracer element's vapors in the equipment enclosure is detected by a transducer which responds to a particular vapor representing a particular component or equipment malfunction and indicates it to an observer.



3,720,936

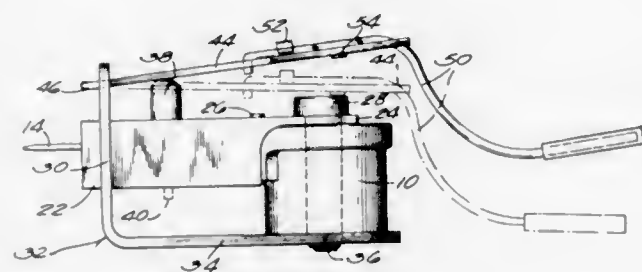
## WARNING SIGNAL RELAY AND SYSTEM

Abed G. Kahale, Roselle; Kenji Yatsushiro, Chicago, and Thaddeus S. Wielgos, Des Plaines, all of Ill., assignor to Controls Company of America, Melrose Park, Ill.

Filed Sept. 3, 1971, Ser. No. 177,799

Int. Cl. G08b 21/00

U.S. Cl. 340—261



The switch is designed to be used in a washing machine to sense an out-of-balance condition of the tub during the spin cycle. The assembly is wired into the washer with the coil in series with the washer motor but the coil is normally shunted by a switch which is self biased to its "closed" position bridging the coil terminals. In this condition the motor operation is normal. When an out-of-balance tub in a clothes washer bumps the wand projecting from the armature the armature is moved to the core of the coil and actuates the switch plunger to open the switch, thus placing the coil in series with the motor. The relatively high impedance of the coil relative to the motor impedance limits motor current so the motor stops. The A-C supply to the coil causes the armature to vibrate (buzz) giving an audible signal that the washer has stopped due to an unbalanced load. The washer is restored to normal by opening the line switch which de-energizes the coil to thereby release the armature and permit the switch to reclose and restore the coil shunt.

3,720,937

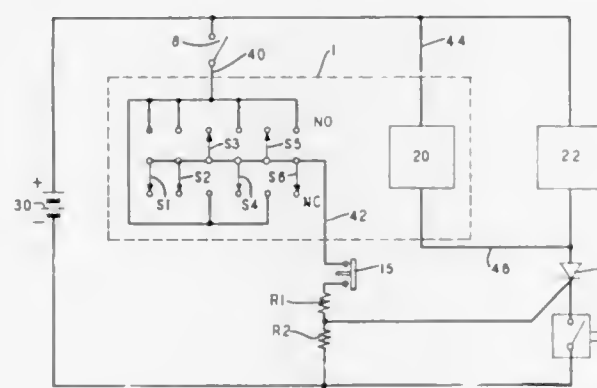
## SELF-CONTAINED UNAUTHORIZED ENTRY ALARM

Albert L. Lang, 182 Kendall Road, Kendall Park, N.J., and George A. W. Smith, 916 Beechwood Court, Plainfield, N.J.

Filed July 29, 1971, Ser. No. 167,319

Int. Cl. G08b 13/00, 13/08

U.S. Cl. 340—283



The entry alarm of this invention is especially useful in apartments where ease of installation and removal are highly desirable. Specifically, the invention comprises a battery operated alarm system which is completely contained within a inverted U-shaped assembly designed to fit quite simply over the top of a door and to be held in place with ordinary double-sided tape. The system includes a sensor which sets off a battery operated alarm unless a code-operated device on the outside of the door is correctly manipulated prior to the opening of the door.

## SYSTEM FOR PREVENTING ERRONEOUS DATA OUTPUT SIGNALS FROM AN ELECTRICAL KEYBOARD

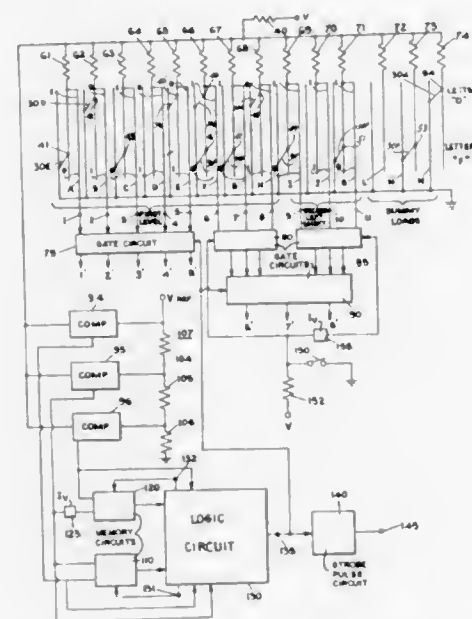
Wayne V. Leposavic, Saratoga, Calif., assignor to Lematex, Inc., Santa Clara, Calif.

Filed April 19, 1971, Ser. No. 135,076

Int. Cl. H04q 3/00

U.S. Cl. 340—365 S

25 Claims



In a mechanically operated keyboard employing keys each having a multiplicity of electrical switch contacts for providing an encoded electrical signal output corresponding to and uniquely identifying individual key stations, an electrical circuit provides a dummy load across the multiple switch contacts which varies as different keys are actuated in a manner to provide a constant load across the multiple switch contacts. The electrical circuit develops a control signal which can be employed in conjunction with associated circuits to inhibit erroneous data output signals from the keyboard in the event of improper switch closure.

3,720,939

## AUDIO MODULATED SWITCHING CIRCUIT HAVING FLASHING LIGHTS

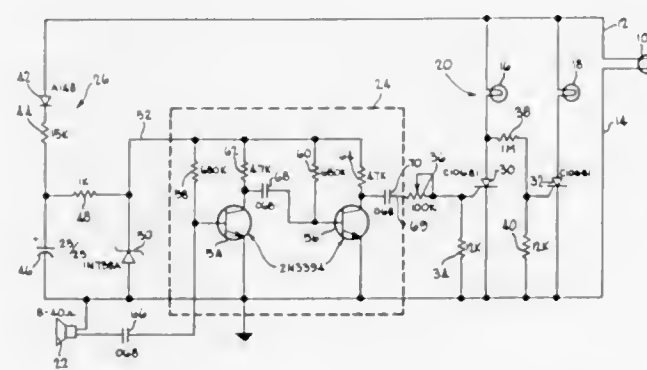
Edward L. Polanek, Glendale Heights, and Daniel W. Micek, Chicago, both of Ill., assignors to Universal Research Laboratories, Incorporated, Elk Grove Village, Ill.

Filed March 15, 1971, Ser. No. 124,284

Int. Cl. G08b 5/36

U.S. Cl. 340—366 R

8 Claims



A high sensitivity audio modulated switching circuit operates a plurality of lamps to create various and original lighting effects. The energization of the lamps is controlled by a thyristor circuit which is responsive to both the a.c. line voltage and varying amplified signals from an audio transducer.

3,720,940

## METHOD AND APPARATUS FOR SORTING PACKAGES AND THE LIKE

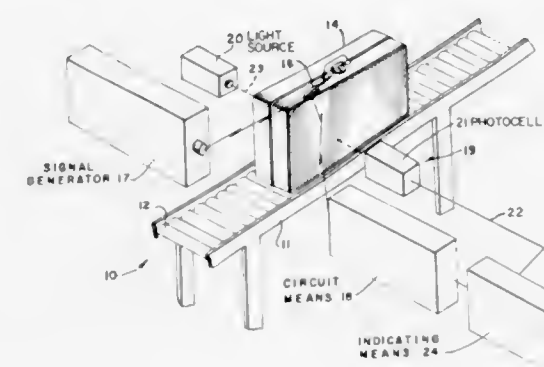
Henry L. Fox, 514 Fountain Street, New Haven, Conn., and Mark Hubelbank, 39 Laurel Street, Somerville, Mass.

Filed Sept. 29, 1970, Ser. No. 76,359

Int. Cl. G01s 9/56

U.S. Cl. 343—6 R

18 Claims



A method and apparatus for detecting the presence of an electrical element responsive to a particular electrical signal and suitable for use, for example, in sorting luggage and the like. In the preferred embodiment, a radiator responsive to a particular frequency is secured to a tag attached to a piece of luggage. A signal generator is oriented in proximity with the passage of luggage in a baggage conveying system. A circuit is provided which includes a threshold detector for generating a signal when the radiator responsive to a predetermined frequency passes in proximity to a signal from the signal generator. The circuit includes a digital decoder network for generating an error signal when misdirected luggage intercepts the signal from the signal generator. A package detector unit, including a photoelectric network is included with the circuit to provide an indication that a package was missed when a predetermined combination of input signals was not received by the circuit within a predetermined time after the passage of the package.

3,720,941

## AUTOMATIC MONOPULSE CLUTTER CANCELLATION CIRCUIT

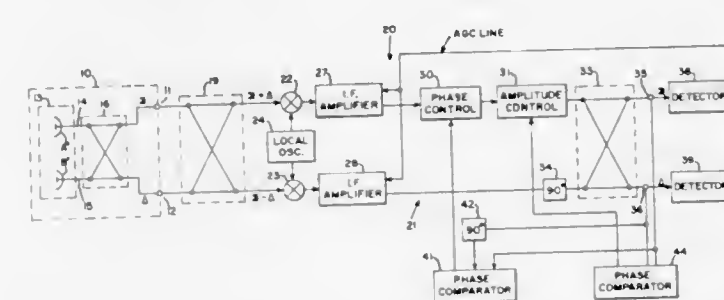
Manuel Ares, Manlius, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed April 13, 1970, Ser. No. 27,919

Int. Cl. G01s 9/02

U.S. Cl. 343—7 A

8 Claims



Clutter cancellation is provided in a monopulse radar system by placing a null in the angle response of the radar on the clutter. This is achieved by cross-cancellation of signals as received at two antennas oriented to provide vertically displaced response patterns, the null thus provided being maintained centered on the clutter by operation of control means which adjust the phase and amplitude of one or both of the signals prior to their cross-cancellation. The signal phase and amplitude adjustment means may take any of several different forms but in each case they form part of closed loop controls

which optimize the cancellation of clutter returns from received signals while preserving target returns.

3,720,942

## VIDEO PROCESSING SYSTEM

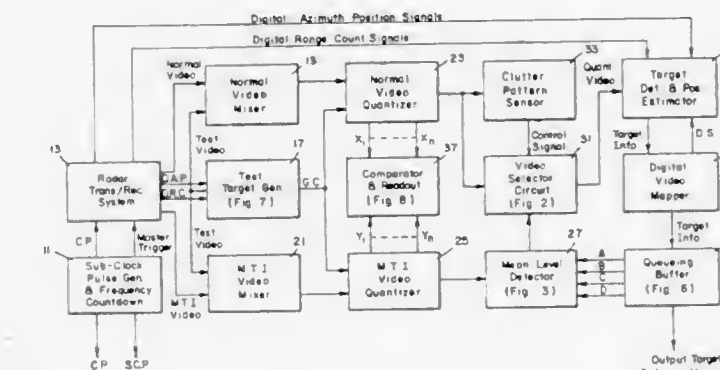
Richard D. Wilmot, Yorba Linda; Oscar G. Bradshaw, Garden Grove, and David G. Wiggins, Fullerton, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed March 4, 1971, Ser. No. 120,952

Int. Cl. G01s 9/42

U.S. Cl. 343—7.7

21 Claims



A system for automatically processing quantized normal and MTI radar video to provide improved clutter rejection and improved detection of moving targets in clutter. The quantized MTI video is applied to a mean level detector, which has its sensitivity controlled as a function of the number of detected target reports being stored in an output buffer unit in order to automatically provide the proper threshold to prevent a data link from being saturated by clutter targets. The quantized MTI video output of the mean level detector and the quantized normal video are applied to a video selector circuit, which is controlled by a clutter pattern sensor for each range bin interval of a radar sweep to automatically select for subsequent detection and processing the MTI video in all range bin intervals having clutter and the normal video in all range bin intervals not having clutter.

3,720,943

## VEHICLE ACTIVITY RECORDING DEVICE

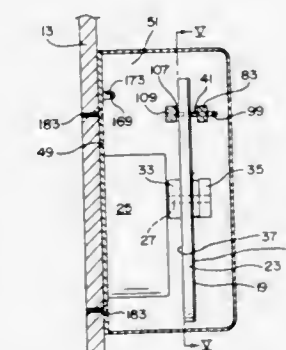
William Van Smith, Memphis, Tenn., assignor to Lectrolarm Custom System, Inc., Memphis, Tenn.

Filed April 28, 1972, Ser. No. 248,721

Int. Cl. G01d 9/32

U.S. Cl. 346—7

9 Claims



A device for attachment to a vehicle to record the periods of time in which the vehicle is standing, in motion, and/or certain doors thereof are open or closed. The device includes a marking instrument, e.g., a stylus, which is supported by a vibration sensitive arm. The stylus is in constant engagement with a recording disk. A clock rotatably drives the disk at a predetermined rate. Peculiar helix drive structure is included for gradually moving the stylus ever closer to the center of the disk, which causes the stylus to scribe ever decreasing concentric circles onto the disk, i.e., one circle every 24 hours. When







processing of wide band receiver signals without comprising the data resolution limits thereof. Local oscillator injection means provides a coded periodic sampling signal at a local oscillator input of an intermediate frequency receiver, the sampling periodicity of which sampling signal is substantially less than the system pulse repetition interval and the coding of which sampling signal is a replica of that transmitted by the pulsed energy system. The time-phase of the sampling periodicity of the sampling signal is discretely progressively varied each pulse repetition interval. Data matrix storage means responsive to the variable time-phase sampling signals reconstructs a range trace signal of improved resolution, which may be further processed by radial extent logic to effect spatial filtering within system subpulse intervals.

3,720,951

## MICROWAVE ABSORBING WALL ELEMENT

Yoshiyuki Naito, Tokyo, Japan, assignor to TDK Electronic Company, Limited, Tokyo, Japan

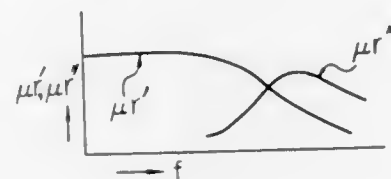
Filed Nov. 30, 1970, Ser. No. 93,710

Claims priority, application Japan, May 11, 1970, 45/40410

Int. Cl. H01g 17/00

U.S. Cl. 343—18 A

3 Claims



This invention provides a thin microwave absorbing wall member using a ferrite plate of which complex permeability is represented substantially by a formula:

$$\mu_r = 1 + \frac{K_{relax}}{1 + (jf\tau)^2}$$

3,720,952

## SIGNAL PROCESSING APPARATUS

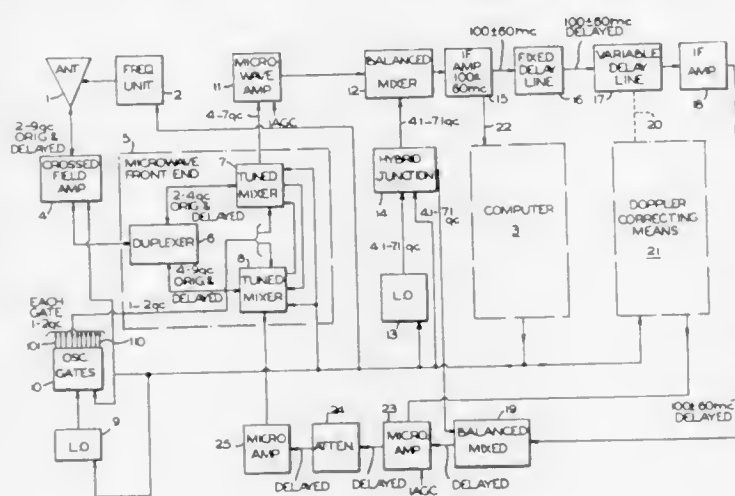
Leo Lawsine, 807-South Barton Street, Arlington, Va.

Filed Dec. 29, 1964, Ser. No. 421,826

Int. Cl. H04k 3/00

U.S. Cl. 343—18 E

4 Claims



1. Apparatus for processing radar signals and the like, comprising wideband signal receiving and transmitting antenna means; circulator means having a first terminal connected with said antenna means, said circulator means including also second and third terminals;

a first tuned microwave mixer set including a first directional filter, a plurality of first directional filter mixer units each tuned to a different discrete frequency band, and first manifold means connecting said first mixer units with said first directional filter;

a second tuned microwave mixer set including a second directional filter, a plurality of second directional filter mixer units corresponding in number with said first mixer units and being tuned to the corresponding frequency bands thereof, respectively, and second manifold means connecting said second mixer units with said second directional filter;

first common conductor means connecting the mixture units of the first set with the second terminal of said circulator means, said first conductor means containing series-connected series-connected switch;

second common conductor means connecting the mixture units of the second set with the third terminal of said circulator means;

local oscillator signal generator means;

first gate means connecting said signal generator means with all of the mixer units of said first set;

a plurality of second gate means connecting said signal generator means with the mixture units of said second set, respectively;

and signal processing means having input and output terminals connected with the directional filters of said first and second sets, respectively, for controlling the operation of said switch and of said first and second gating means as a function of the inherent characteristics of signals received by said antenna means and for returning to the directional filter means of said second set a modified facsimile signal.

3,720,953

## DUAL POLARIZED SLOT ELEMENTS IN SEPTATED WAVEGUIDE CAVITY

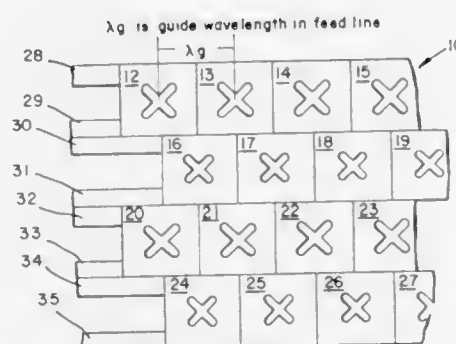
James S. Ajioka, Fullerton, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Feb. 2, 1972, Ser. No. 222,787

Int. Cl. H01q 13/10

U.S. Cl. 343—771

15 Claims



A slot radiating element for use in a two-dimensional phased array is in the "end" wall of a septated waveguide which is stepped-down in back of the radiating element to allow for excitation by means of reduced-height waveguide, stripline, coaxial line or other feeding networks without requiring additional vertical or horizontal spacing between the radiating elements. The radiating element constitutes a crossed or vertical slot or circular hole in the end wall centered over the septum with an additional slot in the septum extending into the cavity from the radiating element to excite the horizontal component (component in the plane of the septum) of polarization. Opposite sides of the septum are excited in antiphase (odd mode) to cause excitation of an electric field parallel to the septum in the radiating slot or hole and are fed in-phase (even mode) to cause excitation of an electric field perpendicular to the plane of the septum in the radiating element. Thus, polarization of the radiating slots or hole and,

hence, the antenna is controlled by controlling the phase and/or amplitude relationship between the two excitations. In view of the arbitrary height of the slotted end wall, arrays can be stacked close enough to allow the capability of being scanned by phase shift in that plane, without formation of grating lobes.

## ERRATUM

For Class 346—7 see:  
Patent No. 3,720,943

3,720,954

## RECORDING DEVICE

Chester S. Czyryk, Silver Lake, Wis., assignor to Mangood Corporation Chicago, Ill.

Filed Feb. 4, 1972, Ser. No. 223,662

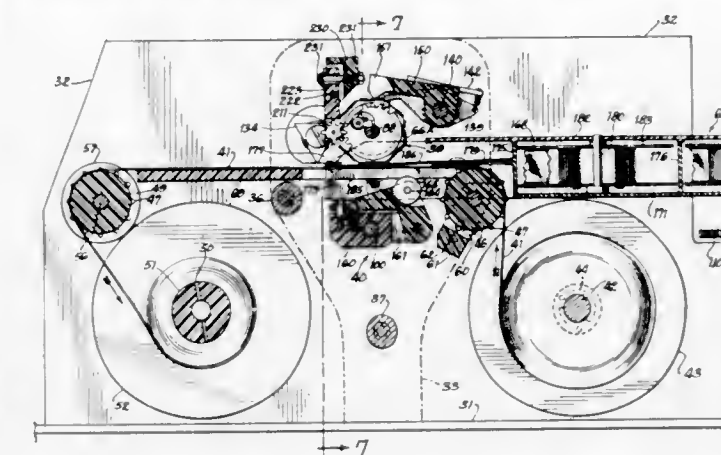
Int. Cl. G01d 9/02

U.S. Cl. 346—106

20 Claims

A device for periodic recording of traffic flow on roads or of liquid level of a river by printing on paper tape the positions of a set of counter print wheels of a mechanical counter that is driven in response to vehicular traffic or to a change in liquid level. As a traffic counter the device provides automatic periodic resetting of the wheels to zero. A novel, disposable printing ribbon cartridge permits construction of the device with rigid support, by spaced vertical plates secured to each

other and a base plate, of both ends of the counter as well as of an assembly of print rolls to improve printing while avoiding threading of the ink ribbon. A correlator-locking mechanism of



the device fixes position of the wheels during printing. A one-piece counter wheel, with a pawl mounted in it for resetting to zero, provides more rigid faces for the decagonal periphery.

## ERRATUM

For Class 444—1 see:  
Patent No. 3,720,948



# DESIGNS

MARCH 13, 1973

226,461  
SHOE

Stuart C. Nelson, Los Angeles, Calif., assignor to Stuart Nelson Footgear, Inc., Los Angeles, Calif.  
Filed Feb. 7, 1972, Ser. No. 224,383  
Term of patent 14 years  
Int. Cl. D2—04

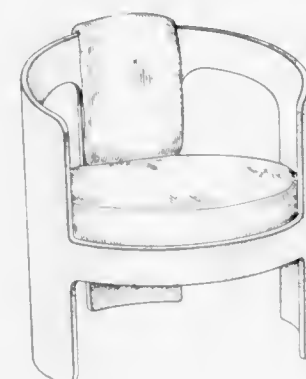
U.S. Cl. D2—309



226,463  
CHAIR

Gordon L. Duern and Donald S. Griffin, Kitchener, Ontario, Canada, assignors to Electrohome Limited, Kitchener, Ontario, Canada  
Filed May 19, 1971, Ser. No. 145,118  
Term of patent 14 years  
Int. Cl. D6—02

U.S. Cl. D6—55



226,462  
HAND HELD FLUID DISPENSER AND BRUSH FOR CLEANING UPHOLSTERY OR THE LIKE

Kenneth E. Gibbs, Wyoming, Mich., assignor to Bissell Inc., Grand Rapids, Mich.  
Filed May 5, 1971, Ser. No. 140,648  
Term of patent 14 years  
Int. Cl. D4—01

U.S. Cl. D4—7



226,464  
MULTIPLE SEATING UNIT

Donald Michael Genaro, Haworth, N.J., John Niel McGarvey, Drexel Hill, Pa., and Frederick Allen Rosebrock, Greenfield, Ind., assignors to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.  
Filed July 16, 1971, Ser. No. 163,557  
Term of patent 14 years  
Int. Cl. D6—02

U.S. Cl. D6—59



MARCH 13, 1973

U. S. PATENT OFFICE

509

226,465  
CHAIR

Gordon L. Duern and Donald S. Griffin, Kitchener, Ontario, Canada, assignors to Electrohome Limited, Kitchener, Ontario, Canada  
Filed May 19, 1971, Ser. No. 145,092  
Term of patent 14 years  
Int. Cl. D6—02

U.S. Cl. D6—69



226,468  
BEDSIDE RAIL

Morton I. Thomas, Monroe, N.Y.  
(125 South St., Passaic, N.J. 07055)  
Filed Aug. 5, 1971, Ser. No. 169,598  
Term of patent 14 years  
Int. Cl. D6—06

U.S. Cl. D6—198



226,469  
PILLOW

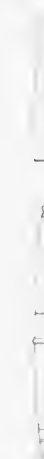
Paula Hurd, 12 Grove St., Hopkinton, Mass. 01748  
Filed Oct. 13, 1971, Ser. No. 189,052  
Term of patent 14 years  
Int. Cl. D6—09

U.S. Cl. D6—203



226,466  
PEN AND PENCIL COMBINATION  
Harold F. Bajusz, 379 Innes Road, Woodridge, N.J. 07075  
Filed May 14, 1971, Ser. No. 143,730  
Term of patent 14 years  
Int. Cl. D19—06

U.S. Cl. D74—17 B



226,470  
MANUALLY OPERATED WALL MOUNTED CAN OPENER  
Theodorus Cornelis Marie van der Kroft, Valkenswaard, Netherlands, assignor to Van Elderen's Metaalwarenfabriek "Brabantia" N.V., Aalst, Netherlands  
Filed Feb. 22, 1971, Ser. No. 117,865  
Term of patent 14 years  
Int. Cl. D7—04

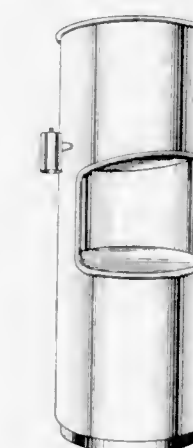
U.S. Cl. D8—37



226,467  
ILLUMINABLE TELEVISION SUPPORT AND ROOM DIVIDER

Walter J. Edwards, Donelson, Tenn., assignor to King of the Road Enterprises, Inc., Nashville, Tenn.  
Filed Feb. 12, 1971, Ser. No. 115,151  
Term of patent 14 years  
Int. Cl. D6—04

U.S. Cl. D6—181

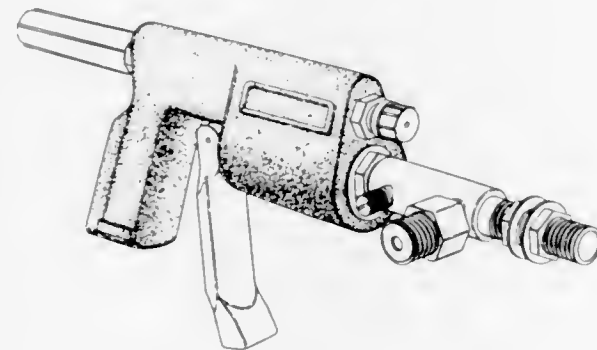




226,471

**TOOL FOR CLEARING BLOCKED PIPES**  
 Jack Samuel Conn, Surrey, England, assignor to Surrey Steel Components Limited, Richmond, England  
 Filed May 24, 1971, Ser. No. 146,595  
 Term of patent 7 years  
 Int. Cl. D8—05

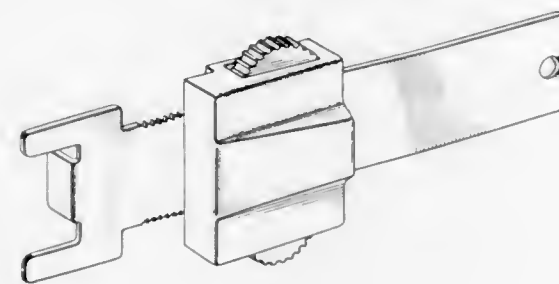
U.S. Cl. D8—68



226,472

**DOOR LOCK**  
 Phillips H. Barnes, Playa Del Rey, Calif., assignor to Packaging Techniques, Inc., El Segundo, Calif.  
 Filed Nov. 27, 1970, Ser. No. 26,177  
 Term of patent 14 years  
 Int. Cl. D8—07

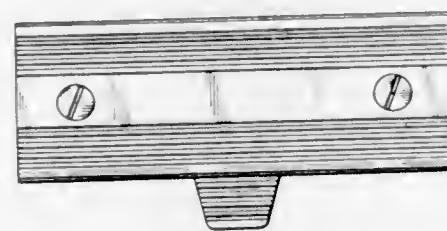
U.S. Cl. D8—109



226,473

**DOOR BOLT LOCK**  
 Louis G. Bobrowski, Berlin, Conn., assignor to The Stanley Works, New Britain, Conn.  
 Filed Sept. 9, 1971, Ser. No. 179,255  
 Term of patent 14 years  
 Int. Cl. D8—07

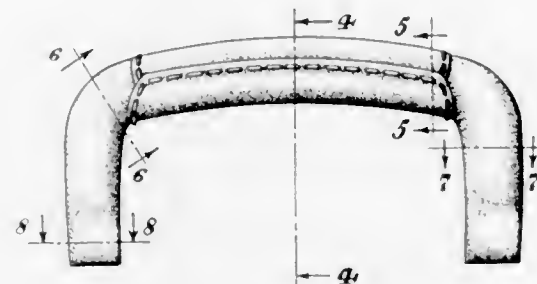
U.S. Cl. D8—131



226,474

**LUGGAGE HANDLE**  
 Bela G. Szabo, Pittsburgh, Pa., assignor to Bruce Plastics, Inc., Pittsburgh, Pa.  
 Filed May 5, 1971, Ser. No. 140,650  
 Term of patent 14 years  
 Int. Cl. D8—06

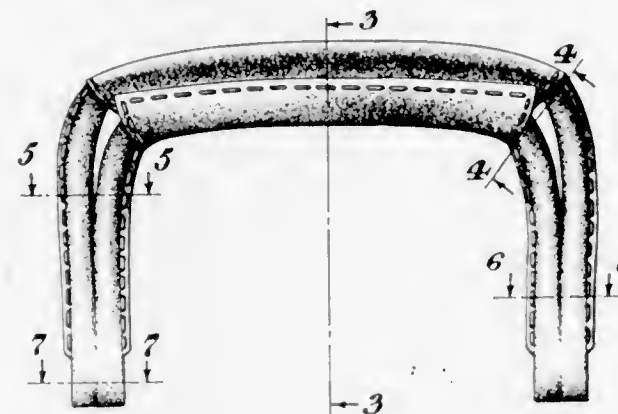
U.S. Cl. D8—154



226,475

**LUGGAGE HANDLE**  
 Bela G. Szabo, Pittsburgh, Pa., assignor to Bruce Plastics, Inc., Pittsburgh, Pa.  
 Filed May 7, 1971, Ser. No. 141,451  
 Term of patent 14 years  
 Int. Cl. D8—06

U.S. Cl. D8—154



226,476

**BOTTLE**  
 Howard Cooper, Suite 7707, 175 E. Delaware, Chicago, Ill. 60611  
 Filed Jan. 8, 1971, Ser. No. 105,150  
 Term of patent 14 years  
 Int. Cl. D9—01

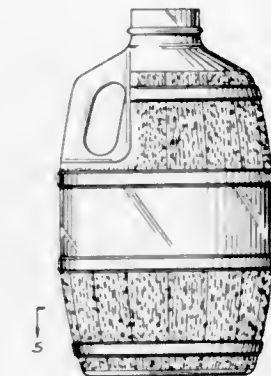
U.S. Cl. D9—28



226,477

**BOTTLE**  
 Howard Cooper, Suite 7707, 175 E. Delaware, Chicago, Ill. 60611  
 Filed Nov. 18, 1971, Ser. No. 200,288  
 Term of patent 14 years  
 Int. Cl. D9—01

U.S. Cl. D9—39

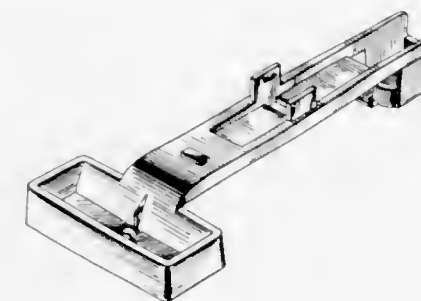


226,478

**TRAY FOR RELEASABLY ENGAGING A RAZOR AND A BLADE CARTRIDGE DISPENSER**  
 Martin Glaberson, Ardsley, N.Y., assignor to Warner-Lambert Company, Morris Plains, N.J.  
 Continuation-in-part of design application Ser. No. 191,952, Oct. 22, 1971. This application Dec. 2, 1971, Ser. No. 204,413

Term of patent 14 years  
 Int. Cl. D9—03

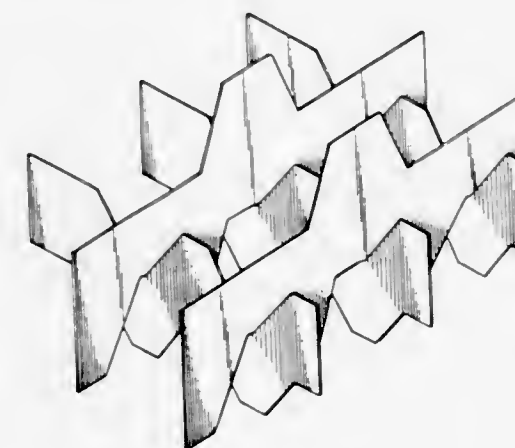
U.S. Cl. D9—186



226,479

**CARTON PARTITION UNIT**  
 Thomas L. Flanagan, Killingworth, Conn., assignor to Emhart Corporation, Bloomfield, Conn.  
 Filed Apr. 5, 1971, Ser. No. 131,573  
 Term of patent 14 years  
 Int. Cl. D9—99

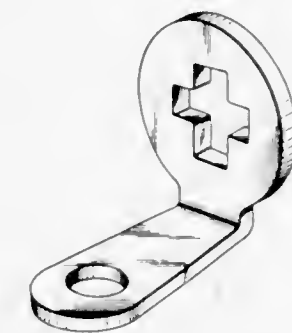
U.S. Cl. D9—294



226,480

**GUNSIGHT**  
 Richard Mauro, 2326 Powell Ave., Bronx, N.Y. 10462  
 Filed May 23, 1972, Ser. No. 256,208  
 Term of patent 14 years  
 Int. Cl. D22—01

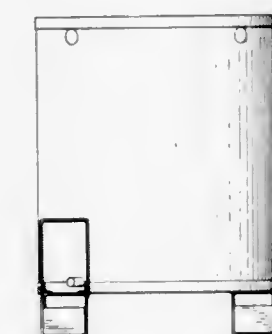
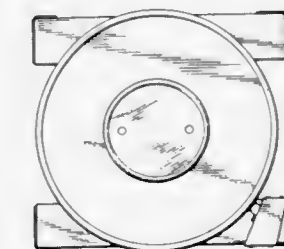
U.S. Cl. D22—8



226,481

**COMBINED CONTAINER AND STORAGE BIN**  
 Clarence B. Coleman and Harry R. Kattelmann, Oakland, Calif., assignors to Fabricated Metals, Inc.  
 Filed Mar. 25, 1971, Ser. No. 128,231  
 Term of patent 14 years  
 Int. Cl. D23—01

U.S. Cl. D23—2





226,482

**FROSTPROOF HYDRANT**

Miroslav Uroshevich, Cincinnati, Ohio, assignor to  
Murdock Inc., Cincinnati, Ohio  
Filed May 13, 1971, Ser. No. 143,287  
Term of patent 14 years  
Int. Cl. D23—01

U.S. Cl. D23—12

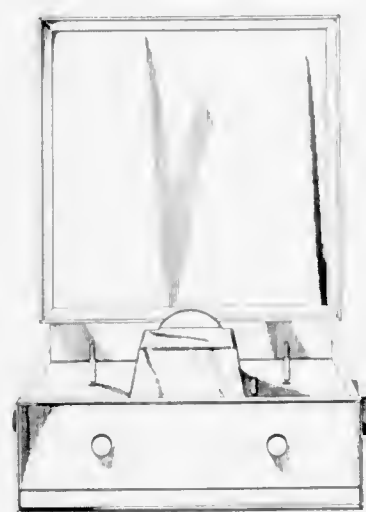


226,484

**MICRO FILM READER**

Ronald James Purvey, Birmingham, and Raymond Black-  
well, Axminster, England, assignors to Group Six Lim-  
ited, Alpertown, Wembley, England  
Filed Apr. 26, 1971, Ser. No. 137,737  
Term of patent 3½ years  
Int. Cl. D14—02

U.S. Cl. D26—5 C

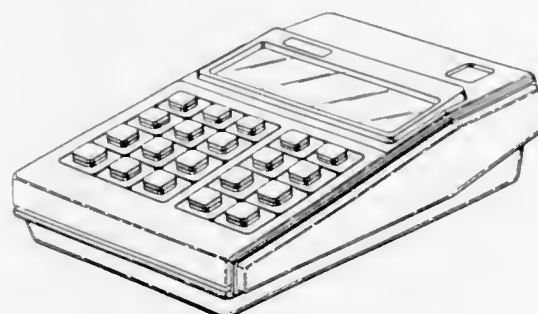


226,485

**ELECTRONIC CALCULATING MACHINE**

Isao Kitai, Osaka, Japan, assignor to Sharp Kabushiki  
Kaisha, Osaka, Japan  
Filed Nov. 4, 1971, Ser. No. 195,900  
Claims priority, application Japan July 26, 1971  
Term of patent 14 years  
Int. Cl. D14—02

U.S. Cl. D26—5 C

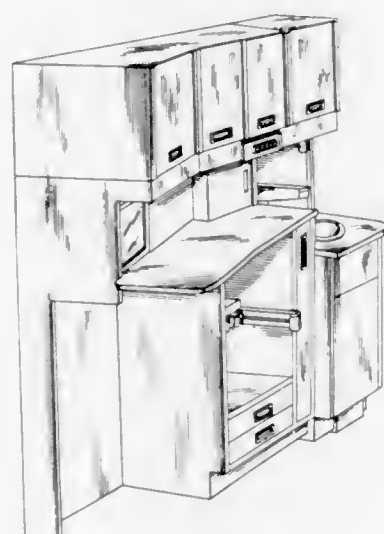


226,483

**MODULAR CONSOLE FOR A DENTAL  
OPERATORY**

John M. Schwartz, Des Moines, Iowa, assignor to Den-Tal  
Ez Mfg. Co., Des Moines, Iowa  
Filed Feb. 7, 1972, Ser. No. 224,384  
Term of patent 14 years  
Int. Cl. D24—01

U.S. Cl. D24—1 B

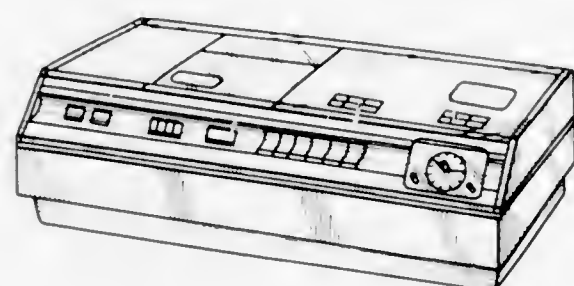


226,486

**VIDEO CASSETTE RECORDER**

Hendrik Maria Vananderoye, Hasselt, Belgium, assignor  
to U.S. Philips Corporation  
Filed May 18, 1971, Ser. No. 144,710  
Claims priority, application Belgium Nov. 20, 1970  
Term of patent 14 years  
Int. Cl. D14—01

U.S. Cl. D26—14 B



226,487

**COMBINATION MICROPHONE AND CONTROL  
STAND FOR A LOUDSPEAKING TELEPHONE  
SET**

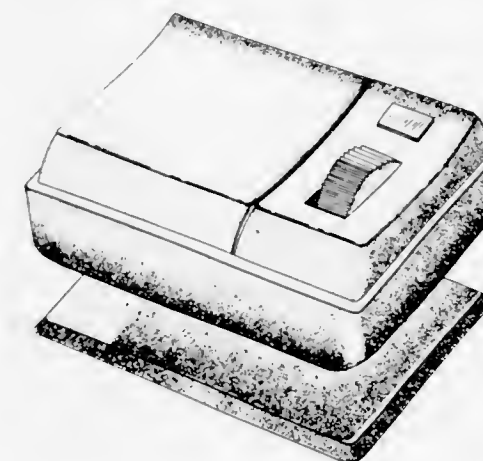
Donald Michael Genaro, Haworth, N.J., and George  
Willis Reichard, Jr., Indianapolis, Ind., assignors to  
Bell Telephone Laboratories, Incorporated, Murray  
Hill, N.J.

Filed Oct. 5, 1971, Ser. No. 186,829

Term of patent 14 years

Int. Cl. D14—03

U.S. Cl. D26—14 A



226,488

**EMERGENCY TELEPHONE LIGHT**

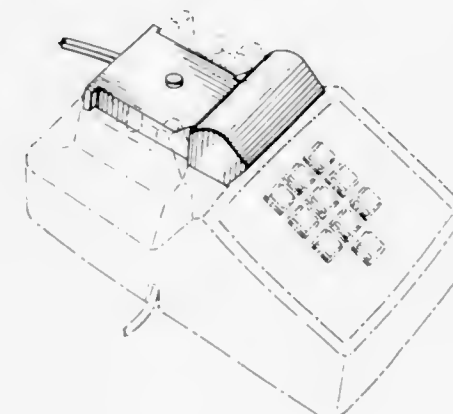
Fred G. Sinclair, 800 NE. 155th Terrace,  
North Miami Beach, Fla. 33162

Filed Mar. 16, 1972, Ser. No. 249,490

Term of patent 14 years

Int. Cl. D14—03

U.S. Cl. D26—14 A



226,489

**SWING SEAT OR THE LIKE**

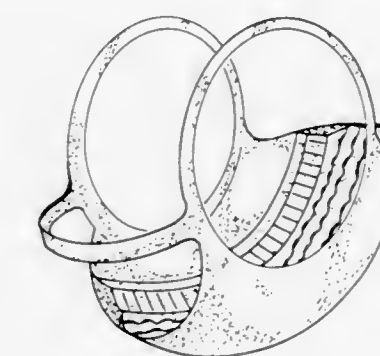
Howard B. Kimble, 3100 Arrowwood Drive,  
Raleigh, N.C. 27604

Filed Mar. 10, 1971, Ser. No. 123,128

Term of patent 14 years

Int. Cl. D21—02

U.S. Cl. D34—5 M



226,490

**SKI**

Robert Mimeur, Cluses, France, assignor to Etablisse-  
ments Carpano et Pons, Cluses, France

Filed Feb. 3, 1972, Ser. No. 223,407

Term of patent 14 years

Int. Cl. D21—02

U.S. Cl. D34—14 D



226,491

**TOY CONSTRUCTION PIECE**

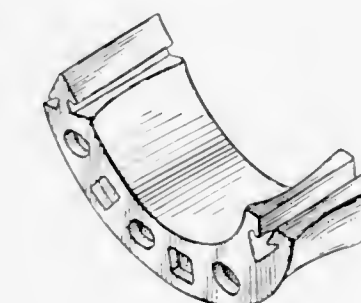
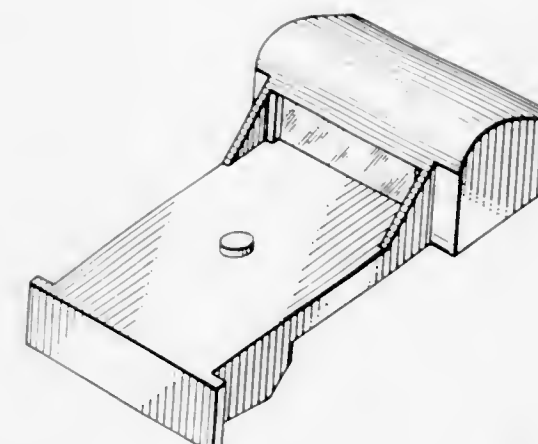
John P. Hancovsky, Shaler Township, Allegheny County,  
Pa., assignor to Hi-Ho Products, Inc., Sharpsburg, Pa.

Filed May 18, 1971, Ser. No. 144,711

Term of patent 14 years

Int. Cl. D21—01

U.S. Cl. D34—15 GG





226,492

## TOY CONSTRUCTION PIECE

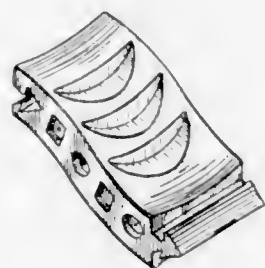
John P. Hancovsky, Shaler Township, Allegheny County, Pa., assignor to Hi-Ho Products, Inc., Sharpsburg, Pa.

Filed May 18, 1971, Ser. No. 144,714

Term of patent 14 years

Int. Cl. D21—01

U.S. Cl. D34—15 GG



226,493

## INFLATABLE KITE

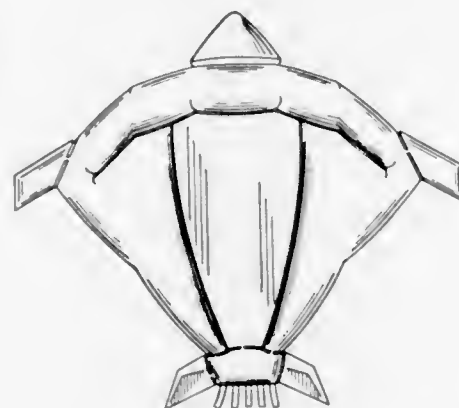
Calogero Madonia, 6250 E. 36th St., Tulsa, Okla. 74135

Filed Oct. 28, 1971, Ser. No. 193,614

Term of patent 14 years

Int. Cl. D21—01

U.S. Cl. D34—15 AF



226,494

## DIGITAL CLOCK-LAMP

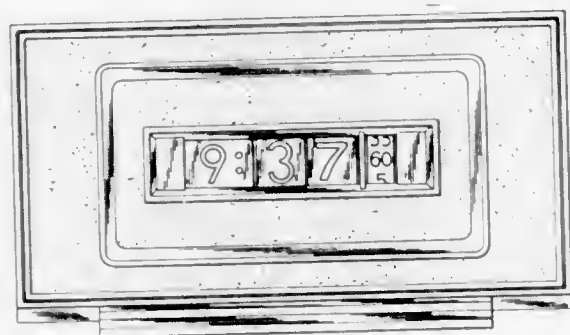
Jack Bergman, Pittsburgh, Pa., assignor to Pennwood Numechron Co., Pittsburgh, Pa.

Filed July 29, 1971, Ser. No. 167,547

Term of patent 14 years

Int. Cl. D10—01

U.S. Cl. D42—7



226,495

## TRAY OR THE LIKE

James B. Swett, Barrington, R.I., assignor to Dart Industries Inc., Los Angeles, Calif.

Filed Nov. 2, 1971, Ser. No. 195,069

Term of patent 14 years

Int. Cl. D7—02

U.S. Cl. D44—1 B



226,496

## LAMP

Gordon L. Duern and Donald S. Griffin, Kitchener, Ontario, Canada, assignors to Electrohome Limited, Kitchener, Ontario, Canada

Filed Mar. 26, 1971, Ser. No. 128,644

Term of patent 14 years

Int. Cl. D26—05

U.S. Cl. D48—20 R



226,497

## LAMP

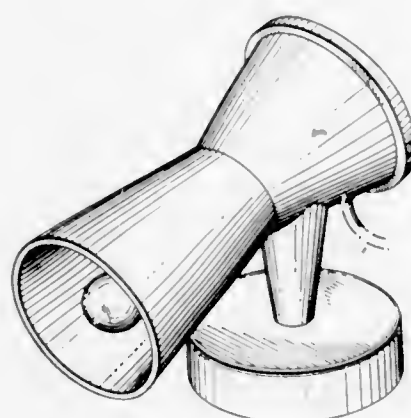
Gerard J. O'Brien, 33 Pamrapo Ave., Jersey City, N.J. 07307

Filed Nov. 30, 1971, Ser. No. 203,503

Term of patent 14 years

Int. Cl. D26—05, 03

U.S. Cl. D48—20 F



226,498

## LAMP

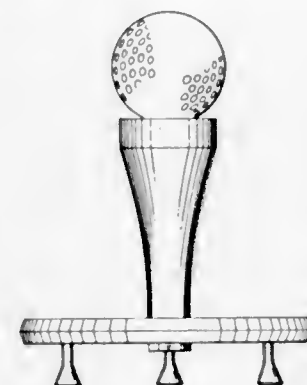
John J. Misenko, 6179 Stratford Drive, Parma Heights, Ohio 44130

Filed Dec. 1, 1971, Ser. No. 203,950

Term of patent 14 years

Int. Cl. D26—05

U.S. Cl. D48—20 C



226,499

## WRINGER MOP

Samuel J. Popeil, Chicago, Ill., assignor to Popeil Brothers Inc., Chicago, Ill.

Filed June 11, 1971, Ser. No. 152,477

Term of patent 14 years

Int. Cl. D4—01

U.S. Cl. D49—21



226,500

## REFUSE RECEPTACLE OR THE LIKE

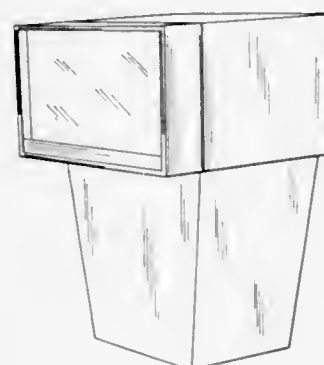
James D. Ezell, 108 Pineland Circle, Raleigh, N.C. 27601

Filed Feb. 16, 1972, Ser. No. 227,009

Term of patent 14 years

Int. Cl. D7—06

U.S. Cl. D49—35



226,501

## TIRE MEASURING GAUGE OR SIMILAR ARTICLE

Samuel A. Walker, 10504 Solta, Dallas, Tex. 75250

Filed July 21, 1971, Ser. No. 164,973

Term of patent 14 years

Int. Cl. D10—04

U.S. Cl. D52—6 E



226,502

## EYEGLASSES CASE

Heihachi Hori, 430 Shimoishihara Chofu-shi, Tokyo, Japan

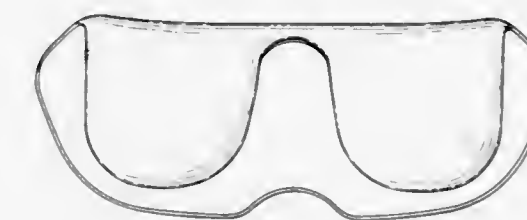
Filed May 3, 1971, Ser. No. 140,009

Claims priority, application Japan Feb. 17, 1971

Term of patent 14 years

Int. Cl. D16—06

U.S. Cl. D57—1



226,503

## PORTABLE REAR PROJECTION VIEWER

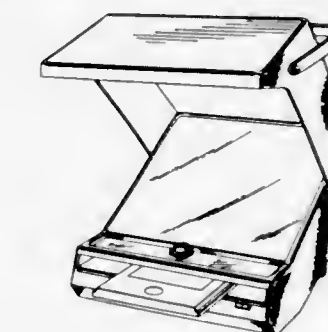
William A. Andres, Hopkins, Larry F. Becker, Brooklyn Park, and Larry D. Quanrud, Golden Valley, Minn., assignors to Washington Scientific Industries, Inc., Long Lake, Minn.

Filed Sept. 27, 1971, Ser. No. 184,312

Term of patent 14 years

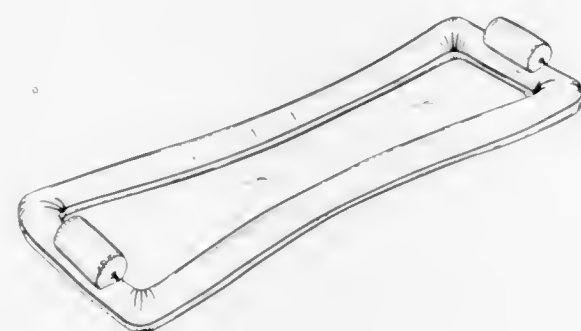
Int. Cl. D16—03

U.S. Cl. D61—1 N

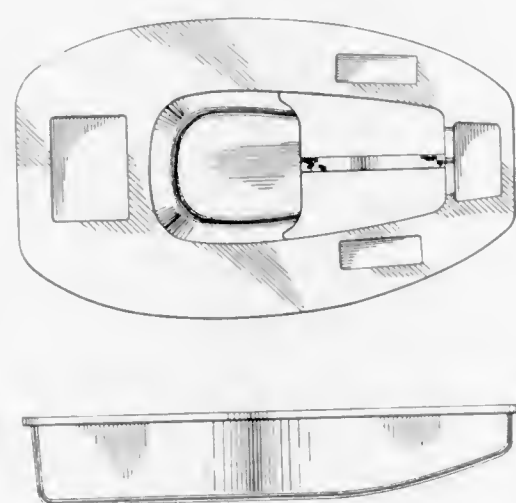




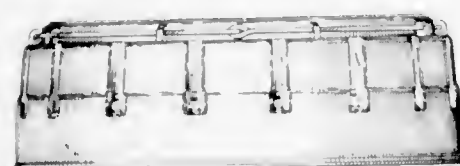
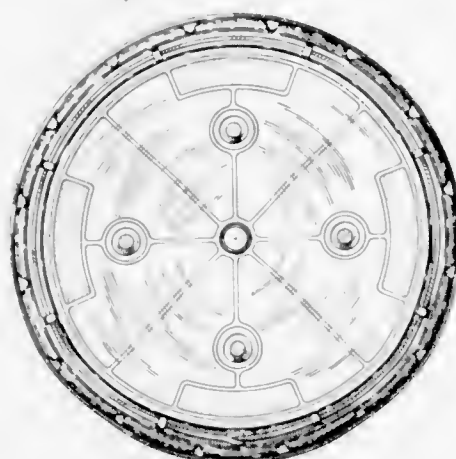
226,504  
COMBINED PNEUMATIC RAFT AND SUN  
BATHING SUPPORT STRUCTURE  
Willard S. Norton, 5680 NE. Oaktree Lane,  
Kansas City North, Mo. 64104  
Filed May 10, 1971, Ser. No. 142,121  
Term of patent 14 years  
Int. Cl. D12—99  
U.S. Cl. D71—1 HH



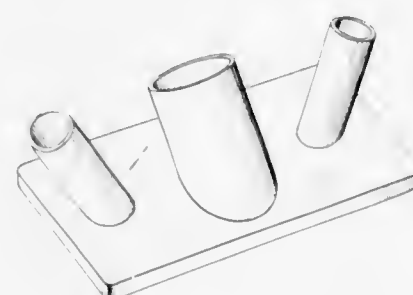
226,505  
FISHING FLOAT  
Hubert L. McIntyre, Tonkawa, Okla. 74653  
Filed May 17, 1971, Ser. No. 150,939  
Term of patent 14 years  
Int. Cl. D12—14  
U.S. Cl. D71—1 HH



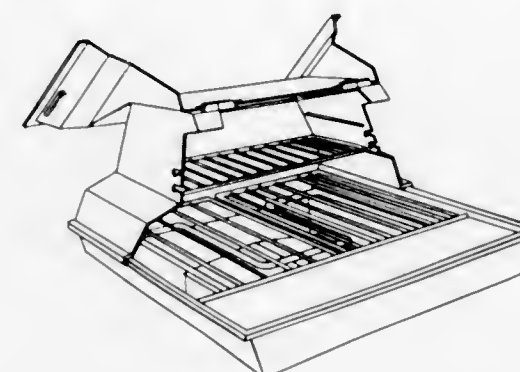
226,506  
SWIMMING FLOAT  
Edward F. Brill, Oconomowoc, Wis., assignor to Beach-  
Buoy, Inc., Oconomowoc, Wis.  
Filed Sept. 24, 1971, Ser. No. 183,750  
Term of patent 14 years  
Int. Cl. D21—03  
U.S. Cl. D71—1 HH



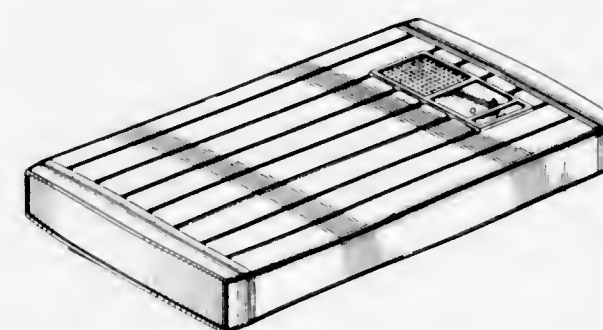
226,507  
SUPPORT FOR ROADWAY WARNING DEVICES  
Travis R. Wright, 80 Miller Ave., Dayton, Ohio 45427  
Filed Sept. 29, 1971, Ser. No. 184,981  
Term of patent 14 years  
Int. Cl. D29—02  
U.S. Cl. D72—1 H



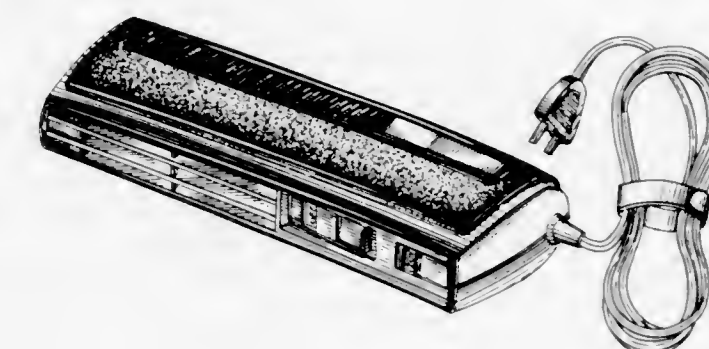
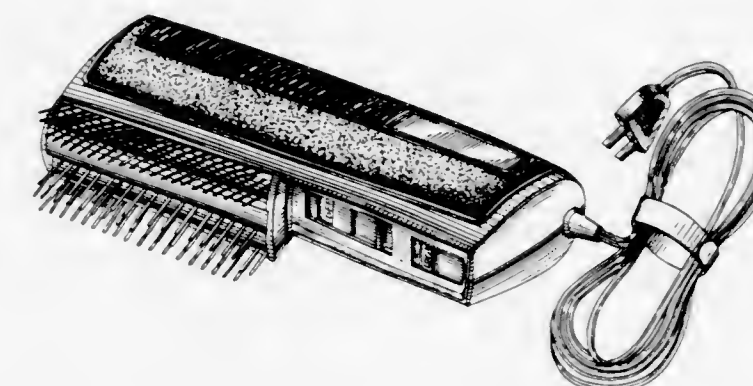
226,508  
SMOKE DETECTOR  
Channing W. Gilson, Los Angeles, Calif., assignor to  
A-T-O Inc., Willoughby, Ohio  
Filed Jan. 20, 1972, Ser. No. 219,604  
Term of patent 14 years  
Int. Cl. D29—01  
U.S. Cl. D72—1 R



226,509  
ELECTRIC BARBECUE GRILL AND OVEN  
COMBINATION  
Charles D. Dushek, Lisle, Ill., assignor to Sears,  
Roebuck and Co., Chicago, Ill.  
Filed May 18, 1971, Ser. No. 144,715  
Term of patent 14 years  
Int. Cl. D7—02  
U.S. Cl. D81—10 E



226,510  
COMBINED HAIR DRYER AND STYLING  
ATTACHMENT THEREFOR  
John L. Benty, Maplewood, and Daniel Friedman, Edison,  
N.J., assignors to Clairol Incorporated, New York, N.Y.  
Filed Oct. 12, 1971, Ser. No. 188,400  
Term of patent 14 years  
Int. Cl. D28—03  
U.S. Cl. D86—10 F





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- Barnes, Michael Harry, to United Kingdom Atomic Energy Authority. Preparation of noradrenaline. 3,720,582, Cl. 195-30.000.
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- Basil, Weir, to Teledyne Inc. Method and apparatus for sorting semiconductor dice. 3,720,309, Cl. 209-73.000.
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- Peters, Karl-Heinz; and Neff, Rutger, 3,720,693.
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- Becker, Paul Horst; See—  
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- Bell, Harold, to Mighty-Mac, Inc. T-bar zipper tab handle. 3,719,973, Cl. 24-205.15h.
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- Bennich, Hans H.; and Johansson, Stig G. O., to Wide, Leif E. Sweden Pharmacia AB. Method for determining the presence of reagins. 3,720,760, Cl. 110.
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- Breuer, Hermann, to Squibb, E. R., & Sons, Inc. Nitrofuryl-oxadiazole amides. 3,720,668, Cl. 260-240.00a.
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- Brinegar, Willard C., to Celanese Corporation. Reverse osmosis process employing polybenzimidazole membranes. 3,720,607, Cl. 210-23.000.
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- Bruce, George D.; Davidge, Ronald V.; Fowler, Raymond L.; Hobgood, George W., Jr.; Locklar, Henry C., Jr.; and Cleave, George W., to International Business Machines Corporation. Electrophotographic apparatus with synchronized document illumination and scanning feature. 3,720,465, Cl. 355-8.000.
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- Chang, Hsu, to International Business Machines Corporation. Sensing of cylindrical magnetic domains. 3,720,928, Cl. 340-174.0tf.
- Chatterji, Arun K.; Custozzo, Marianne; Kiriazides, Demosthenes K.; Russell, John J., Jr.; and Serio, John P., to Xerox Corporation. Electrostatic developer containing modified silicon dioxide particles. 3,720,617, Cl. 252-62.100.
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- Chow, Henry; Faris, William R.; Lynn, Howard F.; and Payne, Delmar V., to Bendix Corporation, The. Receiver device. 3,720,945, Cl. 343-114.500.
- Chow, Henry; Faris, William R.; Lynn, Howard F.; and Payne, Delmar V., to Bendix Corporation, The. Logarithmic receiver device which compensates for received signal strength receiver device. 3,720,946, Cl. 343-119.000.
- Christensen, Poul Sondergaard, to Bruun & Sorensen A/S. Floor structure. 3,720,027, Cl. 52-309.000.
- Chudler, Morris, to Prudential Lighting Corporation. Latch mechanism. 3,720,432, Cl. 292-220.000.
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- Ditscheid, Hans L., to Eastman Kodak Company. Microfilm reader. 3,720,464, Cl. 353-27.000.
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- Eiler, Peter, to Cottwald, Leo. Multi-axled vehicle chassis. 3,720,280, Cl. 180-64.00r.
- Einstein, Bernard Caesar: See—
- Parish, Hubert Gene; and Einstein, Bernard Caesar, 3,720,535.
- Eisenberger, Peter M.; and McCall, Samuel Leverte, Jr., to Bell Telephone Laboratories, Incorporated. Nonlinear device for frequency shifting X-rays. 3,720,843, Cl. 307-88.300.
- Ekstrom, Lars. Swingable wash basin for compact shower-room. 3,719,959, Cl. 4-168.000.
- Eldridge, David G.: See—
- Hayner, Paul F.; and Eldridge, David G., 3,720,483.
- Elkins, Jack D. Inflatable warning device for roadways. 3,720,181, Cl. 116-63.00p.
- Elliott, Kenneth F., to GTE International Incorporated. Rotary switch. 3,720,893, Cl. 335-138.000.
- Elliott, Michael; and Janes, Norman F., to National Research Development Corporation. Insecticides. 3,720,703, Cl. 260-468.00h.
- Elsing, John W., to Control Data Corporation. Thermal expansion compensator. 3,720,930, Cl. 340-174.10b.
- EMI Limited: See—
- Gale, Frederick Henry, 3,720,889.
- Energy Sciences, Inc.: See—
- Nablo, Sam V., 3,720,828.
- Engelhard, Helmut: See—
- Rinkler, Heinrich; Wieden, Horst; Engelhard, Helmut; and Nogaj, Alfred, 3,720,733.
- Engelman, Valentine R.: See—
- Alonas, Kay; Engelman, Valentine R.; and Jacobs, Norman A., 3,720,298.
- Enters, Edward W.; and Price, Warren H., to Gilson Bros. Co. Load limiter for self-energizing drive. 3,720,112, Cl. 74-196.000.
- Entringer, Michel, to Societe Wendel Sidelor S.A. Heat treatment of hot rolled steel wire rods. 3,720,544, Cl. 148-14.000.
- Epitastudomanyl Intezet: See—
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- Epting, Roy W.: See—
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- Erasmus, Albert, to Bengkiser-Knapsack GmbH. Thinner for drilling fluids. 3,720,610, Cl. 252-8.50c.
- Erhibitors Service Company: See—
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- Erickson, Raymond Curry, to Squibb, E. R., & Sons, Inc.  $\alpha$ -Ureido-cyclohexadienylalkylene-penicillins. 3,720,664, Cl. 260-239.100.
- Erin Industries, Inc.: See—
- Irish, Edwin M., Jr., 3,720,343.
- Ersilio, Levati, to Mattel, S.p.A. Chassis for a miniature toy vehicle. 3,720,017, Cl. 46-221.000.
- Esso Production Research Company: See—
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- Esso Research and Engineering Co.: See—
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- Esso Research and Engineering Company: See—
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 Franc, Charles. Mounting apparatus for illuminated gift packages, greeting cards, or the like. 3,720,825, Cl. 240-10.650.  
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- Gorgens, Joseph E.; and Bissell, Robert D., to Dresser Industries, Inc. Double seated regulating valve. 3,720,234, Cl. 137-625.360.
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- Gouch and Company (Hanley) Limited: See—  
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- Gough, George Terah, to Gouch and Company (Hanley) Limited. Apparatus for casting ceramic articles. 3,720,494, Cl. 425-147.000.
- Gould, Leslie R., to Esso Research and Engineering Company. Continuous dewaxing of oils by in situ refrigeration. 3,720,599, Cl. 208-33.000.
- Grable, Donovan B. Method and apparatus for sub-surface deformation of well pipe. 3,720,262, Cl. 166-298.000.
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- Greene, Charles W.; and Varner, George C., to Deering Milliken Research Corporation. Endless reinforcement and method for producing same. 3,720,570, Cl. 161-58.000.
- Greenfield, Walter; and Berg, Raymond, to Cooper Laboratories (Cooper), mesne. Resealable hermetically sealed ampules and closure thereof. 3,720,341, Cl. 215-6.000.
- Greenwood, Albert C., to Westinghouse Electric Corporation. Current monitoring means. 3,720,894, Cl. 335-204.000.
- Gregg, Hendrick J. Wind turbine generator with exhaust gas heater. 3,720,840, Cl. 290-55.000.
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- Harms, John F. Upflow cartridge filter apparatus. 3,720,322, Cl. 210-238.000.
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- Hart, William, to Mattel, Inc. Compact voice unit. 3,720,117, Cl. 74-798.000.
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Widdig, Arno; Kühle, Engelbert; Gladbach, Bergisch; Sasse, Klaus; Scheinplüg, Hans; Grewe, Ferdinand; Kaspers, Helmut; and Fronberger, Paul-Ernst, 3,720,682.
- Kulander, Carl J. Vibration-dampening device for a floor-mounted vibrating mechanism. 3,720,392, Cl. 248-20.000.
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- Kumakura, Hiromu. Automatic sprinkling apparatus. 3,720,375, Cl. 239-210.000.
- Kume, Masahiro; See—  
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- Kunc, Frank C., to Scott Paper Company. Filter element. 3,720,574, Cl. 161-156.000.
- Kupperman, Dennis I.; See—  
Kupperman, Sam; and Kupperman, Dennis I., 3,720,016.
- Kupperman, Sam; and Kupperman, Dennis I. Toy having slotted axle and elastic strip drive means laterally insertable therethrough. 3,720,016, Cl. 46-206.000.
- Kupsky, George A., to Burroughs Corporation. Multi-position character display panel. 3,720,452, Cl. 316-24.000.
- Kuraray Co., Ltd.; See—  
Fukushima, Osamu; Nagoshi, Kazuo; and Iwamoto, Toshiaki, 3,720,631.
- Imoto, Saburo; Ohara, Osamu; Nakamoto, Hisashi; Tanaka, Hisashi; and Ueda, Ryuei, 3,720,651.
- Kurita Water Industries Limited, mesne; See—  
Suzuki, Shigeyuki; Kumamoto, Kotaro; Kaneda, Isamu; and Sakai, Shoushiro, 3,720,624.
- Kurle, Arthur R., to Halliburton Company. Parachute release device and method. 3,720,390, Cl. 244-149.000.
- Kveglis, Albert A.; See—  
Kolyer, John M.; and Kveglis, Albert A., 3,720,638.
- Kyrias, George M. Automatic injection system. 3,720,211, Cl. 128-218.000.
- La Branche, Harvey W.; See—  
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- Labofina, SOC AN; See—  
Vanderlinden, AndreJacquesEmile; draditzkyBlgiu; and Labofina, SOC AN, 3,720,707.
- Lagasse, Joseph Louis, to Northern Electric Company Limited. Spiral head adjusting screw. 3,720,129, Cl. 85-9.000.
- Laing, Ingeborg; See—  
Laing, Nikolaus; and Laing, Ingeborg, 3,720,198.
- Laing, Nikolaus; and Laing, Ingeborg. Heat storage elements, a method for producing them and devices comprising heat storage elements. 3,720,198, Cl. 126-400.000.
- L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procédes Georges Claude; See—  
Simonet, Guy, 3,720,042.
- Laird, John D., to Avco Corporation. Intra-arterial blood pump. 3,720,200, Cl. 128-1.000.
- Lambert, John Robert, to Redment Engineering Company Limited. Transporter vehicles. 3,720,437, Cl. 296-1.000.
- Lamont, George Laurence, to Contract Cleaning Co., Pty. Limited. Combined floor-polisher and suction cleaner. 3,719,966, Cl. 15-385.000.
- Lamoureux, William Roger, to International Business Machines Corporation. Photonically partitioned continuous gas envelope and transiently energized pilot discharge areas used in address selection of display firing. 3,720,919, Cl. 340-166.000.
- Landherr, Lawrence R.; and Prohaska, Karl J., to Milwaukee Cylinder Corporation. Automatically reversing, double acting fluid cylinder mechanism. 3,720,137, Cl. 91-279.000.
- Landree, Raymond L., to Bendix Corporation, The. Depth-type filter for operation with high differential pressures across the filter. 3,720,323, Cl. 210-493.000.
- Lang, Albert L.; and Smith, George A. W. Self-contained unauthorized entry alarm. 3,720,937, Cl. 340-283.000.
- Lansky, Zdenek; and Malinowski, Lester W., to Parker Hannifin Corporation. Supersonic lubricator. 3,720,290, Cl. 184-55.000.
- Lapple, Charles E., to Donaldson Company, Inc. Centrifugal classifier. 3,720,313, Cl. 209-144.000.
- Lapporte, Seymour J.; and Toland, William G., to Chevron Research Company. Methylene and oxymethylene bis-ester production. 3,720,706, Cl. 260-494.000.
- Largman, Theodore, to Allied Chemical Corporation. Cycloalkane-bisamides. 3,720,712, Cl. 260-558.000.
- Larribau, Etienne; Grubis, Bernard; and Sahores, Jean, to Societe Nationale des Petroles d'Aquitaine. X-ray spectrometry apparatus having a controlled X-ray source. 3,720,830, Cl. 250-51.500.
- Larsen, Gordon R.; See—  
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- Larson, Donald J.; See—  
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- LaSalle Steel Company; See—  
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- Latinen, George A.; deceased (by Latinen, May V.; administratrix), to Monsanto Company. Devolatilizer rotor assembly. 3,720,479, Cl. 416-198.000.
- Latinen, May V.; See—  
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- Laugherty, James R.; See—  
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- Laugherty, Lorene; and Laugherty, James R., to Avis Research, Inc. Disposable footprinter. 3,720,304, Cl. 206-46.000.
- Laukien, Gunther R.; See—  
Keller, Toni W.; Laukien, Gunther R.; and Tschopp, Werner H., 3,720,816.
- Lawrence, Mark F.; and Beecroft, William C., to Mark 50 Machinery Sales, Inc. Sawmill carriage networks. 3,720,244, Cl. 83-523.000.
- Lawsine, Leo. Signal processing apparatus. 3,720,952, Cl. 343-18.000.
- Le Seigneur, Pierre, to Thomson-CSF. Power amplifying device for amplitude modulated high frequency signals. 3,720,880, Cl. 330-29.000.
- Le Tourneau, R. G., Inc.; See—  
Molby, Lloyd A., 3,720,332.
- Leacock, Ronald. Automatic machine tool. 3,720,475, Cl. 408-44.000.
- Leary, David E.; See—  
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- Lechner, Walter Ludwig; See—  
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- Lectrolarm Custom Systems, Inc.; See—  
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- Lee, Clarence M., to Zenith Radio Corporation. Multiple input voltage source power supply. 3,720,868, Cl. 321-47.000.
- Lee, Larry E., to Murphy G. W., Industries, Inc. Pump piston. 3,720,140, Cl. 92-87.000.
- Lee, Raymond, Organization, Inc.; The; See—  
Arnold, Edward S., 3,720,800.
- Lee, Tzu-Chang; and Zook, James David, to Honeywell Inc. Differential readout holographic memory. 3,720,453, Cl. 350-3.500.
- Lee, Yoon Chai; and Trementozzi, Quirino A., to Monsanto Company. Bottle constructed of a blend of polymers from methacrylonitrile, monovinylidene and rubber compounds. 3,720,340, Cl. 215-1.000.
- Leeming, Peter Rodway; See—  
Canas-Rodriguez, Antonio; and Leeming, Peter Rodway, 3,720,771.
- Lehmann, Frank-Dieter, to Hauni-Werke Korber & Co., KG. Apparatus for separating selected cigarettes or analogous rod-shaped articles from a series of rapidly moving equidistant articles. 3,720,310, Cl. 209-74.000.
- Lehmann, Werner; See—  
Wanner, Karl; Schmidt, Wolfgang; Bleicher, Manfred; Sigg, Horst; Lehmann, Werner; and Burklin, Max, 3,720,269.



- Lehner, Karl, to Vickers-Zimmer Aktiengesellschaft Planung und Bau von Industrieanlagen. Process and apparatus for the continuous production of synthetic threads. 3,720,382, Cl. 242-35.50r.
- Lematex, Inc.: See—  
Leposavic, Wayne V., 3,720,938.
- Leposavic, Wayne V., to Lematex, Inc. System for preventing erroneous data output signals from an electrical keyboard. 3,720,938, Cl. 340-365.00s.
- Letchworth, Peter E., to Stauffer Chemical Company. Synergists insecticidal mixtures of O,O-dimethyl-O-(2-methoxy-4-cyanophenyl) phosphorothiate and 3, 4-methylene dioxypheyl propynyloxy carbamates. 3,720,766, Cl. 424-210.000.
- LeVelle, James A.: See—  
Allen, William G.; LeVelle, James A.; and Schuh, Frank J., 3,720,267.
- Levey, Gustave S., to Levey, Gustave S., mesne. Recirculating paint system or the like. 3,720,373, Cl. 239-127.000.
- Levey, Gustave S., mesne: See—  
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- Levinn, Robert N., to American Thermostat Corporation. Temperature-sensitive assist for temperature-controlled switch. 3,720,898, Cl. 337-95.000.
- Lewis, James H.: See—  
Duck, James; and Lewis, James H., 3,720,260.
- Lewis, John C., to Park-Ohio Industries, Inc. Method and apparatus for inductively heat treating elongated workpieces. 3,720,803, Cl. 219-10.690.
- Leyh, Harold F. Spud clamping device. 3,720,435, Cl. 294-88.000.
- Liebman, Arno J. Body rubbing device. 3,720,205, Cl. 128-67.000.
- Liggett & Myers Incorporated: See—  
Norman, Vello; Bryant, Herman G., Jr.; and Williams, Thomas Blair, 3,720,214.
- Lindblom, Karl Thore, to Ostbergs Fabriks AB. Arrangement for measuring the length of oblong objects. 3,720,247, Cl. 144-3.00d.
- Linde Aktiengesellschaft: See—  
Nasser, Gamal El Din; and Waldmann, Hans, 3,720,071.
- Schurawski, Siegfried; and Kropp, Walter, 3,720,059.
- Lion Hamigaki Kabushiki Kaisha: See—  
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- Lippitsch, Josef M.: See—  
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- List, Ferdinand; and Alf, Helmut, to Chemische Werke Huls Aktiengesellschaft. Production of phthalic anhydride from phthalic acid. 3,720,692, Cl. 260-346.700.
- Litton Business Systems, Inc.: See—  
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- Litton Systems, Inc.: See—  
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- Liuzzo, Giuseppe: See—  
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- Loch, Alphonse: See—  
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- Loch, George N.; and Loch, Alphonse. Plastic fence post. 3,720,401, Cl. 256-19.000.
- Lochridge, Joe C., to Brown & Root, Inc. Pipeline laying operation with explosive joining of pipe sections. 3,720,069, Cl. 61-72.300.
- Lockheed Aircraft Corporation: See—  
Grove, Robert K.; and Sloma, Richard O., 3,720,044.
- Locklar, Henry C., Jr.: See—  
Bruce, George D.; Davidge, Ronald V.; Fowler, Raymond L.; Hobbgood, George W., Jr.; Locklar, Henry C., Jr.; and Cleave, George W., 3,720,465.
- Lodi, Frank, to Richeo Plastic Company. Cable hanger and clamp. 3,719,971, Cl. 24-73.0pb.
- Loeffler, Larry J., to Merck & Co., Inc. Treatment of a pathological fibrinolytic state in patients. 3,720,775, Cl. 424-319.000.
- Logemann, Johan D.: See—  
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- Logue, James A., to Owens-Illinois, Inc. Television bulb with improved strength. 3,720,345, Cl. 220-2.10a.
- Lohr, Manfred, to Hoesch Aktiengesellschaft. Hydro-pneumatic spring. 3,720,405, Cl. 267-64.000.
- Long, Jasper J.; and Justus, Ben, to Optoelectronics, Inc. Vacuum tight lead throughs for dewar mounted infrared detectors. 3,719,990, Cl. 29-628.000.
- Longoni, Sergio; and Portinari, Antonio, to Industrie Pirelli S.p.A. Process for lining conductive tubes with insulating material. 3,720,557, Cl. 156-156.000.
- Loper, Robert J., to Trail-R-Signs. Signboard construction. 3,720,012, Cl. 40-140.000.
- Lord, George Harry: See—  
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- L'Oreal: See—  
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- Lorenzen, Heinz-Christen, to Hauni-Werke Korber & Co. KG. Apparatus for evaluating the output of machines for the production and/or processing of smokers products. 3,720,815, Cl. 235-151.130.
- Ludoph, Hemmo Hermannes Johannes: See—  
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- Luke, George C.: See—  
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- Lukas, Anthony J., to Beatrice Foods Co. Preparation of a blue cheese flavored product. 3,720,520, Cl. 99-140.00r.
- Lummus Company, The: See—  
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- Lundin, Charles E., to Colorado Springs National Bank. Copper-lead alloy. 3,720,507, Cl. 75-135.000.
- Lundin, Robert E.: See—  
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- Lurf, Gunther: See—  
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- Lustig, Simon. Exothermic composition for use in steelworks and in foundries. 3,720,552, Cl. 149-3.000.
- Lynn, Howard F.: See—  
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- Chow, Henry; Faris, William R.; Lynn, Howard F.; and Payne, Delmar V., 3,720,946.
- Mabuchi, Shunsuke: See—  
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- Macaulay, Norman; and Ruus, Henn, to Moore Business Forms, Inc. Polymer gels and method of making same. 3,720,534, Cl. 117-36.200.
- Macdowell, John F.: See—  
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- Mack, William T. Liquid confining and collecting apparatus. 3,720,062, Cl. 61-1.00f.
- Mackenzie, Harold B. Discrete material transporting and dumping apparatus. 3,720,328, Cl. 214-38.00d.
- Maestri, Bruno. Tool for driving and setting headless nails or metal tacks. 3,720,364, Cl. 227-109.000.
- Magee, John E. Automatic elevator car positioning monitor. 3,720,292, Cl. 187-29.00r.
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- Mainhardt, Robert; Cochran, David L.; Deleray, Arthur L.; Fritzler, Gary L.; and Mawhinney, Robert C. Rotatable rocket having means for preventing flameout due to centrifugal force created during rotation thereof. 3,720,167, Cl. 102-34.400.
- Majewski, Mieczyslaw Stanislaw. Plumb bob with interchangeable parts. 3,720,001, Cl. 33-392.000.
- Makino, Toshiaki. Process for recovering and manufacturing silicic acid system pigment from alkali process pulp black liquor containing silicates. 3,720,531, Cl. 106-288.00b.
- Malinowski, Lester W.: See—  
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- Mallory Electric Corporation: See—  
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- Mallory, Marion, Jr., to Mallory Electric Corporation. Ignition system. 3,720,194, Cl. 123-148.00e.
- Manaka, Kazuo, to Broadview Chemical Corporation. Anaerobic sealant compositions. 3,720,656, Cl. 260-89.50n.
- Manaka, Makoto: See—  
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- Mangood Corporation: See—  
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- Mani, Inder, to Dow Chemical Company, The. Vinyl ester resins cured by ionizing radiation the presence of CBr<sub>4</sub>. 3,720,592, Cl. 204-159.150.
- Maniero, Daniel A.: See—  
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- Mansfield, Geoffrey Harry; and Watts, Malcolm Lehan, to Imperial Chemical Industries Limited. Cracking of hydrocarbons. 3,720,600, Cl. 208-47.000.
- Manuali, Bertrand Claude Marcel Jean, to Centre National d'Etudes Spatiales. Diode switching arrangements comprising three-position switching means. 3,720,888, Cl. 333-7.000.
- Marathon Oil Company: See—  
Argabright, Perry A.; Sinkey, Vernon J.; and Phillips, Brian L., 3,720,632.
- Norton, Charles J.; and Hurley, Edward, Jr., 3,720,710.
- Marie, Maurice; and Trouillet, Achille, to Calor. Roller bearing device for a washing machine, particularly for a linen washing machine. 3,720,081, Cl. 68-132.000.
- Marine Colloids Inc.: See—  
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- Mark 50 Machinery Sales, Inc.: See—  
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- Marsden, Howard A.: See—  
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- Marsh, Paul G., to Black Clawson Company, The. Recovery of salvageable components from solid waste material. 3,720,380, Cl. 241-20.000.
- Martel, Marvin L. Oil crankcase service. 3,720,287, Cl. 184-1.500.
- Martin, Daryl T., to Hoerner Waldorf Corporation. Book folder. 3,720,366, Cl. 229-37.00e.
- Martin, Henry; and Beriger, Ernst, to Ciba Geigy AG. Phosphorus amides. 3,720,735, Cl. 260-959.000.
- Martin Metals Company: See—  
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- Martin, Patrick Douglas, to Wiggins Teape Research & Development Limited. Drying sheet material. 3,720,002, Cl. 34-18.000.
- Martin, Robert L.; Howland, Leland L.; and Eichinger, Le Roy J., to Thermo King Corporation. Transportable refrigeration unit having induction alternator-induction motor reconnection and control system. 3,720,842, Cl. 307-68.000.
- Martin, Yvonne Connolly: See—  
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- Martinsons, Aleksandrs: See—  
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- Masaoka, Yutaka, to Yamaha Hatsudoki Kabushiki Kaisha. Driving device for motor driven vehicles. 3,720,277, Cl. 180-5.00r.
- Maschinenfabrik Zuckermann Komm. Ges.: See—  
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- Massachusetts Institute of Technology: See—  
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- Tannenbaum, Steven R.; Sinskey, Anthony J.; and Maul, Stephen B., 3,720,585.
- Massar, Ernst, to Siemens Aktiengesellschaft. Power current cryotron with flat gate conductor. 3,720,847, Cl. 307-265.000.
- Masson, Narinder; Korenicki, William John; and Lechner, Walter Ludwig, to Gamon-Camet Industries, Inc. Valve assembly. 3,720,229, Cl. 137-527.800.
- Massonne, Joachim; Kreutz, Rolf; and Friedrich, Heinz, to Kali-Chemie Aktiengesellschaft. Method for recovering uranium as uranium hexafluoride. 3,720,748, Cl. 423-4.000.
- Masunaga, Kunihiko; Shinohara, Hiroshi; and Kondo, Toshihito. Method of forming a heat resistant film. 3,720,589, Cl. 204-14.00n.
- Matheny, Alfred Paul; and Rahon, John R. Emergency air supply system for passengers of a submerged land vehicle. 3,720,207, Cl. 128-142.000.
- Matsuda, Kazuo; Tanaka, Yoshiaki; and Sakai, Takeyo, to Kao Soap Co., Ltd. Process for polymerization of tetrahydrofuran. 3,720,719, Cl. 260-615.00b.
- Mattel, Inc.: See—  
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- Hart, William, 3,720,117.
- May, Richard L., 3,720,011.
- Mattel, S.p.A.: See—  
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- Matthews, Robert B.; and Fitzmaurice, Charles M., to Plessey Company Limited, The. Fluidic systems. 3,720,217, Cl. 137-805.000.
- Matthews, Terence H.; Gold, Charles N.; and Cowpland, Michael C. J., to Microsystems International Limited. Frequency determining network. 3,720,887, Cl. 331-142.000.
- Matthey, Johnson, and Mallory, Ltd.: See—  
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- Maul, Stephen B.: See—  
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- May, Richard L., to Mattel, Inc. Figure toy stand and phonograph record combination. 3,720,011, Cl. 40-28.200.
- Maydan, Dan; Cohen, Melvin Irwin; and Kerwin, Robert Eugene, to Bell Telephone Laboratories, Incorporated. Recording and display method and apparatus. 3,720,784, Cl. 178-6.60r.
- Mayer, Warren C., to Johnson & Johnson. Resin bonded dry creped tissue laminate having the crepe removed therefrom and method of making same. 3,720,573, Cl. 161-156.000.
- Mc Cart, William J., to General Electric Company. Air conditioner. 3,720,073, Cl. 62-183.000.
- Mc Intire, Owen F. Car top carrier for snowmobiles and the like. 3,720,358, Cl. 224-42.080.
- Mc Math, Jack A., to Dover Corporation. Safety valve. 3,720,220, Cl. 137-75.000.
- McCall, Samuel Leverte, Jr.: See—  
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- McCallum, Hugh F., to Dresser Industries, Inc. Earth boring bit thrust bearing. 3,720,274, Cl. 175-372.000.
- McCormic, Joseph, to Delta Hydraulics, Inc. Integrated servo actuator. 3,720,118, Cl. 91-47.000.
- McCoy, Bernard J.; and Rans, Frank O., to United States of America, Navy. Electromechanical acoustic noise source. 3,720,908, Cl. 340-8.00r.
- McCurdy, Neal R.: See—  
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- McDonagh, Stephen M.: See—  
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- McDonald, Hugh C. Hand gun concealing pouch. 3,720,013, Cl. 42-1.00r.
- McDonough, William P. Cattle restraining stanchion. 3,720,187, Cl. 119-98.000.
- McGinnis, Herbert E., to Goodrich, B. F., Company, The. Belt splice. 3,719,969, Cl. 24-38.000.
- McGraw-Edison Company: See—  
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- McGregor, Robert, & Sons Limited: See—  
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- McKechnie, John C.; and Grimmer, Paul D., to United States of America, Navy. Visual display simulator. 3,720,007, Cl. 35-12.00n.
- McKenry, Robert J.; and Oaks, Seibert S., to Kennametal Inc. Mining tool. 3,720,273, Cl. 175-335.000.
- McLaughlin, Charles R.; and West, Jerry B., to Century Geophysical Corporation. High resolution telemetry for random pulse outputs. 3,720,910, Cl. 340-18.00r.
- McWilliams, Orenith D.: See—  
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- Mead, George N. J. Compact steam generator and system. 3,720,188, Cl. 122-41.000.
- Medical Plastics, Inc.: See—  
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- Meier, Otto H.: See—  
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- Meinert, Kerwin E.: See—  
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- Meisters, Inara Dagnija, to Pennwalt Corporation. Water soluble lubricant. 3,720,695, Cl. 260-404.800.
- Mellgren, Per Gustaf, to Kockum Soderhamn Aktiebolag. Apparatus for felling trees. 3,720,248, Cl. 144-34.00r.
- Melotik, Donald J., to Stauffer Chemical Company. Permanganate final rinse for metal coatings. 3,720,547, Cl. 148-6.14r.
- Memorex Corporation: See—  
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- Hurtig, Roy Eugene; Geri, Don Winston; and Becker, Paul Horst, 3,720,150.
- Mendoza, Gonzalo R. Apparatus to control the cutting depth made in a workpiece by a cutting machine. 3,720,122, Cl. 82-24.00r.
- Mennesson, Andre Louis, to Societe Industrielle de Brevets et d'Etudes S.I.B.E. Fuel feed devices for internal combustion engines. 3,720,190, Cl. 123-32.0ea.
- Menzies, John Ian; and Menzies, Maureen, to Heatshield Research and Development Pty. Ltd. Heat-insulating panel or sheet and a method of and apparatus for making the same. 3,720,558, Cl. 156-199.000.
- Menzies, Maureen: See—  
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- Mercier, Gary M., to Columbia Gas System Service Corporation. Relay timing system. 3,720,858, Cl. 307-141.000.
- Merck & Co., Inc.: See—  
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- Peister, Karl; Slettinger, Meyer; and Hinkley, David F., 3,720,774.
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Schabert, Hans-Peter; and Pawlitzki, Rainer, to Siemens Aktiengesellschaft. Device for coupling nuclear reactor control rod to drive linkage therefor and for maintaining control rods in reactor core. 3,720,580, Cl. 176-36.00r.  
Schachenmann, C., Dr., & Co.: See—  
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Schaltbau Gesellschaft mit beschränkter Haftung: See—  
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Scheidt, James E.: See—  
Bianchetta, Donald L.; Sears, Richard L. M.; McWilliams, Orceuth D.; and Scheidt, James E., 3,720,282.  
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Widdig, Arno; Kuhle, Engelbert; Gladbach, Bergisch; Sasse, Klaus; Scheinplugg, Hans; Grewe, Ferdinand; Kaspers, Helmut; and Fronberger, Paul-Ernst, 3,720,682.  
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piperazinyl-alkyl-3-alkyl-2-imidazolidinones as CNS-depressants. 3,720,677, Cl. 260-268.00r.  
Schlegel, Fred. Trailer hitch guide assembly. 3,720,000, Cl. 33-264.000.  
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Schlumberger Technology Corporation: See—  
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Schmidt, Bernard H., Jr., to Motorola, Inc. Solid-state relay. 3,720,848, Cl. 307-251.000.  
Schmidt, Erich, to Maschinenfabrik Zuckermann Komm. Ges. Contour-copying apparatus. 3,720,243, Cl. 142-7.000.  
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Schools, Rodman S.; and Sincerbox, Glenn T., to International Business Machines Corporation. Recording in reversible, photochromic medium. 3,720,921, Cl. 340-173.01m.  
Schor, Ferdinand William, to AMP Incorporated. Filter assembly for printed circuit board connector. 3,720,903, Cl. 339-14.00r.  
Schrock, James Douglas, to Moore, Samuel, & Company. Composite tubing. 3,720,235, Cl. 138-137.000.  
Schrofer, Karl Heinrich: See—  
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Schuplin, Jerome T., to Fastway Fasteners, Inc. Clip for securing conduit boxes to metal dry wall studs. 3,720,395, Cl. 248-205.00r.  
Schurawski, Siegfried; and Kropp, Walter, to Linde Aktiengesellschaft. Hydraulic system and valve therefor. 3,720,059, Cl. 60-421.000.  
Schwenk, Kurt; and Hablitzel, Hermann, to Volkswagenwerk Aktiengesellschaft. Method for molding undercut slots in motor vehicle body parts. 3,720,746, Cl. 264-219.000.  
Schwochow, Friedrich; and Heinze, Gerhard, to Farbenfabriken Bayer Aktiengesellschaft. Production of synthetic zeolites of Faujasite structure. 3,720,756, Cl. 423-329.000.  
Scola, Daniel A.; and Basche, Malcolm, to United Aircraft Corporation. Treatment of carbon fibers. 3,720,536, Cl. 117-47.00r.  
Scott, J. O.: See—  
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Seibel, Markus; and Thoesse, Klaus, to Kalle Aktiengesellschaft. Process for improving the surface adhesion of shaped articles made from polyesters. 3,720,539, Cl. 117-138.00f.

Seidel, William B., to Cincinnati Milacron Inc. Tool change apparatus. 3,719,987, Cl. 29-568.000.  
Seifert, Richard M.: See—  
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Sellstedt, John H.; Teller, Daniel M.; and Guinasso, Charles J., to American Home Products Corporation. 6-Substitute D-4-oxo-retidino-1-yl penicillanic acids. 3,720,666, Cl. 260-239.100.  
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Shephard, Basil S., to Westinghouse Electric Corporation. Temperature responsive actuation. 3,720,107, Cl. 73-363.700.  
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Shinohara, Yoshiyuki; and Isaka, Toshiyuki, to Mitsui Petrochemical Industries, Ltd. Process for preparation of cresol and acetone from cymene hydroperoxide. 3,720,716, Cl. 260-593.00a.  
Shlesinger, Bernard Edward, Jr. Magnetically actuated reed switch assembly. 3,720,895, Cl. 335-205.000.  
Shoemaker, John D., Jr.: See—  
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Shono, Masaru. Apparatus for forming sand piles. 3,720,063, Cl. 61-11.000.  
Shook, Paul R.; Sweeney, Earl G.; and Duncan, Ralph E., to FMC Corporation. Separation of particulate material by the application of electric fields. 3,720,312, Cl. 209-130.000.  
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Sianesi, Dario; Fontanelli, Renzo; and Grazioli, Alberto, to Montecatini Edison S.p.A. Perfluoropolyethers modified with quinone compounds in the polymeric chain and process for their preparation. 3,720,646, Cl. 260-63.00a.



- Sibeud, Jean Paul, to Berliet, M., Automobiles. Pick-up devices for detecting the passage of a movable member of a scale assembly of an apparatus for accurately measuring the specific consumption of internal combustion engine. 3,720,934, Cl. 340-207.000.
- Sidebotham, Nelson Robert: *See*—  
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- Siegel, Richard D.: *See*—  
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- Sikora, Joseph A., to Sparton Corporation. Directional hydrophone buoy system. 3,720,909, Cl. 340-8.000.
- Silshy, John N., to Acron Corporation. Magnetic recording system for repertory dialer. 3,720,795, Cl. 179-100.2md.
- Silver, H. Graham: *See*—  
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- Simonet, Guy, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procédés Georges Claude. Method of production of pure hydrogen and mixtures containing hydrogen in definite proportions. 3,720,042, Cl. 55-25.000.
- Simonnnot, Jack: *See*—  
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- Simpson, Edgar A.; and Doyle, Carroll F., to Grace, W. R., & Co. Hydrophobic silica. 3,720,532, Cl. 106-308.00q.
- Sincerbox, Glenn T.: *See*—  
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- Singleton, Norman R.: *See*—  
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- Sisa, Laszlo: *See*—  
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- Sitko, Leopold S., to Pullman Incorporated. End-of-railway-car cushioned draft assembly. 3,720,325, Cl. 213-8.000.
- Skagerlund, Lars-Erik, to Aktiebolaget Bofors. Device for a transmitter receiver unit which gives an indication when an object reflects radiation transmitted from the transmitter to the receiver. 3,720,468, Cl. 356-4.000.
- Skarlos, Leonidas, to Texaco Inc. Preparation of oxalic acid. 3,720,591, Cl. 204-59.000.
- SKF Industrial Trading and Development Company, N.V.: *See*—  
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- Slettinger, Meyer: *See*—  
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- Small, Charles B.: *See*—  
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- Smart, Jay A., to Won-Door Corporation. Door control system for folding doors. 3,720,254, Cl. 160-193.000.
- Smeets, Alfred, to Citrex, S.A. Aqueous detergent compositions. 3,720,621, Cl. 252-135.000.
- Smith, Charles A., to Sperry Rand Corporation. Baler feeder with material accumulation prevention means at the outboard end. 3,720,161, Cl. 100-189.000.
- Smith, Charles L.; and Webster, William C., to Corson, G. & W. H., Inc. Process for treating aqueous chemical waste sludges and composition produced thereby. 3,720,609, Cl. 210-59.000.
- Smith, George A. W.: *See*—  
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- Smith, Theodore M. Quick change spindle adapter or chuck. 3,720,417, Cl. 279-82.000.
- Smula, Karl Ulrich: *See*—  
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- Snam Progetti S.p.A.: *See*—  
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- Snyder, Paul W., Jr.: *See*—  
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- Societa Italiana Resine S.p.A.: *See*—  
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- Societa Italiana Resines S.p.A.: *See*—  
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- Societe Anonyme dite: L'Oreal: *See*—  
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- Societe d'Etudes et de Recherches de Ventilation et d'Aerolique: *See*—  
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- Societe Industrielle de Brevets et d'Etudes S.I.B.E.: *See*—  
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- Societe Nationale des Petroles d'Aquitaine: *See*—  
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- Societe Rhodiacta: *See*—  
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- Societe Technique d'Accessoires Specialises: *See*—  
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- Societe Wendel Sidelor S.A.: *See*—  
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- Sohlbrand, Heinrich, to Siemens Aktiengesellschaft. Process for producing dense metal oxide coating on semiconductor. 3,720,542, Cl. 117-201.000.
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- Sorimachi, Kanehiro: *See*—  
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- Spahr, Gene L., to FMC Corporation. Auxiliary motor starter control circuitry including remote and local control of plural batteries. 3,720,839, Cl. 290-37.000.
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- Special Optics Inc.: *See*—  
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- Spohr, Albert R.: *See*—  
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- Spragg, Robert Claude; and Whitehouse, David John, to Rank Organisation Limited, The. Method of measurement and apparatus therefor. 3,720,818, Cl. 235-151.320.
- Sprague, James M.; and Ziegler, Carl, to Merck & Co., Inc. Sulfonylphenoxalkanoic acids. 3,720,709, Cl. 260-519.000.
- Squibb, E. R., & Sons: *See*—  
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- St. Paul, Peter. Adjustable rod construction for trophies and similar articles. 3,720,430, Cl. 287-62.000.
- Staats, Henry N., to General Binding Corporation. Constant tension winding apparatus. 3,720,385, Cl. 242-75.450.

- Staats, Henry N.; and Morrissey, Neal J., to General Binding Corporation. Method and apparatus for individually laminating bound sheets. 3,720,564, Cl. 156-477.00b.
- Staeblin, John H.: *See*—  
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- Stahl, Lawrence E.: *See*—  
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- De Rooij, Abraham H.; and Aggenbach, Pierre A. M., 3,720,758.
- Duyverman, Coenraad J.; and Gorgels, Martin J., 3,720,755.
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- Standard Pressed Steel Co.: *See*—  
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- Stangeland, Phillip F. Raffle sail for boats. 3,720,180, Cl. 114-102.000.
- Stanley, Charles C., to TRW Inc. Microelectronic circuit production. 3,720,515, Cl. 96-38.400.
- Statton, Gary L., to Atlantic Richfield Company. Organic hexafluorophosphates, arsenates or antimonates as accelerators for curing epoxy resins. 3,720,634, Cl. 260-18.0pf.
- Stauffer Chemical Company: *See*—  
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- Letchworth, Peter E., 3,720,766.
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- Stauffer, James D., to Bonham, Grant & Brundage, Limited. Method and apparatus for conditioning and disposing of alum sludge from water treatment. 3,720,608, Cl. 210-56.000.
- Stedman, Robert N.: *See*—  
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- Steel Parts Corporation: *See*—  
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- Steffe, Harlan E. Tractor drawbar extension. 3,720,427, Cl. 280-405.00r.
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- Steitz, Richard Ralph, to RCA Corporation. Method of joining solder balls to solder bumps. 3,719,981, Cl. 29-423.000.
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- Sternbach, Leo Henryk: *See*—  
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- Stettler, Christian, to Greiner Electronic AG. Fluid metering pump. 3,720,353, Cl. 222-380.000.
- Steven, Gary; and Pinnow, Kenneth E., to Crucible Inc. Steel mold and method for producing the same. 3,720,545, Cl. 148-2.000.
- Steven Manufacturing Company: *See*—  
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- Stevens, Hugh Dexter; and Muller, Thomas Emery, to International Telephone and Telegraph Corporation. Process for producing high performance crimped rayon staple fiber. 3,720,743, Cl. 264-168.000.
- Stillit, Gerald Barry: *See*—  
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- Stobbe, Richard E.: *See*—  
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- Stock, David K., to FMC Corporation. Apparatus for making thermoplastic handle bags. 3,720,141, Cl. 93-33.000.
- Stockstill, Calvin A. Apparatus for admixing liquids in predetermined ratio. 3,720,230, Cl. 137-564.500.
- Stoddard, Darrell D., to Sierracin Corporation. The. Acyloxy end-blocked 3- $\alpha$ -acylamidopropyl or 3- $\alpha$ -haloacylamido-propyl trisiloxanes and process therefor. 3,720,699, Cl. 260-448.80r.
- Stoffregen, Karl Heinz, to Schmalbach-Lubeca-Werke Aktiengesellschaft. Packaging container. 3,720,347, Cl. 220-46.00r.
- Stog, W., KG, Industrie-und Rohrleitungsbaue: *See*—  
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- Stog, Wilhelm; and Krefter, August, to Stog, W., KG, Industrie-und Rohrleitungsbaue. Expansion joint. 3,720,474, Cl. 404-47.000.
- Stokeld, Richard W., Jr.: *See*—  
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- Stolberger Zink AG: *See*—  
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- Stoltefuss, Wilhelm: *See*—  
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- Stoop, Adrian. Complex of patio houses. 3,720,023, Cl. 52-169.000.
- Stout, Don R.; and Klein, Jorge, to Case, J. I., Company. Earth working implement. 3,720,338, Cl. 214-776.000.
- Strauss, Edgar, to Ruti Machinery Works Ltd.; formerly Caspar Honegger, Ruti ZH. Arrangement for forming a selvage for use on a loom. 3,720,236, Cl. 139-54.000.
- Strauss, Edgar, to Ruti Machinery Works Ltd. Arrangement for monitoring weft threads. 3,720,238, Cl. 139-12.000.
- Strong, John D. Inconspicuous ranging device for golfers. 3,720,467, Cl. 356-3.000.
- Stumpf, Robert J., to Kimberly-Clark Corporation. Method of manufacturing high-loft, nonwoven fabric. 3,720,554, Cl. 156-62.600.
- Sueda, Osamu. Apparatus for determining the permeability of a non-magnetic medium. 3,720,870, Cl. 324-34.00r.
- Sumida, Hajime: *See*—  
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- Sumitomi Electric Industry Company Ltd.: *See*—  
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- Sumitomo Chemical Co., Ltd.: *See*—  
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- Sun Oil Company: *See*—  
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- Sunbeam Corporation: *See*—  
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- Suvanto, Antti; and Nilsson, Hilding, to Aktiebolaget Asea-Atom. Manipulating tool for a nuclear reactor component provided with a handle. 3,720,436, Cl. 294-88.000.
- Suzuki, Shigeru, to Kabushiki Kaisha Ricoh. Transfer device for images by the use of liquid development electrophotography. 3,720,183, Cl. 118-637.000.
- Suzuki, Shigeyuki; Kumamoto, Kotaro; Kaneda, Isamu; and Sakai, Shoushiro, to Kurita Water Industries Limited, mesne. Cationic surface active substance, method for manufacturing same. 3,720,624, Cl. 252-357.000.
- Suzuki, Syoichi: *See*—  
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- Swartz, Jerome; and Wilson, Donald K., to Special Optics Inc. System of polarizing optical energy and transmitting the same through media. 3,720,457, Cl. 350-157.000.
- Sweeney, Earl G.: *See*—  
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- Sygnator, Henry A., to Illinois Tool Works Inc. Sheet metal nut. 3,720,251, Cl. 151-21.00r.
- Sylwester, Alfred V., to United States of America, Navy. Elliptical warhead. 3,720,168, Cl. 102-67.000.
- Sze, Morgan C.; and Kafes, Nicholas C., to Lummus Company, The. Pyrolysis of hydrotreated feedstocks. 3,720,729, Cl. 260-683.00r.
- Szegvari, Andrew. Treatment of dispersions. 3,720,379, Cl. 241-20.000.
- Taber, David; and Raphaelian, Leo A., to Armour-Dial, Inc. Synergistic antiseptic compositions. 3,720,620, Cl. 252-107.000.
- Tabler, Donald C., to Phillips Petroleum Company. Dehydrogenation of cyclohexane or mono- or polyalkylcyclohexanes. 3,720,724, Cl. 260-668.00d.
- Tada, Takashi: *See*—  
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- Taft Electrosystems, Inc.: *See*—  
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- Takahashi, Minoru: *See*—  
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- Takeda, Tohru, to Tamura Electric Works, Limited. Electromagnetic counters. 3,720,811, Cl. 235-92.00c.
- Taketomi, Bunsaku. Stitch frame actuating mechanism mountable on an ordinary sewing machine. 3,720,177, Cl. 112-102.000.
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- Tamura Electric Works, Limited: *See*—  
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- Tannenbaum, Steven R.; Sinskey, Anthony J.; and Maul, Stephen B., to Massachusetts Institute of Technology. Process of reducing the nucleic acid content in yeast. 3,720,585, Cl. 195-98.000.
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- Tate, Jack F., to Texaco Inc. Method for stimulating well production. 3,720,265, Cl. 166-307.000.
- Taterzynski, Sylvester R.; and Raeburn, George Dand. Spark gap devices and methods and apparatus for making same. 3,720,560, Cl. 156-268.000.
- Taylor, Clarence R., to Eastman Kodak Company. Microfiche holder. 3,720,463, Cl. 353-27.000.
- Taylor, Clifford A. Reaming apparatus. 3,720,476, Cl. 408-71.000.
- Taylor, Melvin L.; and Ronzio, Nelson J., to American Metal Climax, Inc. Treatment of nickel leach liquor. 3,720,749, Cl. 423-141.000.
- TDK Electronics Company, Limited: See—
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- Teijin Limited: See—
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- Tessler, Martin M.; and Rutenberg, Morton W., to National Starch and Chemical Corporation. Preparation of starch esters. 3,720,662, Cl. 260-233.500.
- Tessler, Martin M., to National Starch and Chemical Corporation. Preparation of starch esters. 3,720,663, Cl. 260-233.500.
- Tetal (Power Hydraulics) Limited: See—
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- Theisen, John W. Prefabricated stackable stair unit. 3,720,024, Cl. 52-185.000.
- Thermo King Corporation: See—
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- Thielemann, Rudolf H.: See—
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- Reeves, John R.; Dow, Bruce R.; and Thompson, Francis T., 3,720,845.
- Thompson, William A., to International Business Machines Corporation. Cryogenic arc furnace and method of forming materials. 3,720,598, Cl. 204-328.000.
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- Le Seigneur, Pierre, 3,720,880.
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- Tietz, Wolfgang: See—
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- Tilford, Albert R.; Boettger, Harold E.; and Yew, Ming-Chih, to General Motors Corporation. Vacuum servo vehicle leveling system. 3,720,424, Cl. 280-124.000.
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- Ting, Youn H., to Texas Instruments, Incorporated. Food warming apparatus. 3,720,807, Cl. 219-441.000.
- Tipping, Anthony Edgar: See—
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- Sakomura, Toshio; Kisaki, Hisashi; Tada, Takashi; and Mabuchi, Shunsuke, 3,720,704.
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- Uchiyama, Takashi, to Canon Kabushiki Kaisha. Flash apparatus for a camera. 3,720,144, Cl. 95-10.000.
- Uchiyama, Takashi; and Sorimachi, Kanehiro, to Canon Kabushiki Kaisha. Electronic exposure control apparatus for a camera. 3,720,152, Cl. 95-53.000.
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- Van Bussel, Peter J. Method of making a peripherally grooved sheet metal article. 3,719,980, Cl. 29-159.000.
- van der Lely, Cornelis. Universal tractors. 3,720,047, Cl. 56-15.600.
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- Van Doorne, Hubertus Josephus; and Ludoph, Hemmo Hermannes Johannes (said Ludoph assor to said), 3,720,113.
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- Van Houten, Robert. Hydriding process. 3,720,751, Cl. 423-252.000.
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- Van Orden, Lynn L., to Bausch & Lomb Incorporated. Symmetrical lens. 3,720,458, Cl. 350-227.000.
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- Van Wierst, Wilhelmus Lambertus, to Koninklijke Nederlandsche Hoogovens en Staalfabrieken N.V. Rotatable hot metal car. 3,720,173, Cl. 105-271.000.
- Vanderlinden, Andre Jacques Emile; draditzky Blgiu; and Labofina, SOC AN, to Process for reducing the sulfuric acid content of alkalisulfonic acids. 3,720,707, Cl. 1.
- Varga, Andrew. Fluid meter. 3,720,106, Cl. 73-273.000.
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- Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft: See—
- Kaser, Arthur, 3,720,581.
- Vertin, Thomas D. Machine element drive means including a gear rack assembly of individual square teeth. 3,720,114, Cl. 74-424.600.
- Vertin, Thomas D. Machine element drive means. 3,720,115, Cl. 74-424.600.
- Vickers-Zimmer Aktiengesellschaft Planung und Bau von Industrieanlagen: See—
- Lehner, Karl, 3,720,382.
- Victor Company of Japan, Limited: See—
- Ishii, Yoshikazu; Hayashi, Masamichi; and Tanaka, Shunichi, 3,720,787.
- Vieweg, Gunther; Kappius, Friedrich; Ott, Hans; and Wenk, Jurgen, to Siemens Aktiengesellschaft. Device for dampening oscillations in a midjet motor. 3,720,852, Cl. 310-90.000.
- Viking Aircraft Corporation, mesne: See—
- Foot, Robert E., 3,720,387.
- Vilain, Robert H., to Compagnie Francaise d'Entreprises Metalliques. Installations for submarine work. 3,720,066, Cl. 61-46.500.
- Villeroy & Boch Keramische Werke KG: See—
- de Vinck, Luc Gaston, 3,720,490.
- Vincenty, Henry Edward, to Euclid, Inc. Combustion air intake system for an off-the-road vehicle. 3,720,279, Cl. 180-54.00a.
- Voegele, Lawrence R., to Jostens, Inc. Molding structure for casting articles having a negative draft portion. 3,720,397, Cl. 249-57.000.
- Vogel, Hans, to Gebr. Giulini GmbH. Method of forming a phosphate glass to inoculate water. 3,720,505, Cl. 65-21.000.
- Volkswagenwerk Aktiengesellschaft: See—
- Schwenk, Kurt; and Hablitzel, Hermann, 3,720,746.



Voltz, Jacques: *See*—  
Raupp, Gunther; and Voltz, Jacques, 3,720,671.  
Von Borcke, Ulrich: *See*—  
Hieronymus, Hans, 3,720,901.  
Von Bruning, Drost M., to Mettler Instrumente AG. Thin-film resistance thermometer having low ohmic contact strips. 3,720,900, Cl. 338-25.000.  
Vyzkumny ustav obrabecich stroju a obrabeni: *See*—  
Zeleny, Jaromir, 3,720,134.  
Wagner-Biro Aktiengesellschaft: *See*—  
Fritz, Kurt; Lippitsch, Josef M.; and Lurf, Gunther, 3,720,259.  
Wacker-Chemie G.m.b.H.: *See*—  
Bergmeister, Eduard; Kirst, Paul-Gerhard; Nitzsche, Siegfried; Pirson, Ewald; and Roth, Michael, 3,720,538.  
Wada, Hiroyuki; Kawakami, Yasumasa; and Kamihigoshi, Tutomu, to Daikin Kogyo Co., Ltd. Novel aluminum fluoride catalyst and process for hydrofluorinating acetylene using same. 3,720,722, Cl. 260-653.400.  
Wada, Motomu: *See*—  
Yagi, Yoshiharu; Hino, Minoru; Noguchi, Takanobu; Wada, Motomu; Yasuno, Kiyoshi; Sota, Kou; Ito, Nobuo; and Nakai, Yasuto, 3,720,652.  
Wada, Shoji. Method for removing cutting and grinding burrs from machined injection needle tubes. 3,720,021, Cl. 51-28.00r.  
Wada, Takashi: *See*—  
Yukinaga, Hisajiro; Nan Jo, Yoshimasa; and Wada, Takashi, 3,720,530.  
Wadlow, David E., to United Aircraft Corporation. Dynamic rotation of cathode ray tube display. 3,720,860, Cl. 315-26.000.  
Wagner, Fritz: *See*—  
Drnges, Ernst; and Wagner, Fritz, 3,720,836.  
Wahlbeck, Erik H., Firma: *See*—  
Wahlbeck, Hans Gustav Erik, 3,720,391.  
Wahlbeck, Hans Gustav Erik, to Wahlbeck, Erik H., Firma. Band of parallel, oppositely curved chains soldered together at the link solder joints. 3,720,391, Cl. 245-4.000.  
Wakamatsu, Aizu: *See*—  
Isobe, Takehiro; Shimazu, Toshio; Ogawa, Koji; Arake, Yukio; Wakamatsu, Aizu; and Hashimoto, Tatsuji, 3,720,510.  
Waldmann, Hans: *See*—  
Nasser, Gamal El Din; and Waldmann, Hans, 3,720,071.  
Walker, Charles C.: *See*—  
Jackson, Harry Y.; Walker, Charles C.; and Ramoska, John, 3,720,077.  
Walker, Joseph J.; and Bell, Oran M. Ankle hitch. 3,720,206, Cl. 128-84.00r.  
Walsh, Thomas C.: *See*—  
Plowman, James S.; and Walsh, Thomas C., 3,720,480.  
Wanner, Karl; Schmidt, Wolfgang; Bleicher, Manfred; Sigg, Horst; Lehmann, Werner; and Burklin, Max, to Bosch, Robert, G.m.b.H. Portable torque and impulse transmitting machine. 3,720,269, Cl. 173-48.000.  
Ward, Sonnet G. Snowmobile loading and unloading device for pickup trucks. 3,720,335, Cl. 214-505.000.  
Warkentin, Aaron James. Box filling apparatus. 3,720,039, Cl. 53-59.00w.  
Warner & Swasey Company, The: *See*—  
Klein, John, 3,720,814.  
Wartman, Lloyd H.; and King, Paul A., to Union Carbide Corporation. Method for reducing the dynamic drag of a turbulent aqueous stream. 3,720,216, Cl. 137-13.000.  
Wasley, William L.: *See*—  
Pittman, Allen G.; and Wasley, William L., 3,720,630.  
Watanabe, Takao: *See*—  
Izumi, Kaichi; and Watanabe, Takao, 3,720,615.  
Waters, Robert S.; and Spohr, Albert R., to Sunbeam Corporation. Reciprocating manicure device. 3,720,851, Cl. 410-50.000.  
Watson, George A.; and Hamond, Arthur H., Jr., to AMP Incorporated. Data transmitting system. 3,720,790, Cl. 179-15.0al.  
Watson, James M.: *See*—  
Daniels, Calvin L.; and Watson, James M., 3,720,727.  
Watson, William J.; and Husband, Edwin H., to Texas Instruments, Incorporated. Open-ended computer with selectable I/O control. 3,720,920, Cl. 340-172.500.  
Watts, Malcolm Lehaney: *See*—  
Mansfield, Geoffrey Harry; and Watts, Malcolm Lehaney, 3,720,600.  
Way, Stewart, to Westinghouse Electric Corporation. Magneto-hydrodynamic power system with semi-closed cycle. 3,720,850, Cl. 310-11.000.  
Waznys, Peter J.; and Bart, Philip D., to Remco Industries, Inc. Remote controlled bucking toy vehicle. 3,720,019, Cl. 46-244.00a.  
Weatherhead Company, The: *See*—  
Pauly, Bruce H.; Nicol, John; and Chen, Karl K., 3,720,088.  
Weaver, George D. Steered, high speed vehicle. 3,720,283, Cl. 180-79.100.  
Webb, Jervis B., Company: *See*—  
Dehne, Clarence A., 3,720,172.  
Webster, William C.: *See*—  
Smith, Charles L.; and Webster, William C., 3,720,609.  
Wegmann, Horst; Smula, Karl Ulrich; Bartz, Lothar; and Stoltefuss, Wilhelm, to Gewerkschaft Eisenhutte Westfalen. Machine for removing sedimentary material from filter beds. 3,720,299, Cl. 198-9.000.

Wehrli, Hansuli; and Jeger, Oskar, to Ciba-Geigy Corporation. 20-Pyrrolecarboxylic acid ester of 20-hydroxy- $\Delta^4$ -pregnene derivatives. 3,720,667, Cl. 260-239.55r.  
Weiberg, Otto: *See*—  
Pohl, Gerhard; Rink, Karl-Heinz; Triebel, Wolfgang; Weiberg, Otto; and Weigert, Wolfgang, 3,720,689.  
Weigert, Wolfgang: *See*—  
Pohl, Gerhard; Rink, Karl-Heinz; Triebel, Wolfgang; Weiberg, Otto; and Weigert, Wolfgang, 3,720,689.  
Weiner, Joel Ana: *See*—  
Feldstein, Nathan; and Weiner, Joel Ana, 3,720,525.  
Weissenfels, Franz: *See*—  
Junger, Hans; Kotzsch, Hans-Joachim; Vahlensieck, Hans-Joachim; and Weissenfels, Franz, 3,720,642.  
Welch, Arnold D.; and Dolfini, Joseph Edward, to Squibb, E. R., & Sons, Inc. Acyloxymethyl esters of alpha-ureidocyclohexadienylakylene-penicillins. 3,720,665, Cl. 260-239.100.  
Wellekens, John F. Padlock type locks. 3,720,083, Cl. 70-38.00a.  
Wenk, Jurgen: *See*—  
Vieweg, Gunther; Kappius, Friedrich; Ott, Hans; and Wenk, Jurgen, 3,720,852.  
Werner, Bruhl: *See*—  
Muller, Fritz; Werner, Hugo; Werner, Bruhl; and Thummler, Ursus, 3,720,506.  
Werner, Hugo: *See*—  
Muller, Fritz; Werner, Hugo; Werner, Bruhl; and Thummler, Ursus, 3,720,506.  
West, Jerry B.: *See*—  
McLaughlin, Charles R.; and West, Jerry B., 3,720,910.  
West Laboratories, Inc.: *See*—  
Goldberg, Raymond; and Shaw, Irving F., 3,720,250.  
West, Roger F., to United Aircraft Corporation. High voltage slewing of penetration tube gun. 3,720,781, Cl. 178-5.4pe.  
Western Electric Company, Incorporated: *See*—  
Fagerstrom, Joseph W.; and Robbins, Frederick E., 3,719,989.  
Westinghouse Air Brake Company: *See*—  
Bunchak, William G.; and Krizek, Reynold J., 3,720,278.  
Kamner, Haim J., 3,720,331.  
Westinghouse Electric Corporation: *See*—  
Adelizzi, Richard S., 3,720,419.  
Andrews, Harry N.; Frisch, Erling; Singleton, Norman R.; and Stein, Phillip C., 3,720,222.  
Avellar, Karl B.; Buchanan, James E.; and Higgins, Edward R., 3,720,866.  
Barnett, Eugene J.; and Shreffler, Wesley E., 3,720,196.  
Brody, Thomas P., 3,720,856.  
Carlson, Norman R.; Putman, Richard E. J.; and Carleton, James T., 3,720,404.  
Feather, Landis E.; and Morris, Louis, 3,720,897.  
Gilmore, John F.; and Epting, Roy W., 3,720,826.  
Goldberg, Newton N.; and Ferguson, James L., 3,720,658.  
Greenwood, Albert C., 3,720,894.  
Hirayama, Chikara; and Maniero, Daniel A., 3,720,499.  
Jansen, Robert J., 3,720,074.  
Reeves, John R.; Dow, Bruce R.; and Thompson, Francis T., 3,720,845.  
Shepherd, Basil S., 3,720,107.  
Way, Stewart, 3,720,850.  
Wheatley, Thomas, Jr. Full opening wafer valve. 3,720,225, Cl. 137-268.000.  
Wheatley, Thomas, Jr. Full-bore pipeline check valves adapted for rearrangement into alternative body styles. 3,720,228, Cl. 137-454.200.  
White, Eugene B., to Filters International, Inc. Reverse flow aquarium filter device. 3,720,319, Cl. 210-169.000.  
White, William E.: *See*—  
Dali, George J.; and White, William E., 3,720,462.  
Whitehouse, David John: *See*—  
Spragg, Robert Claude; and Whitehouse, David John, 3,720,818.  
Whitehouse, Philip A.: *See*—  
Guiseley, Kenneth B.; and Whitehouse, Philip A., 3,720,659.  
Whitney, W. A., Corporation: *See*—  
Scott, William B., 3,720,125.  
Wickman Machine Tool Sales Limited: *See*—  
Gilbert, Harold James; and Earsley, Norman, 3,720,119.  
Widdig, Arno; Kuhle, Engelbert; Gladbach, Bergisch; Sasse, Klaus; Scheinplug, Hans; Grewe, Ferdinand; Kaspers, Helmut; and Fronberger, Paul-Ernst, to Bayer Aktiengesellschaft. Substituted amidophenylthioureas. 3,720,682, Cl. 260-294.80h.  
Wide, Leif E.: *See*—  
Bennich, Hans H.; and Johansson, Stig G. O., 3,720,760.  
Wieden, Horst: *See*—  
Rinkler, Heinrich; Wieden, Horst; Engelhard, Helmut; and Nogaj, Alfred, 3,720,733.  
Wielgus, Thaddeus S.: *See*—  
Kahale, Abed G.; Yatsushiro, Kenji; and Wielgus, Thaddeus S., 3,720,936.  
Wiemers, Karl-Josef, to Rheinmetall G.m.b.H. Barrel moving device for guns. 3,720,132, Cl. 89-43.00r.  
Wieworowski, Tadeusz Karol; and Miller, David James, to Freeport Minerals Company. Selective recovery of cobalt from an ammoniacal carbonate solution containing cobalt and nickel. 3,720,750, Cl. 423-150.000.  
Wiggins, David G.: *See*—

Wilmot, Richard D.; Bradshaw, Oscar G.; and Wiggins, David G., 3,720,942.  
Wiggins Teape Research & Development Limited: *See*—  
Martin, Patrick Douglas, 3,720,002.  
Wiley, Bruce F., to Phillips Petroleum Company. Pressure control. 3,720,487, Cl. 417-572.000.  
Wilhelm, Frederick C.: *See*—  
Hayes, John C.; Mitsche, Roy T.; Rausch, Richard E.; and Wilhelm, Frederick C., 3,720,628.  
Wilhelm, John Raymond. Water closets. 3,719,958, Cl. 4-76.000.  
Wilkinson, Frank: *See*—  
Corliss, Robert F.; and Wilkinson, Frank, 3,720,232.  
Wilkinson, John N., to Optical Radiation Corporation. Projection light source and optical system. 3,720,460, Cl. 352-198.000.  
Will, Peter M.: *See*—  
Franaszek, Peter A.; Grossman, David D.; and Will, Peter M., 3,720,875.  
Williams, Thomas Blair: *See*—  
Norman, Vello; Bryant, Herman G., Jr.; and Williams, Thomas Blair, 3,720,214.  
Willinger, Allan H., to Metaframe Corporation. Aquarium filter. 3,720,317, Cl. 210-94.000.  
Wilmot, Richard D.; Bradshaw, Oscar G.; and Wiggins, David G., to Hughes Aircraft Company. Video processing system. 3,720,942, Cl. 343-7.700.  
Wilson, Donald K.: *See*—  
Swartz, Jerome; and Wilson, Donald K., 3,720,457.  
Wilson, Harold W., to Golden Cycle Corporation. The. Process for the netrapment and recovery of sulfur dioxide gas. 3,720,754, Cl. 423-244.000.  
Wilson, Haydn, to Kent Instruments Limited. Apparatus for measurement of gas mixture properties. 3,720,594, Cl. 204-195.00s.  
Wilson, Robert J.; and Naden, Robert W. Structural surface covering and method of making a cover element therefor. 3,720,031, Cl. 52-520.000.  
Wily, John L.: *See*—  
Haehnel, Rudolf H.; and Wily, John L., 3,720,054.  
Wimmer, Robert. Production of glass fiber-reinforced plastic articles. 3,720,540, Cl. 117-139.000.  
Windmoller & Holscher: *See*—  
Rocker, Herman, 3,720,040.  
Winquist, Knut Ludvig; and Backman, Sture Anders, to Graffman, Johan H. Fuel-injection carburetors having fuel regulator. 3,720,403, Cl. 261-50.00a.  
Woertz, Hans; and Woertz, Oskar, to Woertz, Oskar, Inh. H&O. Electric ribbon cable and connector assembly. 3,720,778, Cl. 174-59.000.  
Woertz, Oskar: *See*—  
Woertz, Hans; and Woertz, Oskar, 3,720,778.  
Woertz, Oskar, Inh. H&O: *See*—  
Woertz, Hans; and Woertz, Oskar, 3,720,778.  
Wojtowicz, Adam S. Vibro-shower. 3,720,204, Cl. 128-64.000.  
Wolf, Edgar, to Redactron Corporation. Speed insensitive reading and writing apparatus for digital information. 3,720,927, Cl. 340-174.10h.  
Wolff, Siegfried; Baumgart, Siegfried; Arnold, Ulf-Erick; Pohnisch, Hannelore; and Herbrich, Peter, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Testing of elastomeric materials. 3,720,099, Cl. 73-101.000.  
Wollner, Johannes; and Tietz, Wolfgang, to Deutsche Texaco Aktiengesellschaft. Aqueous dispersion paints of copolymers of diesters of fumaric acid with vinyl compounds. 3,720,636, Cl. 260-29.610.  
Won-Door Corporation: *See*—  
Smart, Jay A., 3,720,254.  
Woodie, Robert A., to Texaco Inc. Method and apparatus for monitoring the molecular weight of hydrocarbon mixtures. 3,720,096, Cl. 73-53.000.  
Woods, Roger M.: *See*—  
Oleson, George E.; and Woods, Roger M., 3,720,588.  
Woodward, Cyril H. T. Automatic sheet winding apparatus and method of winding a skid of sheet material. 3,720,407, Cl. 271-18.00r.  
Woodward, Robert Newell; and Sidebotham, Nelson Robert, to Eastman Kodak Company. Silver halide emulsions stabilized with managanous salts. 3,720,516, Cl. 96-110.000.  
Wright, Donald R., to Dow Chemical Company. The. Method for the preparation of walled structures. 3,720,556, Cl. 156-156.000.  
Xerox Corporation: *See*—  
Adams, James E.; and Haas, Werner E., 3,720,456.  
Chatterji, Arun K.; Custozzo, Marianne; Kiriazides, Demosthenes K.; Russell, John J., Jr.; and Serio, John P., 3,720,617.  
Gundlach, Robert W., 3,720,513.  
Honjo, Satoru; and Tamai, Yasuo, 3,720,514.  
Yacko, Edward M.: *See*—  
Black, Richard I.; and Yacko, Edward M., 3,720,823.  
Yada, Yutaka; Higeta, Tsukumo; and Mitsui, Shinichi, to Fujitsu Limited. Pulse code modulation system for hybrid multiplex transmission of audio and data signals. 3,720,791, Cl. 179-15.00b.  
Yagi, Osami: *See*—  
Yamada, Kouichi; and Yagi, Osami, 3,720,584.  
Yagi, Yoshiharu; Hino, Minoru; Noguchi, Takanobu; Wada, Motomu; Yasuno, Kiyoshi; Sota, Kou; Ito, Nobuo; and Nakai, Yasuto, to Sumitomo Chemical Co., Ltd. Polymeric composition with anti-static and anti-fogging properties. 3,720,652, Cl. 260-80.700.  
Yamada, Kouichi; and Yagi, Osami, to Nippon Oil Company, Limited. Process for the production of monohydroxy carboxylic acids. 3,720,584, Cl. 195-49.000.  
Yamada, Susumu: *See*—  
Kabayama, Sukeaki; Kume, Masahiro; Katou, Akira; Yamada, Susumu; and Isei, Masayuki, 3,720,798.  
Yamaguchi, Hideki: *See*—  
Kasahara, Ichiro; and Yamaguchi, Hideki, 3,720,471.  
Yamaguchi, Tetsuro; Saito, Yuichi; Nishino, Yoshio; and Inoue, Shunichi, to Mitsubishi Kinzoku Kogyo Kabushiki Kaisha. Closed die forging method of making high density ferrous sintered alloys. 3,720,512, Cl. 75-221.000.  
Yamaha Hatsudoki Kabushiki Kaisha: *See*—  
Masaoka, Yutaka, 3,720,277.  
Yamamoto, Ryuji: *See*—  
Izawa, Nobuharu; Kikuyama, Munetsugu; Toyoshima, Hiroshi; and Yamamoto, Ryuji, 3,719,976.  
Yanaga, Makoto, to Alps Electric Co., Ltd. Space key. 3,720,801, Cl. 200-172.00a.  
Yasuno, Kiyoshi: *See*—  
Yagi, Yoshiharu; Hino, Minoru; Noguchi, Takanobu; Wada, Motomu; Yasuno, Kiyoshi; Sota, Kou; Ito, Nobuo; and Nakai, Yasuto, 3,720,652.  
Yatsushiro, Kenji: *See*—  
Kahale, Abed G.; Yatsushiro, Kenji; and Wielgus, Thaddeus S., 3,720,936.  
Yew, Ming-Chih: *See*—  
Tilford, Albert R.; Boettger, Harold E.; and Yew, Ming-Chih, 3,720,424.  
Yoshioka, Sigenori: *See*—  
Hanlon, John P., Jr.; and Yoshioka, Sigenori, 3,720,393.  
Yoshitomi Pharmaceutical Industries, Ltd.: *See*—  
Nakanishi, Michio; Arimura, Katsuo; and Tsuda, Yoshiaki, 3,720,670.  
Yost, Edward F., Jr., to Spectral Data Corporation. Multispectral camera. 3,720,146, Cl. 95-12.200.  
Young, Einar T., to Sun Oil Company. Remotely operable register resetting mechanism. 3,720,370, Cl. 235-94.00r.  
Young, Stephen A.: *See*—  
Pollitz, William E., 3,719,961.  
Yukinaga, Hisajiro; Nan Jo, Yoshimasa; and Wada, Takashi. Composition for preventing russet on pome fruit comprising casein and hydrated silicone dioxide. 3,720,530, Cl. 106-146.000.  
Zanker, Klaus Joachim, to Kent Instruments Limited. Flowmeters. 3,720,104, Cl. 73-194.00b.  
Zarowin, Charles B., to International Business Machines Corporation. Metal vapor discharge tube using metal and semi-metal compounds in a discharge tube. 3,720,877, Cl. 330-4.300.  
Zastawny, Jaroslaw, to Canron Limited. Pipe coupling. 3,720,428, Cl. 285-368.000.  
Zaunius, Giedre Maria: *See*—  
Nelson, John Archiblad; and Zaunius, Giedre Maria, 3,720,702.  
Zeleny, Jaromir, to Vyzkumny ustav obrabecich stroju a obrabeni. Control system for machine tool members. 3,720,134, Cl. 90-11.00r.  
Zenith Radio Corporation: *See*—  
Lee, Clarence M., 3,720,868.  
Ziccarelli, Salvatore F.: *See*—  
Hamilton, Robert M.; and Ziccarelli, Salvatore F., 3,720,519.  
Ziegler, Carl: *See*—  
Sprague, James M.; and Ziegler, Carl, 3,720,709.  
Zimmer, Johannes: *See*—  
Kraft, Rupert; and Zimmer, Johannes, 3,720,160.  
Zink, John, Company: *See*—  
Zink, John Smith; Goodnight, Hershel; and Reed, Robert D., 3,720,495.  
Zink, John Smith; Goodnight, Hershel; and Reed, Robert D., to Zink, John, Company. Burner assembly for liquid fuel. 3,720,495, Cl. 431-184.000.  
Zook, James David: *See*—  
Chen, Di; and Zook, James David, 3,720,923.  
Lee, Tzu-Chang; and Zook, James David, 3,720,453.  
Zucca, Mark L. Pick proof lock. 3,720,085, Cl. 70-358.000.  
Zuest, Armin: *See*—  
Schindler, Walter; and Zuest, Armin, 3,720,676.  
Schindler, Walter; Schmid, Erich; and Zuest, Armin, 3,720,677.  
Zuk, Paul, to Bell Telephone Laboratories, Incorporated. Low distortion signal oscillator. 3,720,886, Cl. 331-110.000.  
Zundel, Claude: *See*—  
Benzaria, Jacques Raphael; and Zundel, Claude, 3,720,626.  
Zweegers, Petrus Wilhelmur. Agricultural implement for working crop lying on the field. 3,720,053, Cl. 56-370.000.



# LIST OF REISSUE PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 13TH DAY OF MARCH, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bederman, Seymour, and L. G. Lankford, to International Business Machines Corp. Method and apparatus for selecting interfittng parts for assembly. Re. 27,600, 3-13-73, Cl. D9—407.  
Dresser Industries, Inc.: See—  
Talbert, Milton L. Re. 27,597.  
Gas Council, The: See—  
Thompson, Brian H., and Majumdar. Re. 27,599.  
International Business Machines Corp.: See—  
Bederman, Seymour, and Lankford. Re. 27,600.  
Lankford, Larry G.: See—  
Bederman, Seymour, and Lankford. Re. 27,600.

Majumdar, Binay B.: See—  
Thompson, Brian H., and Majumdar. Re. 27,599.  
Talbert, Milton L., to Dresser Industries, Inc. Large-diameter earth boring bit. Re. 27,597, 3-13-73, Cl. D75—334.  
Thompson, Brian H., and B. B. Majumdar, to The Gas Council. Process for the production of a gas containing gaseous hydrocarbons. Re. 27,599, 3-13-73, Cl. D8—213.  
Westinghouse Electric Corp.: See—  
Wright, William E. Re. 27,598.  
Wright, William E., to Westinghouse Electric Corp. Disposal system for contaminated hydrogen from a nuclear reactor. Re. 27,598, 3-13-73, Cl. D176—37.

# LIST OF PLANT PATENTEEES

Mikkelsen, Inc.: See—  
Rieger, Otto. 3,317.  
Rieger, Otto. 3,318.  
Rieger, Otto. 3,319.  
Rieger, Otto. 3,320.  
Rieger, Gertrud: See—  
Rieger, Otto. 3,317.  
Rieger, Otto. 3,318.  
Rieger, Otto. 3,319.  
Rieger, Otto. 3,320.

Rieger, Otto, deceased, by G. Rieger, legal representative, to Mikkelsen, Inc. Begonia plant. 3,317, 3-13-73, Cl. D68.  
Rieger, Otto, deceased, by G. Rieger, legal representative, to Mikkelsen, Inc. Begonia plant. 3,318, 3-13-73, Cl. D68.  
Rieger, Otto, deceased, by G. Rieger, legal representative, to Mikkelsen, Inc. Begonia plant. 3,319, 3-13-73, Cl. D68.  
Rieger, Otto, deceased, by G. Rieger, legal representative, to Mikkelsen, Inc. Begonia plant. 3,320, 3-13-73, Cl. D68.

# LIST OF DESIGN PATENTEEES

A-T-O Inc.: See—  
Gilsen, Channing W. 226,508.  
Andres, William A., L. F. Becker, and L. D. Quanrud, to Washington Scientific Industries, Inc. Portable rear projection viewer. 226,503, 3-13-73, Cl. D61—1.  
Bajusz, Harold F. Pen and pencil combination. 226,466, 3-13-73, Cl. D74—17.  
Barnes, Phillips H., to Packaging Techniques, Inc. Door lock. 226,472, 3-13-73, Cl. D8—109.  
Beach-Buoy, Inc.: See—  
Brill, Edward F. 226,506.  
Becker, Larry F.: See—  
Andres, William A., Becker, and Quanrud. 226,503.  
Bell Telephone Laboratories, Inc.: See—  
Genaro, Donald M., McGarvey, and Rosebrock. 226,464.  
Benty, John L., and D. Friedman, to Clairrol Inc. Combined hair dryer and styling attachment therefor. 226,510, 3-13-73, Cl. D86—10.  
Bergman, Jack, to Pennwood Numechron Co. Digital clock-lamp. 226,494, 3-13-73, Cl. D42—7.  
Bissell Inc.: See—  
Gibbs, Kenneth E. 226,462.  
Blackwell, Raymond: See—  
Purvey, Ronald J., and Blackwell. 226,484.  
Bobrowski, Louis G., to The Stanley Works. Door bolt lock. 226,473, 3-13-73, Cl. D8—131.  
Brill, Edward F., to Beach-Buoy, Inc. Swimming float. 226,506, 3-13-73, Cl. D71—1.  
Bruce Plastics, Inc.: See—  
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Szabo, Bela G. 226,475.  
Clairrol Inc.: See—  
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Cooper, Howard. Bottle. 226,476, 3-13-73, Cl. D9—28.  
Cooper, Howard. Bottle. 226,477, 3-13-73, Cl. D9—39.  
Dart Industries, Inc.: See—  
Sweet, James B. 226,495.  
Den-Tal Ez Mfg. Co.: See—  
Schwartz, John M. 226,483.  
Duern, Gordon L., and D. S. Griffin, to Electrohome Ltd. Chair. 226,463, 3-13-73, Cl. D6—55.  
Duern, Gordon L., and D. S. Griffin, to Electrohome Ltd. Chair. 226,465, 3-13-73, Cl. D6—69.  
Duern, Gordon L., and D. S. Griffin, to Electrohome Ltd. Lamp. 226,496, 3-13-73, Cl. D48—20.  
Dushak, Charles D., to Sears, Roebuck and Co. Electric barbecue grill and oven combination. 226,509, 3-13-73, Cl. D81—10.  
Edwards, Walter J., to King of the Road Enterprises, Inc. Illuminable television support and room divider. 226,467, 3-13-73, Cl. D6—181.

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Fabricated Metals Inc.: See—  
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Friedman, Daniel: See—  
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Genaro, Donald M., J. N. McGarvey, and F. A. Rosebrock, to Bell Telephone Laboratories, Inc. Multiple seating unit. 226,464, 3-13-73, Cl. D6—59.  
Genaro, Donald M., and G. W. Reichard, Jr., to Bell Telephone Laboratories, Inc. Combination microphone and control stand for a loudspeaking telephone set. 226,487, 3-13-73, Cl. D26—14.  
Gibbs, Kenneth E., to Bissell Inc. Hand held fluid dispenser and brush for cleaning upholstery or the like. 226,462, 3-13-73, Cl. D4—7.  
Gilsen, Channing W., to A-T-O Inc. Smoke detector. 226,508, 3-13-73, Cl. D72—1.  
Glaberson, Martin, to Warner-Lambert Co. Tray for releasably engaging a razor and a blade cartridge dispenser. 226,478, 3-13-73, Cl. D9—186.  
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Duern, Gordon L., and Griffin. 226,465.  
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Andres, William A., Becker, and Quanrud. 226,503.  
Reichard, George W., Jr.: See—  
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Conn, Jack S. 226,471.  
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NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2	CLASS 37	CLASS 64	CLASS 91	65	3,720,182	25	3,720,241
125 3,719,956	42R 3,720,010	27NM 3,720,076	1 3,720,138	CLASS 117		CLASS 142	
209 3,719,954	CLASS 40	29 3,720,077	35 3,720,136	21 3,720,533		7 3,720,243	
243R 3,719,955	28.2 3,720,011	CLASS 65	47 3,720,118	36.2 3,720,534		CLASS 144	
CLASS 4	104.18 3,720,130	21 3,720,505	176 3,720,139	46CA 3,720,535		3D 3,720,245	
67 3,719,957	140 3,720,012	CLASS 66	279 3,720,137	47R 3,720,536		3D 3,720,246	
76 3,719,958	CLASS 42	133 3,720,078	CLASS 92	50 3,720,537		34R 3,720,248	
168 3,719,959	1N 3,720,014	CLASS 68	87 3,720,140	72 3,720,538		309AC 3,720,249	
173 3,719,960	1R 3,720,013	6 3,720,079	CLASS 93	138.8F 3,720,539		CLASS 148	
295 3,719,961	CLASS 46	19.1 3,720,080	33 3,720,141	139 3,720,540		2 3,720,545	
CLASS 5	11 3,720,015	132 3,720,081	CLASS 95	201 3,720,542		6.14R 3,720,547	
91 3,719,962	206 3,720,016	CLASS 70	1 3,720,143	211 3,720,541		6.16 3,720,549	
351 3,719,963	221 3,720,017	25 3,720,082	10CT 3,720,144	218 3,720,543		11.5R 3,720,550	
CLASS 8	228 3,720,018	38A 3,720,083	11.5R 3,720,145	637 3,720,183		14 3,720,544	
115.7 3,720,500	244A 3,720,019	264 3,720,084	12.2 3,720,146	CLASS 118		126 3,720,551	
CLASS 12	CLASS 48	358 3,720,085	44C 3,720,148	CLASS 119		156 3,720,546	
10.5 3,719,964	213 Re.27,599	CLASS 72	44R 3,720,151	51.11 3,720,185		CLASS 149	
146B 3,719,965	CLASS 49	194 3,720,086	44 3,720,149	51.12 3,720,186		3 3,720,552	
CLASS 15	362 3,720,020	364 3,720,087	53EB 3,720,152	51.5 3,720,184		19 3,720,553	
385 3,719,966	CLASS 51	402 3,720,088	86 3,720,147	98 3,720,187		CLASS 150	
CLASS 17	281R 3,720,021	CLASS 73	94G 3,720,150	CLASS 122		52R 3,720,250	
71 3,719,967	CLASS 52	3 3,720,089	CLASS 96	41 3,720,188		CLASS 151	
CLASS 19	79 3,720,022	4R 3,720,090	1R 3,720,513	250R 3,720,189		21R 3,720,251	
236 3,719,968	169 3,720,023	11 3,720,091	1.5 3,720,514	CLASS 123		CLASS 152	
CLASS 21	185 3,720,024	23.1 3,720,092	38.4 3,720,515	32EA 3,720,190		361 3,720,252	
2.5 3,720,498	204 3,720,025	27R 3,720,093	110 3,720,516	CLASS 98		CLASS 156	
CLASS 23	241 3,720,026	37 3,720,094	86 3,720,153	148E 3,720,194		62.6 3,720,554	
281 3,720,501	284 3,720,028	38 3,720,095	110 3,720,154	149D 3,720,195		102 3,720,555	
292 3,720,502	309 3,720,027	53 3,720,096	CLASS 99	CLASS 126		156 3,720,556	
CLASS 24	334 3,720,029	55 3,720,097	35 3,720,517	197 3,720,196		199 3,720,558	
38 3,719,969	400 3,720,030	67.7 3,720,098	71 3,720,518	270 3,720,197		202 3,720,559	
73PB 3,719,970	520 3,720,031	101 3,720,099	140N 3,720,519	400 3,720,198		268 3,720,560	
193 3,719,971	618 3,720,032	144 3,720,100	140R 3,720,520	CLASS 128		272 3,720,561	
205.15H 3,719,973	741 3,720,033	161 3,720,101	141R 3,720,521	1D 3,720,199		291 3,720,562	
237 3,719,974	742 3,720,034	186 3,720,102	171CP 3,720,522	2.05D 3,720,201		306 3,720,563	
CLASS 26	3 3,720,035	190H 3,720,103	171B 3,720,524	2.06E 3,720,209		477B 3,720,564	
51.3 3,719,975	14 3,720,036	194A 3,720,105	332 3,720,156	2.08 3,720,202		497 3,720,565	
CLASS 28	21FC 3,720,037	194B 3,720,104	337 3,720,155	4 3,720,204		CLASS 159	
72.14 3,719,976	39 3,720,038	363.007 3,720,107	421H 3,720,157	64 3,720,205		4F 3,720,253	
CLASS 29	59W 3,720,039	398R 3,720,108	4 3,720,158	67 3,720,206		CLASS 160	
26A 3,719,977	62 3,720,040	421B 3,720,109	118 3,720,159	84R 3,720,207		193 3,720,254	
121R 3,719,978	CLASS 55	460 3,720,110	160 3,720,160	142 3,720,208		199 3,720,255	
148.4A 3,719,979	25 3,720,042	CLASS 74	189 3,720,161	214.4 3,720,210		392 3,720,256	
159R 3,719,980	29 3,720,041	236 3,720,113	CLASS 101	218A 3,720,211		CLASS 161	
182.7 3,720,504	74 3,720,043	424.6 3,720,114	39 3,720,162	288 3,720,212		5 3,720,567	
191.6 3,720,503	159 3,720,044	459 3,720,115	169 3,720,163	395 3,720,213		48 3,720,568	
407 Re.27,600	306 3,720,045	489 3,720,111	463 3,720,164	CLASS 131		57 3,720,569	
423 3,719,981	414 3,720,046	798 3,720,117	CLASS 102	17 3,720,214		58 3,720,570	
CLASS 56	15.6 3,720,047	CLASS 75	16 3,720,165	CLASS 134		73 3,720,571	
15.9 3,720,048	15.9 3,720,048	24 3,720,506	22 3,720,166	165 3,720,215		143 3,720,572	
291 3,720,049	291 3,720,049	135 3,720,507	34.4 3,720,167	CLASS 137		156 3,720,573	
330 3,720,050	330 3,720,050	147 3,720,508	67 3,720,168	13 3,720,216		170 3,720,574	
346 3,720,051	346 3,720,051	171 3,720,509	90 3,720,169	75 3,720,220		173 3,720,575	
370 3,720,052	370 3,720,052	178AM 3,720,510	92.3 3,720,170	112 3,720,221		CLASS 162	
CLASS 57	214 3,720,053	214 3,720,511	95 3,720,171	154 3,720,222		67 3,720,577	
9 3,720,054	221 3,720,512	CLASS 82	172S 3,720,172	183 3,720,223		116 3,720,578	
140J 3,720,055	CLASS 83	2B 3,720,120	CLASS 104	227 3,720,224		162 3,720,579	
CLASS 60	1 3,720,056	27R 3,720,119	224.1 3,720,175	268 3,720,225		CLASS 164	
39.02 3,720,057	4C 3,720,121	4C 3,720,121	271 3,720,173	334 3,720,226		75 3,720,257	
39.74R 3,720,058	24R 3,720,122	34A 3,720,123	376 3,720,174	454.2 3,720,227		CLASS 165	
226R 3,720,060	40 3,720,124	40 3,720,124	CLASS 106	527.8 3,720,228		2 3,720,258	
421 3,720,059	CLASS 83	146 3,720,125	1 3,720,525	564.5 3,720,230		162 3,720,259	
468 3,720,061	344 3,720,126	550 3,720,127	39.6 3,720,526	576 3,720,231		CLASS 166	
CLASS 61	523 3,720,128	CLASS 84	85 3,720,527	624.014 3,720,232		5 3,720,260	
1F 3,720,062	1.13 3,720,776	94 3,720,128	90 3,720,528	625.17 3,720,233		208 3,720,261	
35 3,720,064	CLASS 85	CLASS 89	146 3,720,530	625.36 3,720,234		298 3,720,262	
36A 3,720,065	9R 3,720,129	41ME 3,720,131	288B 3,720,531	804 3,720,219		303 3,720,263	
46 3,720,067	CLASS 90	43R 3,720,132	308Q 3,720,532	805 3,720,217		307 3,720,265	
46.5 3,720,066	42 3,720,071	126 3,720,133	CLASS 108	839 3,720,218		311 3,720,264	
53 3,720,068	54 3,720,072	11R 3,720,134	58 3,720,176	CLASS 138		312 3,720,266	
72.3 3,720,069	183 3,720,073	14 3,720,135	102 3,720,177	137 3,720,235		314 3,720,267	
72.6 3,720,070	272 3,720,074	CLASS 91	168 3,720,178	CLASS 139		CLASS 169	
CLASS 35	467 3,720,075	63P 3,720,181	CLASS 112	12 3,720,238		2R 3,720,268	
8A 3,720,005			CLASS 114	54 3,720,236		CLASS 173	
9C 3,720,006			16G 3,720,179	170.3 3,720,237		48 3,720,269	
12N 3,720,007			102 3,720,180	CLASS 140		163 3,720,270	
24R 3,720,008			CLASS 116	2 3,720,239		CLASS 174	
			6 3,720,242	CLASS 141		15C 3,720,277	
			9 3,720,240			51 3,720,283	



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57	3,720,271	CLASS 175	3,720,599	61.11R	3,720,810	2.5AY	3,720,631	3,720,632	50A	229	3,720,855
61	3,720,272	33	3,720,600	78	3,720,369	18PF	3,720,634	3,720,635	CLASS 264	309	3,720,856
334	Re.27,597	111	3,720,601	92PC	3,720,812	19EP	3,720,648	3,720,737	CLASS 315	10	3,720,857
335	3,720,273	216	3,720,602	94R	3,720,370	29.6T	3,720,636	3,720,738	7A	23	3,720,859
372	3,720,274	251R	3,720,603	151.11	3,720,814	29.7H	3,720,637	3,720,740	7.7	26	3,720,860
36R	3,720,580	321	3,720,604	151.13	3,720,815	30.6R	3,720,638	3,720,741	101	101	3,720,861
37	Re.27,598	1	3,720,605	151.13	3,720,816	33.4EP	3,720,639	3,720,742	CLASS 316	24	3,720,452
87	3,720,581	10	3,720,306	151.3	3,720,817	33.6R	3,720,640	3,720,743	CLASS 317	258	3,720,862
3	3,720,275	11	3,720,307	151.32	3,720,818	37N	3,720,641	3,720,744	CLASS 318	52	3,720,863
81	3,720,276	73	3,720,308	153AE	3,720,819	37R	3,720,642	3,720,745	138	138	3,720,864
122	3,720,276	74	3,720,309	156	3,720,820	46.5E	3,720,644	3,720,746	654	654	3,720,866
5.2R	3,720,779	79	3,720,310	172	3,720,821	47EP	3,720,645	3,720,747	CLASS 321	47	3,720,868
5.4R	3,720,780	130	3,720,311	CLASS 237	78L	3,720,650	75M	3,720,649	CLASS 322	43.5R	3,720,867
5.4PE	3,720,781	144	3,720,312	2A	3,720,371	78.5R	3,720,651	3,720,652	CLASS 323	29.5	3,720,869
5.4R	3,720,782	211	3,720,313	12.3B	3,720,372	80.7	3,720,652	3,720,653	CLASS 324	34R	3,720,870
6.6A	3,720,785	254	3,720,315	127	3,720,373	80.72	3,720,653	3,720,654	78D	133	3,720,871
6.6A	3,720,784	11	3,720,316	177	3,720,374	85.3R	3,720,654	3,720,655	158T	133	3,720,872
7.1	3,720,786	23	3,720,606	177	3,720,375	87.5B	3,720,655	3,720,656	CLASS 325	16	3,720,874
CLASS 179	3,720,788	56	3,720,607	308	3,720,376	88.5N	3,720,656	3,720,657	CLASS 326	38B	3,720,875
1B	3,720,789	94	3,720,608	336	3,720,377	112.7	3,720,657	3,720,658	CLASS 327	465	3,720,876
1E	3,720,790	169	3,720,609	397	3,720,378	207.1	3,720,658	3,720,659	CLASS 328	4.3	3,720,877
15AL	3,720,791	199	3,720,610	1.3	3,720,822	209.5	3,720,659	3,720,660	CLASS 329	12	3,720,878
15BC	3,720,792	238	3,720,611	2.25	3,720,823	212	3,720,660	3,720,661	CLASS 330	26	3,720,879
15BM	3,720,793	493	3,720,612	6.4F	3,720,824	227	3,720,661	3,720,662	CLASS 331	29	3,720,880
18GF	3,720,794	500	3,720,613	10.65	3,720,825	233.5	3,720,662	3,720,663	CLASS 332	107	3,720,881
18HB	3,720,795	45	3,720,614	11.4H	3,720,826	239.1	3,720,663	3,720,664	CLASS 333	3	3,720,882
100.2MD	3,720,796	8	3,720,615	46.59	3,720,827	239.55R	3,720,664	3,720,665	CLASS 334	55	3,720,883
100.2PM	3,720,797	1H	3,720,616	CLASS 241	20	3,720,379	240A	3,720,666	CLASS 335	94.5	3,720,884
100.41K	3,720,798	16.4A	3,720,617	CLASS 242	35.5R	3,720,380	243C	3,720,667	CLASS 336	13	3,720,891
5R	3,720,799	38D	3,720,618	CLASS 243	47.01	3,720,381	244R	3,720,668	CLASS 337	135	3,720,892
6.5	3,720,800	84	3,720,619	CLASS 244	74.44	3,720,382	249.5	3,720,669	CLASS 338	138	3,720,893
24	3,720,801	90R	3,720,620	CLASS 245	75.45	3,720,383	250R	3,720,670	CLASS 339	204	3,720,894
54A	3,720,802	140	3,720,621	CLASS 246	17.25	3,720,384	256.4	3,720,671	CLASS 340	205	3,720,895
64R	3,720,803	450	3,720,622	CLASS 247	134A	3,720,385	268TR	3,720,672	CLASS 341	206	3,720,896
79.1	3,720,804	505	3,720,623	CLASS 248	135B	3,720,386	268C	3,720,673	CLASS 342	60	3,720,897
79.2R	3,720,805	674	3,720,624	CLASS 249	149	3,720,387	273	3,720,674	CLASS 343	95	3,720,898
114	3,720,806	776	3,720,625	CLASS 250	4	3,720,388	281	3,720,675	CLASS 344	348	3,720,899
CLASS 181	3,720,807	10.69	3,720,803	CLASS 251	20	3,720,389	281	3,720,676	CLASS 345	25	3,720,900
31B	3,720,808	69V	3,720,804	CLASS 252	125	3,720,390	293.57	3,720,677	CLASS 346	32R	3,720,901
CLASS 184	3,720,809	152	3,720,805	CLASS 253	205R	3,720,391	293.66	3,720,678	CLASS 347	2R	3,720,902
1.5	3,720,810	216	3,720,806	CLASS 254	361A	3,720,392	294.8H	3,720,679	CLASS 348	14R	3,720,903
6.4	3,720,811	441	3,720,807	CLASS 255	378	3,720,393	304	3,720,680	CLASS 349	34	3,720,904
15A	3,720,812	469	3,720,808	CLASS 256	38A	3,720,394	306.8D	3,720,681	CLASS 350	97R	3,720,905
55A	3,720,813	17	3,720,297	CLASS 257	22.3	3,720,345	307G	3,720,682	CLASS 351	101	3,720,906
CLASS 187	3,720,298	182	3,720,298	CLASS 258	46R	3,720,346	309.2	3,720,683	CLASS 352	176MP	3,720,907
20	3,720,299	9	3,720,299	CLASS 259	54	3,720,347	309.2	3,720,684	CLASS 353	8R	3,720,908
29R	3,720,300	32	3,720,301	CLASS 260	54	3,720,348	309.2	3,720,685	CLASS 354	15.5BH	3,720,909
73.5	3,720,302	127	3,720,302	CLASS 261	14	3,720,349	309.2	3,720,686	CLASS 355	18R	3,720,910
3.52	3,720,296	61.08	3,720,797	CLASS 262	1	3,720,350	309.2	3,720,687	CLASS 356	31R	3,720,911
46	3,720,294	144B	3,720,798	CLASS 263	132	3,720,351	309.2	3,720,688	CLASS 357	52F	3,720,912
141	3,720,295	148R	3,720,799	CLASS 264	380	3,720,352	309.2	3,720,689	CLASS 358	52H	3,720,913
CLASS 195	3,720,582	167R	3,720,800	CLASS 265	386	3,720,353	309.2	3,720,690	CLASS 359	61	3,720,914
31R	3,720,583	172A	3,720,801	CLASS 266	400.7	3,720,354	309.2	3,720,691	CLASS 360	67	3,720,915
49	3,720,584	173	3,720,586	CLASS 267	569	3,720,355	309.2	3,720,692	CLASS 361	81R	3,720,916
98	3,720,585	58	3,720,587	CLASS 268	85	3,720,356	309.2	3,720,693	CLASS 362	166R	3,720,917
CLASS 197	3,720,297	14N	3,720,589	CLASS 269	42.08	3,720,357	309.2	3,720,694	CLASS 363	172.5	3,720,918
17	3,720,297	37R	3,720,590	CLASS 270	97	3,720,358	309.2	3,720,695	CLASS 364	173CC	3,720,919
182	3,720,298	51	3,720,588	CLASS 271	3	3,720,359	309.2	3,720,696	CLASS 365	173LM	3,720,920
9	3,720,299	59R	3,720,591	CLASS 272	36	3,720,360	309.2	3,720,697	CLASS 366	174PA	3,720,921
20R	3,720,300	159.15	3,720,592	CLASS 273	7	3,720,361	309.2	3,720,698	CLASS 367	174TF	3,720,922
32	3,720,301	180G	3,720,593	CLASS 274	51	3,720,362	309.2	3,720,699	CLASS 368	174.1B	3,720,923
127	3,720,302	595S	3,720,594	CLASS 275	109	3,720,363	309.2	3,720,700	CLASS 369	174.1E	3,720,924
CLASS 200	3,720,797	206	3,720,595	CLASS 276	2.5	3,720,365	309.2	3,720,701	CLASS 370	174.1H	3,720,925
144B	3,720,798	211	3,720,596	CLASS 277	37E	3,720,366	309.2	3,720,702	CLASS 371	207	3,720,926
148R	3,720,799	284	3,720,597	CLASS 278	62	3,720,367	309.2	3,720,703	CLASS 372	248R	3,720,927
167R	3,720,800	328	3,720,598	CLASS 279	19	3,720,401	309.2	3,720,704	CLASS 373	261	3,720,928
172A	3,720,801	19	3,720,448	CLASS 280	72	3,720,402	309.2	3,720,705	CLASS 374	283	3,720,929
CLASS 202	3,720,586	46F	3,720,303	CLASS 281	2A	3,720,630	309.2	3,720,706	CLASS 375	365S	3,720,930
173	3,720,586	46R	3,720,304	CLASS 282	2A	3,720,630	309.2	3,720,707	CLASS 376		

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366R	3,720,939	117	3,720,455	102	3,720,470	CLASS 415	244	3,720,754	270	3,720,769															
	CLASS 343	157P	3,720,456	108	3,720,471	219	3,720,478	252	3,720,751	273	3,720,770														
		157	3,720,457	124	3,720,472	CLASS 416	255	3,720,752	274	3,720,771															
	6R	3,720,940	227	3,720,458	CLASS 393	198	3,720,479	307	3,720,755	277	3,720,772														
	7A	3,720,941	CLASS 352	18E	3,720,944	220	3,720,480	329	3,720,756	295	3,720,773														
	7.7	3,720,942										CLASS 401	3,720,481	341	3,720,757	319	3,720,775								
	14	3,720,949																CLASS 417	388	3,720,758	CLASS 425				
	17.2PC	3,720,950																				179	3,720,482	447	3,720,759
	18A	3,720,951	CLASS 404	3,720,483	448	3,720,760	78	3,720,491																	
	18E	3,720,952							CLASS 353	47	3,720,474	101	3,720,492												
114.5	3,720,945	67												3,720,142	403	3,720,485	1	3,720,761	117	3,720,493					
119	3,720,946																				CLASS 408	440	3,720,486	572	3,720,487
756	3,720,947		44	3,720,475	45	3,720,489	114	3,720,763																	
771	3,720,953								71	3,720,476	CLASS 423	177	210												
CLASS 346	8	CLASS 355												226	3,720,477	4	3,720,748	245	3,720,766	CLASS 444					
																					CLASS 356	50	3,720,851	141	3,720,749
7	3,720,943	CLASS 410	360	3,720,488	150	3,720,750	250	3,720,768																	
106	3,720,954								3	3,720,467	50	3,720,851	4	3,720,748	245	3,720,766	1	3,720,948							
3.5	3,720,453	4	3,720,468	360	3,720,488	150	3,720,750	250	3,720,768																
7	3,720,454	74	3,720,469																						

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D 2—	309	226,461	68	226,471	D22—	8	226,480	D34—	56	226,484	D48—	20	226,496	D71—	226,504
D 4—	7	226,462	109	226,472	D23—	2	226,481	D34—	5	226,489			226,497	D72—	226,505



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1 : 3,720,208	3,720,355	3,720,949	3,720,076	3,720,936	3,720,147
2 : 3,720,485	3,720,363	3,720,950	3,720,116	3,720,939	3,720,199
3 : 3,720,172	3,720,368	3,720,953	3,720,125	3,719,961	3,720,202
4 : 3,720,357	3,720,389	3,720,187	3,720,155	3,719,981	3,720,212
5 : 3,720,848	3,720,392	3,720,312	3,720,158	3,719,985	3,720,227
6 : 3,720,350	3,720,394	3,720,307	3,720,171	3,720,087	3,720,340
7 : 3,719,982	3,720,415	3,720,528	3,720,201	3,720,320	3,720,396
8 : 3,719,990	3,720,420	3,720,529	3,720,204	3,720,330	3,720,398
9 : 3,719,992	3,720,423	3,720,632	3,720,210	3,720,698	3,720,467
10 : 3,719,999	3,720,425	3,720,749	3,720,215	3,720,837	3,720,479
11 : 3,720,011	3,720,432	3,720,832	3,720,221	3,720,839	3,720,503
12 : 3,720,013	3,720,433	3,720,840	3,720,242	3,720,839	3,720,555
13 : 3,720,014	3,720,435	3,719,986	3,720,251	3,720,051	3,720,585
14 : 3,720,024	3,720,438	3,720,045	3,720,278	3,720,302	3,720,633
15 : 3,720,031	3,720,439	3,720,086	3,720,282	3,720,338	3,720,807
16 : 3,720,039	3,720,460	3,720,130	3,720,298	3,720,813	3,720,813
17 : 3,720,044	3,720,464	3,720,169	3,720,319	3,720,828	3,720,828
18 : 3,720,046	3,720,484	3,720,179	3,720,325	3,720,862	3,720,862
19 : 3,720,056	3,720,502	3,720,216	3,720,328	3,720,867	3,720,867
20 : 3,720,065	3,720,515	3,720,234	3,720,331	3,719,980	3,720,000
21 : 3,720,068	3,720,535	3,720,270	3,720,342	3,720,465	3,720,005
22 : 3,720,080	3,720,544	3,720,297	3,720,356	3,720,034	3,720,034
23 : 3,720,085	3,720,593	3,720,339	3,720,365	3,720,048	3,720,048
24 : 3,720,093	3,720,629	3,720,480	3,720,385	3,720,050	3,720,050
25 : 3,720,101	3,720,630	3,720,508	3,720,418	3,720,114	3,720,114
26 : 3,720,117	3,720,637	3,720,536	3,720,448	3,720,115	3,720,115
27 : 3,720,128	3,720,672	3,720,537	3,720,476	3,720,120	3,720,120
28 : 3,720,131	3,720,697	3,720,622	3,720,519	3,720,157	3,720,157
29 : 3,720,139	3,720,699	3,720,670	3,720,520	3,720,174	3,720,174
30 : 3,720,150	3,720,706	3,720,781	3,720,564	3,720,209	3,720,209
31 : 3,720,166	3,720,708	3,720,804	3,720,579	3,720,323	3,720,323
32 : 3,720,167	3,720,710	3,720,940	3,720,583	3,720,327	3,720,327
33 : 3,720,168	3,720,718	3,720,911	3,720,603	3,720,352	3,720,352
34 : 3,720,180	3,720,739	3,720,926	3,720,604	3,720,397	3,720,397
35 : 3,720,184	3,720,766	3,720,957	3,720,620	3,720,416	3,720,416
36 : 3,720,206	3,720,773	3,720,007	3,720,628	3,720,417	3,720,417
37 : 3,720,211	3,720,790	3,720,205	3,720,656	3,720,424	3,720,424
38 : 3,720,213	3,720,794	3,720,207	3,720,684	3,720,440	3,720,440
39 : 3,720,232	3,720,812	3,720,322	3,720,695	3,720,445	3,720,445
40 : 3,720,240	3,720,817	3,720,475	3,720,726	3,720,472	3,720,472
41 : 3,720,256	3,720,820	3,720,757	3,720,728	3,720,532	3,720,532
42 : 3,720,258	3,720,822	3,720,785	3,720,768	3,720,639	3,720,639
43 : 3,720,262	3,720,869	3,720,824	3,720,793	3,720,834	3,720,834
44 : 3,720,264	3,720,881	3,720,851	3,720,808	3,720,866	3,720,866
45 : 3,720,272	3,720,884	3,720,305	3,720,851	3,720,885	3,720,885
46 : 3,720,281	3,720,903	3,720,335	3,720,853	3,720,902	3,720,902
47 : 3,720,303	3,720,918	3,719,971	3,720,861	3,720,913	3,720,913
48 : 3,720,309	3,720,931	3,719,978	3,720,864	3,720,947	3,720,947
49 : 3,720,313	3,720,938	3,719,983	3,720,868	3,720,954	3,720,954
50 : 3,720,333	3,720,942	3,720,009	3,720,874	3,719,973	3,720,643
51 : 3,720,346	3,720,948	3,720,016	3,720,892	3,720,145	3,720,737

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3,720,772	3,720,686	3,720,513	3,720,314	3,720,127	3,720,096
3,720,829	3,720,691	3,720,516	3,720,316	3,720,161	3,720,138
3,720,838	3,720,702	3,720,526	3,720,345	3,720,175	3,720,140
3,720,842	3,720,712	3,720,527	3,720,349	3,720,178	3,720,154
3,720,909	3,720,725	3,720,534	3,720,351	3,720,197	3,720,203
3,720,915	3,720,729	3,720,567	3,720,372	3,720,222	3,720,225
3,720,917	3,720,734	3,720,568	3,720,379	3,720,268	3,720,228
3,720,945	3,720,743	3,720,577	3,720,380	3,720,273	3,720,261
3,720,946	3,720,744	3,720,598	3,720,388	3,720,321	3,720,263
27 : 3,720,274	3,720,764	3,720,617	3,720,395	3,720,343	3,720,265
3,720,289	3,720,774	3,720,701	3,720,402	3,720,354	3,720,267
3,720,366	3,720,782	3,720,714	3,720,406	3,720,362	3,720,271
3,720,421	3,720,784	3,720,777	3,720,446	3,720,370	3,720,332
3,720,453	3,720,786	3,720,825	3,720,450	3,720,393	3,720,373
3,720,732	3,720,795	3,720,833	3,720,451	3,720,404	3,720,387
3,720,859	3,720,821	3,720,854	3,720,454	3,720,426	3,720,489
3,720,923	3,720,823	3,720,855	3,720,496	3,720,499	3,720,613
3,720,924	3,720,826	3,720,873	3,720,551	3,720,551	3,720,627
3,720,930	3,720,843	3,720,875	3,720,553	3,720,543	3,720,640
3,720,932	3,720,872	3,720,877	3,720,590	3,720,545	3,720,727
3,720,936	3,720,879	3,720,882	3,720,607	3,720,609	3,720,730
28 : 3,720,266	3,720,883	3,720,894	3,720,608	3,720,634	3,720,742
29 : 3,719,997	3,720,891	3,720,898	3,720,623	3,720,658	3,720,754
3,720,329	3,720,922	3,720,899	3,720,663	3,720,666	3,720,819
3,720,614	3,720,925	3,720,906	3,720,679	3,720,688	3,720,835
3,720,765	3,720,937	3,720,919	3,720,723	3,720,709	3,720,910
3,720,772	3,720,956	3,720,921	3,720,751	3,720,736	3,720,912
3,720,777	3,719,956	3,720,927	3,720,752	3,720,775	3,720,920
3,720,798	3,719,979	3,720,928	3,720,761	3,720,783	3,720,928
3,720,808	3,720,001	3,720,941	3,720,806	3,720,810	3,720,936
3,720,814	3,720,019	3,720,944	3,720,814	3,720,827	50 : 3,720,301
3,720,831	3,720,022	3,720,963	3,720,831	3,720,845	3,720,747
3,720,858	3,720,072	3,720,978	3,720,858	3,720,850	51 : 3,720,038
3,720,878	3,720,083	3,720,214	3,720,878	3,720,856	3,720,311
3,720,886	3,720,103	3,720,214	3,720,886	3,720,876	3,720,390
3,720,897	3,720,118	3,720,214	3,720,897	3,720,886	3,720,591
3,720,904	3,720,146	3,720,241	3,720,904	3,720,897	3,720,611
3,720,907	3,720,148	3,720,252	3,720,907	3,720,911	3,720,731
3,720,916	3,720,186	3,720,287	3,720,916	3,720,921	3,720,871
3,720,935	3,720,191	3,720,287	3,720,935	3,720,922	3,720,895
3,720,939	3,720,196	3,720,287	3,720,939	3,720,922	3,720,908
3,720,970	3,720,233	3,720,287	3,720,970	3,720,922	3,720,926
3,720,987	3,720,239	3,720,287	3,720,987	3,720,926	3,720,935
3,720,997	3,720,250	3,720,287	3,720,997	3,720,926	3,720,952
3,720,452	3,720,292	3,720,306	3,720,452	3,720,926	53 : 3,720,952
3,720,457	3,720,306	3,720,317	3,720,457	3,720,926	3,720,958
3,720,518	3,720,317	3,720,324	3,720,518	3,720,926	3,720,170
3,720,525	3,720,318	3,720,324	3,720,525	3,720,926	3,720,933
3,720,562	3,720,324	3,720,341	3,720,562	3,720,926	3,720,955
3,720,573	3,720,371	3,720,371	3,720,573	3,720,926	3,720,994
3,720,574	3,720,408	3,720,408	3,720,574	3,720,926	3,720,112
3,720,587	3,720,411	3,720,411	3,720,587	3,720,926	3,720,135
3,720,601	3,720,411	3,720,411	3,720,601	3,720,926	3,720,137
3,720,612	3,720,412	3,720,422	3,720,612	3,720,926	3,720,141
3,720,638	3,720,422	3,720,422	3,720,638	3,720,926	3,720,231
3,720,641	3,720,430	3,720,430	3,720,641	3,720,926	3,720,288
3,720,654	3,720,456	3,720,456	3,720,654	3,720,926	3,720,358
3,720,655	3,720,458	3,720,458	3,720,655	3,720,926	3,720,383
3,720,662	3,720,462	3,720,462	3,720,662	3,720,926	3,720,549
3,720,663	3,720,463	3,720,463	3,720,663	3,720,926	3,720,554
3,720,664	3,720,469	3,720,469	3,720,664	3,720,926	3,720,863
3,720,665	3,720,481	3,720,481	3,720,665	3,720,926	3,720,954

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		226,481			226,499	34	:	226,464	226,489	226,505	226,495
		226,508			226,509			226,487	226,500	226,474	226,467
9	:	226,473	19	:	226,483			226,497	226,482	226,475	226,501
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Patents (Including Reissues) . . . . .	PI 36
Designs . . . . .	PI 37

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## PATENT OFFICE NOTICES

### Trademarks, Trade Names, and Copyrights

[19 CFR Part 133]

#### Filing of Increased Number of Copies of Documents With Application To Record Trademark or Copyright

Notice is hereby given that under the authority of R.S. 251, as amended (19 U.S.C. 66), and section 624, 46 Stat. 759 (19 U.S.C. 1624), it is proposed to amend §§ 133.3 and 133.33 of the Customs regulations to provide that the number of copies of documents required by the Bureau of Customs to be filed with an application to record a copyright or trademark is increased from 700 to 1,000.

Accordingly, it is proposed to amend paragraph (a) of § 133.3, and paragraph (a) (2) of § 133.33 to read as follows:

#### § 133.3 Documents and fee to accompany application.

(a) Documents. The application shall be accompanied by:

- (1) A status copy of the certificate of registration certified by the U.S. Patent Office showing title to be presently in the name of the applicant; and

- (2) One thousand copies of this certificate, or of a U.S. Patent Office facsimile. The copies may be reproduced privately and shall be on paper approximately 8½ x 11 in size. If the certificate consists of two or more pages, the copies may be reproduced on both sides of the paper.

#### § 133.33 Documents and fee to accompany application.

(a) . . . . .

- (2) One thousand 8 x 10½ photographic or other likenesses reproduced on paper of any three-dimensional work, design, print, label, or other work not readily identifiable by title and author. An application shall be excepted from this requirement if it covers a work such as a book, magazine, periodical, or similar copyrighted matter readily identifiable by title and author. One thousand likenesses of a component part of a copyrighted work, together with the name or title, if any, by which the part so depicted is identifiable, may accompany an application covering an entire copyrighted work.

Consideration will be given to relevant data, views, or arguments pertaining to the proposed amendment which are submitted to the Commissioner of Customs, Attention: Regulations Division, Washington, D.C. 20226, and received no later than March 19, 1973.

Written material or suggestions submitted will be available for public inspection in accordance with § 103.0(b) of the Customs regulations (19 CFR 103(b)), at the Regulations Division, Bureau of Customs, Washington, D.C., during regular business hours.

Approved: Feb. 8, 1973.

EDWARD L. MORGAN,

Assistant Secretary of the Treasury.

[SEAL]

EDWIN F. RAINS,  
Acting Commissioner of Customs.

[FR Doc. 73-3039; Filed 2-14-73; 8:45 am]

Published in 38 F.R. 4515-4516; Feb. 15, 1973

### Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,828,568, M. L. Rhine, HIGH PRESSURE PUMP, filed Aug. 30, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c2167, TRW, Inc. (formerly Thompson Ramo Wooldridge Inc.) v. Ellipse Corp. and Ford Motor Company.

2,896,857, G. R. Tompkins, WASHING APPARATUS, filed Sept. 30, 1968, D.C., N.D. Ohio (Cleveland), Doc. C-68-737, Malabary Mfg. Co., George Russell Tompkins and Resarc, Inc. v. Custom Power Washer, Inc. Consent judgment; patent valid; defendants are permanently enjoined, Sept. 15, 1972.

2,899,242, G. Bombardier, ENDLESS TREAD FOR MOTOR DRIVEN VEHICLES; 3,066,546, L. D. Thostenson, PULLEY TRANSMISSION, D. 222,995, Y. LaPointe, SNOWMOBILE COWL, filed Sept. 5, 1972 D.C., N.D. Ohio (Cleveland), Doc. C72-936, Bombardier Limited v. Rupp Industries, Inc.

2,911,729, B. A. Wood, METHOD OF AND MEANS FOR STEAM TREATING AND VIBRATING GARMENTS; 3,576,661, J. W. Dekoekkoek, PROCESS AND SYSTEM FOR DEWRINKLING GARMENTS, filed Oct. 4, 1972, D.C., E.D. Wash. (Spokane), Doc. 3717, Western Automation Corporation and Elmer J. Williamson v. Crystal Laundry Company of Seattle and Colmac Industries, Inc.

2,933,333, Bredtschneider, Drewes, Laird and Onak, PIPE COUPLING, filed June 12, 1972, D.C., E.D. Mich. (Detroit), Doc. 384,436, Aeroquip Corporation v. Crane Company. Plaintiff's notice of dismissal pursuant to Rule 41(a)(1)(i) F.R.C.P. entered Oct. 5, 1972.

3,027,610, O. E. Liddell, METHOD OF PROTECTING TIMBERS AGAINST MARINE BORER ATTACK, filed Oct. 19, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72-2496-IH, Osmose Wood Preserving Co. of America, Inc. and Harry W. Stirtz, Jr. v. The Zippertubing Co. and Wm. A. Plummer and J. Maurer.

3,066,546. (See 2,889,242.)

3,068,484, Moehlenpah and Pallme, APPARATUS FOR FABRICATING WOOD STRUCTURES; 3,069,684, same, filed Aug. 13, 1970, D.C., E.D. Mich. (Detroit), Doc. 35242, Hydro-Air Engineering, Inc. v. Truswal Systems, Inc. et al. Consent decree; patents valid; defendants have infringed, plaintiff is owner of Letters Patent, counterclaims and Count 2 of the complaint as amended are dismissed, Oct. 11, 1972.

3,069,684. (See 3,068,484.)

3,117,332, Kelley and Dallman, ADJUSTABLE DOCKBOARD; 3,137,017, Pfeiffer and Ramer, same; 3,203,002, G. McGuire, ADJUSTABLE DOCKBOARD WITH COUNTER-BALANCING EXTENSION LIP; Re. 25,249, G. P. Kelley, ADJUSTABLE DOCKBOARD; filed Oct. 18, 1972, D.C., N.D. Tex. (Dallas), Doc. CA-3-6400-C, Kelley Company, Inc. v. Overhead Door Corporation.

3,137,017. (See 3,117,332.)

3,203,002. (See 3,117,332.)

3,260,508, E. R. Powell, BALANCING HOIST, filed Mar. 31, 1972, D.C., E.D. Mich. (Detroit), Doc. 38085, D. W. Zimmerman Mfg., Inc. v. William H. Hash Co., Inc. Stipulation and order of dismissal signed by the Honorable Charles Joiner on Oct. 19, 1972.

3,396,342, A. E. Feinberg, POWER SUPPLY CIRCUIT FOR CONTINUOUS WAVE MAGNETRON OPERATED BY PULSED DIRECT CURRENT, filed Oct. 12, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c2555, Advance Transformer Co. v. Sears, Roebuck and Co.

3,404,494, H. D. Wolfe, THEATRE AND STAGE CONSTRUCTION, filed June 23, 1972, D.C., W.D. Va. (Roanoke), Doc. 72-C-86-R, Howard D. Wolfe v. Samuel Belkin. Voluntary dismissal pursuant to Rule 41(a) of the Federal Rules of Civil Procedure, Oct. 24, 1972.

3,416,659, Linderman and Gibson, CAN TESTING, filed Nov. 30, 1971, D.C., D.C., Doc. 3474-69, Reynolds Metals Co. v. Linderman Engineering Company, Inc. et al. Ordered defendant shall grant royalty free, non-exclusive license to plaintiff, Nov. 30, 1971.

3,436,530, Faude, Haller, Hengstler, CONTROL DEVICE, filed Sept. 5, 1972, D.C. Conn. (New Haven), Doc. 15289, Veeder Industries, Inc. v. Hecon Corporation.

3,532,390, R. C. Bueler, CONTROL VALVE, filed Oct. 16, 1972, D.C., W.D. Mich. (Kalamazoo), Doc. K109-72CA-8, Wagner Electric Corporation v. The Bendix Corporation.

3,533,407, G. I. Smith, STRAP TYPE WRIST SUPPORT, filed Sept. 17, 1971, D.C., N.D. Ohio (Cleveland), Doc. C-71-911, King Louie International, Inc. v. House of Champions Research. Order permanently enjoining defendants from infringing; parties have settled their differences out of court, Oct. 17, 1972.

MARCH 20, 1973

U. S. PATENT OFFICE

521

3,576,661. (See 2,911,729.)

3,661,220, C. R. Harris, WEIGHING DEVICE FOR LOGGING TRUCKS OR THE LIKE, filed Sept. 20, 1972, D.C., W.D. Wash. (Seattle), Doc. 609-72C2, Electro Development Corporation v. Structural Instrumentation Inc., and Measurement Systems, Inc.

3,672,969, Novel and Ostrow, ELECTRODEPOSITION OF GOLD AND GOLD ALLOYS, filed Oct. 13, 1972, D.C. Mass. (Boston), Doc. 72-3165A-C, Lea-Ronal, Inc. v. Auric Corporation.

Re. 25,249. (See 3,117,332.)

Re. 26,066, F. A. Lambach, FISHING FLOAT, filed Oct. 16, 1972, D.C., M.D. Pa. (Scranton), Doc. 72-526, Plastilite Corporation v. Kassner Imports.

D. 221,713, P. Kates, UMBRELLA, filed May 16, 1972, D.C., S.D.N.Y., Doc. 72-C-2087, Giant Umbrella Co. Inc. v. Kanematsu-Gotshu, Inc. Same, filed May 16, 1972, D.C., S.D.N.Y., Doc. 72-C-2088, Giant Umbrella Co. Inc. v. Kinsko-Mataicki Corp. Same, filed May 16, 1972, D.C., S.D.N.Y., Doc. 72-C-2089, Giant Umbrella Co. Inc. v. New York Sankyo Seiko Co. Ltd. Same, filed May 16, 1972, D.C., S.D.N.Y., Doc. 72-C-2090, Giant Umbrella Co. Inc. v. C. Itoh and Co. (America, Inc.). Same, filed May 16, 1972, D.C., S.D.N.Y., Doc. 72-C-2091, Giant Umbrella Co. Inc. v. Okuda Co. New York Inc. Same, filed May 16, 1972, D.C., S.D.N.Y., Doc. 72-C-2092, Giant Umbrella Co. Inc. v. Toshoku America, Inc.

D. 222,995. (See 2,899,242.)



## Certificates of Correction for the Week of Mar. 20, 1973

Re. 27,370	3,654,246	3,680,230	3,687,999
Re. 27,388	3,654,557	3,680,391	3,688,181
Re. 27,400	3,657,024	3,680,396	3,688,502
D. 223,773	3,657,918	3,680,863	3,688,542
3,260,691	3,658,370	3,681,324	3,688,683
3,284,611	3,658,711	3,681,334	3,688,993
3,445,938	3,659,286	3,681,467	3,689,831
3,446,604	3,660,317	3,682,191	3,690,054
3,588,889	3,662,671	3,682,277	3,690,284
3,591,897	3,663,079	3,682,540	3,690,297
3,593,337	3,663,647	3,682,973	3,690,388
3,598,006	3,664,255	3,682,975	3,690,509
3,603,354	3,664,523	3,683,144	3,690,823
3,607,332	3,665,902	3,683,246	3,690,835
3,607,886	3,666,734	3,683,592	3,691,401
3,607,755	3,667,890	3,683,944	3,691,674
3,611,061	3,668,241	3,683,990	3,692,550
3,612,841	3,668,910	3,684,002	3,692,669
3,612,883	3,669,755	3,684,096	3,692,768
3,615,585	3,670,257	3,684,152	3,694,197
3,619,219	3,670,317	3,684,258	3,694,693
3,622,283	3,671,931	3,684,385	3,695,874
3,622,795	3,673,801	3,684,568	3,695,900
3,635,912	3,674,247	3,684,893	3,696,367
3,637,075	3,676,215	3,686,012	3,697,030
3,637,589	3,676,685	3,686,258	3,698,073
3,638,169	3,677,149	3,686,314	3,698,431
3,642,057	3,677,268	3,686,622	3,698,620
3,648,227	3,677,570	3,686,865	3,699,588
3,648,244	3,678,503	3,687,138	3,699,719
3,648,899	3,679,114	3,687,257	3,700,168
3,649,190	3,679,339	3,687,418	3,700,228
3,650,103	3,679,494	3,687,743	3,700,301
3,653,290	3,679,596	3,687,917	3,701,134
3,654,172	3,680,053	3,687,985	3,701,299

## Erratum

All reference to Patent Number 3,716,607 to Sugio Otani, Heat Treatment of Molten Carbonaceous Material Prior to its conversion to Carbon Fibers and other shapes, appearing in the OFFICIAL GAZETTE of February 13, 1973, should be deleted as the application inadvertently issued.

## PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner  
WILLIAM FELDMAN, Deputy Assistant Commissioner

## CONDITION OF PATENT APPLICATIONS AS OF MARCH 6, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
<b>CHEMICAL EXAMINING GROUPS</b>	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director.....	12-16-71
Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	
GENERAL ORGANIC CHEMISTRY, GROUP 120—J. MARCUS, Director.....	1-03-72
Heterocyclic; Amides; Alkaloids; Aro; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director.....	11-16-71
Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director....	12-01-71
Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director..	11-02-71
Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	
<b>ELECTRICAL EXAMINING GROUPS</b>	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director.....	7-18-72
Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director.....	5-31-72
Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director.....	4-19-72
Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director..	12-15-71
Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director.....	1-04-72
Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	
DESIGNS, GROUP 290—R. L. CAMPBELL, Director.....	5-26-71
Industrial Arts; Household, Personal and Fine Arts.	
<b>MECHANICAL EXAMINING GROUPS</b>	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director.....	3-17-72
Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director.....	1-03-72
Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding; Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT INFORMATION, GROUP 330—A. RUEGG, Director.....	4-10-72
Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletary; Printing; Typewriters; Stationery; Information Dissemination.	
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director.....	3-06-72
Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gear- ing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director.....	1-03-72
Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	

Expiration of patents: The patents within the range of numbers indicated below expire during March 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,736,896 to 2,740,116, inclusive  
Plant Patents..... Numbers 1,457 to 1,466, inclusive



# REISSUES

MARCH 20, 1973

Matter enclosed in heavy brackets **[ ]** appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,601

**NOVEL WATER-REPELLENT COMPOSITIONS**  
Jacob M. Fain, Bay Harbor Islands, Fla., and Edward McDonnell, Brooklyn, N.Y., assignors to William L. Alexander, William G. Mulligan, and Foster Dee Snell, trustees for the stockholders of Twenty-Nine West Fifteenth Street Corporation  
No Drawing. Original No. 3,433,750, dated Mar. 18, 1969, Ser. No. 521,504, Jan. 19, 1966. Application for reissue Dec. 30, 1971, Ser. No. 214,492

Int. Cl. C08g 33/20

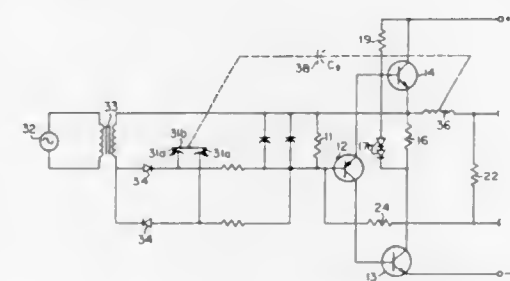
U.S. Cl. 260—2 S 10 Claims  
Water repellent compositions comprised of a silico-titanium copolymer and a cationic, surface-active quaternary ammonium compound and to a method of forming transparent water-repellent films on the surface of transparent solids during rain.

27,602

**AMPLIFIER WITH FLOATING INPUT**  
Melvin O. Eide, Bellevue, Wash., assignor to United Control Corporation, Redmond, Wash.  
Original No. 3,482,175, dated Dec. 2, 1969, Ser. No. 718,797, Apr. 4, 1968. Application for reissue Nov. 9, 1970, Ser. No. 87,964

Int. Cl. H03f 3/04

U.S. Cl. 33—24 17 Claims



An amplifier has an input floating with respect to ground and employs a resistor which is connected across the base-emitter junctions of two transistors in the amplifier. By matching the characteristics of the transistors, their base-emitter junction drops can be substantially equal so that the voltage drop across the input resistor is near zero. The potential of the floating input follows the output potential so that an input device or element may be maintained at the same potential as an output device.

27,603

**PROCESS OF PRODUCING AN ELECTRICAL RESISTOR**  
Anthony J. Stankavich, Syracuse, N.Y., assignor to Carrier Corp., Syracuse, N.Y.  
Original No. 3,619,287, dated Nov. 9, 1971, Ser. No. 761,184, Sept. 20, 1968. Application for reissue Dec. 8, 1971, Ser. No. 205,863

Int. Cl. B44d 1/18; C23c 17/00

U.S. Cl. 117—227 3 Claims

An electrical resistance element particularly adapted for use in precision potentiometers and related applications wherein the high temperature resistant and essentially electrically non-conductive base has fused thereon a resistance material comprised of powdered glass and metal resinate suitably treated and admixed with precious metal powders with which in the mixing process is combined an organic vehicle preferably provided by ethyl cellulose dissolved in an alcohol exemplified by 1-undecanol or 1-decanol or equivalents thereof. The instant invention as applied to a ceramic substrate assures uni-

formly successful results in the printing process, and among other advantages contributes significantly to increased shelf life for the material being applied.

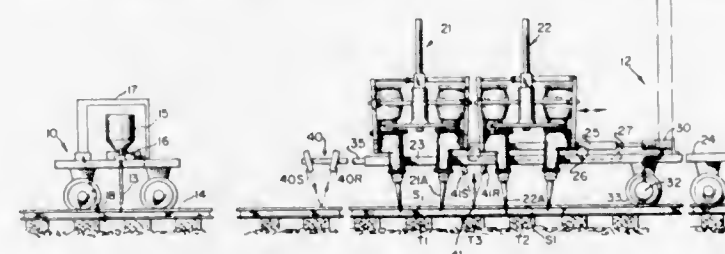
27,604

**WORKHEAD POSITIONING MEANS**  
John Kenneth Stewart and Helmuth Rolf Erich von Beckmann, Columbia, S.C., assignors to Canron Limited-Canron Limitee  
Original No. 3,504,635, dated Apr. 7, 1970, Ser. No. 698,001, Jan. 15, 1968. Application for reissue May 10, 1971, Ser. No. 142,083

Int. Cl. E01b 27/16

U.S. Cl. 104—12

8 Claims



A railway track tamping machine having a fixed tamping head mounted on the chassis of the machine and a second tamping head mounted on the chassis of the machine behind the fixed tamping head and movable longitudinally of the chassis relative to the fixed tamping head, is provided with a detector which detects a first index on the track related to a first tie to be tamped and initiates a control means to control the forward travel of the vehicle to position the fixed head over the first tie to be tamped; and a second detector which detects a second index related to a second tie to be tamped and initiates a control means to actuate a motor on the vehicle to move the second tamping head on the chassis relative to the first tamping head to position the second tamping head over the second tie to be tamped.

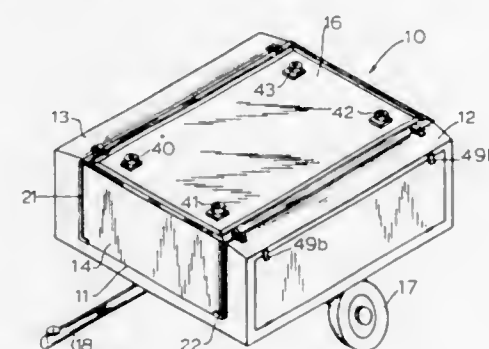
27,605

**VEHICULAR TOWED CAMPING TRAILER**  
Neill M. Laney, 2430 Medway Drive, Raleigh, N.C. 27608  
Original No. 3,549,196, dated Dec. 22, 1970, Ser. No. 805,165, Mar. 7, 1969. Application for reissue June 23, 1971, Ser. No. 156,142

Int. Cl. B60p 3/32

U.S. Cl. 296—23 R

7 Claims



A vehicular towed camping trailer provides a covered compartment for hauling camping gear and employs removable end gates which can be converted into tables and a removable cushioned top which can be converted into a cushioned bed.

# PATENTS

GRANTED MARCH 20, 1973

## GENERAL AND MECHANICAL

3,720,955

**FOOTBALL HELMET**  
John H. Rawlings, Ava, Mich., assignor to Questor Corporation, Toledo, Ohio  
Filed Nov. 26, 1971, Ser. No. 202,220

Int. Cl. A42b 3/00

U.S. Cl. 2—3 R

4 Claims



A contour adjusting device for a football helmet having an elongated channel in the rear padding of the helmet located substantially adjacent to the nape of the neck of the wearer. A resilient pad of a selectively predetermined depth and of a dimension to fit within the elongated channel is secured within the channel and extends outwardly therefrom. The use of different depth pads adjusts the rear of the helmet to provide a snug fit against the nape of the neck.

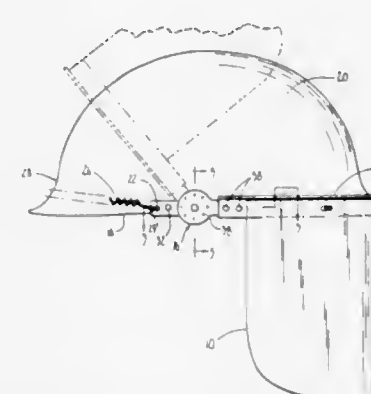
3,720,956

**FACE SHIELD**  
Herbert A. Raschke, Greenbrae, Calif., assignor to E. D. Bulard Company, Sausalito, Calif.  
Filed May 19, 1971, Ser. No. 146,578

Int. Cl. A42b 1/00

U.S. Cl. 2—8

2 Claims



A detent joint for pivotally securing a face shield holder to a stationary head gear. The joint is constructed of a pair of identical resilient discs secured to the holder and the head gear, respectively, pivotable about a common pin, and firmly held in mutual contact by thrust shoulders of the pin. The discs include a plurality of coating detents that are equally spaced from each other and from the pivot axis so that upon pivotal movement of the face shield holder the detent and

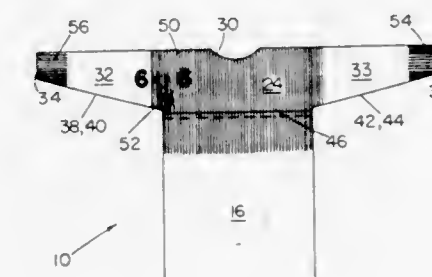
3,720,957

**CONFORMABLE DISPOSABLE GARMENT**  
Donald Patience, Barrington, Ill., assignor to The Kendall Company, Boston, Mass.  
Filed Feb. 14, 1972, Ser. No. 225,847

Int. Cl. A41b 9/00; A61b 19/06

U.S. Cl. 2—114

5 Claims



A disposable garment such as an operating room gown is made of flexible inelastic nonwoven material, composed of generally planar sections joined by seams, selected portions of the material being micropleated by mechanical compression of the material to form a multiplicity of random discontinuous micropleats extending transversely to the direction of the compression to compact the material in said direction to form a conformable portion irreversibly size-adjustable to a larger size along said direction, whereby the garment is adapted to conform to a wearer's form and size.

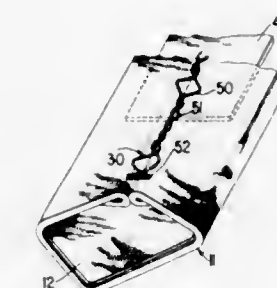
3,720,958

**NECKTIE AND METHOD OF MAKING SAME**  
Roy M. Cowdrey, Cranford, N.J., assignor to The Singer Company, New York, N.Y.  
Filed Aug. 26, 1971, Ser. No. 175,308

Int. Cl. A41d 25/06

U.S. Cl. 2—146

6 Claims



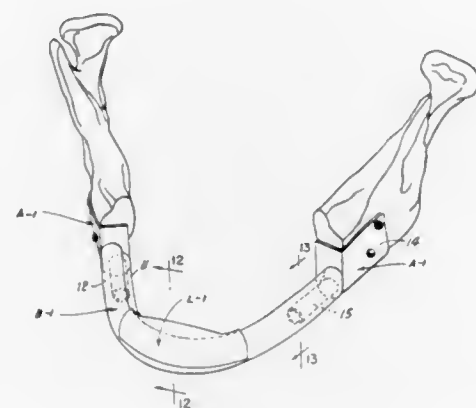
A necktie and the method of fabricating the necktie using only lines of stitches capable of being produced on a conventional household sewing machine and without requiring eversion of the necktie. Easily removed basting stitches are used temporarily to hold parts of the necktie in position to be finally united by a zigzag pattern of stitches.



3,720,959

**MANDIBULAR PROSTHETIC APPARATUS**  
George W. Hahn, 1605 Pentagon Parkway, Dallas, Tex.  
Filed Aug. 26, 1970, Ser. No. 67,029  
Int. Cl. A61f 1/24

U.S. Cl. 3-1



A kit for forming a number of different forms of prosthetic devices to replace different portions of a mandible which have been removed. The kit includes a number of prefabricated members, fabricated from a malleable stainless steel mesh, including mating inner and outer tubular sleeve portions for assembling adjoining members, with the sleeve portions being crimped together to define rigid couplings. Screws are used to attach the end member of an assembled prosthetic device to the bone stump of the remaining mandible.

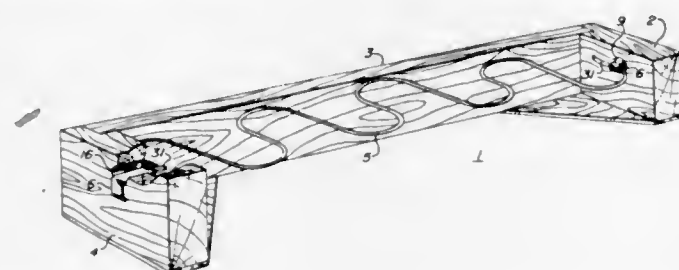
3,720,960

**SPRING ATTACHMENT CLIP**

John J. Bond, P.O. Box 19, Wickenburg, Ariz. 85358  
Filed May 21, 1971, Ser. No. 145,748  
Int. Cl. A47c 23/02

U.S. Cl. 5-259 R

9 Claims



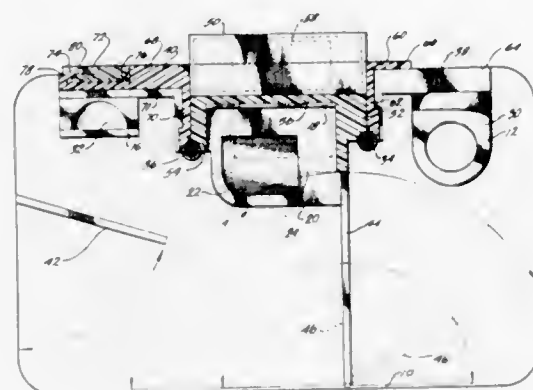
A device which provides an inexpensive and rapid means for suspending springs within a framework. The device, in its simplest form, comprises a flat strip of sheet metal having one end bent upwardly in an arced configuration. At the end opposite thereto a portion of the strip is bent downwardly at an angle of 90° to form a flange and the end dependent therefrom is bent at an angle of 90° such that the latter portion is essentially parallel to the main body of the strip. If desired, the end portion may be pointed or notched to provide two or more pointed ends. In operation, the pointed end is hammered into the outside of the frame with the main part of the strip resting on the frame. Thusly, the arced end points toward the interior of the frame and the spring to be suspended within the frame is hooked within the arced portion. The clip provides vertical support of a cantilever type due to the main part of the strip resting on the frame and lateral support due to the pointed ends being anchored to the frame. The longitudinal force exerted by the spring is countered by the first 90° bend acting as a flange against the frame itself.

3,720,961

**SELF-CLEANING RESTROOM**  
Glenwood L. Garvey, 10998 Strathmore,  
Los Angeles, Calif. 90024  
Filed July 26, 1971, Ser. No. 166,037  
Int. Cl. A47k 17/00; E03d 11/12

12 Claims U.S. Cl. 4-1

20 Claims



An enclosed room has three bathroom fixtures in it: a lavatory and counter, a toilet and a urinal. The urinal and toilet are each carried by a rotation joint or hinge for rotation into a cleaning position nestled below the lavatory and counter. Plumbing to the toilet and urinal is through their rotation joints and includes rotational plumbing joints to swing with these fixtures. Cleaning spray heads beneath the lavatory and counter are positioned to direct cleaning solution into the urinal basin and onto the toilet. Cleaning spray heads behind the toilet are positioned when the toilet is in its cleaning position to direct cleaning solution onto the under surface of the urinal basin. Rotatable panels carried by the rotation joints of the toilet and urinal close upon themselves when the urinal and toilet are rotated into their cleaning position to define a cleaning cabinet for all three fixtures. Additional nozzles within the cabinet clean the walls, a mirror and the floor during the cleaning operation. Outside the cabinet, the walls of the enclosed room are conveniently cleaned with additional spray heads without being encumbered by the urinal and toilet. The cleaning equipment is self-contained in a support package. Circulated hot air dries the cleaned fixtures and walls of the restroom.

3,720,962

**FLUSH TOILET AND METHOD**

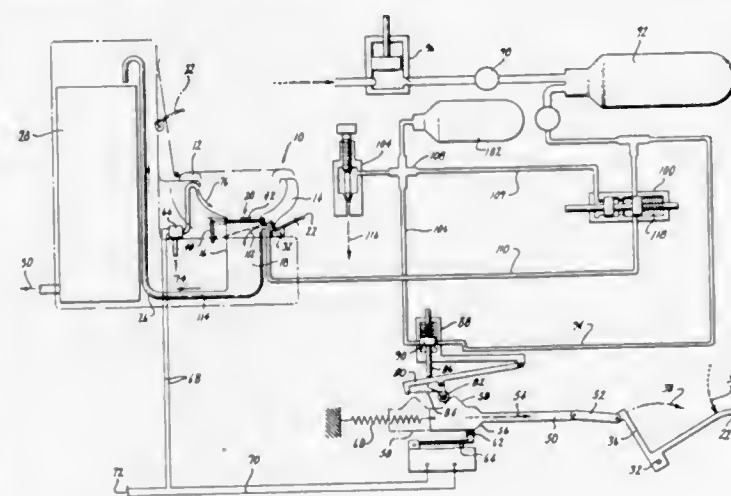
Robert E. Harrah, Willits, Calif., assignor to Microphor, Inc., Willits, Calif.

Filed Jan. 29, 1971, Ser. No. 110,929

Int. Cl. A41d 13/04

U.S. Cl. 4-52

11 Claims



A system (apparatus and method) for reducing the amount of water required for flushing conventional and portable

toilets. The system makes use in a toilet combination of a bowl portion and a gas-tight base portion and employs water flush means for the bowl portion in conjunction with air flush means for the base portion. Movable valve means between the bowl and base portions are controlled to retract while water is introduced to flush the bowl portion and to return while a charge of compressed air is introduced to discharge the contents of the toilet to a waste discharge line. This system is effective in conjunction with conventional toilets or waste treating systems or compact biological or chemical waste treating systems.

3,720,963

**PORTABLE WASHING STAND**

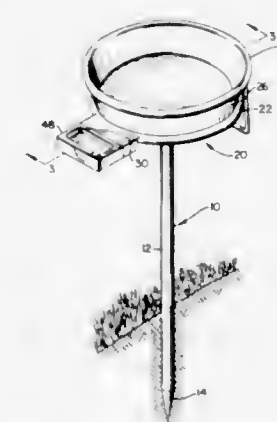
Roman Zakaski, Charleston, W. Va., assignor to Monty Enterprises, Inc.

Filed March 19, 1971, Ser. No. 125,933

Int. Cl. A47k 1/04

U.S. Cl. 4-167

8 Claims



A portable washing stand having a ground penetrating standard removably supporting on its upper end a circular plate by means of an interfitting locking and stabilizing arrangement with the plate providing a secure seat for a wash basin and having diametrically opposing radially extending peripheral projections, one of which removably supports a swivel mounted towel ring and the other of which provides a support for a detachable soap dish.

3,720,964

**PREFABRICATED SWIMMING POOLS**

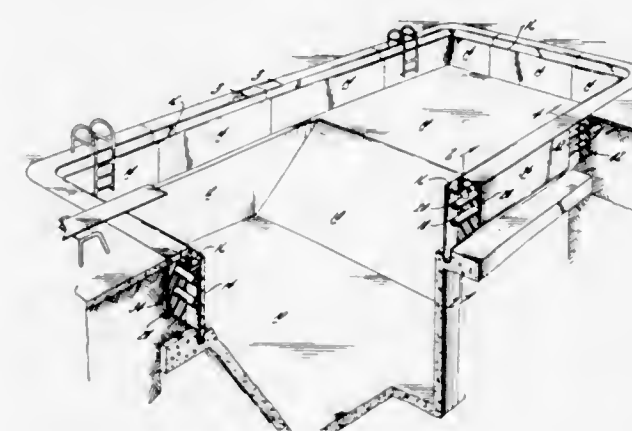
David P. Thomson, Chicago, Ill., assignor to Chicago Swimming Pool Manufacturing Inc., Maywood, Ill.

Filed Oct. 19, 1970, Ser. No. 82,204

Int. Cl. E04h 3/16, 3/18

U.S. Cl. 4-172.19

17 Claims



Fiberglass reinforced plastic swimming pools and prefabricated pool walls are illustrated. In one embodiment, the pools and walls contain liquid conveying conduits which are supported by a conduit supporting material such as a rigid

3,720,965

**BACK SUPPORT**

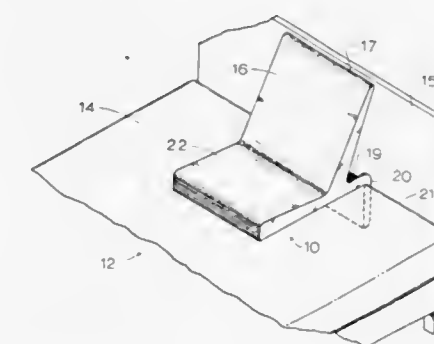
Harry Walter Wright, 6 Wetherby, Scarborough, Ontario, Canada

Filed July 23, 1971, Ser. No. 165,452

Int. Cl. A47c 21/00

U.S. Cl. 5-327 B

2 Claims



A back support for use with a bed having a headboard, in which a back member has an upper edge adapted to bear against the headboard and a lower edge carrying a rearwardly extending arm having a flange adapted to bear against the mattress or frame of the bed. A seat may extend forwardly from the lower edge of the back member.

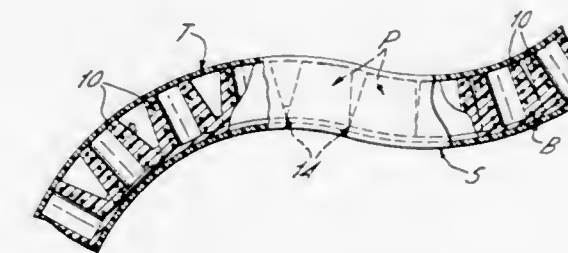
3,720,966

**SPRING UPHOLSTERY CUSHIONING**

Milton Zysman, 54 Glen Road, Toronto, Ontario, Canada  
Continuation-in-part of Ser. No. 30,890, April 22, 1970. This application Oct. 1, 1971, Ser. No. 185,508  
Int. Cl. A47c 27/22, 7/20

U.S. Cl. 5-353

6 Claims



A pocket spring upholstery cushioning comprised of helical springs respectively encapsulated in a pod of flexible foam plastic and all mutually interconnected in co-planar, side by side assembly by an integral web of the same material. Said web has a thickness of less than the axial heights of the pods and connects them by their ends on one side only of the cushioning permitting independent relative movement of the spring ends on the other side of the cushioning.

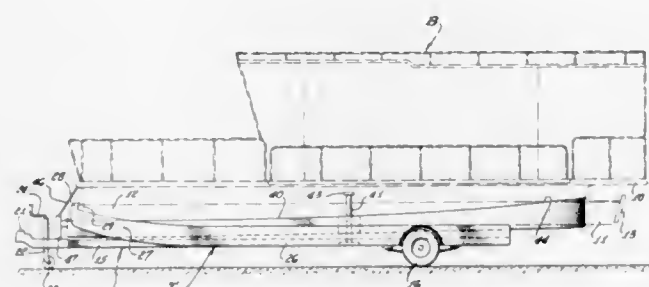


### 3,720,967 BOAT TRAILER

Henry T. M. Rice, 1213 Ramona Street, San Gabriel, Calif.  
Filed Feb. 16, 1971, Ser. No. 115,295  
Int. Cl. B63c 13/00

U.S. Cl. 9-1 T

14 Claims



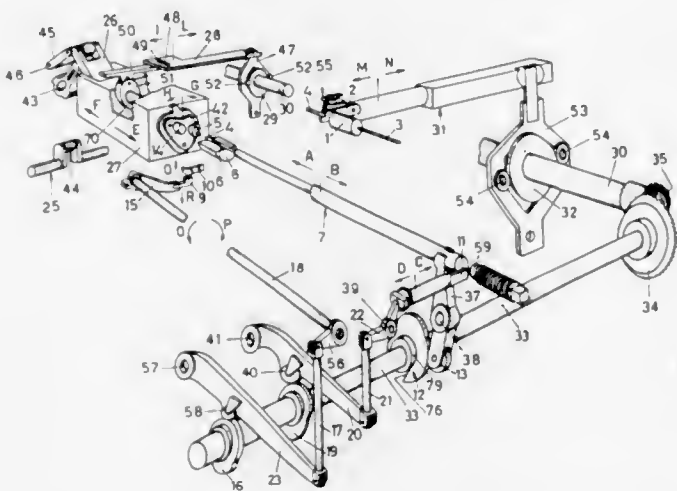
A boat trailer including a trailer frame carrying a float member thereabove and movable vertically relative thereto, a boat being guided by the float member from and onto the trailer. When the trailer is disposed in the water, its frame drops vertically relative to the float member to an extent limited by the float member, enabling the boat to back off freely from the trailer under its own power, as well as move forwardly over the trailer to a position to be supported by the trailer when it is pulled fully onto dry land by a towing vehicle.

### 3,720,968 MACHINE FOR THE PRODUCTION OF HALF-PUNCHED RIVETS

Eufemia Garlaschi, Via Mengoni, 4 Milan, Italy  
Continuation-in-part of Ser. No. 812,715, April 2, 1969, abandoned. This application Jan. 8, 1971, Ser. No. 105,050  
Claims priority, application Italy, April 6, 1968, 14924 A/68  
Int. Cl. B21k 1/60

U.S. Cl. 10-11 A

2 Claims



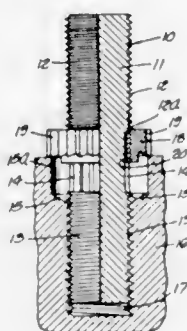
A machine is disclosed for the formation of half-punched rivets as a continuous operation, using an endless wire as the starting material. The rivet-forming wire sections are sequentially severed from the endless wire, pushed through a die, punched and headed, means being provided to withdraw the finished rivets from the die, and means being provided to permit the size of the produced rivets to be easily and readily varied.

### 3,720,969 METHOD OF MAKING A STUD FASTENER ASSEMBLY WITH INTEGRAL LOCK

Jose Rosan, Sr., San Juan Capistrano, and Jose Rosan, Jr., Newport Beach, both of Calif., assignors to Rosan Engineering Corp., Newport Beach, Calif., by said Rosan  
Division of Ser. No. 32,081, April 27, 1970, Pat. No. 3,630,252. This application Sept. 23, 1971, Ser. No. 182,944  
Int. Cl. B21k 1/44

U.S. Cl. 10-27 R

5 Claims



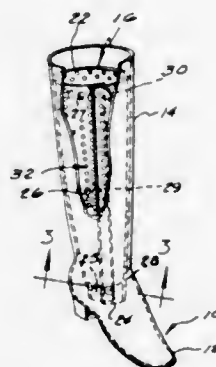
A method of making a stud fastener assembly having both ends thereof threaded and a lock ring in slidable but captive engagement between the said threaded ends so that said lock ring is not disengageable therefrom whereby the lock ring is slipped onto the stud fastener subsequent to threading one end thereof and thereafter threading the opposite end of said fastener.

### 3,720,970 BOOT TREE

Evelyn J. Lutz, 205 Park Avenue, Holly, Mich.  
Filed April 15, 1971, Ser. No. 134,151  
Int. Cl. A43d 5/00

U.S. Cl. 12-114.6

10 Claims



A boot tree formed by rolling a plastic perforated sheet into a hollow frusto-conical shape, opened at opposite ends, and including means for releasably securing the overlying portions of the rolled plastic sheet such that the frusto-conical shape of the rolled sheet may be selectively varied to permit the insertion of the boot tree into boot legs of various sizes. The boot tree may be unfolded and flattened for easy storage.

### 3,720,971 SHOE MAKING

Keith Gordon Wyness; Alan Roy Dodd, both of Norfolk; John Nigel Dixon Spinks, London, and Kevin David Nicholas Kearney, Woking, all of England, assignors to The Shoe and Allied Trades Research Associated, Kettering, Northamptonshire, England

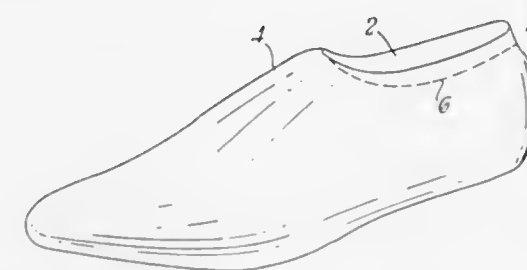
Filed Nov. 18, 1970, Ser. No. 90,770

Claims priority, application Great Britain, Nov. 20, 1969, 56,929/69

Int. Cl. A43d

U.S. Cl. 12-146 C

18 Claims



Methods and apparatus for making shaped upper components for a shoe. Whole upper components or upper part upper components can be made. Vacuum and pressure forming techniques for conforming initially flat material to a moulding surface are disclosed. The moulding surfaces may be of a shape whereby the preformed upper is convertible to the shape of the last merely by a bending operation. The mould shape can be arrived at by forming a sheet of resiliently bendable material such as unplasticized PVC to the last shape required to form a shell and, after removing the shell from the last, partially flattening it by spreading outwardly the opposite sides. Where a male mould is used the surface of the material which is to be the outside surface of the shoe can be in contact with the mould surface, and the preformed upper would be turned inside out after removal from the mold; where a female mould is used the surface of the material which is to be inside the shoe may be in contact with the moulding surface and again the preformed upper would be turned inside out after removal from the mould. The moulding surface may be embossed to transfer a pattern to the upper material. The material is held during the moulding operation. A device for partially cutting out the upper from the sheet of material from which it is formed may be provided, which device may also operate as a clamp for holding the material during the forming operation.

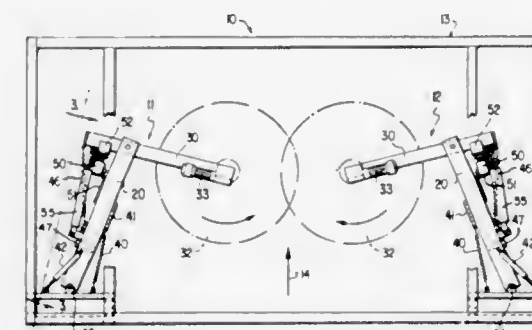
### 3,720,972 VEHICLE WRAP-AROUND CLEANING APPARATUS

George Thomas Ennis, 1354 East State Street, Sharon, Pa.  
Filed Sept. 7, 1971, Ser. No. 178,191

Int. Cl. B60s 3/06

U.S. Cl. 15-21 D

9 Claims



A vehicle wrap-around rotary brush-type cleaning assembly having a first arm pivotally mounted at one side of the path of a vehicle and a second arm pivoted thereto carrying rotatable brush means at one end. Spring tensioning means connect the first arm to the frame and the second arm to the first arm to

maintain the arms in a normal open position. A compression spring is positioned between the two arms to limit relative movement in one direction and urge the arms back to their normal position. A damping cylinder connected between the arms by a pin and slotted plate connection permits relative initial movement between the arms prior to any damping taking effect. The brush moves across the front, along the side and across the back of a vehicle. Two brush assemblies may be disposed directly opposite each other on each side of the path with the brushes in overlapping relation to clean both sides of a vehicle.

### 3,720,973 BRAIDED CABLE COVER REMOVING MACHINE

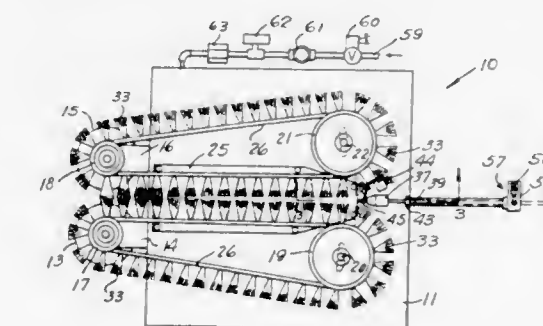
Stephen B. Bogese, Roanoke, Va., assignor to Virginia Plastics Company, Roanoke, Va.

Filed May 11, 1971, Ser. No. 142,308

Int. Cl. H02g 1/12

U.S. Cl. 15-88

10 Claims



A machine for combing out the woven braid cover of an electric cable to permit connections to be made to the end of the cable with the metallic cover being wound into a single strand at the end for connection to a shielding or ground circuit. The machine includes opposed belts having a plurality of wire brush tufts secured thereto and with the tufts of the belts arranged in confronting relation. The cable with the woven metal braid thereon is inserted into the space between the belts so as to be contacted by the wire brush tufts which comb out the braid into individual strands. The end of the cable is inserted a pre-determined distance between the belts and is then pulled backwardly from between the belts with the desired amount of the woven cover combed into individual strands. The ends of the wire tufts are corrugated to facilitate the combing out action.

### 3,720,974 FLOOR SWEEPER HANDLE-TO-HOUSING CONNECTION

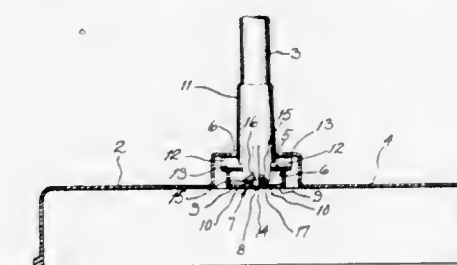
Henry J. Rosendall, Grand Rapids, Mich., assignor to Bissell Inc., Grand Rapids, Mich.

Filed Jan. 19, 1971, Ser. No. 107,754

Int. Cl. B25g 3/00

U.S. Cl. 15-144 R

6 Claims



The housing of a carpet sweeper or the like has a recess in its top with a floor which is formed to act as a spring. The lower end portion of the sweeper handle



is mounted in bearings and is pivotable from an upright position to at least one horizontal position. The handle end engages the recess floor during pivoting, and the increased friction holds the handle and housing at a suitable angle.

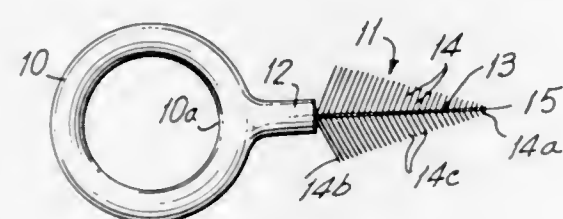
### 3,720,975 TOOTHBRUSHES

Stanley E. Nelson, 200 Central Park, South, New York, N.Y.  
Filed Feb. 12, 1971, Ser. No. 114,996

Int. Cl. A46b 3/00

U.S. Cl. 15—167 R

1 Claim



A toothbrush adapted for finger manipulation and especially adapted for use at the cervical areas of teeth. A finger-manipulation member has thereon an array of bristles arranged in a formation along an axis extending forwardly from the member, the bristles being of progressively increasing lengths in a direction rearwardly from the front or leading end of the array, the foremost bristles being proportioned for initial entry within the space at the cervical portions of two adjacent teeth, thereby to provide an opening wedge for entry of the longer bristles therebehind. The finger member is positioned at the rear end of the array of bristles, so that the direct push of an operatively positioned finger will be in the direction of the axis toward the plane of the teeth to be brushed.

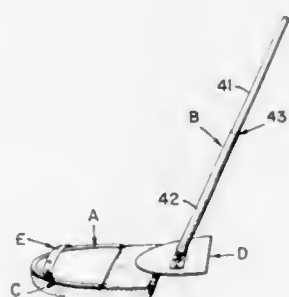
### 3,720,976 BAYONET MOUNTED FLEXIBLE CLEANING PAD

Guy Bailey, Route 1, Box 3, Atlas, Okla.  
Filed Feb. 8, 1971, Ser. No. 113,181

Int. Cl. A47l 13/18, 17/02

U.S. Cl. 15—244 A

4 Claims



A toilet brush is disclosed which can be mounted to and from an elongate handle. The brush itself includes a hand sized parabolic shaped plate having a hand encircling strap over the top of the plate and a cloth mounted flexible sponge pad attached to the bottom of the plate. A handle with an attached bayonet plate can be moved to and from a position of engagement with a female bayonet fitting on the top portion of the brush plate. The cloth mounted flexible sponge pad extends beyond the parabolic shaped plate to provide an extended and flexible cleaning surface. This extended and flexible cleaning surface can both conform to and be backed by the human wrist when the brush is handle held as well as conformed to the irregular interior surfaces of a toilet bowl when the brush is handle held.

### 3,720,977 SUCTION CLEANING APPARATUS

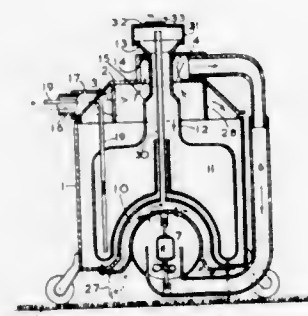
Wladyslaw Brycki, 19 Mayfield Rd., Liverpool, England  
Filed Feb. 16, 1971, Ser. No. 115,320

Claims priority, application Great Britain, March 25, 1970, 14,367/70

Int. Cl. A47l 7/00

U.S. Cl. 15—321

1 Claim



This invention relates to suction washing apparatus and has for its object to wash by suction the pile of carpets, surface of floor coverings, upholstery and other fabrics, and floor, windows and wall and even ceiling which in use is arranged to supply cleaning liquid to the surface to be cleaned and to remove same by suction means.

### 3,720,978 INDEXING FURNITURE GLIDE

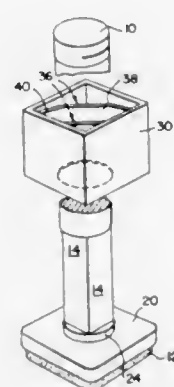
Robert E. Miller, Jr., Bronxville, N.Y., and Anthony J. Balchunas, Rahway, N.J., assignors to Robert E. Miller & Co., Inc., New York, N.Y.

Filed Oct. 7, 1971, Ser. No. 187,335

Int. Cl. A47b 9/06

U.S. Cl. 16—42

7 Claims



A glide, adjustable axially in protruding relation to the low leg of an article of furniture, has indexing means comprising leaf springs set on edge and resiliently biased against flats on a foot-ended stud that is threaded up into a nut fixed in the leg, so as yieldably to stop the stud at quarter-turn intervals when the foot is rotated to thread the stud further up into or down from the nut.

### 3,720,979 BIASED HINGES

Alois A. Krawagna, Willowdale, Ontario, Canada, assignor to Western Corporation Limited, Toronto, Ontario, Canada  
Continuation-in-part of Ser. No. 689,390, Dec. 11, 1967. This application June 17, 1968, Ser. No. 744,268

Int. Cl. E05d 7/00

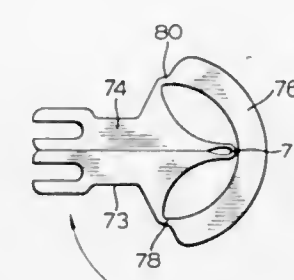
U.S. Cl. 16—150

5 Claims

A snap-hinge in which two hinge members are hinged together about a first hinge line. A resilient connecting link is joined at one end integrally to one of the hinge members at a

second hinge line and is hinged at the other end to the other hinge member at a third hinge line. The connecting link is capable either of compression or of expansion as between its

prepared fish is held against a light source of predetermined minimum intensity. The sharpened end of a cannula is inserted in the flesh in a position to expose the object which is then



two ends, and tends to maintain the hinge members in a given angular relationship, and to return the hinge members to that relationship if they depart from it.

### 3,720,980 PRESSING MACHINE FOR FORMING ELONGATED BODIES OF MEAT AND THE LIKE EDIBLE MATERIAL

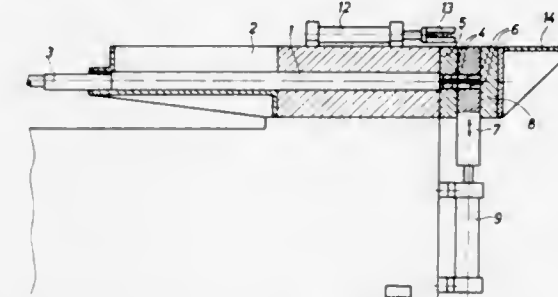
Hermann Walter Gehlen, Kaiserslautern, Upper Palatine; Karl Hartmann, Bremerhaven-Speckenbittel, and Gerhard Thieme, Kaiserslautern, Upper Palatine, all of Germany, assignors to Eisenwerke Kaiserslautern GmbH, Kaiserslautern/Pfalz, Germany  
Filed Aug. 10, 1970, Ser. No. 62,454

Claims priority, application Germany, Aug. 9, 1969, P 19 40 724.1

Int. Cl. A22c 7/00

U.S. Cl. 17—32

5 Claims



A pressing machine for forming elongated bodies or portions of meat and the like edible material comprises an extrusion plate forming a wall of a compression chamber and being provided with at least one array of calibrated extrusion openings the cross-section of which corresponds to the cross-section of the bodies to be formed. A forming plate, having a thickness equal to the length of the bodies and being slidably mounted between the extrusion plate and a stationary guide plate, is provided with through-going passages of equal cross-section to and aligned with, in its operative position, the openings of the extrusion plate. Upon filling of the passages with compressed material extruded through said openings, the forming plate is displaced to a retracted position for the ejection of the bodies formed from said passages.

### 3,720,981 METHOD AND APPARATUS FOR REMOVING WORMS AND PARASITES FROM THE FLESH OF FISH

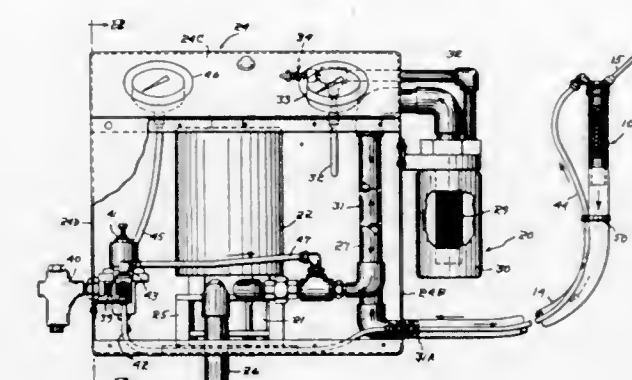
Joseph M. Schmadier, Hunts Point Road, Cape Elizabeth, Maine  
Filed May 4, 1972, Ser. No. 250,179

Int. Cl. A22b 3/00

U.S. Cl. 17—45

19 Claims

The invention is concerned with the removal of such objects as worms and parasites from the flesh of a fish after it has been cleaned and so prepared that it is sufficiently translucent to enable any such objects to be observed when the thus



sucked therefrom and discharged into a collector. The vacuum is regulated to be within a predetermined range. Both method and apparatus are disclosed.

### 3,720,982 QUICK DETACHABLE BUTTON

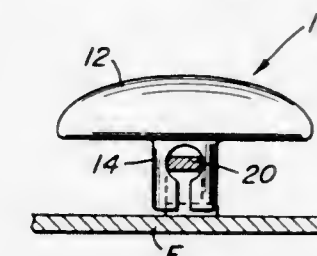
Julia S. Myers, 170 North Franklin Street, Wilkes-Barre, Pa., and Paul F. Wilber, 1950 58th Ave., N., Apt. R-3, St. Petersburg, Fla.

Filed April 7, 1971, Ser. No. 131,918

Int. Cl. A44b 1/28, 1/38

U.S. Cl. 24—104

3 Claims



A button with a plastic shank is removably secured to a fastener bar that is sewed or riveted to a garment. The shank of the button has a transverse slit in it of the same thickness as the thickness of the fastener bar; and this slit terminates in a hole just below the head of the button which is of the same diameter as the width of the fastener bar. The button can be mounted on the fastener bar by slipping the slit in its shank over the fastener bar and then turning the button so that the bar enters and engages in the hole in the shank. To remove the button from the bar it is first turned to have the fastener bar aligned with the slit in the button shank, and then the shank is slid off the fastener bar.

### 3,720,983 APPARATUS FOR THE MANUFACTURE OF CRIMPED BULKY FILAMENTS

Hazime Hino, 5-5 Tominosato-machi, Takatsuki-shi; Tsutomu Nakamura, 1, Oaza Minohara, and Nobuo Takahashi, 5-18, 4-chome, Shimohozumi, both of Ibaraki-shi, all of Japan

Continuation-in-part of Ser. No. 847,548, Aug. 5, 1969, abandoned. This application Oct. 29, 1971, Ser. No. 193,790  
Claims priority, application Japan, Aug. 6, 1968, 43/56053

Int. Cl. D02g 1/16

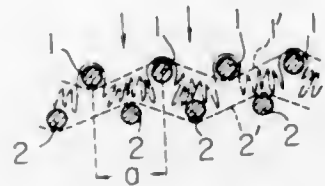
U.S. Cl. 28—1.4

4 Claims

In an apparatus for preparing crimped bulky filaments from continuous non-crimped filaments having a total denier of 40—5,000 using a moving screen and a jet stream of a temperature higher than 200°C. and a pressure of 3—12 kg/cm<sup>2</sup> gauge, which impinges on the screen accompanying the filaments, at a filament feeding rate of at least 250 m/min and (x) = D X R



is at least 60,000 de.meter/min, the improvement in that the screen is an assembly screen having a perforation ratio of 20-60 percent, the distance between the upper and lower screens



being up to 2 mm, the perforation area of the lower screen being smaller than the area of the upper screen, and the distance between the open end of the jet and the upper screen being up to 3 mm.

3,720,984

## MULTI-END KNIT-DEKNIT PROCESS

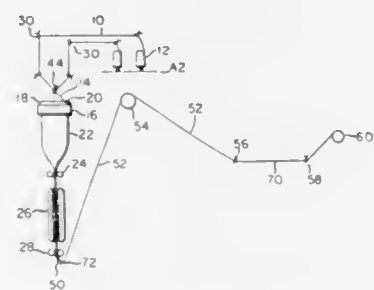
Elbert Belmont Roberson, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 6, 1971, Ser. No. 104,219

Int. Cl. D04b 19/00

U.S. Cl. 28-72.16

3 Claims



An improvement in a knit-deknit process wherein a plurality of yarns are angularly converged to a single bundle which is knitted into tubing and heat-set. The tube is maintained in a twistless state while being unraveled and the unraveled bundle is separated and taken up as separate yarns.

3,720,985

## METHOD OF IMPROVING ADHERENCE OF EMISSIVE MATERIAL IN THERMIONIC CATHODES

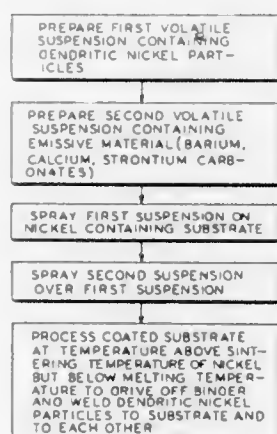
William E. Buescher, Emporium, Pa., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed June 30, 1971, Ser. No. 158,578

Int. Cl. H01j 9/00

U.S. Cl. 29-25.17

6 Claims



An application of dendritic nickel particles to a nickel containing cathode substrate to form a porous nickel is filled with potentially emissive material in one or more alternate spray

passes. The nickel particles are welded to the substrate and to each other at the time the cathode is activated at a temperature in excess of the sintering temperature but below the melting temperature of the nickel particles. The procedure eliminates a separate sintering step and provides excellent adherence of the emissive material, thus reducing many arcing problems in high voltage applications.

3,720,986

## EXPLOSIVE BONDING OF WORKPIECES TO MANUFACTURE A CAPACITOR

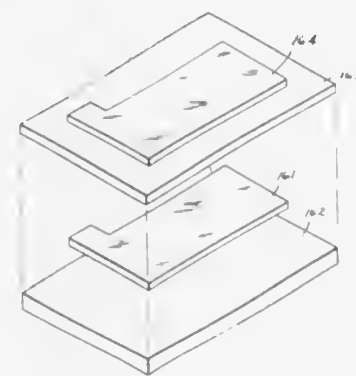
Benjamin Howell Cranston, 67 Kuser Road, Trenton, N.J. 08619

Application Aug. 31, 1970, Ser. No. 68,431, which is a continuation-in-part of application Ser. No. 6,829, Jan. 29, 1970. Divided and this application Nov. 26, 1971, Ser. No. 202,347

Int. Cl. H01g 13/00

U.S. Cl. 29-25.42

15 Claims



First workpieces, for example, beam-leaded integrated circuits, and the like, are bonded to second workpieces, for example, metallized ceramic substrates by first depositing a quantity of primary explosive, such as lead azide, onto each beam lead and then detonating the explosive to explosively bond the integrated circuits to the substrate. In another embodiment of the invention, the explosive bonding force is applied through a buffer sheet of plastic or metallic material which protects the surface of the substrate from contamination and which, in addition, dampens the shock of the explosion. In yet another embodiment of the invention, metal conductive paths are explosively bonded directly to a ceramic or glass substrate to form a "printed circuit pattern." The same techniques are used to manufacture resistors, capacitors, inductors, etc.

3,720,987

## PROCESS FOR THE MANUFACTURE OF SLEWING RINGS OR BEARING ASSEMBLIES

Jacques Leon Francois Dubost, Ville D'Avary, France, assignor to R. K. S., Avallon (Yonne), France

Filed Feb. 17, 1971, Ser. No. 116,141

Claims priority, application France, Feb. 20, 1970, 7006121

Int. Cl. B21h 1/12; B21d 53/10; B23p 17/00

U.S. Cl. 29-148.4 R

5 Claims



A process for manufacturing slewing rings or bearings-rings by centrifugally casting steel to cause the migration of iron particles toward the exterior region of the casting and carbon particles toward the interior region of the casting, and sub-

sequently, quenching the casting to produce a higher degree of hardness to its internal region relative to its external region and a higher degree of toughness to its external region relative to its internal region.

3,720,988

## METHOD OF MAKING A HEAT PIPE

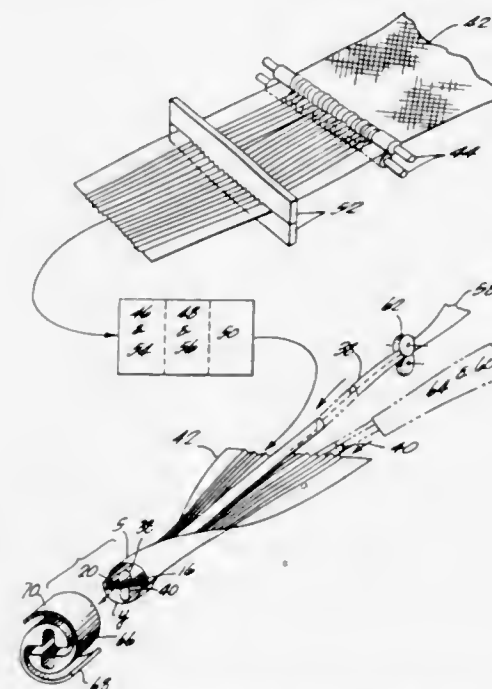
Elmer Dale Waters, Richland, Wash., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Sept. 20, 1971, Ser. No. 182,038

Int. Cl. B21d 53/02

U.S. Cl. 29-157.3 R

7 Claims



A heat pipe wick structure including a homogenous central wick is fabricated by forming a plurality of laterally disposed longitudinal pleats in a sheet of wire screen, and compressing the formed pleats laterally together and inserting the same longitudinally into a tubular container of a heat pipe. The plates can be formed in a laterally central portion of the sheet with a flat screen portion on each side thereof, and the side portions are turned back over opposite sides of the formed central wick to serve as wall screens in the tubular container. Reservoir screens having a generally U-shaped cross section normally engaged by the formed pleats can be additionally installed on both side of the central wick in the tubular container.

3,720,989

## GEAR CUTTING METHODS

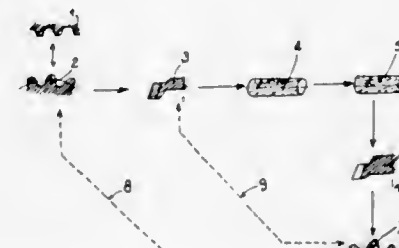
Pierre A. Ramond, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt, France

Filed May 25, 1970, Ser. No. 39,969

Int. Cl. B21d 53/28; B21h 5/00; B21k 1/30; B23p 15/14; B29d

U.S. Cl. 29-159.2

11 Claims



Method of manufacturing teeth, notably of gearings having their outline cut integrally by means of a pinion-tool, wherein an apparent outline of theoretical pinion-tool for different states of wear of said tool is calculated from the outline of the

desired workpieces and of its generating rack; from the surfaces of the teeth of the theoretical pinion-tool a theoretical hob is calculated for generating said surfaces; a simplified hob is then made from said theoretical hob, and used for milling pinion-tools adapted to produce rough-cut gears after sharpening the leading faces of said pinion-tools; the outlines of these gears are then compared with the desired outline for any possible correction of the simplified hob outline and the resultant correction of the pinion-tools and workpieces; this method is applicable to the cutting of spur or helical teeth, whether of the involute type or not, for both internally toothed and externally toothed gears, by using milled pinion-tools.

3,720,990

## LIQUID PHASE SINTERED MOLYBDENUM BASE ALLOYS

Earl I. Larsen, Indianapolis, Ind., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

No Drawing. Filed Jan. 13, 1969, Ser. No. 790,861

Int. Cl. B22f 3/00

U.S. Cl. 29-182

18 Claims

A molybdenum base alloy containing at least two metallic elements which form an alloy which melts at a temperature considerably below that of molybdenum and when in the molten state dissolves appreciable molybdenum during liquid phase sintering and which may be shaped before or after sintering for example, by machining, to form desired shapes such as hot metal forming tools such as die casting dies, cores, etc., thus avoiding expensive hot working and/or hot forging is described.

3,720,991

## MACHINE FOR SEALING BALLOONS AND THE LIKE

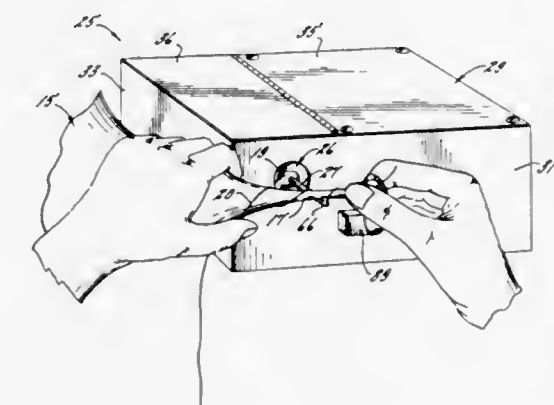
Rudolph L. Allison and Gary L. Lindstrand, Rockford, Ill., assignors to MTL Incorporated, Rockford, Ill.

Filed Apr. 12, 1971, Ser. No. 133,143

Int. Cl. B23g 7/10

U.S. Cl. 29-211 D

11 Claims



The machine includes a reciprocating needle which doubles over the neck of the balloon and draws the neck through a hole in a disc. The latter seals the balloon gas-tight by pinching together the doubled-over section of the neck.

3,720,992

## AUTOMATIC PIPE HANDLING SYSTEM

John W. Hyatt, 23 Edmund Street, Malden, Mass.

Filed March 1, 1971, Ser. No. 119,644

Int. Cl. B23p 19/00, 19/04

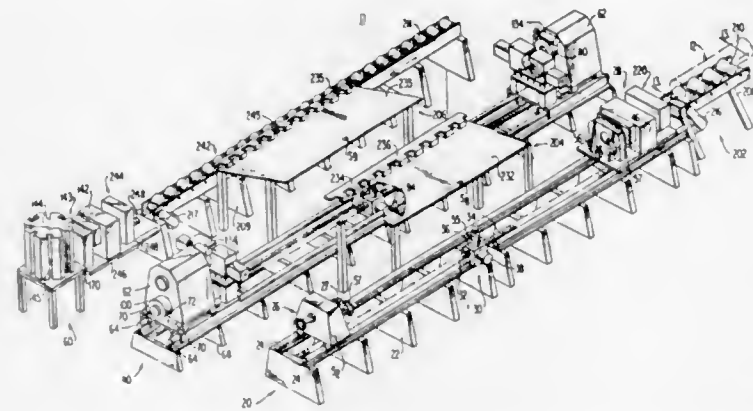
U.S. Cl. 29-59

59 Claims

An automatic machine and control system for automatically cutting elongated pieces of material such as tubes, pipe bar stock and the like, into pieces of pre-determined lengths at a first station. Each cut piece is automatically conveyed to a



second station where it is clamped and centered with respect to threading and reaming heads which automatically thread and ream both ends of the clamped piece simultaneously. The threaded piece is then released from the clamping means and automatically conveyed to a third station where one of the threaded ends is automatically coated with thread sealing material, following which a fitting is automatically attached to the coated threads. The completed assembly is then automatically conveyed to a storage area. The automatic threading station employs automatically adjustable die heads which automatically compensate for pieces having different diameters

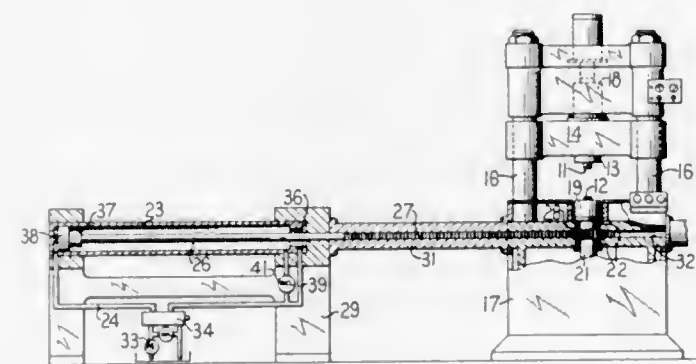


with the reaming portion of the die head being automatically adjusted concurrently with the threading portion. The distance between the two die heads of the automatic threading station is automatically adjusted to compensate for varying lengths of pieces to be threaded. The automatic control system and stations can be adapted for operation without any one of the stations, that is, the cutting station can be used in conjunction with the threading station or, the threading station can be used in conjunction with the fitting make-on station without requiring the third station to be incorporated into the system.

3,720,993

## FRICTION WELDING METHOD

Charles G. Farmer, Edelstein, and Calvin D. Loyd, Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.  
Division of Ser. No. 728,646, May 13, 1968, Pat. No. 3,567,100. This application Oct. 26, 1970, Ser. No. 84,139  
Int. Cl. B23k 27/00  
U.S. Cl. 29—470.3 5 Claims



Friction-welding apparatus comprising a rack and pinion for translating force from a unidirectionally, linearly acting hydraulic motor into rotational force and applying the resultant rotational force to one of a pair of relatively rotatable weld pieces. Programming means regulate operation of the hydraulic motor to precisely determine energy input to a weld interface between the weld pieces.

3,720,994  
METHOD OF FORMING METAL TUBING

Rolf K. Wagele, Isernhagen, Germany, assignor to Kabel-und Metallwerke Gutehoffnungshütte Aktiengesellschaft, Hanover, Germany

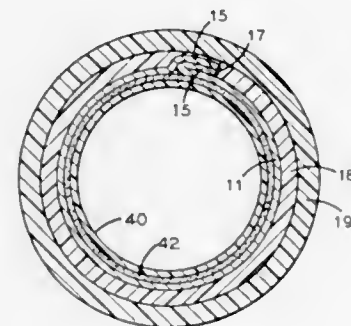
Filed Nov. 23, 1971, Ser. No. 201,298

Claims priority, application Germany, Nov. 27, 1970, P 20 58 379.3

Int. Cl. B23k 31/02

U.S. Cl. 29—477.7

8 Claims



A method of forming metal tubing from very thin metal tape, wherein the tape is folded about a non-metallic tubing to convert the same into tubular form; the marginal edge portions of the tape providing tab portions extending radially and in contacting relation, the tab portions being metalically integrated at their outer edges and then folded about the base thereof into contact with the outer surface of the metal tubing; the non-metallic tubing being selectively (1) removed from the formed metal tubing; or (2) retained to form a liner for the metal tubing.

3,720,995

## MODULE FRAMES AND METHOD OF MAKING SAME

Victor E. Brown; Raul L. Mora, both of Fort Lauderdale, and Morton T. Evans, Pompano Beach, all of Fla., assignors to Behring Corporation, Fort Lauderdale, Fla.

Division of Ser. No. 53,502, July 9, 1970. This application Aug. 26, 1971, Ser. No. 175,282

Int. Cl. B23k 1/20

U.S. Cl. 29—482

10 Claims



The method of making frames and frame units for modules of modular building includes steps of punching perimeter beams to form stops on the beams where cross-beams are to be located, and assembling the cross-beams with a pair of the perimeter beams by butting the ends of the cross-beams against corresponding stops to position the cross-beams without using jigs or fixtures to establish their positions. Retainers may be formed in the perimeter beams next to the stops to temporarily retain the cross-beams in place until they are welded to the perimeter beams. In some frame units, the perimeter beams and cross-beams are metal channels, and the beams are assembled flange-to-flange and web-to-web. One weld is made to connect each abutting pair of flanges next to the webs, and another weld is made at a point separated farther from the webs so that the webs reinforce each other and the flanges reinforce each other. Cross-beams may also be

welded to the stops on the perimeter beams. The invention includes the frame units, part of the strength and load handling capabilities of which are derived from particular arrangements of stops and welds.

3,720,996

## PROCESS FOR THE MANUFACTURE OF A RIGID CONNECTION BETWEEN A SYNTHETIC BODY AND A METAL BODY

Manfred Tschermak, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and München, Germany

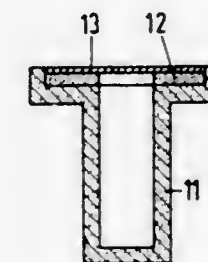
Filed Oct. 15, 1969, Ser. No. 866,592

Claims priority, application Germany, Oct. 16, 1968, P 18 03 307.3

Int. Cl. B29c 6/02

U.S. Cl. 29—527.1

5 Claims



The method of producing a firm connection between a synthetic body and a metal body. The region of the synthetic body intended for the connection has a, at least partially, porous sintered metal body of predetermined shape inserted into it in such a way that the synthetic material of the synthetic body penetrates the pores of the sintered metal body. An additional metal body (bodies) is fastened to the exposed portion of the sintered metal body.

3,720,997

## EUTECTIC PLATING AND BREAKING SILICON WAFERS

James R. Black and Elliott Phillofsky, Phoenix, Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Jan. 11, 1971, Ser. No. 105,404

Int. Cl. B01j 17/00

U.S. Cl. 29—583

5 Claims



A wafer of semiconductive material in the normal manufacture of making transistors or integrated circuits has many individual transistors or IC's produced on one side thereof and the other side thereof is coated with gold. Then the wafer is scribed, usually on the one side thereof, with scribe lines to assist in breaking the wafer into individual transistor or IC chips. As here disclosed a quenched silicon-gold alloy is produced on the other side of the wafer and the wafer is scribed. Since the quenched silicon-gold alloy is very brittle, the wafer breaks more easily on the scribe lines than do prior art scribed wafers.

3,720,998

## METHOD OF MANUFACTURING COMMUTATOR SEGMENTS OF COMPOUND MATERIAL

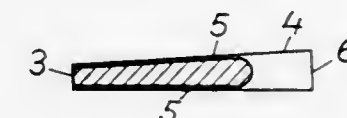
Assar Malm, and Jan-Erik Fransson, both of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed May 6, 1971, Ser. No. 140,687

Int. Cl. H01r 43/00

U.S. Cl. 29—597

4 Claims



Commutator segments are formed by hydrostatically extruding a billet having a core of aluminum or aluminum alloy and a tubular copper or copper alloy casing through a die of such shape that a thin strip is produced. This strip, either during extending or by rolling after extrusion, is given a shape which is thinner in the center than at the edges. The strip is cut longitudinally along its central axis and cut to suitable lengths.

3,720,999

## METHOD OF ASSEMBLING TRANSISTORS

Johannes Nier, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Continuation-in-part of Ser. No. 869,583, Oct. 27, 1969,

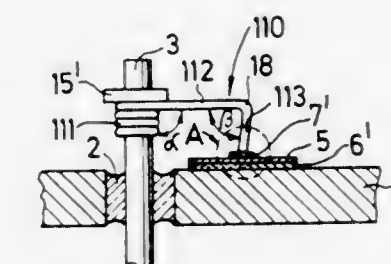
abandoned, which is a division of Ser. No. 757,407, Sept. 4, 1968, Pat. No. 3,584,265. This application April 29, 1971, Ser. No. 138,666

Claims priority, application Germany, May 9, 1970, P 20 22 717.2

Int. Cl. B01j 17/00; H01l 5/04, 7/60, 9/08, 11/02, 11/04, 15/08

U.S. Cl. 29—587

9 Claims



A transistor, wherein a semiconductor wafer is soldered to a metallic base and has one or two exposed contacts which are connected to pin-shaped terminals of the base by U-shaped elastic leads having coiled first end portions, straight intermediate portions and straight second end portions, is assembled by deforming the leads to tilt the coiled end portions with reference to the terminals and to thereby clamp such coiled end portions to the terminals in positions in which the end faces of the second end portions are in full surface-to-surface abutment with layers of solder which coat the contacts on the wafer, or by causing the second end portions to bear against the respective contacts merely by the action of gravity. The thus assembled working parts of the transistor are thereupon heated in a soldering furnace to bond the wafer to the base and to simultaneously solder the second end portions of the leads to the respective contacts. The coiled end portions are bonded to the respective terminals in response to melting of rings of soft solder which are slipped onto the terminals prior to heating so as to rest on the respective coiled end portions.



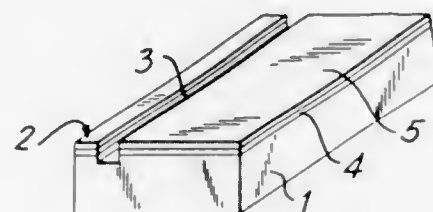
3,721,000

**METHOD OF MAKING A MAGNETIC HEAD**  
Noriaki Okamoto, Kanagawa, Teruo Wakabe, Tokyo, and Kazuo Nozawa, Chiba-ken, Japan, assignors to Sony Corporation, Tokyo, Japan  
Original application Mar. 12, 1969, Ser. No. 806,477, now Patent No. 3,578,920. Divided and this application Oct. 23, 1970, Ser. No. 83,587

Int. Cl. H01f 7/06

U.S. Cl. 29—603

2 Claims



A magnetic head has a gap spacer between magnetic core members thereof, which spacer is constituted by at least one layer of a non-magnetic metal oxide formed over a protective layer, such as, silica dioxide, on a gap-defining surface of the magnetic core members. The metal oxide layer is formed over the protective layer by heating on the latter an acid solution of a non-magnetic metal halide or a solution of an organic metal salt, during which heating the protective layer prevents oxidation and etching of the underlying gap-defining surface.

3,721,001

# **METHOD OF MAKING QUICK RESPONDING THERMOMETER**

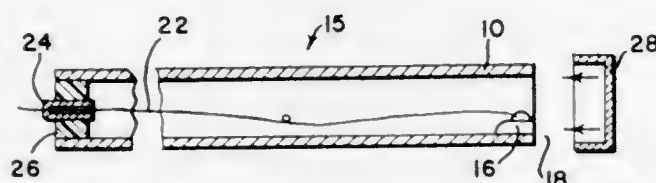
Philip C. Crosby, Wakefield; Robert J. Goyette, Chelmsford, and Douglas M. Bauer, Danvers, all of Mass., assignors to Council Commerce Corporation, Jericho, L.I., N.Y.

Filed Jan. 21, 1971, Ser. No. 108,615

Int. Cl. H01c 7/04

U.S. Cl. 29—612

8 Claims



A process for making a quick-responding, thermally-sensitive, probe for use in a thermometer comprising placing an abrasion-resistant thermally-sensitive element such as a thermistor in a probe and calibrating the element in place while using the wall of the probe to help support it and moderate the rate of abrasion. The novel device formed by this technique advantageously comprises a very thin wall constructed of a material of high thermal diffusivity which wall also acts as an electrical lead to an electronic temperature-measuring circuit.

3,721,002

# **HIGH VOLTAGE CABLE SPLICING AND TERMINATING METHODS**

Paul F. Pugh, 4082 Sequoyah Road, Oakland, Calif.

Filed May 15, 1970, Ser. No. 37,570

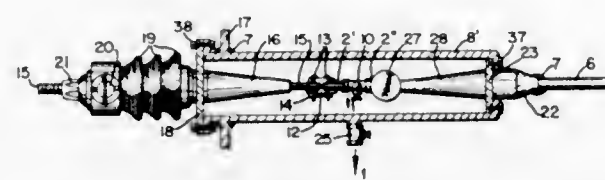
Int. Cl. H01r 43/00

U.S. Cl. 29—628

10 Claims

The circulation of a fluid through the center of a high voltage cable can be used to monitor the cable temperature and to

increase the loading limit of the cable. The methods for terminating and splicing fluid-filled power cables with fluid circulation



lation and for controlling the fluid pressure when the cables are terminated in free air are novel and a part of a high voltage cable system.

3,721,003

# **METHOD FOR ATTACHING WIRES TO A FLAT ARTICLE**

Kazunori Ueda, Neyagawa; Eiichi Masuo, Moriguchi; Hiroaki Yagi, Higashi-Sumiyoshi, Osaka, and Sinya Nishimoto, Suita, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 23, 1970, Ser. No. 83,319

Claims priority, application Japan, Oct. 27, 1969, 44/86237; Oct. 27, 1969, 44/86238; Oct. 27, 1969, 44/86239

Int. Cl. H01r 43/00; H05k 43/00

U.S. Cl. 29—628

3 Claims



A method of attaching lead wires to both surfaces of a disk-shaped electric article such as a ceramic capacitor prior to soldering the wires to the article, wherein the disk-shaped article is first inserted between unevenly crossed end portions of a resilient conductive wire member bent in the shape of a hair-pin and then turned a half round about the longitudinal axis of the wire member while the bent portion of the wire member is unmovably held, so that the article is firmly gripped between wires; and a machine which automatically performs the above-described process.

3,721,004

# **PRUNING TOOL**

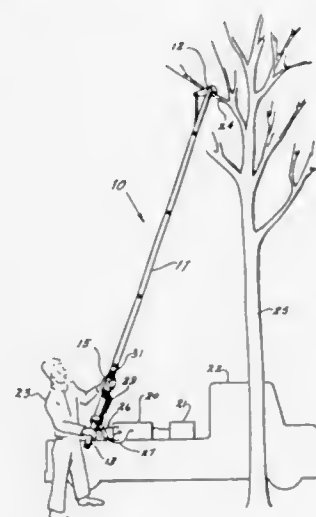
John Q. Buckles, Cincinnati, Ohio

Continuation-in-part of Ser. No. 125,276, March 17, 1971, abandoned. This application April 7, 1972, Ser. No. 241,900

Int. Cl. B26b 15/00

U.S. Cl. 30—228

16 Claims



A pruning tool comprising an elongated hollow tube, which may be in sections, a cutter on one end of the tube having a

pivoted cutting element, a piston and cylinder at the other end of the tube and a flexible cable passing through the center of the tube and connected to the piston and cylinder at one end of the cutting element at the other end wherein the cutting element is operated by applying tension to the cable by means of the piston and cylinder. Centering means are provided for the cable so that the cable, when tensioned, stresses the tube only in compression, without introducing any substantial bending moment.

3,721,005

# **ORTHODONTIC BRACKET**

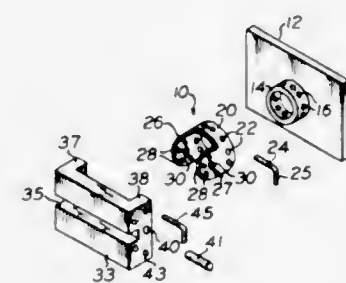
Howard Cohen, 2791 West Fifth Street, Brooklyn, N.Y.

Filed Aug. 31, 1971, Ser. No. 176,500

Int. Cl. A61c 5/08

U.S. Cl. 32—14 A

10 Claims



A selectively adjustable orthodontic bracket for use in both torquing and uprighting of malpositioned teeth. The bracket permits coupling a conventional orthodontic arch wire to the tooth band positioned about a malpositioned tooth so as to permit selective rotation of the arch wire either about its axis or transversely thereto with respect to the tooth to thereby insure the transmission of desired forces between the arch wire and the tooth. The bracket is formed with a slotted arch wire engaging plate, the arch wire being engaged within the slot of said arch wire engaging plate. A universal joint is formed on the side of the arch wire engaging plate remote from the slot for securement to the tooth engaging band, the universal joint being selectively fixable in any position to which set so that the arch wire engaging plate may be rotated about an axis parallel or transverse to that of the arch wire, to permit selective provision of either torquing or uprighting forces to the tooth.

3,721,006

# **FINGER PAD FOR DENTAL INSTRUMENTS**

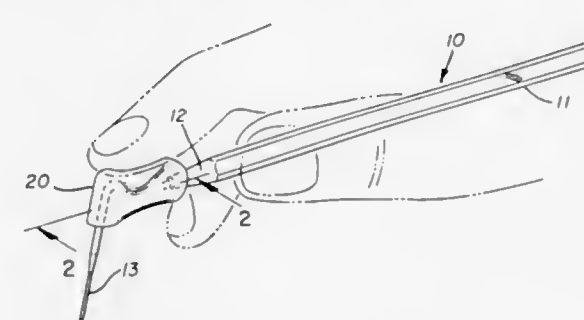
Oscar Malmin, 127 East Wayne Avenue, Akron, Ohio

Filed May 28, 1971, Ser. No. 147,858

Int. Cl. A61c 3/00

U.S. Cl. 32—40 R

4 Claims



A finger pad for utilization in connection with angled dental instruments such as pluggers, margin trimmers, enamel hatchets, etc. The finger pad includes a piece of plastic or similar material mounted on the angled portion of the instrument and provided with pressure points contoured into the pad for reception of the tip of the operator's finger. The contoured portions are positioned so that a direct pressure is

properly directed toward the tip of the tool thereby eliminating inaccuracies. The pad can either be removably placed on the angled portion of the tool, permanently secured to the end of the tool handle or made integral therewith.

3,721,007

# **NAVIGATION CALCULATOR**

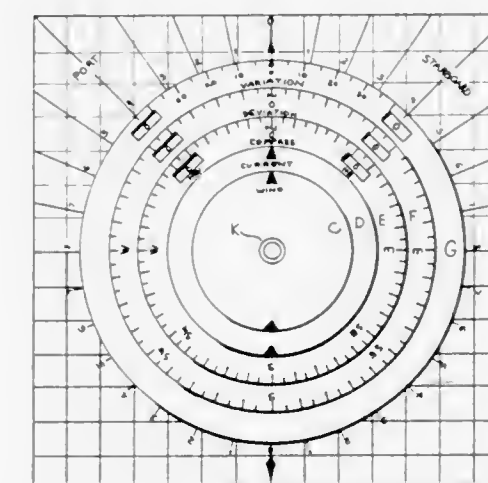
Philip M. Banner, 28 Oxford Road, Massapequa, N.Y.

Filed April 13, 1970, Ser. No. 27,535

Int. Cl. G01c 21/20; G06c 27/00

U.S. Cl. 33—1 SD

3 Claims



A navigation calculator comprising a base plate having angular markings, a plurality of round members rotatably mounted on said plate and on each other, each of the round members being adapted to be moved to insert the navigation parameters such as magnetic variation, compass deviation, compass reading, current direction and wind direction so that the various parameters are added to give a final reading.

A pair of protractor arms are adapted to be rotatably mounted on top of the stack of round members for drawing a course on a chart.

3,721,008

# **MARKER AND TRACKING ARM**

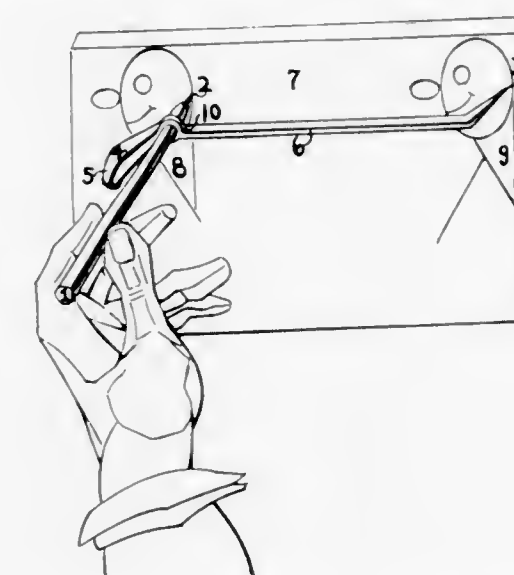
Eugene P. Frank, 350 East St. James St., San Jose, Calif.

Filed Oct. 26, 1971, Ser. No. 192,467

Int. Cl. B43l 13/16

U.S. Cl. 33—41 E

1 Claim



The marker and tracking arm is in general a pen or pencil with an arm extending from it with a tracking point that, due



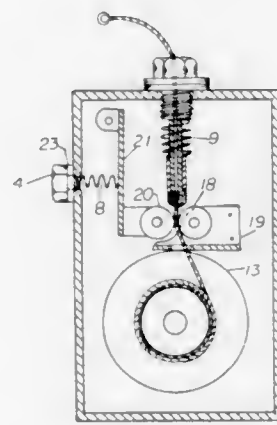
to the influence of gravity, follows an identical track as the marker point.

### 3,721,009 CHALK LINE HOLDER

Steve M. Lucich, P.O. Box 305, Reno, Nev.  
Continuation of Ser. No. 854,334, June 25, 1969. This application April 5, 1971, Ser. No. 131,529  
Int. Cl. B44d 3/38

U.S. Cl. 33—87

2 Claims



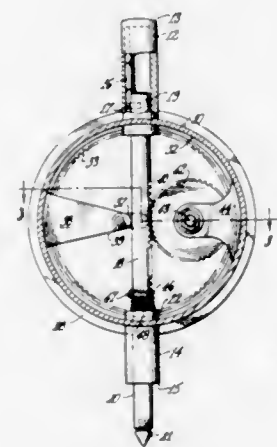
An improved chalk line holder in which either a liquid or dry marking agent can be utilized for striking lines of a varying degree of permanence. The packing gland through which the cord passes is held under compression thereby preventing enlargement of the orifice in the packing gland and the subsequent loss of marking agent through the enlarged orifice.

### 3,721,010 DIAL INDICATOR GAGE

Harold E. Ristow, 1332 W. 186 Street, Gardena, Calif.  
Continuation-in-part of Ser. No. 817,438, April 18, 1969, abandoned. This application Feb. 8, 1971, Ser. No. 113,125  
Int. Cl. G01b 5/00

U.S. Cl. 33—172 R

8 Claims



Gage to measure depth of bore or thickness of workpiece, etc. Diametrically projecting, spring-urged contact stem transverses cylindrical housing which has rotatable inner sleeve with internal ring gear. Rack teeth on stem engaged by one or more intermediate gears which drive ring gear and turn sleeve which carries dial indicator relative to overlying stationary pointer, the zero setting of which can be changed however to indicate desired standard for workpiece. Gear train and diametrically large dial face produce very high accuracy.

### 3,721,011 DRAWING TEMPLATE

Gerold Anderka, Hamburg, Germany, assignor to Rapido-graph, Inc., Bloomsburg, N.J.  
Filed April 16, 1970, Ser. No. 29,203  
Claims priority, application Germany, April 24, 1969, P 19 20 861.8

U.S. Cl. 33—174 B

Int. Cl. B41n 1/24

3 Claims



A template for drawing symbols, the guide surfaces defining the symbols and/or the surface of the template adjacent to the edges of the guide surfaces being of a different color to the remainder of the template.

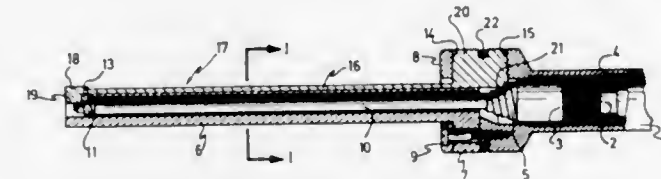
### 3,721,012 INTERNAL MICROMETER

Albert Muller, Crissier, Switzerland, assignor to Tesa S.A., Renes, Switzerland  
Filed May 14, 1970, Ser. No. 37,193  
Claims priority, application Switzerland, May 16, 1969, 7461/69

U.S. Cl. 33—178 R

Int. Cl. G01b 3/46, 5/08

4 Claims



The present invention has for its object, an internal micrometer comprising a cylindrical body, a control shaft which is movable in a rotational and longitudinal manner within the body and two conical coaxial members connected to one another by a rod, driven by said shaft and controlling the movements of at least one measuring key movably perpendicularly to the shaft of said conical members.

### 3,721,013 METHOD OF DRYING WOOD

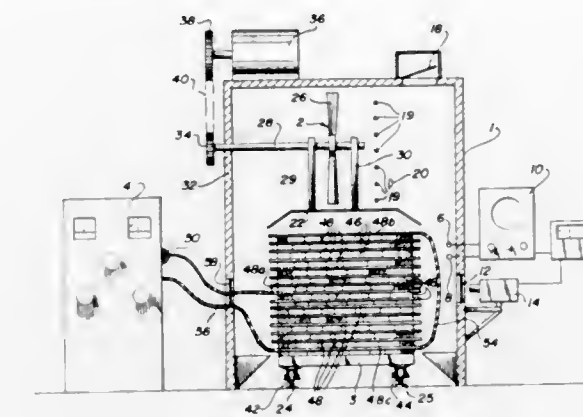
Donald G. Miller, Ottawa, Ontario, Canada, assignor to Canadian Patens and Development Limited, Ottawa, Canada  
Filed June 4, 1971, Ser. No. 149,912  
Int. Cl. B01k 5/00

U.S. Cl. 34—1

4 Claims

A method of rapidly drying wood by combining radio frequency or microwave heating with circulated heated air kiln drying, in which the surface temperature of the wood is measured, the wet and dry bulb temperatures of the circulated heated air within the kiln are measured, the wet bulb temperature is maintained according to a kiln schedule for the species and thickness of the wood, and in addition the input of radio

frequency or microwave energy and the dry bulb temperature of the kiln are regulated to control the surface temperature of



the wood according to the dry bulb temperature of the kiln schedule.

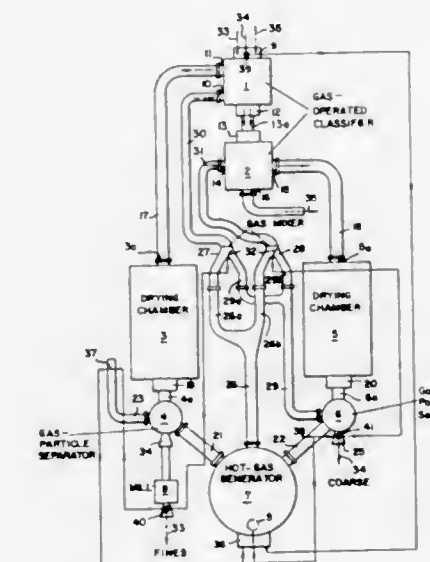
### 3,721,014 METHOD OF AND APPARATUS FOR THE DRYING OF COMMUNUTED MATERIAL

Peter Voelskow, Bad Kreuznach, Germany, assignor to G. Siempelkamp & Co., Krefeld, Germany  
Filed May 14, 1971, Ser. No. 143,498  
Claims priority, application Germany, May 19, 1970, P 20 24 197.8

U.S. Cl. 34—10

Int. Cl. F26b 3/10

12 Claims



A method of and an apparatus for the drying of comminuted material, especially wood particles and fibers and particles and fibers of cellulosic or plant materials in general, as may be used for the production of pressed board. The particulate mixture, including a fine component, a coarse component and at least one further component such as splinters, is subjected to gas classification to separate the fines from the coarse particles which are conveyed in respective hot-gas streams eventually to respective separators. In the separators, the particles are recovered from the cooled gas, part of which is returned to the hot-gas generator which the remainder or at least another part is mixed with the hot gases produced by this generator for recycling to the drying stage. The gas cycles of the fine and coarse stages may be operated independently.

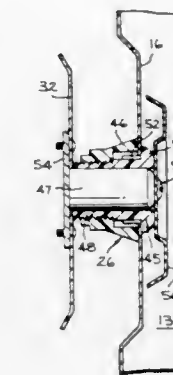
### 3,721,015 BEARING ASSEMBLY

Robert R. Sisler, Louisville, Ky., and Claude L. Blake, New Albany, Ind., assignors to General Electric Company, Louisville, Ky.

Filed Sept. 23, 1971, Ser. No. 183,032  
Int. Cl. F26b 11/02

U.S. Cl. 34—133

3 Claims



A clothes drying machine having a self-lubricating plastic sleeve bearing secured to the rear wall of a rotating drum, and the stationary harder surfaced steel stub shaft for rotatably supporting the drum and bearing assembly is fixed to the machine cabinet.

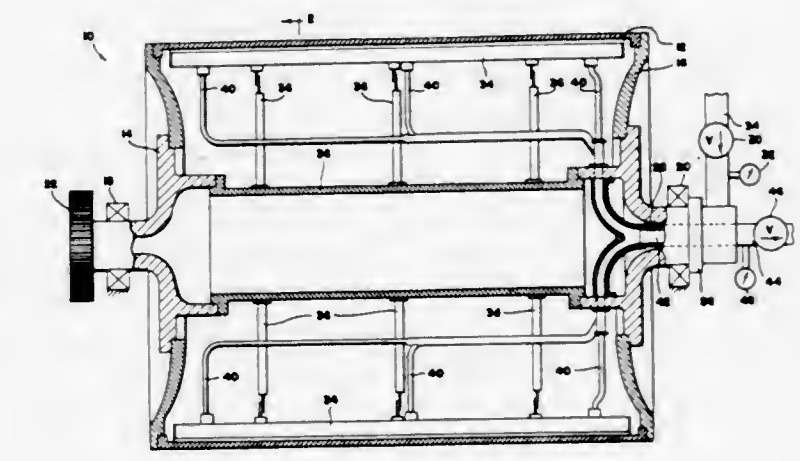
### 3,721,016 METHOD OF REMOVING CONDENSATE FROM A ROTARY DRYER

Charles A. Lee and Frank D. Sorrells, Knoxville, Tenn., assignors to International Paper Company, New York, N.Y.

Original application Aug. 4, 1969, Ser. No. 847,111, now Patent No. 3,640,000, dated Feb. 8, 1972. Divided and this application June 30, 1971, Ser. No. 158,478  
The portion of the term of the patent subsequent to Feb. 8, 1989, has been disclaimed  
Int. Cl. F28g 13/04

U.S. Cl. 34—125

4 Claims



Condensate rimming the inner surface of the shell of a rotary dryer is removed with steam exiting from the interior of the shell through a plurality of orifices into an exhaust manifold within the shell, whence it is exhausted to the exterior of the shell. To assist in removal of the condensate, a plate attached to the manifold forms a plurality of flow channels substantially parallel to the surface of the condensate. The cross-sectional area of the flow channels decreases in the direction of flow of the steam so that steam driven from the interior of the shell is accelerated along the surface of the condensate over a substantial distance to shear water from the inner surface of the shell and entrain the water in the steam as the steam passes through the orifices into the manifold.



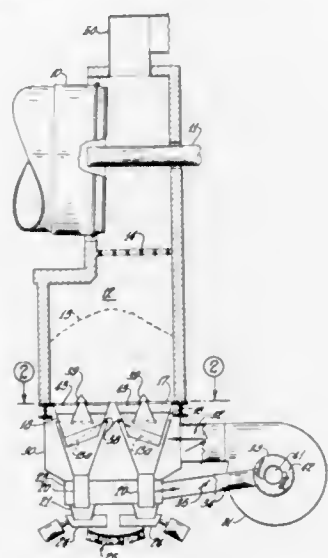
3,721,017

## APPARATUS FOR COOLING PARTICLES

Lee H. Niems, 2702 Brassie, Flossmoor, Ill.  
 Filed May 10, 1971, Ser. No. 141,747  
 Int. Cl. F27b 7/02

U.S. Cl. 34-167

15 Claims



Apparatus for cooling heated pieces of matter, particularly calcined lime pebbles or particles in which the hot material to be cooled is passed through a hopper and cooled by air introduced under pressure at the perimeter of the mass through bias aligned louvers in the side walls of the hopper. A particular aspect of the invention is the alignment of the louvers at an angle to horizontal to establish different length air paths through the mass to compensate for the different resistances to flow presented by the surface angle of repose of the material and the natural tendency of the particles to become segregated in various predeterminable regions of the mass with consequent localized concentration of heat in the mass.

3,721,018

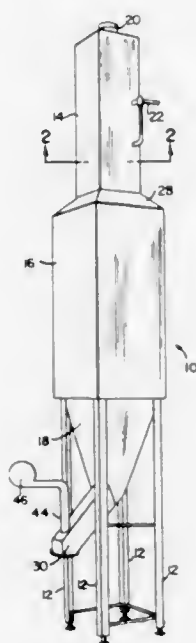
## GRAIN STEAMING APPARATUS

Maurice W. Brandt, and Franklin J. Shears, both of Fremont, Mich., assignors to Gerber Products Company, Fremont, Mich.

Filed April 21, 1971, Ser. No. 136,016  
 Int. Cl. F26b 17/12

U.S. Cl. 34-168

9 Claims



Grain steaming apparatus comprising a tower having three sections, an upper section, a central section, and a lower section. The grain to be steamed is introduced into the top of the

upper section, and steam is communicated into the interior thereof via a pair of steam manifolds. The lower section of the tower comprises a baffle arrangement adapted to control the flow of wheat in the tower while preventing channeling of the grain, to achieve uniform grain flow across the cross section of the tower. The baffle arrangement may preferably be formed by a plurality of perpendicularly disposed plates forming a grid work of substantially square, tapering passages. In this manner, the resistance encountered by the grain from the lower constriction of the tower will be distributed substantially uniformly across the cross section of the tower.

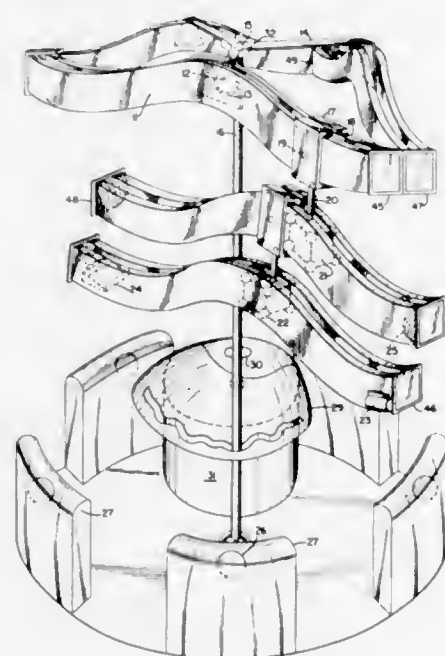
3,721,019

## INITIAL CONDITION INDICATION

Lawrence H. Befferman, 3316 Colden Avenue, Bronx, N.Y.  
 Filed March 19, 1971, Ser. No. 126,241  
 Int. Cl. G09b 19/00

U.S. Cl. 35-1

9 Claims



An apparatus and method for analyzing manufacturing processes and other applicable complex interrelationships where interpretation is extremely difficult. A plurality of hollow bell curve shaped square tubes each representing a characteristic of the process are interlocked by pairs with a rolling upper coupler which belts the exterior of the first tube and is connected to a lower coupler which glides within the interior of the second. Each coupler is capable of supporting and freely transversing without interference the extremes of a tubes entire length. The unrestricted interrelated movement allows the apparatus to respond to any change of characteristic as simulated by the addition of weight based on mathematical calculations. As in a balance the position of the interlocked tubes is an accurate representation of the altered process. A method and apparatus is given for determining the degree of response of tubes, interpreting results, and creating movement with a random generator for observing the effect of many characteristic attributes on the process.

3,721,020

## EDUCATIONAL DEVICE

Hulbert Martin, 2928 Hillegass Ave.,  
 Berkeley, Calif. 94705  
 Filed May 26, 1971, Ser. No. 146,907  
 Int. Cl. G09b 1/16

U.S. Cl. 35-35 H

9 Claims

An educational device is disclosed comprising a first, second and third means having different distinguishing indicia thereon. The first means includes at least one consonant thereon that normally occurs immediately before a vowel appearing in a single syllable word. The

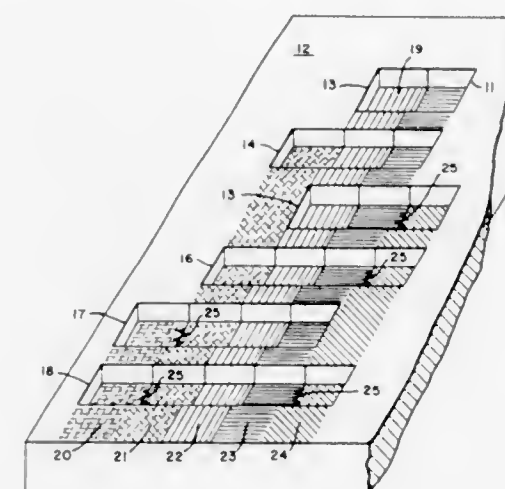
3,721,022

## DESIGN DEVICE

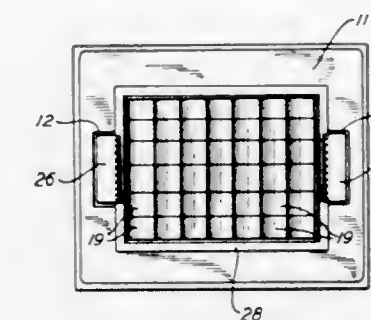
John Mercorelli, 1265 Van Houten Avenue, Clifton, N.J.  
 Filed Jan. 15, 1971, Ser. No. 106,864  
 Int. Cl. G09b 1/20

U.S. Cl. 35-77

4 Claims



second means includes at least one vowel thereon. The third means includes at least one consonant thereon that normally occurs immediately after a vowel appearing in a single syllable word. A board or the like is provided having a plurality of linearly disposed rows with delineated areas for accommodating the various means, at least



The invention is a design device in which the beads have keyways, and the axes on which they are mounted have keys engageable and disengageable from the keyways.

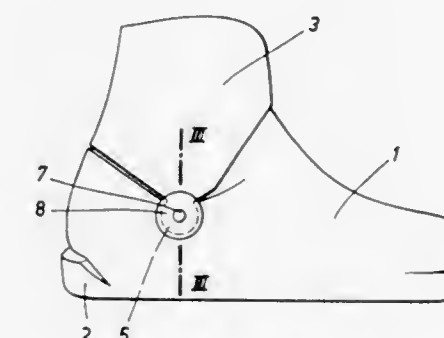
3,721,023

## SPORTS BOOT

Max Kastinger, Seewalchen, Attersee, Austria  
 Filed Sept. 28, 1971, Ser. No. 184,488  
 Claims priority, application Austria, Oct. 8, 1970,  
 9,062  
 Int. Cl. A43b

U.S. Cl. 36-2.5 AL

4 Claims



some of the areas being aligned in linearly disposed columns normal to the linearly disposed rows with all of the areas in each normally aligned column being of the same indicium, this latter indicium corresponding to the indicia on each of the means. In this manner, the proper placement of the means on the board will result in the formation of a single syllable word or a part thereof.

3,721,021

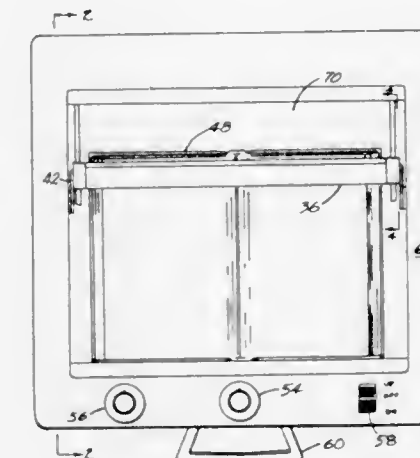
## READING PACER DEVICE

Merrick W. Stewart, 5 Oriole Drive, Essex County, Mass., and  
 Gerard J. Marks, 9403 Stateside Court, Montgomery County, Md.

Filed May 24, 1971, Ser. No. 146,113  
 Int. Cl. G09b 17/04

U.S. Cl. 35-35 B

10 Claims



The disclosure embraces a reading pacer device having a supporting surface for reading material and a pacer bar mounted for traversing the reading material; a variable speed electric motor is provided for moving the pacer bar and an electronic circuit is provided including limit switches for controlling the operation of the motor to vary the speed of the motor to correspond to a pre-selected number of words per unit of area of reading material traversed by the pacer bar.

An upper has a lower portion and a top portion. The lower portion has on each side an area which is recessed on the outside in a depth corresponding to the thickness of said top portion and an external recess which is laterally open toward said area. The top portion covers said area on each side and has on each side of the boot a circular hinge lug which extends into said external recess and defines a circumferential gap therewith. Two coaxial rivets are arranged to be substantially disposed on the axis of the ankle joint of a foot contained in said boot. Each of said rivets pivotally connects one of said lugs to said lower portion. Two cover plates are provided, each of which is secured to one of said rivets and flush with the surface of said boot and covers the adjacent one of said circumferential gaps.

3,721,024

## CEMENT COBBLER

Peter Innerbickler, 1141 Pine Avenue, Apartment No. 2, Long Beach, Calif.

Filed Aug. 2, 1971, Ser. No. 168,080  
 Int. Cl. A43b 1/10

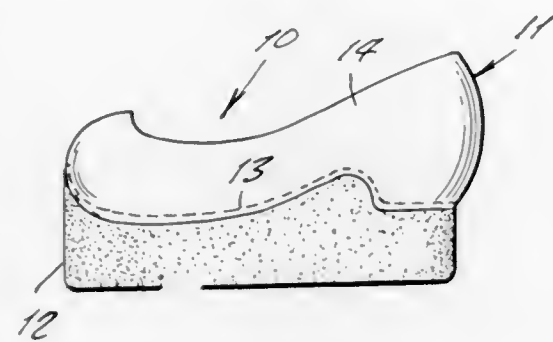
U.S. Cl. 36-4

2 Claims

Footwear for providing foot comfort to persons who are obliged to stand or walk for long periods on hard cement



walks or floors, the device consisting of shoes that are molded as a standard rain slippers of rubber or other materials and which includes an upper and a sole the bottom edge of the sole having a flange or lip for hiding an enjoinment with a relatively



thick sponge rubber sole placed beneath the shoe and secured there to by means of adhesive backed tape that is readily and easily removed for purpose of conveniently replacing a worn sponge rubber sole.

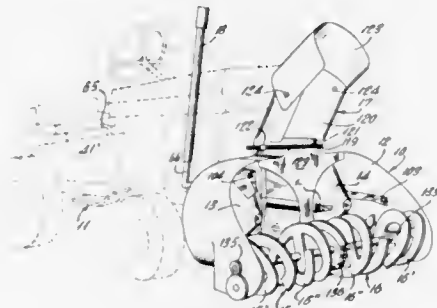
3,721,025

**POWER DRIVEN SNOW BLOWER**

Matthew F. Orr, Shawnee Mission, Kans., assignor to Poloron Products of Indiana, Inc., New Rochelle, N.Y.  
Filed Mar. 13, 1969, Ser. No. 806,878  
Int. Cl. E01h 5/00

U.S. Cl. 37-43 E

1 Claim



A snow blower for attachment to a tractor having counter rotating blowers and two sets of augers supported by a unitary housing. The snow blower is provided with rearwardly extending arms secured to a support assembly removably attached to the tractor. The support assembly includes means for transmitting power from the tractor engine to the snow blower as well as means for raising and lowering the blower relative to the tractor, locking the blower in the raised position and adjusting the height of the blower from the surface being cleared.

3,721,026

**APPARATUS FOR DRY CLEANING AND PRESSING**

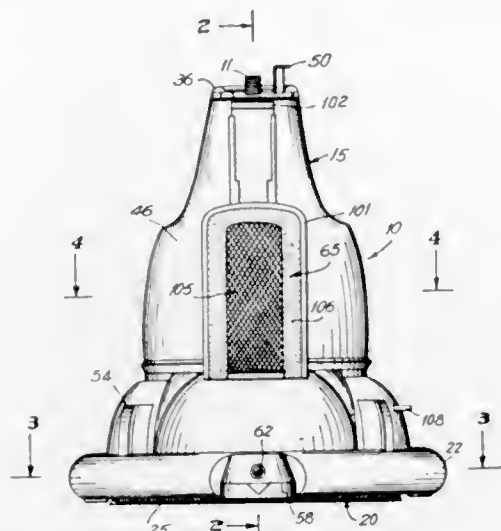
David J. McCallum, Nyack, N.Y., assignor to National Appliance Industries, Inc., New York, N.Y.  
Filed Aug. 2, 1971, Ser. No. 167,898  
Int. Cl. D06f 75/00

U.S. Cl. 38-75

29 Claims

The invention provides an effective and practical method and apparatus of applying a series of commercially obtainable aerosol compounds for fabric improvement, as well as an efficient means for withdrawing deposited foreign matter in combination with normal pressing means by use of a portable dry-cleaning unit adaptable for home use which includes means to

apply the dry-cleaning agent onto the surface to be cleaned, means for thereafter vacuum cleaning and agitating the fabric



to remove particles therefrom and temperature control means for ironing it to provide a finished article that is both dry-cleaned and pressed.

3,721,027

**NEW STYLE PICTURE FRAME PANEL**

Robert J. Slavsky, Lathrup Village, Mich., assignor to Shen & Slavsky, Inc., Detroit, Mich.  
Filed June 22, 1971, Ser. No. 155,436  
Int. Cl. G09f 3/18

U.S. Cl. 40-10 R

1 Claim



A pricing panel of sheet plastic with bevelled edges simulating a picture frame, and with retroverted extensions at its upper and lower edges for snapping the panel into upper and lower grooves of a C-shaped molding, particularly designed for supermarket use in mounting words and digits for goods identification and pricing.

3,721,028

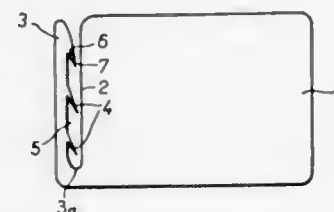
**SUSPENSION SHIELD**

Harry Lehner, Graenichen, Switzerland, assignor to Stoba AG, Plombenfabrik, Horn, Switzerland  
Filed May 3, 1971, Ser. No. 139,787  
Claims priority, application Switzerland, May 6, 1970, 6802/70

U.S. Cl. 40-22

Int. Cl. G09f 3/12

13 Claims



A suspension shield, such as a marking or a price shield or the like, embodying a substantially flat label support or carrier and attachment means for securing this shield to a package, such as a packaging net or the like of a packaged article. The

invention contemplates that the attachment means comprises at least one tongue member provided at at least one edge of the label support, this tongue member being equipped with at least one barb. The end of such at least one barb forms together with an edge of the label support or with a second tongue a narrow passageway.

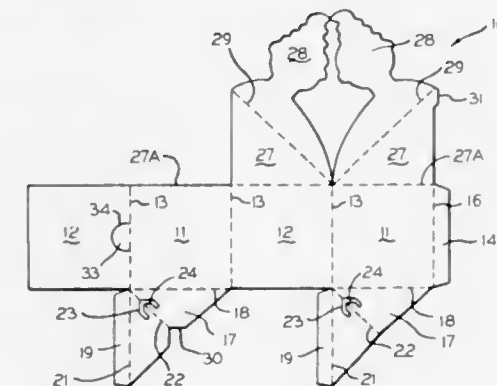
3,721,029

**DISPLAY DEVICE**

Timothy K. Austin, Santa Ana, Calif., assignor to Container Corporation of America, Chicago, Ill.  
Filed Dec. 20, 1971, Ser. No. 209,586  
Int. Cl. G09f 1/00

U.S. Cl. 40-124.1

4 Claims



A display device is erectable from a flattened to an erected position, and is formed from a blank of paper-board or the like comprised of major and minor pairs of foldably interconnected panels in the shape of a flattened tube. Structure is provided for erecting the flattened tube and consists of a pair of opposed erecting flaps connected to corresponding ends of a pair of major and minor panels. Each of the erecting flaps has a diagonal fold line therein enabling the erecting flaps to be folded upon themselves between adjacent major and minor panels when in the form of a flattened tube. Resilient means connected across the erecting flaps bias the major and minor panels to an erected position, and indicia supporting means foldably extending from an adjacent pair of major and minor panels are folded between the major and minor panels, and an indicia bearing extension foldably connected to at least one of the indicia supporting means is movable to an erected position upon the movement of the major and minor panels to the erected position upon operation of the resilient biasing means.

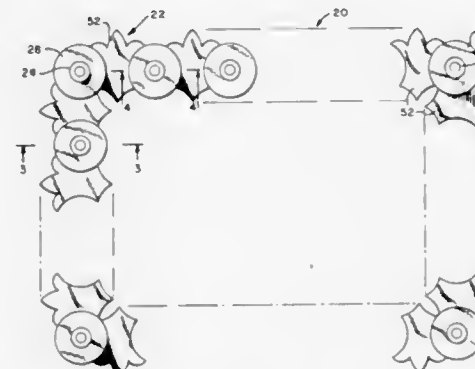
3,721,030

**SECTIONAL PICTURE FRAME**

Hartley Steinhardt, 1 Merritt Road, Farmingdale, N.Y. 11735  
Filed Nov. 26, 1971, Ser. No. 202,509  
Int. Cl. G09f 1/12

U.S. Cl. 40-155

9 Claims



The picture frame comprising the present invention is made up of a plurality of identical elements, each of

which includes an integral pin and an integral socket spaced laterally from the pin. In the assembled condition, the pin of one of the elements is received in the socket of the next adjacent element. A cap is secured to each pin to capture the next adjacent element. The picture and/or the glass covering the picture is positioned behind a lip that is integral with and extends inwardly from each element. A locking peg is disposed in an opening in selected ones of the element in order to bear against the rear surface of the picture. The frame, comprising the present invention, may be square, rectangular or polygonal and may be of any size since it is made up of discrete elements.

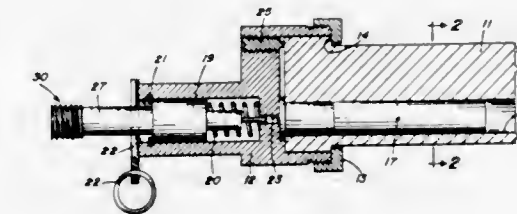
3,721,031

**UNDERWATER REPEATING SHOTGUN**

Charles W. Faltermann, China Lake; William J. Griffith, Inyokern, and Perry L. Fletcher, Ridgecrest, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy  
Filed Aug. 24, 1970, Ser. No. 66,510  
Int. Cl. F41c 27/00, 1/00

U.S. Cl. 42-1 L

7 Claims



An underwater shotgun having a barrel rotatable relative to a firing mechanism. The gun is fired by jabbing it against a target such as a shark. After firing, the firing mechanism is positioned behind a second shell, in the barrel, and the gun is again ready for firing. The gun may be fired, without reloading, up to the number of shells contained within the barrel.

3,721,032

**CASELESS CARTRIDGE FIRING MECHANISM**

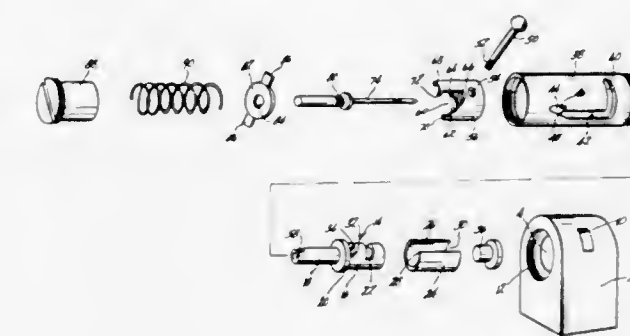
John Shum, Jr., Valley Station, Ky.; Dean R. Kilbourn, and Chao H. Lin, both of Marion, Ill., assignors to Olin Corporation, New Haven, Conn.

Filed May 6, 1971, Ser. No. 140,856

Int. Cl. F41j 1/00

U.S. Cl. 42-1 R

11 Claims

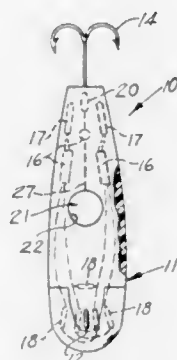


A caseless cartridge firing mechanism which uses a novel spring seal to seal the firing chamber. By virtue of a spring preload against the surface to be sealed, a pressure differential is built up between the sealing surfaces and creates the sealing force.



**3,721,033**  
**TRANSISTORIZED FLASHING FISH LURE**  
 Milton Ray Haynes, 106 Baseline Road,  
 Northville, Mich. 48161  
 Filed Mar. 31, 1970, Ser. No. 24,088  
 Int. Cl. A01k 85/00

U.S. Cl. 43—17.6

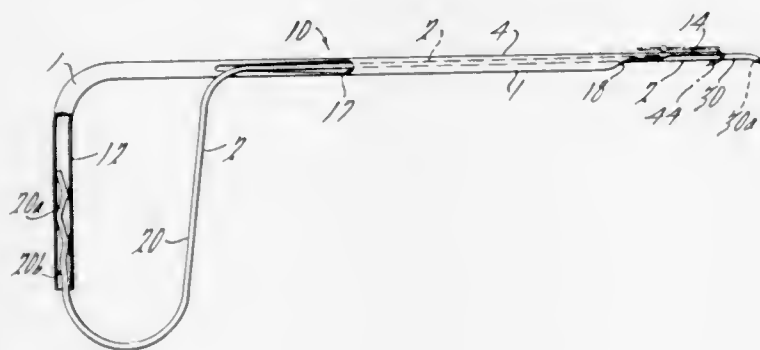


A fish lure having a molded plastic body in which a transistorized circuit is molded into the body of the lure. This transistorized circuit provides the means of flashing a miniature light bulb in order to be enticing to the fish. The body of the device includes a removable rubber plug which contains the batteries for operating the circuit of the device, the plug also has molded into it a wire which extends to a contact, the contact providing a method of engaging a wire on the opening the plug is received in. The other wire extends out of the opening of the plug for connection with the internal circuit of the lure.

**3,721,034**  
**FISH HOOK REMOVER**  
 Paul R. Collins, 6065 Wing Lake Rd., Birmingham, Mich.  
 Filed Sept. 13, 1971, Ser. No. 179,656  
 Int. Cl. A01k 97/00

U.S. Cl. 43—53.5

5 Claims

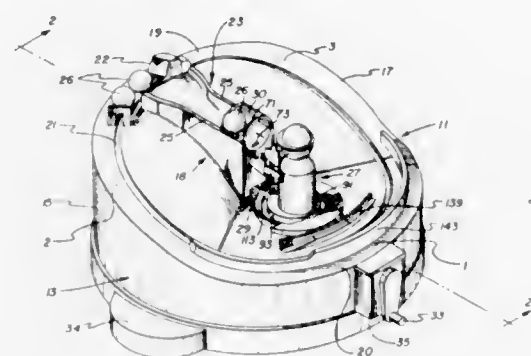


A fish hook remover device comprising a two-piece assembly including an L-shaped tubular member and an elongated, resilient wire member. The wire member is bent intermediate its ends to form a large U-shaped portion with one end thereof engaged with an end of the tubular member which forms a handle and with its other end having a smaller U-shaped portion thereon slidable within the other end of the tubular member. The large U-shaped portion acts as a spring for biasing the smaller U-shaped portion out of the end of the tubular member. To remove a hook from the mouth of a fish, the hook is positioned within the smaller U-shaped portion, the handle is squeezed, and the smaller U-shaped portion is brought into contact with the hook to provide camming and cutting actions to free the hook from the fish's mouth.

**3,721,035**  
**VEHICLE LOADING TOY**  
 Adolph E. Goldfarb, 4614 Monarca Drive,  
 Tarzana, Calif. 91356  
 Filed Feb. 24, 1971, Ser. No. 118,391  
 Int. Cl. A63h 33/30

1 Claim U.S. Cl. 46—40

16 Claims

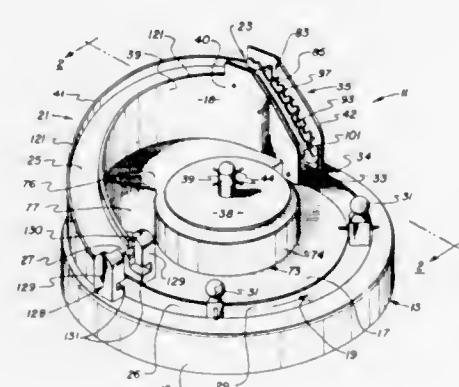


A toy comprising a track and a vehicle disposed on the track and driven along it by a drive means. At least one discrete object is carried by the vehicle and caused to be released therefrom at an unloading point on the track. A movable figure is positioned to receive the object after it has been unloaded from the vehicle, the figure further being capable of moving with the object and loading it onto the same or another vehicle at a loading point on the track. The foregoing is performed in a continuous cycling operation of unloading and loading.

**3,721,036**  
**SLIDE TOY**  
 Adolph E. Goldfarb, 4614 Monarca Drive,  
 Tarzana, Calif. 91356  
 Filed Feb. 25, 1971, Ser. No. 118,777  
 Int. Cl. A63h 33/00

U.S. Cl. 46—43

5 Claims

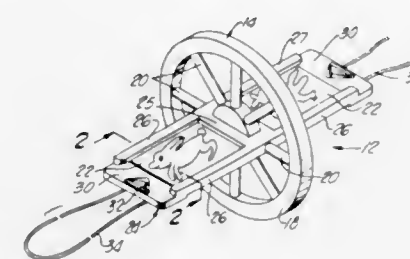


A toy comprising a slide having upper and lower ends, a track for carrying at least one figure from the lower end of the slide to a location at the base of the slide adjacent its upper end, and a climbing mechanism for moving the figure from that location at the base to the upper end of the slide in a manner simulating the motion of a person climbing a stairway or a ladder. The toy may be operated continuously to automatically move one or more figures along the track from the lower end of the slide to the location at its base and then up to its upper end, from where the figure can slide down the slide to the track. The cycle will automatically repeat so long as the toy is operated.

**3,721,037**  
**FLICKER TOY**  
 William R. Allen, 1818 North New Hampshire, Apt. 112, Hollywood, Calif.  
 Filed Aug. 26, 1971, Ser. No. 175,045  
 Int. Cl. A63h 1/32

U.S. Cl. 46—62

9 Claims

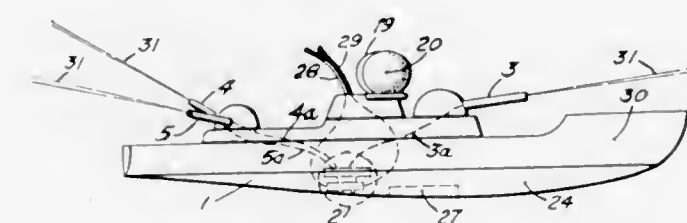


An animated rotating toy having a centrally located, axially symmetrical rotatable body, wing-like supporting frames extending axially from each side of the body, illustrated cards removably mounted in the frames, and an elongated loop of flexible cord affixed to the outboard end of each frame in a manner so that the opposing elongated side portions of the loops can be twisted together and then untwisted by pulling the loops taut, thereby imparting rotational momentum to the rotatable body. The illustrated cards have animated drawings on their opposing faces with the drawing on one face having slightly progressive changes from the drawing on the opposite face so as to create the illusion of movement of the characters depicted in the drawings as the toy is rotated.

**3,721,038**  
**TOY BATTLESHIP**  
 George S. Viczena, Dickson 2602, Canberra, Australia  
 Filed Aug. 25, 1971, Ser. No. 176,360  
 Int. Cl. A63h 23/02

U.S. Cl. 46—93

3 Claims



A toy boat for a child, the boat having toy guns that spray water, each of the toy guns being connected by a pipe to a diverted chamber within which there is a slideable diverter piston movable against compression coil springs adjacent each opposite ends thereof, the diverter chambers communicating through one way valves to storch chambers into which water is admitted through a one way valve in the hull, and each of the storage chambers being connected by a flexible hose to a hand held rubber bulb pump so to move the water for spraying out of the guns.

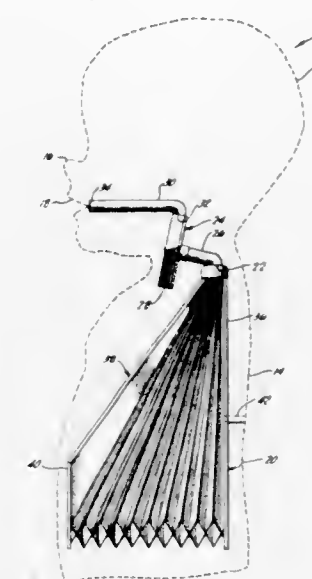
**3,721,039**  
**TOY FIGURE WITH MECHANISM FOR BLOWING AIR**  
 Donald L. Cook, and Douglas R. Hansen, both of 1111 2nd St., Santa Monica, Calif.  
 Continuation of Ser. No. 744,849, July 15, 1968, abandoned.  
 This application April 29, 1970, Ser. No. 31,824  
 Int. Cl. A63h 13/00

U.S. Cl. 46—116

2 Claims

A toy doll capable of producing a stream of air from the doll's mouth. In mechanical embodiments the doll is squeezed,

has its arm cranked, or a wind coil spring is used to operate a bellows, turn a fan and the like. In electrical embodiments a

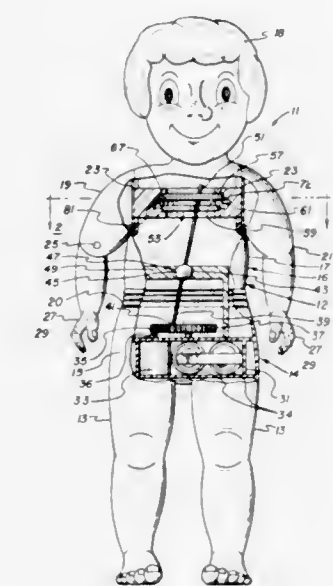


small power source and an electric motor are located in the doll and these are used to operate a fan, bellows, and the like to produce the airstream.

**3,721,040**  
**MECHANICAL DOLL**  
 Adolph E. Goldfarb, 4614 Monarca Drive,  
 Tarzana, Calif. 91356  
 Filed Feb. 24, 1971, Ser. No. 118,388  
 Int. Cl. A63h 11/00

U.S. Cl. 46—119

9 Claims



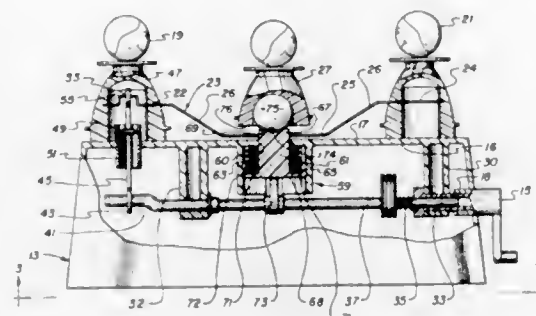
A mechanical doll in the shape of a human figure or robot having a lower body portion which may include a pair of legs supporting a movable upper body portion which has arms and a head disposed at the top thereof. Means is provided within the doll for selectively causing movement of the upper body portion of the doll relative to the stationary lower body portion, the doll being capable of a combination of movements in timed relation to achieve an orbital movement of a hand or hands of the doll. The doll may also be capable of providing a selected one of the motions, such as a side-to-side movement of the upper body relative to the lower body.



**3,721,041**  
**JUMP ROPE TOY**  
 Adolph E. Goldfarb, 4614 Monarca Drive,  
 Tarzana, Calif. 91356  
 Filed Feb. 24, 1971, Ser. No. 118,387  
 Int. Cl. A63h 11/00

U.S. Cl. 46—119

10 Claims

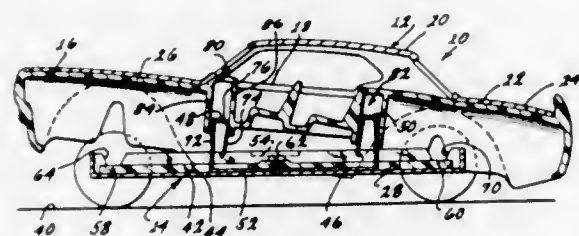


An animated toy comprising two spaced-apart figures, and a wire in the shape of a jump rope disposed between and connected to the two figures. A third figure is disposed intermediate of the two figures. Means is provided for causing the wire to rotate between the two spaced-apart figures while the third intermediate figure moves up and down, allowing the jump rope to clear the base of the third figure as it revolves thereunder so as to give the appearance that the figure is jumping over the rope. Additionally, slide means may be provided whereby the intermediate figure slides from the top of the slide means to its jumping position and then begins to jump rope.

**3,721,042**  
**TOY VEHICLE WITH ADJUSTABLE BODY**  
 Gabriel Marason, Jr., Los Angeles, Calif., assignor to Mattel, Inc., Hawthorne, Calif.  
 Filed March 1, 1971, Ser. No. 119,974  
 Int. Cl. A63h 17/26

U.S. Cl. 46—223

5 Claims



A toy vehicle having a chassis including two upstanding spring members which are received by two sleeves of the vehicle's body so as to cause a frictional engagement when the body and chassis are brought together. The frictional engagement allows an operator to place the body in any one of various positions relative the chassis thereby simulating real hot rod type auto-mobiles in a very simply constructed yet ruggedly built toy.

**3,721,043**  
**PROCESS FOR THE IMPROVEMENT OF THE CONSTITUTION OF SOILS**  
 Guy Camille Van Doorne, Zellik, Belgium, assignor to Labofina S.A.  
 Filed Oct. 27, 1971, Ser. No. 192,989  
 Int. Cl. A01b 79/00

U.S. Cl. 47—58

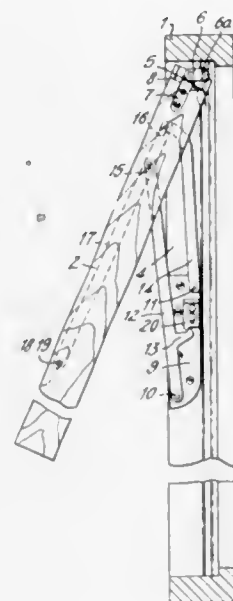
8 Claims

A process for the improvement of the constitution of soils, which comprises incorporating into said soils an aqueous emulsion of bitumen containing a non-ionic surface-active compound and an anionic surface-active compound.

**3,721,044**  
**HINGE MEANS FOR REVERSIBLE WINDOWS**  
 Harald Kvasnes, Vegsund, Norway, assignor of a fractional part interest to A/S Spilka, Spjelkavik, Norway  
 Filed June 3, 1971, Ser. No. 149,696  
 Claims priority, application Norway, June 4, 1970, 2,180/70  
 Int. Cl. E05d 15/28

U.S. Cl. 49—248

3 Claims

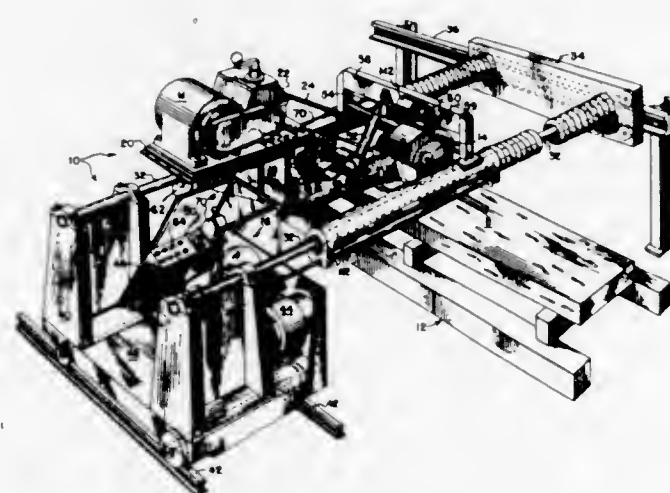


A hinge means for windows permitting positioning of the sash in various positions and also reversal of the sash.

**3,721,045**  
**PRESSURE CONTROL SYSTEM FOR A GRINDING MACHINE AND ACTUATING UNIT THEREFOR**  
 Robert J. Wojcik, Melrose Park, Ill., assignor to Pettibone Corporation, Chicago, Ill.  
 Division of Ser. No. 869,071, Oct. 24, 1969, Pat. No. 3,614,351. This application March 26, 1971, Ser. No. 128,254  
 Int. Cl. B24b 7/02

U.S. Cl. 51—35

5 Claims



A pressure control system for regularly bleeding the applied fluid pressure on a grinding wheel to vary the contact pressure of the wheel on the work. A novel control unit having a manipulating handle functions initially to establish an electric circuit through the solenoid winding of a directional valve so as to apply contact pressure to the grinding wheel, the handle functioning thereafter to regulate the flow of fluid through a bleed valve which reduces the contact pressure by an amount proportional to the forward throw of the handle.

**3,721,046**  
**HORIZONTAL DISC GRINDER WITH EQUAL FEED CONTROL FROM WORKPIECE CONTACT**

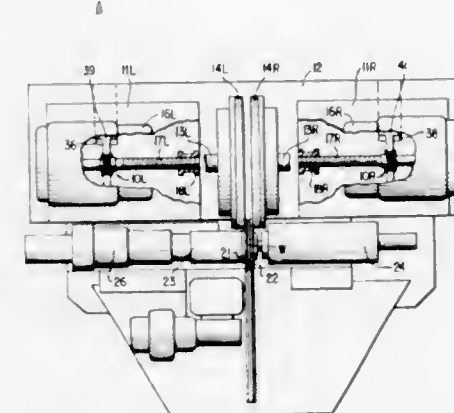
Elman R. Dunn, Roscoe, Ill., assignor to Litton Industries, Inc., Beverly Hills, Calif.

Filed July 2, 1970, Ser. No. 51,860

U.S. Cl. 51—118

Int. Cl. B24b 7/04

6 Claims



An automatic feed apparatus for a horizontal disc grinder is used to effect equal and/or unequal movement of opposed grinding discs (14L, 14R) as required by grinding stock location, to remove an equal amount of stock from the parallel surfaces (21, 22) of disc-type workpieces (W). A face cut feed system is hydraulically operated to effect first a rapid movement in unison of two grinding heads (11L, 11R) until one or the other disc contacts the workpiece (W), then the movement of each grinding head (11L, 11R) is controlled in response to sequential contact of the discs (14L, 14R) with the corresponding sides (21, 22) of the workpiece (W). Individual motor load sensors (1MLS, 2MLS) actuate motor load relays (1CRE, 2CRE) which are used to control first a sequential momentary stoppage in feed movement of first one and then the other grinding head followed by resumption of further infeed in unison at a slow grinding feed rate, following a momentary controlled time delay. Following the timed delay, an equal amount of stock is removed from each parallel surface (21, 22) of the workpiece (W) as determined by a metered volume of fluid which is discharged from a single displacement cylinder (64), which permits an equal infeed movement to occur in each grinding head (11L, 11R).

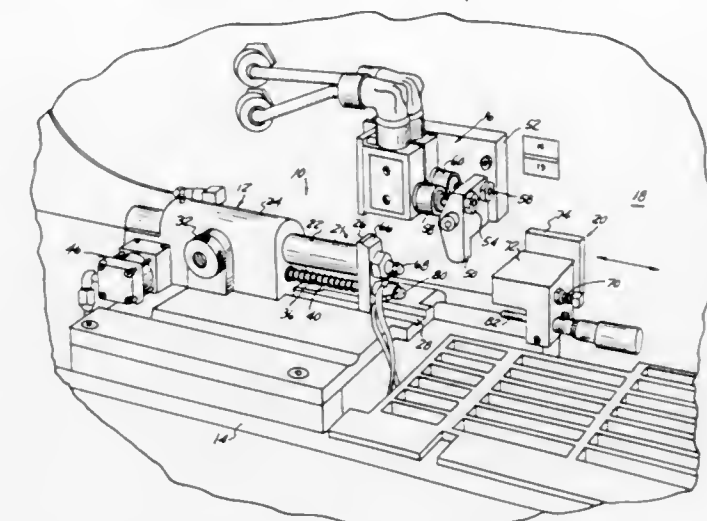
**3,721,047**  
**CRUSH DRESSING CONTROL MECHANISM**  
 Merle E. Ryan, and William D. Stremel, both of Dayton, Ohio, assignors to The Bendix Corporation, Southfield, Mich.  
 Filed July 6, 1971, Ser. No. 159,941  
 Int. Cl. B24b 49/18

U.S. Cl. 51—165.78

4 Claims

A mechanism for controlling the infeed point at which the crush dressing sequence occurs for grinding machines including a position referencing rod slidably fitted in a base with a friction snubbing means preventing free motion therein and positioned by a driving engagement with the wheelhead during infeed motion, and an arrangement producing reduction of the wheelhead infeed to the crush feed rate after a predetermined extent of relative motion therebetween, combined with a spring biased pin slidable in the base and fixed during crush cycling, and controlling the depth of crush by an agreement which discontinues the low speed traverse after a predetermined extent of relative motion between the wheelhead and the pin, thereafter the pin being relocated on a plate carried

by the position referencing rod. By this arrangement, the wheelhead returns to the point of the previous crush cycle at a

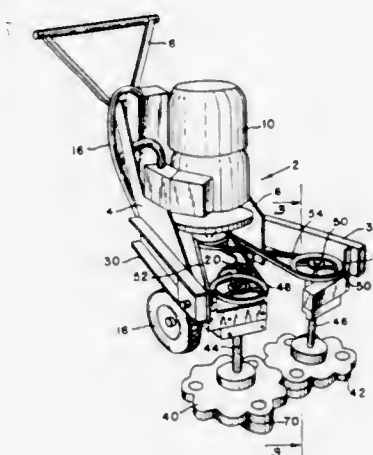


rapid traverse infeed while the crush depth of each cycle remains the same.

**3,721,048**  
**MACHINE FOR POLISHING MASONRY FLOORS**  
 Sidney Rand, Rio Piedras, P.R., assignor to The Government of the Commonwealth of Puerto Rico, as representative of all the People of Puerto Rico  
 Filed Oct. 26, 1971, Ser. No. 192,197  
 Int. Cl. B24b 23/00

U.S. Cl. 51—174

5 Claims



A wheeled carriage carries an electric motor the shaft of which is connected by belts to drive two vertical driven shafts in opposite directions. Meshing gear-shaped polishing wheels on the lower ends of these shafts have abrasive stones on their lower surfaces. The shafts extend through pillow blocks which are mounted on arms extending from the carriage, the support for each pillow block being in the plane of the associated driving belt to prevent turning moments from being exerted on the driven shafts by the belts. The wheels may be adjusted toward and away from the polishing wheels to vary the pressure of the abrasive stones on the floor.

**3,721,049**  
**BASE FOR WHETSTONE**  
 Mitsue Nakahara, 1715 Hart Street, Apt. 4, Honolulu, Hawaii  
 Filed July 2, 1971, Ser. No. 159,286  
 Int. Cl. B24d 5/00, 7/00

U.S. Cl. 51—211 R

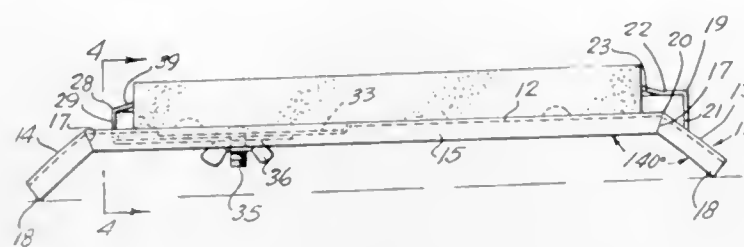
9 Claims

A supporting base for a sharpening stone consisting of an elongated downwardly facing channel having downwardly inclined end portions presenting sharp corners at their bottom ends adapted to penetrate the surface of a work bench. The



channel has a pair of spaced upstanding stops along one longitudinal margin, an upstanding fixed transverse stop at one

may be exposed to view by removing a cover plate of the sub-assembly. Vertically adjustable conduit means positioned



end and a slidably adjustable upstanding transverse stop at its other end, so that sharpening stones of different lengths may be accommodated, between the upstanding stops.

3,721,050

**MODULAR GRID PANEL RETENTION SYSTEM**

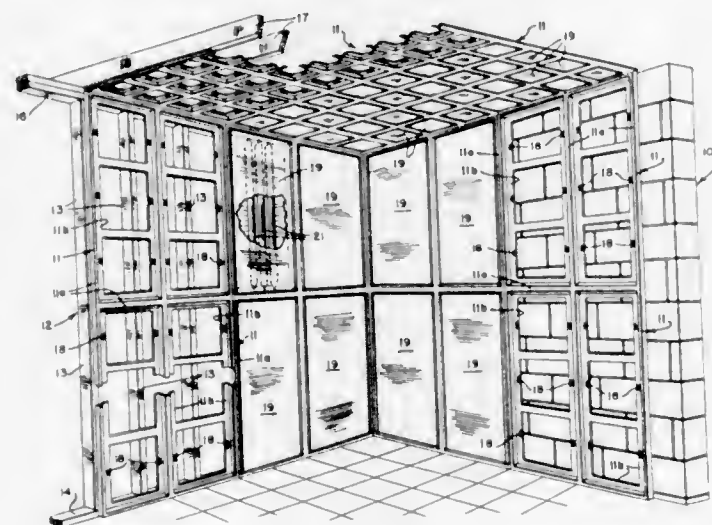
Joseph Perina, Huntington, N.Y., assignor to American Veler, Inc., Manchester, N.H.

Continuation-in-part of Ser. No. 853,657, Aug. 28, 1969, abandoned. This application Sept. 15, 1971, Ser. No. 180,669

Int. Cl. E04b 5/57

U.S. Cl. 52—28

7 Claims



An integral modular grid arrangement is disclosed for supporting a series of modular panels, such as wall or ceiling panels or tiles. The grid may be attached to wall or ceiling structure. Both the grid and panels are equipped with quick connect and disconnect hook and loop type fastener strips which permit the panels to be quickly installed and removed to provide access to lighting which may be installed behind the panels or grid.

3,721,051

**BOTTOMLESS SUB-ASSEMBLY FOR PRODUCING AN UNDERFLOOR ELECTRICAL CABLE TRENCH**

Frank W. Fork, Allison Park, Pa., assignor to H. H. Robertson Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 71,494, Sept. 11, 1970, abandoned. This application July 1, 1971, Ser. No. 158,769

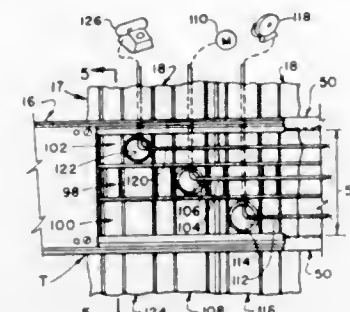
Int. Cl. E04f 17/08, 19/08

U.S. Cl. 52—173

16 Claims

A bottomless sub-assembly installed over metal cellular flooring and enclosing an upper surface portion of the flooring. The upper surface portion cooperates with the sub-assembly to create a structure which may be described as an underfloor electrical cable trench. The upper surface portion

beneath the cover plate, provides a separate enclosed passageway. A unique arrangement for distributing multi-conductor telephone cables is described.



3,721,052

**MULTI-STOREY BUILDING COMPRISING UNIT COMPARTMENTS**

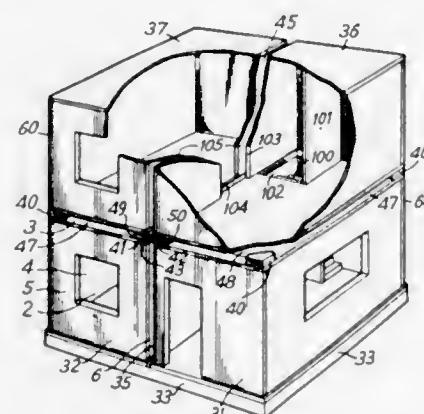
Charles Boel, Labuissiere; Francois Pot, Lens, and Claude Sachot, Bully-Montigny, all of France, assignors to Houilleres Du Bassin Du Nord & Du Pas-DE-Calais, Douai (Nord), France

Filed May 4, 1970, Ser. No. 34,069

Int. Cl. E04h 1/04

U.S. Cl. 52—79

9 Claims



Multi-storey buildings comprising unit compartments which can be completely constructed in the factory and easily transported, comprising ceiling and floor slabs and side walls made of reinforced concrete, characterized in that:

the compartments have side walls which are shells of reinforced concrete between 3 and 8 cm thick and preferably between 4 and 6 cm thick;

the side walls are bolted to each other and to the ceiling and floor slabs;

and the compartments of the bottom storey comprise suitably disposed breastsummers of suitable dimensions which bear at least one storey of compartments of the same kind.

3,721,053

**ADJUSTABLE JOINT BETWEEN PANEL FRAMES**

Albert I. Geyser, Pittsburgh, Pa., assignor to

E. K. Geyser Company, Pittsburgh, Pa.

Filed Mar. 1, 1971, Ser. No. 122,593

Int. Cl. E04b 7/18

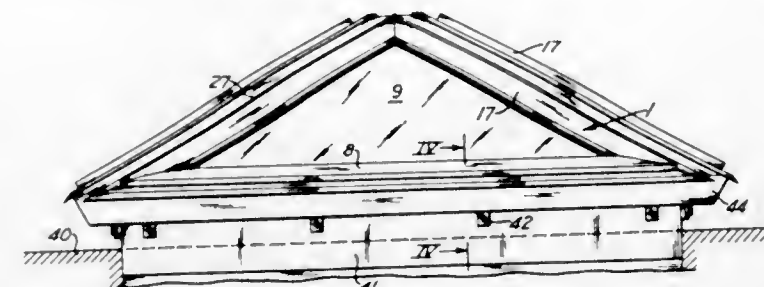
U.S. Cl. 52—82

6 Claims

Each of a pair of frames has a side member with an outwardly opening channel provided with parallel side flanges having transversely arcuate inner surfaces extending lengthwise thereof. These side members are disposed in spaced parallel relation. A joint member extends lengthwise of each channel and is rotatably mounted therein, while a rigid connecting strip extends along each joint member and is joined to it. The strips project laterally between the joint members in overlapping relation to close

the space between the frames. The connecting strips are held against lateral movement across each other. By rotating

said jambs each includes an anchor adjustably carried from the exterior of the jamb for tightening the anchor against the frame studs of a drywall until the door frame is positioned securely between said studs.



ing at least one of the frames on the joint member therein, the angle between the two frames can be changed.

3,721,054

**LIGHT WEIGHT TELESCOPING BOOM**

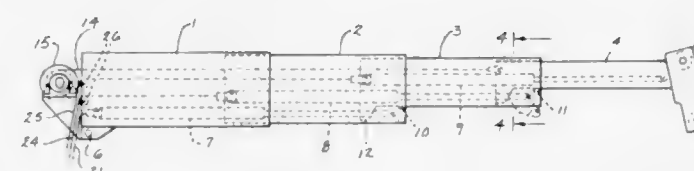
John T. Hornagold, Waukesha, Wis., assignor to Bucyrus-Erie Company, South Milwaukee, Wis.

Filed Sept. 7, 1971, Ser. No. 178,027

Int. Cl. E04h 12/34; B66f 3/24

U.S. Cl. 52—115

7 Claims



A multi-section telescopic boom has a separate, single acting hydraulic cylinder for extending each movable section and a single cable for retracting all of the sections. The outermost sections have support feet at their inner ends which straddle the cylinders for the next inner sections, thus eliminating guard partitions. A bidirectional flow divider system is used to synchronize extension and retraction of the several sections, and pressure relief valve in the system allow for resynchronization.

3,721,055

**DRYWALL DOOR FRAME**

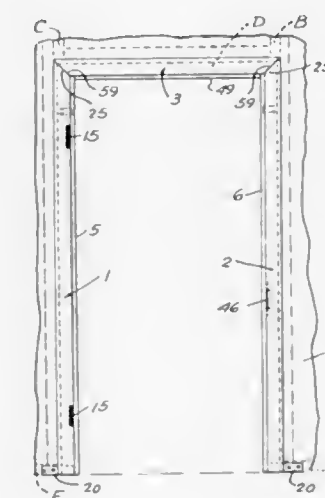
Lewis A. Jerchow, Paramus, N.J., assignor to Pioneer Industries, Division of SOS Consolidated Inc., Carlstadt, N.J.

Filed March 14, 1969, Ser. No. 807,238

Int. Cl. E06b 1/04

U.S. Cl. 52—217

1 Claim



The present metal frame has a hinge jamb, strike jamb, and a head which lock together in place over finished drywalls and

3,721,056

**VERTICAL MODULAR CONSTRUCTION HAVING INSERTABLE UNITS**

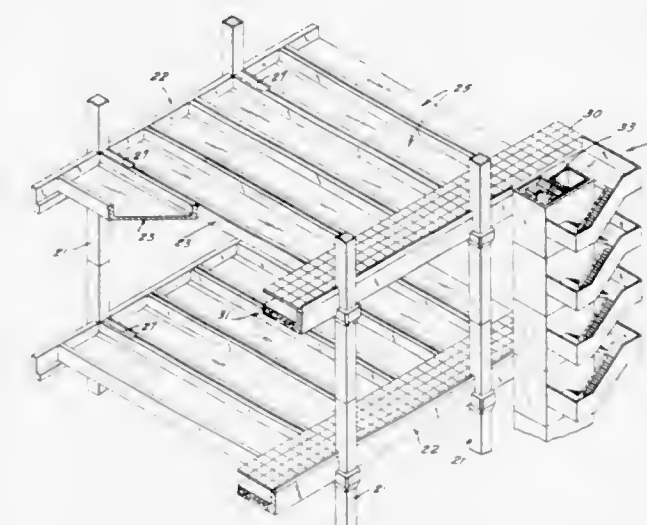
Danforth W. Toan, Tappan, N.Y., assignor to Warner, Burns, Toan, and Lunde, New York, Node 4 Associates, Inc., Brooklyn, N.Y., Alvin E. Gershen Associates, Inc., Trenton, N.J., and Robert Hughes Associates, Ltd., Montreal, Quebec, Canada, fractional part interest to each

Filed Sept. 3, 1970, Ser. No. 69,303

Int. Cl. E04h 1/04

U.S. Cl. 52—236

9 Claims



A modular frame system capable of being constructed in both a vertical and horizontal direction to a predetermined size and configuration. A plurality of spaced land structures in vertically tiered relationship are provided and each land structure has means thereon to permit the land structure to function the same as the ground surface structure of a building. A plurality of substantially vertical columns extend upwardly from the ground and the columns have beams thereon to support the vertically spaced land structures. The land structure and column support assemblies are adapted to receive at least one insertable core unit between each pair of spaced land structures in a manner that will permit each vertically inserted core unit to be connected to a land structure in the same manner as it would normally be connected to the ground surface.

3,721,057

**PARTITION WALL**

Bert Lieber, Stuttgart-Birkach, Germany, assignor to Ernst Lust K.G., Lampertsheim, Germany

Continuation of abandoned application Ser. No. 788,771, Jan. 3, 1969. This application Jan. 19, 1971, Ser. No. 107,867

Claims priority, application Germany, Jan. 20, 1968, P 16 58 915.4

Int. Cl. E04b 2/76

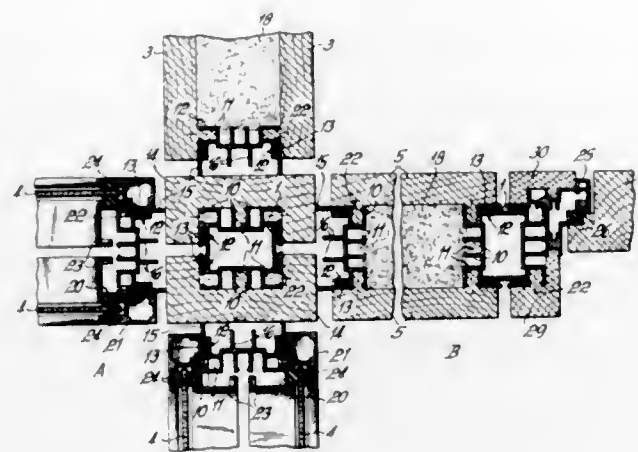
U.S. Cl. 52—241

17 Claims

A partition wall is provided which has box shape columns slidably mounted on securing members fixed



to the ceiling and wall, the columns being secured in place by detachable engagement, at opposite sides thereof, are at right angles with respect to those of said first and second pairs. A seventh can is reduced to flattened condition and positioned between said first mentioned and third mentioned pair of cans, and an eighth can is similarly flattened to be posi-



with cover panels which may be solid, transparent, fixed or constituted as a door.

3,721,058

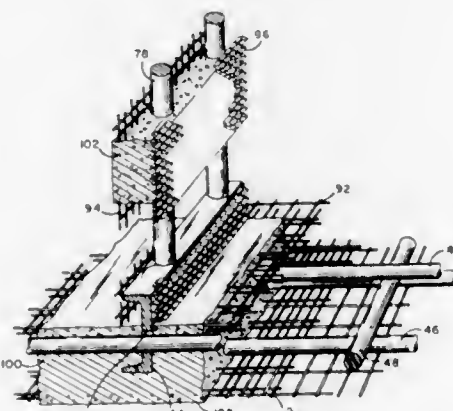
**REINFORCED WALL STRUCTURE**

David B. Dewey, Jr., Rancho Santa Fe, and Norman W. Schofield, San Diego, both of Calif., assignors to General Dynamics Corporation, San Diego, Calif.  
Division of Ser. No. 827,636, May 26, 1969, Pat. No. 3,622,656. This application June 3, 1971, Ser. No. 149,576

Int. Cl. E04b 1/16

U.S. Cl. 52—251

5 Claims



A large buoy construction of relatively thin wall composite material, which walls are integrally formed and interconnected by a reinforcing matrix frame comprising reinforcing members sandwiched between layers of screens, to which the cement type material can be applied by use of power equipment in a rapid application and thorough penetration into the matrix to accomplish on-site formless molding of integral, unitary structures having complex shapes and junctions.

3,721,059

**BUILDING BLOCK OF EMPTY CANS**

Michael E. Reynolds, P.O. Box 1041, Taos, N. Mex.  
Filed Nov. 1, 1971, Ser. No. 194,114

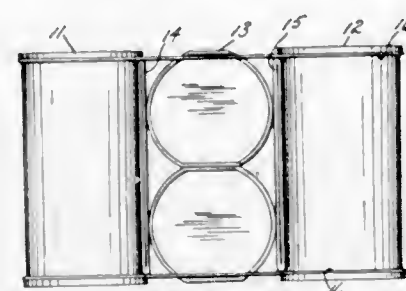
Int. Cl. E04c 1/06

U.S. Cl. 52—750

4 Claims

A building element or block consisting of empty substantially uniformly sized cans which are assembled in a wall-like structure using mortar joints and without the necessity of embedding the cans in concrete or other cementitious material. Each element consists of first and second pairs of cans standing in a first direction, a third pair of cans disposed intermediate said first and second pairs, the principal axes of which

tioned between said second pair and said third pair to serve as weather stops. The assembled element is maintained in such condition by wire cinchures held in position by the rims of said first and second pairs of cans.



3,721,060

**REFUSE COMPACTING DEVICE**

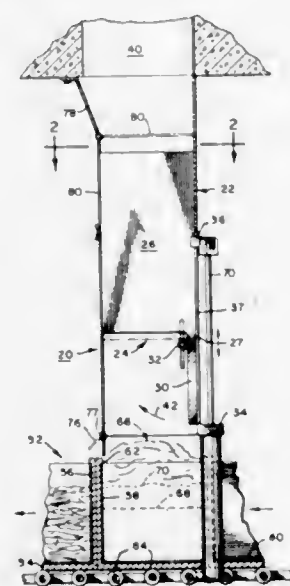
Mario J. Quinto, 70 Dannel Drive, Stamford, Conn.

Filed June 3, 1970, Ser. No. 43,154

Int. Cl. B65b 1/24

U.S. Cl. 53—124 B

29 Claims



A refuse compactor easily positioned under existing refuse chutes and allowing the refuse collecting, compacting and packaging steps to be performed along a single vertical axis. The compactor incorporates at least one horizontally disposed movable door functioning as a compacting ram, with an open position for refuse collecting and a closed position for compacting. In one embodiment, the movable door is supported by two vertically disposed reciprocating plates slidable along the inside walls of a surrounding extension chute. The plates are driven by hydraulic pistons. When refuse is dropped into the chute, it passes through the extension chute, the open movable door and into collection means placed at the base of the extension chute. When compaction is desired, the movable door is closed and the hydraulic pistons draw the vertical plate and door assembly down to compact the refuse collected. Thus the collecting, compacting and packaging steps all occur along a single vertical axis. In other embodiments, the collection and compaction occur within the extension chute by incorporating movable doors or a movable platform at the base of the extension chute to substantially close the chute and collect the refuse. When compaction is desired, similar horizontally disposed vertically reciprocating movable doors are used to effectuate the compaction. When the desired amount of refuse has been compacted, the movable

doors at the base of the extension chute open and allow the compacted refuse to drop into collection means at the base of the extension chute or the platform is drawn downward supporting the compacted refuse. In a further embodiment, movable doors at the base of the extension chute serve as the press head while the collection means placed at the base of the extension chute are vertically reciprocated to effectuate the desired compaction. The compactor also incorporates reciprocating flexible fins or permanently mounted sawtooth blades in the extension chute or mounted in the existing refuse chute to destroy any refuse bridge and substantially reduce any refuse buildup or jamming.

3,721,061

**AUTOMATIC BAG NECK GATHERER AND TYING MECHANISM**

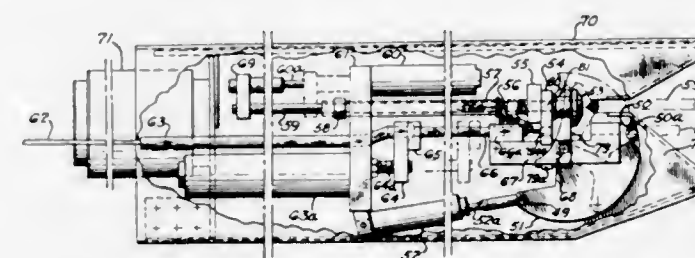
William A. Bodolay, 15 Fernglen Road, East Longmeadow, Mass.

Filed June 14, 1971, Ser. No. 152,777

Int. Cl. B65b 7/12

U.S. Cl. 53—135

24 Claims



This invention is concerned with the subject matter of placing a tie upon the neck of a bag that has previously been filled. The bags for which this particular device is designed are the type that utilize food stuffs, particularly popcorn, potato chips, apples, oranges, onions and the like. There is a source of tie wire which is free mounted. The wire is fed through certain tubes that are strategically located in designated areas. The wire that is pulled through the tubes is bent. One of the tubes is moveable and because the wire is bent, the wire can be pulled from its source through the fixed tube. There is a spinning type of knife which cuts off a segment of the wire. The cut off wire is then wrapped around the neck of the bag. The neck of the bag is squeezed together by the mechanism. There is a control circuit electrically operated for synchronizing the various function of the device. In the preferred embodiment, pneumatic cylinders are employed for actuating the mechanism. The device has been particularly designed to operate with a filled bag on the Bodolay bag making and feeding machine known as U.S. Pat. No. 2,877,609. There is a tying mechanism that takes the cut wire and wraps around the neck of the bag and the spinner mechanism twists it twice after the neck of the bag has been squeezed snugly together.

3,721,062

**BAG PACKAGING SYSTEM**

John T. Roberts, Simpsonville, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Division of Ser. No. 9,869, Feb. 9, 1970. This application Sept. 20, 1971, Ser. No. 182,162

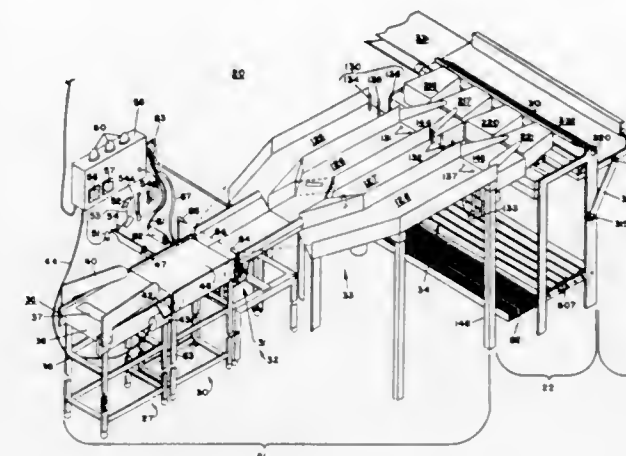
Int. Cl. B65b 43/36

U.S. Cl. 53—385

2 Claims

Apparatus and method for classifying products to be packaged, distributing the classified products to index positions corresponding to their classifications and holding the classified products for packaging, indexing bags into produce loading positions corresponding to the index positions by con-

veying imbricated taped bags into loading positions keyed to the classifications, inflating the taped bags, inserting the indexed items into the bags and removing the loaded bags from



the loading position, conveying the loaded bags to an evacuating and closing position, evacuating and closing the bags and subsequently shrinking the bags.

3,721,063

**ASSEMBLY FOR PACKAGING AND DISPENSING FOOD PRODUCTS, SUCH AS FRENCH FRIED POTATOES**

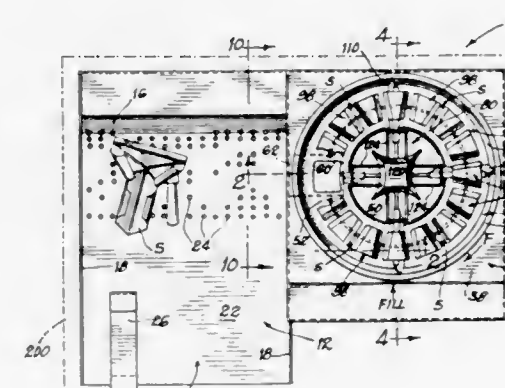
Ralph E. Welmer, Lombard, Ill., assignor to Restaurant Technology, Inc.

Filed Oct. 12, 1971, Ser. No. 188,349

Int. Cl. B65b 67/00

U.S. Cl. 53—390

16 Claims



A packaging and dispensing assembly for segmental food products, such as french fried potatoes. A packaging section and a dispensing section are juxtaposed and are interconnected via a chute leading from the dispensing section to the packaging section whereby french fried potato segments spilled into the dispensing section may be promptly returned to the packaging section. The packaging section includes a trough defining a base opening in communication with the chute and a carousel means which is rotatable with respect to the trough. The carousel means provides a series of generally pocket-like package holding sections which nestingly receive and hold packages of the product. The carousel means rotates to encourage removal of a first-in package and to indicate visually with is the first-in package. The carousel may rotate unidirectionally. The carousel may also mount sweeper elements depending into the trough for carrying spilled french fried potato segments to the trough base opening for return to the packaging section through the chute.



3,721,064

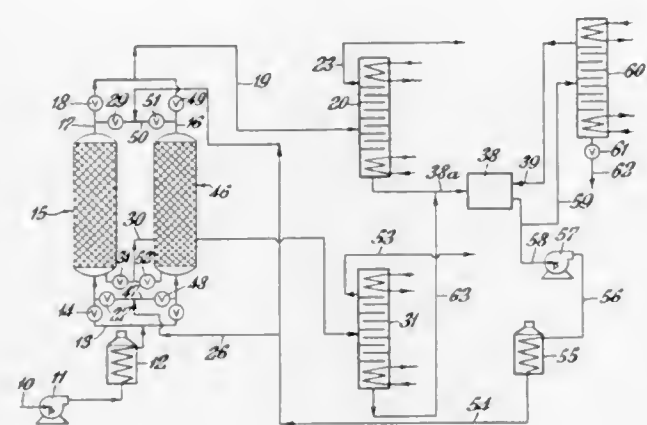
**ISOTHERMAL PROCESS FOR OLEFIN SEPARATION**  
 Martin F. Symoniak, Mahopac, and Max N. Y. Lee, Yorktown Heights, both of N.Y., assignors to Union Carbide Corporation, New York, N. Y.

Filed Feb. 25, 1971, Ser. No. 118,608

Int. Cl. B01d 53/04; C07c 9/02

U.S. Cl. 55—62

3 Claims



Straight-chain and branched-chain monoolefins are separated by size selective molecular sieving in a vapor phase, isobaric, isothermal fixed bed process employing adsorption co-purge and countercurrent purge steps in cyclic sequence. The process utilizes a paraffinic hydrocarbon of higher carbon number than the olefin for the purge which permits distillation recovery of the separated olefins from the purge paraffin which is recycled. The straight chain paraffin content of the feed whereby the molecular sieve is at least partially loaded with straight chain paraffin during all steps of the process.

3,721,065

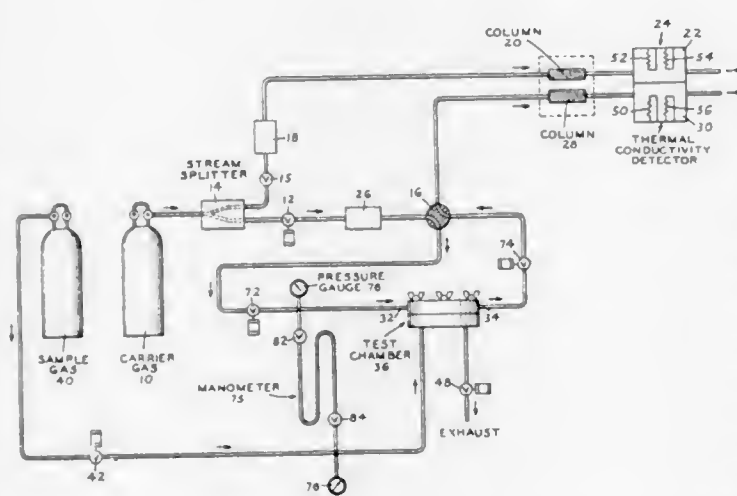
**BARRIER ATTACHMENT FOR GAS CHROMATOGRAPH**  
 Thomas A. Robicheaux, Mobile, Ala., and Clyde G. Ford, Dallas, Tex., assignors to International Paper Company, New York, N. Y.

Filed Jan. 27, 1971, Ser. No. 110,146

Int. Cl. B01d 15/08

U.S. Cl. 55—67

1 Claim



An apparatus integrated with a detection system of the type that establishes individual components in a sample gas mixture by the thermal conductivity thereof, which establishes the gas transmission rate of the sample gas through a given material. Sample gas is fed into a first cavity of a partitioned chamber and diffuses through the partition into a second cavity of the

partitioned chamber. Diffused gas is swept from the second cavity with inlet carrier gas to a thermal conductivity detector in the detection system for analysis.

3,721,066

**PROCESS FOR RECOVERY OF ACID GASES**

Aaron J. Teller, Great Neck, N. Y., assignor to Teller Environmental Systems, Inc., New York, N. Y.

Filed Dec. 29, 1970, Ser. No. 102,561

Int. Cl. B01d 53/04

U.S. Cl. 55—71

10 Claims

A process for removing an acid gas component from a gas stream is shown. The gas is passed in contact with finely divided nepheline syenite which selectively sorbs acid components such as hydrogen fluoride, sulfur dioxide and silicon tetrafluoride from the gas. The nepheline syenite is desirably treated with water to increase its sorbent characteristics.

3,721,067

**CLEAN AIR SYSTEM FOR HOSPITAL OPERATING ROOMS**

Boyd F. Agnew, 111 Via Lido Nord, Newport Beach, Calif.

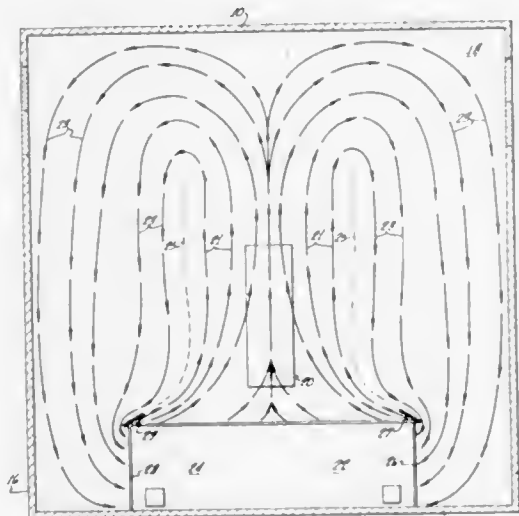
Continuation-in-part of Ser. No. 88,667, Nov. 12, 1970,

abandoned. This application Sept. 1, 1971, Ser. No. 176,909

Int. Cl. B01d 46/00

U.S. Cl. 55—97

26 Claims



Two relatively shallow floor to ceiling cabinets are located against one end wall of a hospital operating room and extend side by side along the wall for a major portion of the room width. Each cabinet is provided with a bank of filters encompassing substantially its entire frontal extent and includes a pressurized plenum chamber behind the filters, coextensive therewith. Blowers mounted within the cabinets pressurize the plenum chambers to direct a laminar horizontal flow of clean air through the filters and thence over an operating table positioned near the end wall. A pair of full height but narrow deflecting vanes extend from opposite outboard ends of the cabinets across the face of the filters at an acute angle therewith. The vanes narrow the outflowing stream, increase its velocity, improve its cross-sectional configuration, and help to separate and isolate the cabinet air intakes. The clean air stream extends from the operating room floor substantially to the ceiling and has a width sufficient to envelope not only the operating table but also persons standing and working alongside the table. Air is returned to the cabinets along relatively narrow portions of the room at opposite sides thereof and withdrawn from the room into the blowers through prefilters mounted on oppositely disposed outboard end walls of the cabinets that are positioned to face opposite side walls. Outflowing clean air is balanced against return air streams.

3,721,068

**GAS STREAM SCRUBBER**

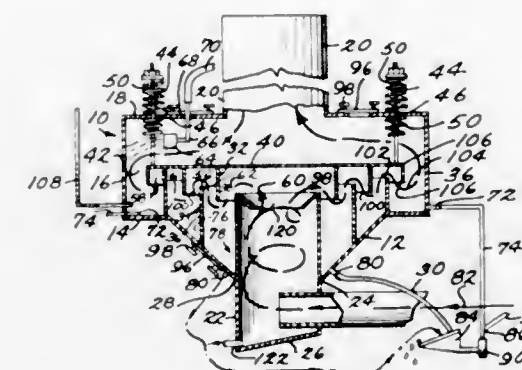
Dan B. Vincent, P.O. Box 5478, Tampa, Fla.

Filed Feb. 1, 1972, Ser. No. 222,628

Int. Cl. B01f 3/04

U.S. Cl. 55—223

4 Claims



There is disclosed a countercurrent system, for instance for removing particles, such as fish solids, citrus pulp and other dust particles or syrupy droplets, from the exhaust gases from a dryer or the like. The system includes a vessel provided with coaxially interdigitated upper and lower baffles which control a countercurrent flow of the washing liquid and gas stream. The baffles are of graduating heights and the upper set "floats" at a level determined by the pressure within the vessel. The washing liquid with entrained gas assists in cleansing the baffles. Cleaning ports may also be provided.

3,721,069

**AIR-OIL SEPARATOR**

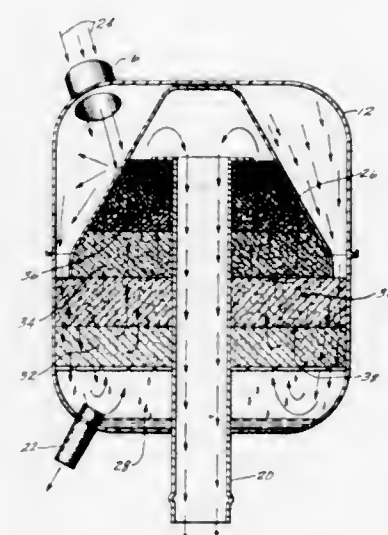
Robert A. Walker, 17130 Roscoe Boulevard, Northridge, Calif.

Filed Aug. 10, 1970, Ser. No. 62,544

Int. Cl. B01d 50/00

U.S. Cl. 55—319

14 Claims



A device suitable for use with internal combustion engines for separating oil from an air-oil mixture expelled from the engine. The device utilizes a baffle for producing primary separation of oil from the mixture and subsequently causes the mixture with any retained oil to be driven through filtration material. An inlet orifice in the device of a first size is provided ultimately communicating with an outlet orifice in the device of second and greater size to further contribute to separation of the oil. A reservoir at the bottom of the device receives the oil for transmission back to the crankcase, oil pump, etc. of the engine.

3,721,070

**METHOD AND APPARATUS FOR PRODUCING YARNS BY THE OPEN-END SPINNING SYSTEM**

Kelichi Minami, Tokuji Nakaue, Kozo Susami, Tabata Masaaki, Otsu; Masakazu Hirota, all of Shiga, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Apr. 13, 1970, Ser. No. 27,509

Claims priority, application Japan, Apr. 14, 1969, 44/28231; Sept. 17, 1969, 44/73408; Feb. 2, 1970, 45/8601; Feb. 2, 1970, 45/8602

Int. Cl. D01h 1/12

U.S. Cl. 57—58.95

6 Claims



Open-end spinning method and apparatus utilizing a spinning rotor, wherein, fibers of the textile staple material are separated from a fiber bundle due to a mechanical pulling-out action created by a pair of rotating rollers which operate at a very high peripheral speed and simultaneously, the separated fibers are fed directly or through a guide member to a collecting surface of the spinning rotor mainly by the inertia of each individual fiber.

3,721,071

**SEALED AND GROUNDED ELECTRIC MOTOR HOUSING**

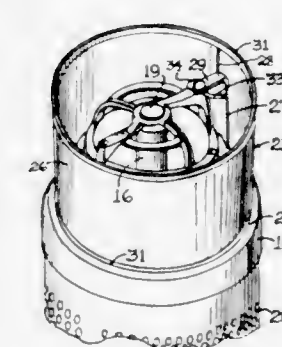
Helmut Mueller and Lawrence N. Purcell, both of P.O. Box 482, Palatine, Ill. 60067

Filed Aug. 20, 1971, Ser. No. 173,566

Int. Cl. B01d 46/42

U.S. Cl. 55—360

6 Claims



An electric motor housing for a vacuum type apparatus that requires the motor to be sealed against dirt, dust, and debris and completely electrically grounded, including a filter support mounted upon an electric motor which is in turn confined within a metal protective sleeve including peripheral gaskets for sealing the sleeve between the motor casting and the apparatus cover, with the sleeve providing an integral yieldable grounding lug for connection to the motor and grounding wire of the electrical supply cord.



3,721,072

**BONDED ACTIVATED CARBON AIR FILTER**

Thomas Miller Clapham, Pittsburgh, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.

Filed July 13, 1970, Ser. No. 54,307

Int. Cl. B01d 53/02

U.S. Cl. 55—387

8 Claims



A filter for removing odors, hydrocarbons, and other contaminants from air comprising activated carbon granules bonded together into a monolithic extended surface shape in the form of a wave. This type of filter is particularly useful in air handling systems where pressure drop is critical.

3,721,073

**METHOD OF PROCESSING, POSITIONING AND AERATING CROPS**

Thomas J. Scarnato, Barrington, Peter J. Peacock, Western Springs, George B. Cicci, Broadview, Paul W. Krage, Elmhurst, and John J. Kowalik, Glenview, Ill., assignors to International Harvester Company, Chicago, Ill.

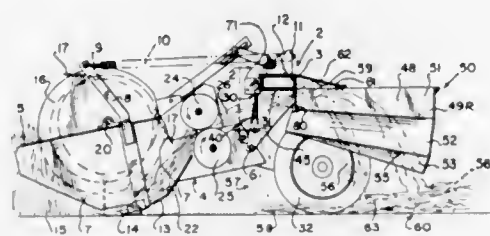
Original application Dec. 16, 1970, Ser. No. 98,497.

Divided and this application Apr. 10, 1972, Ser. No. 242,547

Int. Cl. A01d 43/10

U.S. Cl. 56—1

10 Claims



A method of positioning, processing and aerating crops comprising crushing the crops then discharging them in high velocity stream, then intercepting a portion of the stream and deflecting it toward the ground to form a first layer and then depositing the remainder of the crops in one or more layers upon the first layer in a fluffy swath or windrow.

3,721,074

**MOWER FOR MOWING AROUND AN OBJECT**

Sherman C. Heth, Sturtevant, Wis., assignor to Jacobsen Manufacturing Company, Racine, Wis.

Filed Feb. 16, 1972, Ser. No. 226,761

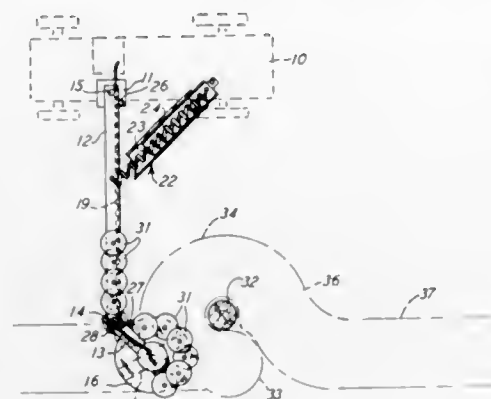
Int. Cl. A01d 35/26

U.S. Cl. 56—10.4

5 Claims

A mower for mowing around an object such as a tree or post, and including a mobile support having a first arm pivoted thereon and extending laterally therefrom, and a second arm pivoted on the extending end of the first arm and extending laterally and forwardly of the first arm. A cutter is supported on the extending end of the second arm and is positionable on the far side of a tree or post or the like when the support is

moved forward, and the cutter, by virtue of the articulation in the first and second arms, is movable in a circle around the post or tree or the like as the mobile support advances past the



object. Springs or like means are used to urge the two arms in their forward positions and against limit stops, and the cutter has a drive means and a power connection extending thereto for powering the cutter.

3,721,075

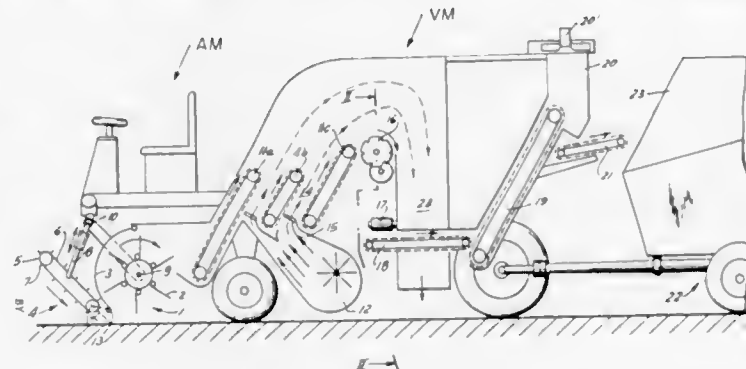
**STRIPPING MACHINE**Rudiger Welberg, Braunschweig, Germany, assignor to Maschinenfabrik August Herbolt, Braunschweig, Germany  
Continuation-in-part of Ser. No. 77,264, Oct. 1, 1970. This application July 13, 1971, Ser. No. 162,040

Claims priority, application Germany, Aug. 6, 1970, G 70 29 548.6

Int. Cl. A01d 55/26, 45/22

U.S. Cl. 56—13.5

13 Claims



A picking machine for harvesting produce from plants which grow in elongated rows and are of the bush variety. A vehicle is capable of advancing longitudinally of the respective rows and carries stripping means extending transversely to the elongation of the rows and being operative for stripping produce off plants. Separating means, arranged behind the stripping means, admits the produce as well as foreign matter and separates the two, first by means of a series of rearwardly rising cleaning conveyors, all substantially arranged in parallel planes, with air streams provided between the cleaning conveyors for agitating and separating the produce from the foreign matter, second by filtering out the foreign matter which is greater in size than the produce and expelling it from the harvesting machine, and third by removing, by suction means, that foreign matter which is lighter in weight than the produce.

3,721,076

**ADJUSTABLE MOWER SUSPENSION SYSTEM**

Robert Nick Behrens, Horicon, Wis., assignor to Deere &amp; Company, Moline, Ill.

Filed Oct. 4, 1971, Ser. No. 186,243

Int. Cl. A01d 35/26

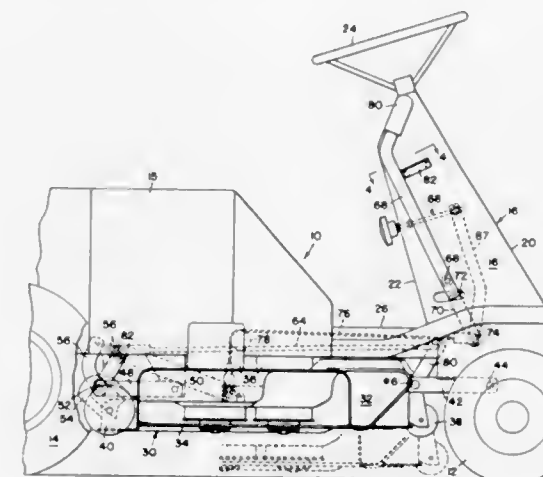
U.S. Cl. 56—14.9

9 Claims

An electric drive riding lawn mower includes a pair of electrically driven rear drive wheels and steerable front wheels

controlled by a steering wheel mounted in an upright supporting structure at the forward end of the machine. A rotary mower unit is suspended from the main frame between the front and rear wheels and includes a generally horizontal housing connected to the main frame by front and rear links which permit the vertical movement of the mower unit between a lowered operating position and a raised transport

horizontally extended position and a raised position which exposes the mower discharge outlet. A foot pedal is pivotally mounted on the mower and through a spring it is connected to the hinged chute such that depressing the pedal causes the chute to move upwardly and expose



position. The position of the mower unit is controlled by a lever pivotally mounted alongside the support structure and connected to the mower unit by a cable, the control lever being lockable in a rearward position wherein it maintains the mower unit in its raised position, and swingable forwardly to lower the mower unit. An adjustable stop limits the forward movement of the control lever to establish the lowermost, operating position of the mower unit.

3,721,077

**TRACTORS**

Cornelis van der Lely, 7, Bruschennrain, Zug, Switzerland

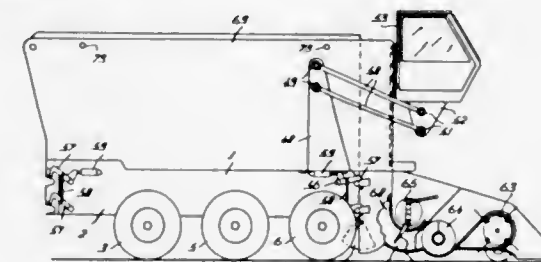
Filed Oct. 3, 1969, Ser. No. 863,486

Claims priority, application Netherlands, Oct. 7, 1968, 6814307

Int. Cl. A01d 75/22

U.S. Cl. 56—15.6

16 Claims



A tractor includes a frame on wheels and a driver's platform which is adjustably connected to the tractor and movable relative to the frame so that various implement attachments can be placed on the upper surface of the tractor at least partly above the frame. Coupling members, including lifting cylinders are connected to the frame to position and secure the attachments to the tractor.

3,721,078

**PEDAL CONTROLLED HINGED CHUTE FOR LAWN MOWERS**

Donald G. Haffner, Greendale, Wis., assignor to Jacobson Manufacturing Company, Racine, Wis.

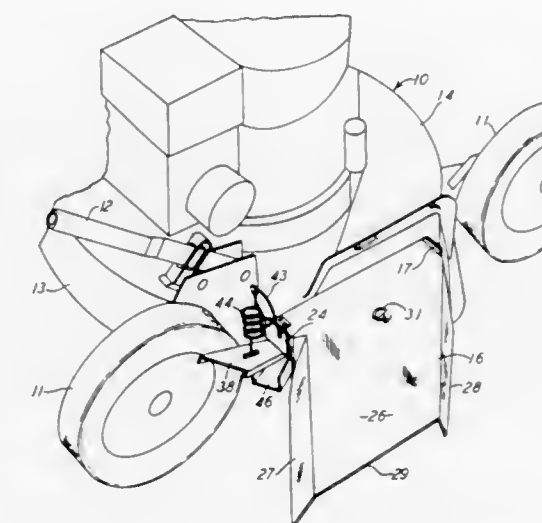
Filed June 19, 1972, Ser. No. 263,781

Int. Cl. A01d 35/22

U.S. Cl. 56—202

7 Claims

A pedal controlled hinged chute for lawn mowers of the rotary type having a housing and a lateral discharge for the grass clippings. A chute is hingedly mounted on the housing on a horizontal axis and moves between a



3,721,079

**MOWING APPARATUS**

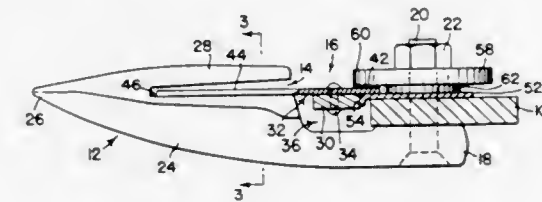
Donald E. Burrough, West Bend, Wis.; Wilfred Lee Roy Steuerwald, and Bobby Gene Sawyer, both of Ottumwa, Iowa, assignors to Deere &amp; Company, Moline, Ill.

Filed Aug. 12, 1971, Ser. No. 171,192

Int. Cl. A01d 55/08

U.S. Cl. 56—305

10 Claims



Mowing apparatus of the reciprocating sickle type including an elongated support beam, a sickle guard mounted on the beam and extending forwardly therefrom, and a sickle bar having a plurality of sharpened knife sections reciprocable through a horizontal slot formed in the guard. The guard includes a lip portion and a body portion, the former overlapping the longitudinal sides of the latter and being spaced vertically therefrom to form the horizontal slot in the guard. Material being mowed is thus inclined transversely outwardly from the sides of the guard and assists in maintaining the sickle in proper cutting relation therewith. The sickle is further maintained in position by means of a circular plate member mounted on the support beam directly behind the lip portion of the guard and overlying the rear edge portion of the sickle.

3,721,080

**CROP WINDROWING APPARATUS**

Preston L. Marsh, Route 1, Hope, Mich.

Filed Oct. 2, 1970, Ser. No. 77,428

Int. Cl. A01d 89/02

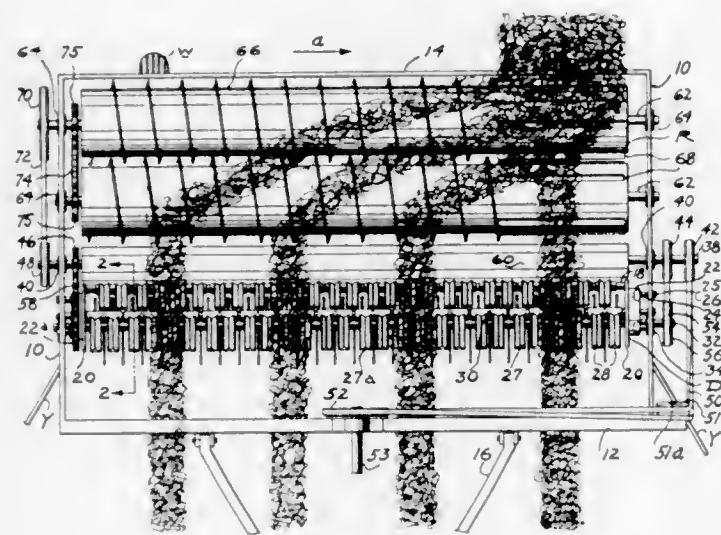
U.S. Cl. 56—364

22 Claims

Apparatus for windrowing crops including a rotatable tine assembly for lifting severed crops and moving them rear-



wardly over a stripper drum rotatably mounted about an axis offset from the rotational axis of the tine assembly and which strips the crops from the tine assembly and propels them further rearwardly onto conveyor mechanism that gathers the crops and discharges them at the rear of the machine in a windrow. In one embodiment, the drum and tine assembly are in-



dividually driven and the drum is provided with a plurality of curvilinear grain collecting troughs which are mounted on longitudinally extending, circumferentially spaced support bars having openings therebetween for receiving the individual tines of the tine assembly. In a modified embodiment, the tine assembly drives the drum.

#### ERRATUM

For Class 57—58.95 see:  
Patent No. 3,721,070

3,721,081

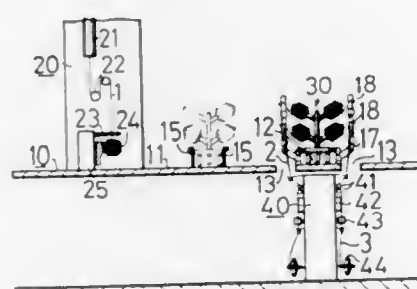
#### APPARATUS FOR HANDLING UNDRAWN SPUN YARN IN SYNTHETIC YARN PRODUCING MILL

Kinyu Ishida, Tokyo, Japan, assignor to Teijin Limited, Tokyo, Japan

Filed Oct. 14, 1971, Ser. No. 189,229  
Int. Cl. D01h 9/18

U.S. Cl. 57—34 R

9 Claims



A take-up winder for undrawn spun yarn is set up on a floor, while a yarn-drawing machine is installed under the floor. The floor is provided with an opening through which the undrawn yarn loaded upon a creel, which is set up substantially on the same level as said floor, is supplied to the yarn-drawing machine under the floor.

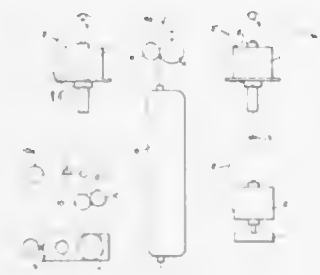
#### 3,721,082 PROCESS FOR MAKING TEXTURED THREADS WITHOUT TWIST RECOVERY OR UNTWISTING

Gerald Johannes Munzner, Leipzig, Germany, assignor to VEB Vereinigte Baumwollspinnerei und Zwirnerei, Baumwollspinnerei Foha, Foha, Germany

Filed July 6, 1971, Ser. No. 159,820  
Int. Cl. D01h 7/90; D02g 1/16

U.S. Cl. 57—157 TS

10 Claims



Process for making textured threads which are not subject to twist recovery or untwisting, from synthetic fiber materials consisting of capillary fibers, with a view to obtaining the characteristics of native vegetable threads, comprising the steps of continuously feeding the fiber materials, e.g., from a double-wire spindle, through a feed zone where preferably tension is regulated, heating the materials so as to fix the twist applied thereto, successively cooling the materials, thereby strengthening their intermolecular structure, and subjecting the same to texturing, followed by optional winding up of the completed single or mixed textured threads.

3,721,083

#### CALENDAR CLOCK

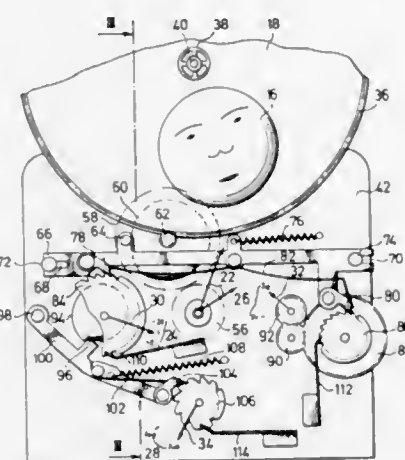
Heinz Jauch, 773 Villigen-Schwenningen, Germany, assignor to Erhard Jauch Uhrenfabrik, Stadtbezirk, Schwenningen, Germany

Filed Feb. 17, 1972, Ser. No. 227,118  
Claims priority, application Germany, Feb. 18, 1971, P 21 07 829.5

U.S. Cl. 58—3

Int. Cl. G04b 19/26

10 Claims



A calendar clock comprising a conventional clockwork mechanism for indication of the time of day and a calendar mechanism coupled to the clockwork mechanism for being driven thereby by means of a 12-hour wheel which is seated on the hour-wheel shaft and which meshes in a ratio of 1:2 with a 24-hour wheel supported in the body of the calendar mechanism. The calendar mechanism is adapted to indicate the day of the week, the date, the month and moon phases, and it includes separate indicating devices therefor which are actuated by the clockwork mechanism. The day, date and month indicating devices are provided with respective dials each with indicia in the clockwise direction, and a respective

hand. The hands are driven by means of ratchet wheels which derive their movement from the clockwork mechanism by means of pawls and an operating mechanism which follows curved cams and actuates the pawls.

3,721,084

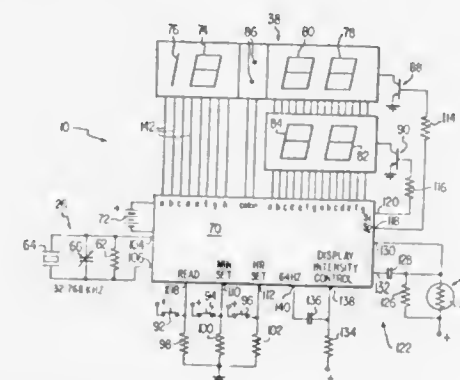
#### SOLID STATE WATCH INCORPORATING LARGE-SCALE INTEGRATED CIRCUITS

Bruno M. Dargent, Lancaster, Pa., assignor to Hamilton Watch Company, Lancaster, Pa.

Division of Ser. No. 138,547, April 29, 1971. This application Aug. 3, 1971, Ser. No. 168,643  
Int. Cl. G04b 19/30

U.S. Cl. 58—50 R

14 Claims



Disclosed is a solid state wristwatch having no moving parts. A crystal oscillator supplies a timing signal through a binary divider and display actuator to an electro-optical display in the form of a digital array of light-emitting diodes. The vast majority of the electrical components of the watch are incorporated in one or more large-scale integrated circuits.

3,721,085

#### CALENDAR DRIVING MECHANISM FOR DATE AND WEEK DAY INDICATING TIMEPIECE

Roland Zaugg, Grenchen, Switzerland, assignor to A. Schild S.A., Grenchen (Canton of Soleure), Switzerland

Filed Aug. 17, 1971, Ser. No. 172,438  
Claims priority, application Switzerland, Aug. 19, 1970, 12401/70

U.S. Cl. 58—58

Int. Cl. G04b 19/24

5 Claims



A driving wheel making one revolution in 24 hours automatically indexes the date indicator and the week day indicator at midnight by means of a date indexing member and a week day indexing member. At a predetermined point of its revolution the driving wheel produces the engagement of a detent mechanism that afterwards progressively bends the two indexing members. At a further predetermined point of its revolution the driving wheel produces releasing of the detent

mechanism so that the indexing members become free simultaneously and index the two indicators in unison.

3,721,086

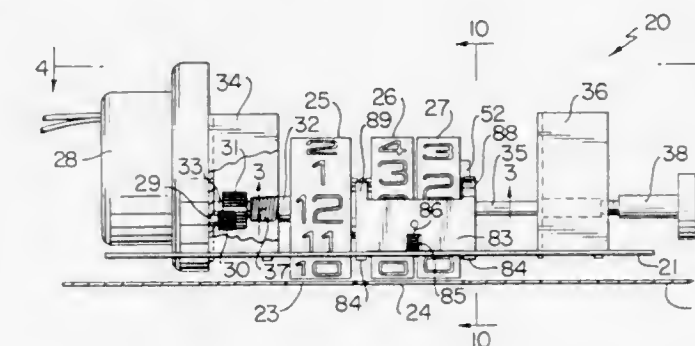
#### DIGITAL CLOCK AND METHOD OF OPERATION AND MAKING THE SAME

Paul T. Flumm, Oakville, Conn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Feb. 8, 1971, Ser. No. 113,368  
Int. Cl. G04b 19/02

U.S. Cl. 58—125 C

35 Claims



A digital clock construction having a frame carrying a rotatable shaft driven by a timer at a predetermined rate. A plurality of time indicating wheels are rotatably mounted on the shaft. A first drive structure is carried by the shaft and is operatively associated with one of the wheels for incrementally rotating the one wheels relative to the shaft on a time basis as the shaft rotates. Other drive structure is operatively associated with the shaft and the remaining wheels to tend to rotate the remaining wheels as the shaft rotates. Latch structure is operatively associated with the one wheels and the remaining wheels for holding the remaining wheels from rotating relative to the frame except in a timed relation to the incremental movement of the one wheels relative to the frame.

3,721,087

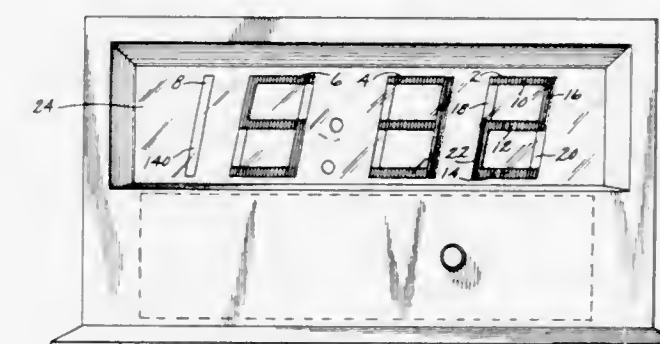
#### DIGITAL CLOCK

Robert L. Boyles, Wayland, and Samuel Polonsky, Medway, both of Mass., assignors to General Electric Company, Bridgeport, Conn.

Filed Nov. 8, 1971, Ser. No. 196,479  
Int. Cl. G04b 19/00, 19/02

U.S. Cl. 58—126 E

10 Claims



A digital clock wherein four numerals corresponding to minutes, tens of minutes, hours and tens of hours are simultaneously displayed. Three rotatable cams are provided for successively indexing the minutes, tens of minutes and hours display indicators, and the cam for the hours display indicator also actuates the tens of hours display indicator. A unique indexing mechanism is positioned between the minutes cam and the tens of minutes cam for indexing the minutes cam one in-



crement each minute and for simultaneously indexing the tens cam one increment at the instant of the tenth actuating increment of the minutes cam.

3,721,088

**FUEL CONTROL SYSTEM FOR GAS TURBINE ENGINES**  
Geoffrey Arthur Lewis, Olton, Solihull, Warwickshire, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

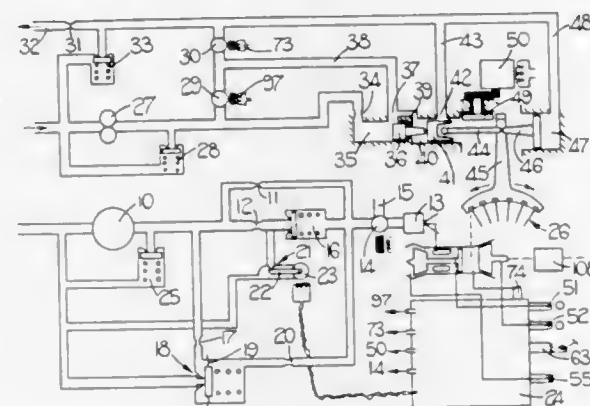
Filed April 21, 1971, Ser. No. 136,273

Claims priority, application Great Britain, April 25, 1970, 19,989/70

Int. Cl. F02c 9/04

U.S. Cl. 60—39.28 R

14 Claims



A fuel control system for a gas turbine engine supplied with fuel by a positive displacement pump has a flow control arrangement, a first spill valve connected across the pump and responsive to electrical signals dependent on engine operating conditions, and a second spill valve connected across the pump and responsive to the pressure drop across the flow control arrangement.

3,721,089

**CROSSOVER TUBE CONSTRUCTION**

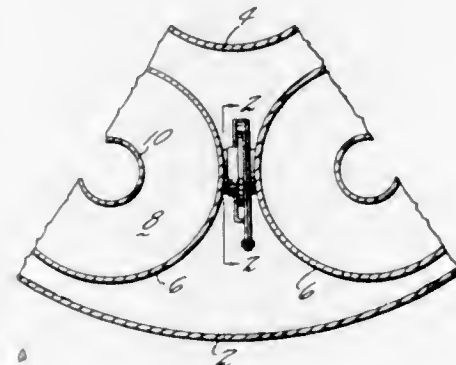
Abraham Morrison, Windsor, and Frederick C. Hetzer, Windsor, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed June 8, 1971, Ser. No. 151,019

Int. Cl. F02c 7/20; F16l 37/08

U.S. Cl. 60—39.32

2 Claims



A crossover tube construction includes a crossover tube on one flame tube with a flange on the outer end thereof cooperating with a flanged ring loosely mounted on the cooperating crossover tube on the adjacent flame tube with a ring overlying said flanges to hold them closely adjacent and permit relative transverse movement between adjacent flame tubes.

3,721,090  
**HYDRODYNAMIC TORQUE CONVERTERS**  
Karl Gustav Ahlen, Stockholm, Sweden, assignor to S.R.M. Hydromekamik AB, Stockholm-Vallingby, Sweden

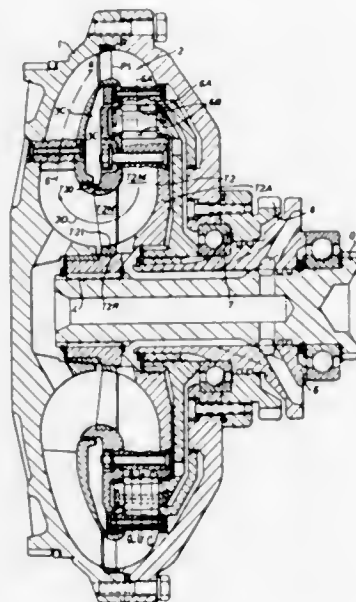
Filed Aug. 4, 1971, Ser. No. 168,826

Claims priority, application Great Britain, March 5, 1971, 6153/71

Int. Cl. F16d 33/00; F16h 41/00

U.S. Cl. 60—362

22 Claims



A hydrodynamic torque converter comprising a toroidal working chamber having a fluid outflow region, a fluid inflow region, and inner and outer transition regions. A ring of pump blades are located essentially in the outflow region, and a ring of guide blades and rings of turbine blades are located generally in the inflow region. At least a portion of one of the blade rings is positioned in one of the transition regions and includes blades which are twisted three-dimensionally by differing amounts along their lengths while the blades of the remaining rings are essentially two-dimensional in that they are of the same twist angle along their lengths.

3,721,091

**IMPACT HYDRAULIC FORMING DEVICE**

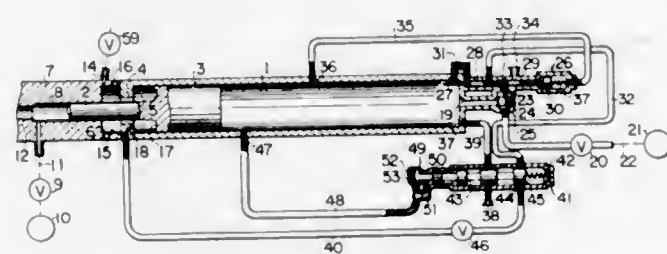
Hiroshi Tominaga, and Masanobu Takamatsu, both of Yokohama, Japan, assignors to Tokyu Sharyo Seizo Kabushiki Kaisha, Tokyo, Japan

Filed April 23, 1971, Ser. No. 136,685

Int. Cl. F15b 7/00

U.S. Cl. 60—54.5 H

7 Claims



An impact hydraulic forming device has a hydraulic pressure chamber with a bore filled with water, and a plunger is arranged to be thrust into the bore by a hammer which is unitary with the plunger and which is reciprocable in a cylinder. Means are provided to direct a jet of water across the open end of the bore in such a way as to seal the water in the bore from flowing out of the bore, to provide a water membrane. The face of the hammer joined to the plunger has an annular recess of curvilinear cross section whose surface merges smoothly with the exterior surface of the plunger, and air jet means are arranged to be directed against this annular groove

to retract the hammer. The hammer is advanced under air pressure for a pair of its stroke after which the pressure air is shut off and the advance of the hammer is carried out by expansion of the air in the cylinder. The air jets directed against the recessed end face of the hammer are also shut off after the hammer has completed part of its return stroke, with the return stroke being completed due to the expansion of the air jetted into the cylinder. Valve means control reciprocation of the hammer, and the valve means may be flow pressure operated valves of may be solenoid valve controlled by an electrical control device.

3,721,092

**CHUCK**

Thomas W. Schafer, Chula Vista, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

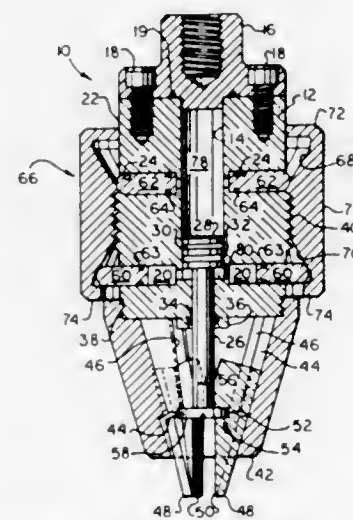
Original application Feb. 13, 1970, Ser. No. 11,090.

Divided and this application Aug. 12, 1971, Ser. No. 171,347

Int. Cl. F15b 7/00; B23b 5/22

U.S. Cl. 60—54.5 H

2 Claims



Chuck includes cylindrical housing with central bore and two sets of holes extending from the bore to side surface of housing, said sets being spaced apart axially of the housing and the holes in each set being spaced apart circumferentially thereof. Actuating pistons are disposed in said holes and project from side surface of housing, and a drive piston is disposed in bore between two sets of holes. A collar is mounted on housing for movement axially thereof and has on its inner side cam surfaces which slope relative to side surface of housing and respectively engage projecting ends of actuating pistons in two sets of holes. Fluid disposed in bore between actuating pistons and drive piston cause latter to move axially of bore when collar moves axially of housing and thereby forces one set of actuating piston toward bore while permitting other set of actuating pistons to move away from bore. A collet having jaws therein is attached to housing, and shaft connected to drive piston varies spacing between jaws when drive piston moves in bore.

3,721,093

**REACTION PROPULSION ENGINE WITH VAPORIZED FUEL DRIVEN TURBINE**

Robert L. Wolf, Chesterfield County, Va., and Rodney McGann, Northridge, Calif., assignors to Texaco Inc., New York, N.Y.

Filed Nov. 20, 1963, Ser. No. 324,932

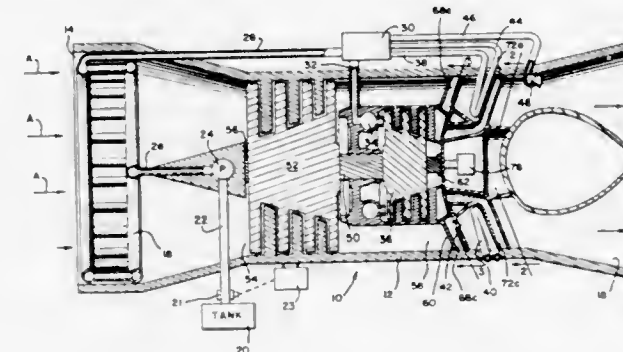
Int. Cl. F02k 11/00

U.S. Cl. 60—267

1 Claim

1. A reaction propulsion system including means providing a combustion chamber having at its rearward end an impulse expansion outlet nozzle, means providing a ram air intake, means directing air from the ram air intake to the forward end of the combustion chamber, a

fuel storage chamber, indirect heat exchange means in heat exchange contact with the ram air in said air directing means, means directing fuel from said storage chamber through said heat exchange means, an air compressor providing a portion of the air directing means between the heat exchange means and the forward end of the combustion chamber, a direct expansion turbine for driving said compressor, a regenerative heat exchanger in said combustion chamber, means for selectively directing at least a portion of the fuel passing through said heat exchange



means to said regenerative heat exchanger, means for directing a portion of the fuel passing through the heat exchange means to the combustion chamber downstream of the regenerative heat exchanger, means for directing the other portion of the fuel from said heat exchange means and the fuel passing through the regenerative heat exchanger through the direct expansion turbine, and means for directing the fuel exhausting from the turbine into the combustion chamber selectively up and downstream of the regenerative heat exchanger.

3,721,094

**APPARATUS FOR AND METHOD OF SETTING PINS IN MINE ROOFS**

Gerald W. Elders, Christopher, Ill.; Thomas E. Schneider, and John R. Alongi, both of Du Quion, all of Ill., assignors to Pin-Set Corporation, Christopher, Ill.

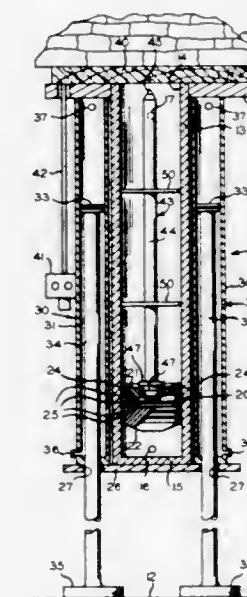
Continuation of Ser. No. 846,795, Aug. 1, 1969, abandoned.

This application Nov. 26, 1971, Ser. No. 202,097

Int. Cl. E21d 21/00

U.S. Cl. 61—45 B

14 Claims



A method of installing a pin in a mine roof in which an elongate pin is pressed into the mine roof by a substantially smooth pushing force applied to the pin head, and the mine roof is subjected to a compressive pressure in the area of the pin to force the roof strata tightly together so that the pin will hold the strata in such condition. The compressive pressure applied to the roof is applied before and during the pressing of the pin



into the roof and/or applied to the roof through the pin at the time the pin is pressed into the roof. More particularly, the method comprises the steps of disposing the pin in an open-end cylinder with the pin head engaging an internal piston, disposing a block between the mine roof and the open-end of the cylinder, and holding the cylinder against the block and holding the block against the mine roof at the area at which the pin is to be fixed. A compressive pressure is applied to the mine roof through the block by jacks so that the roof strata is forced tightly together and thereby preconditioned. Fluid pressure is applied to the piston and the pin is pressed through the block and into the mine roof under a substantially smooth pushing force. The full pin contact with the roof strata provides increasing holding power, and the pin maintains the roof in the compressed condition. The roof pin includes one or more discs carried by and axially spaced along the pin shank, the discs and shank having a friction connection that enables a slidable axial movement of the discs along the shank when the discs engage the roof block as the pin is pressed into place. The discs have an interrupted peripheral margin that provides interrupted bearing surfaces for reduced friction between the guide discs and the cylinder wall.

A pin-setting device includes an elongate cylinder having an open-end and a closed end in which a piston is movably mounted, the pin being located in the cylinder with the pin head seating on the piston. A pair of fluid jacks are located on opposite sides of and attached to the pin cylinder. A pressure plate is carried by the pin cylinder substantially near the open-end, the pressure plate overlapping the jacks and engaging the mine roof to locate the open cylinder end in the predetermined area at which the pin is to be fixed, and holding the block against the mine roof. The jacks exert pressure on the mine roof through the pressure plate and block, and clamp the open-end of the pin cylinder in such position. Upon introduction of fluid into the cylinder, the piston is moved in a direction to press the pin into the mine roof under a substantially smooth pushing force.

3,721,095

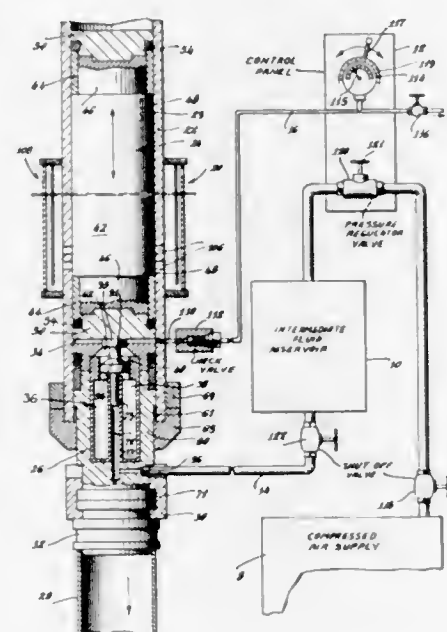
# CONTROLLABLE FORCE METHOD AND SYSTEM OF DRIVING PILES

Stephen V. Chelminski, West Redding, Conn., assignor to Bolt Associates, Inc., Norwalk, Conn.

Filed Aug. 23, 1971, Ser. No. 173,917  
Int. Cl. E02d 7/02

U.S. Cl. 61—53.5

21 Claims



A method and system for determining the magnitude of a driving force being exerted on a substantially rigid object being driven into the earth, such as a pile, and controlling the magnitude in response to that determination. Where the pile driver utilizes a massive piston weight reciprocating in a

cylinder and bouncing upon pressurized fluid in a chamber, the force magnitude is determinable by sensing pressure values occurring in the bounce chamber. Force control is obtainable by regulating the flow of pressurized fluid into the bounce chamber in response to the determination. Peak pressure values are sensed by pressure gauge or transducer means to determine the peak values of driving force being exerted on the top of the pile and control of the pile driver operation can be manually or automatically obtained.

3,721,096

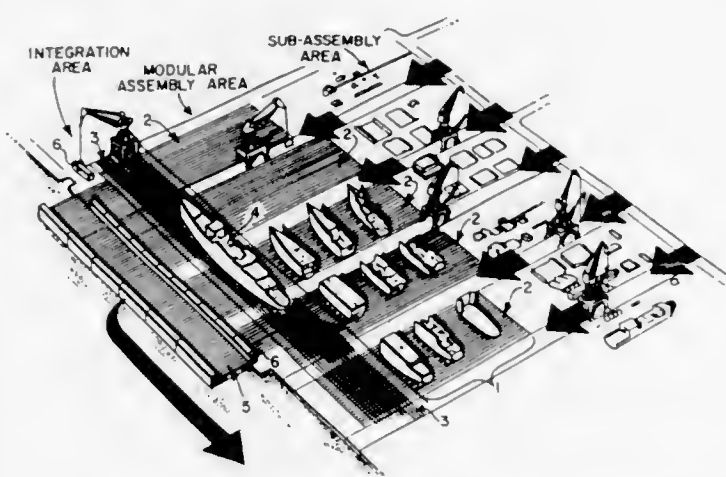
# SOFT SUPPORT SYSTEM FOR HULLS AND THE LIKE

Albert V. Deckert, Jr., New Orleans, and Frederick J. Brinkmann, Metairie, both of La., assignors to Associated Ideas International, Inc., New Orleans, La.

Filed Aug. 26, 1970, Ser. No. 66,985  
Int. Cl. B63c 5/04; F16f 15/16

U.S. Cl. 61—66

5 Claims



A "soft" support system, preferably utilizing pneumatic bellows, capable of supporting a ship hull in a relatively level condition on its building foundations or ways during construction and during moving operations; the system uses either a dynamic or a static "soft" support insert between the basic "hard" foundation supports and the vessel shell; in addition to the preferred pneumatic bellows the "soft" support insert could be inter alia a hydraulic, steel or rubber/elastomeric "spring"; the system in its dynamic mode is capable of raising, lowering or leveling the ship hull, or in minutely positioning hull sections to be joined together during construction operations; the system effectively distributes all loads and reactions between the hull and the foundation or ways thereby tending to eliminate unequal elevations of the foundation or way support locations and tending to nullify hull movement effects due to welding stresses and/or temperature changes, thereby tending to provide a constant support system; during moving operations across the foundations or ways, the constant support system will more nearly allow the horizontal pushing force requirements at each support location to equalize; the preferred embodiment of the "soft" support element includes a series of pneumatic bellows units, each unit including a set of three rubber bellows fastened between two opposing plates, the pneumatic pressure in the bellows being variable, system control for the pneumatic pressure can be a simple manual operation or can be highly sophisticated.

3,721,097

# AMMONIA EFFLUENT RECOVERY AND LIQUEFACTION FROM TEXTILE TREATING ZONE

George C. Briley, James J. Shepherd, and Thomas A. Lyons, all of Houston, Tex., assignors to Cluett Peabody & Co., Inc., New York, N.Y.

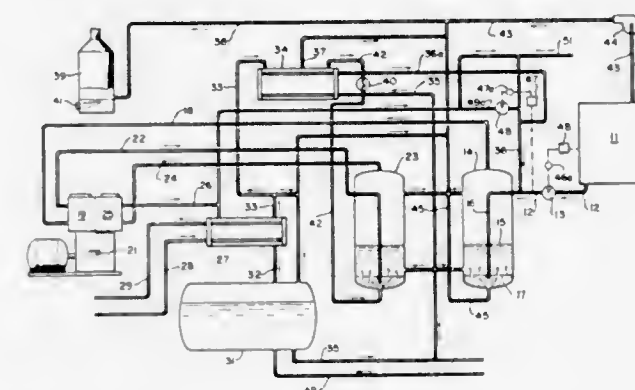
Filed Nov. 16, 1970, Ser. No. 89,927  
Int. Cl. F25j 1/00, 3/00

U.S. Cl. 62—11

4 Claims

Ammonia is recovered and liquefied from a mixture of ammonia and air emitted from an ammonia treatment chamber

used in processing of textiles. The processing of textiles is regarded herein as the "prime" system. In the recovery system, subordinated to the prime system, cooling and compression are followed by condensing then purging. Noncondensibles are oxidized in an furnace and liquid ammonia is returned for reuse to the treatment chamber of the prime system. Controlling delivery of the mixture from the treatment chamber based on pressure therein accommodates maintenance of a



minimal negative pressure in the treatment chamber. The furnace is used also to dispose of the ammonia and air mixture during startup and shutdown of the prime system. The furnace also may be used to oxidize ammonia from the treatment chamber so that the treatment chamber can function in its normal manner even in the event the recovery system is out of service. When feed to the recovery system is interrupted, a recycled stream is brought into play to load falsely the compressor so that shutdown thereof is avoided.

3,721,098

# COOLING BY MIXING GASEOUS STREAMS

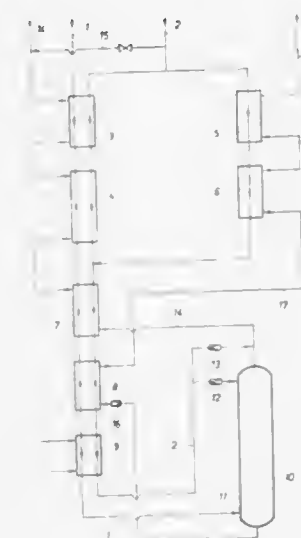
Wolfgang Forg, Grunwald, and Peter Dupont, Munich, Germany, assignors to Linde Aktiengesellschaft Zentrale Patentabteilung, Holriegelskreuth, Germany

Filed Dec. 18, 1969, Ser. No. 886,246

Claims priority, application Germany, Dec. 18, 1968, P 18 15 532.3

Int. Cl. F25j 1/00, 3/03, 3/06  
U.S. Cl. 62—17

8 Claims



In a process for the production of ammonia synthesis gas comprising the steps of cooling nitrogen and raw hydrogen in heat exchange with scrubbing column products; scrubbing the raw hydrogen in a column counter-currently to liquid nitrogen; and admixing cooled nitrogen to purified hydrogen gas leaving the column, in an amount required to establish a hydrogen:nitrogen ratio of 3:1;

the improvement comprising compressing said nitrogen, prior to said cooling, to a higher pressure not substantially above 10% of the pressure of resultant scrubbed hydrogen gas, said higher pressure being sufficient to admix resultant cooled nitrogen to said scrubbed hydrogen. In addition, because lower pressures can be utilized for obtaining the necessary make-up refrigeration, the same turbocompressor employed for compressing nitrogen cycle gas is employed for compressing the nitrogen to be fed to the scrubbing column.

3,721,099

# FRACTIONAL CONDENSATION OF NATURAL GAS

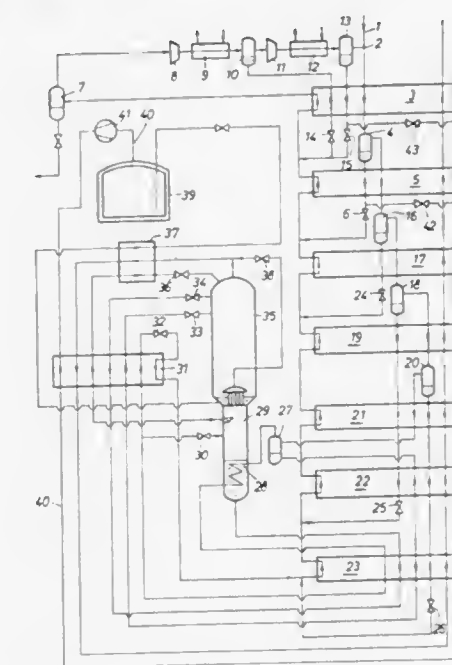
Wolfgang Forg, Grunwald, and Volker Eitzbach, Munich, Germany, assignors to Linde Aktiengesellschaft Zentrale Patentabteilung, Holriegelskreuth, Germany

Filed Mar. 24, 1970, Ser. No. 22,233

Claims priority, application Germany, Mar. 25, 1969, P 19 15 218.2

Int. Cl. F25j 1/00, 3/00, 3/06  
U.S. Cl. 62—29

10 Claims



A system for the liquefaction of natural gas wherein nitrogen is removed from the gas by rectification, involves fractional condensation of the natural gas and passing a gaseous portion of the thus-treated gas through the sump of a rectification column, in indirect heat exchange with sump liquid. At least a portion of the resultant condensed gaseous portion is returned to the rectification column as feed through an expansion valve. Heat exchangers are employed to subcool natural gas liquid passing to the storage tank and reflux liquid passing to the rectification column, said heat exchangers being cooled by nitrogen fractions withdrawn from the rectification column. The overall system provides for savings in refrigeration energy, and also provides peak refrigeration loads for start-up procedures and the like.

3,721,100  
COLD TRAP

Robert J. Bovio, Lowell, Mass., assignor to GTE Sylvania Incorporated

Filed Aug. 5, 1971, Ser. No. 169,479  
Int. Cl. B01d 5/00

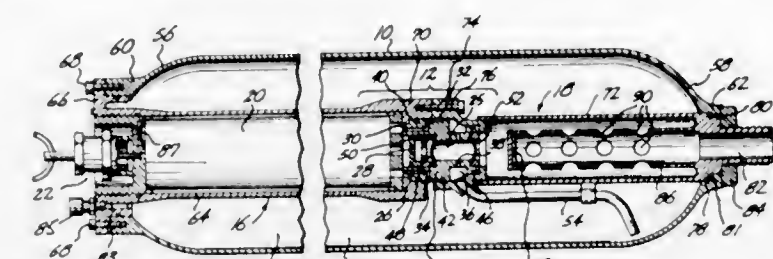
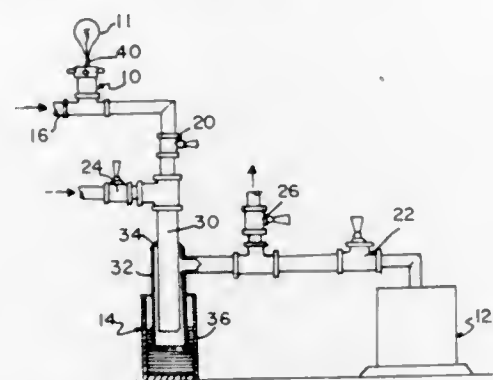
U.S. Cl. 62—55.5

1 Claim

A method of preventing corrosive gases from entering the vacuum pump of a vacuum and fill system that is used in conjunction with lamp manufacture. In performing the method a



cold trap, which may be a flask of liquid nitrogen is interposed in the line between the vacuum pump and the vessel to be evacuated. During the vacuum and fill operations, unused



gases and the liquid and pressure burst discs. It also comprises a baffled mixing chamber.

3,721,103

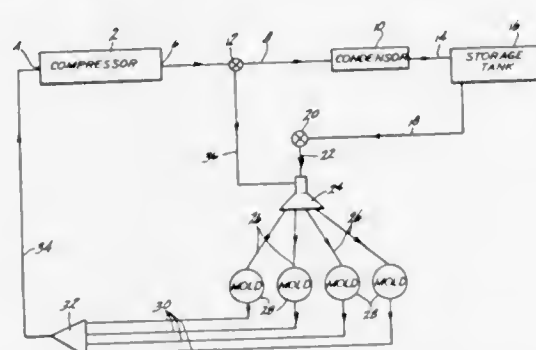
**METHOD FOR MAKING HOLLOW ICE BODIES**  
William L. Brandt; Tommy E. Boston, and Don E. Reed,  
Lebanon, Mo., assignors to Olin Corporation

Filed June 15, 1970, Ser. No. 46,277

Int. Cl. F25c 1/10

U.S. Cl. 62-73

1 Claim



A hollow body of ice is formed by filling with water a mold having a cavity conforming to the desired shape of the body. The mold is then cooled for a time period sufficient to freeze only the peripheral portion of the volume of water filling the mold. The partially frozen body is then removed from the mold and a pair of opposed holes are punched through the ice layer to permit the entrained water to drain out, leaving a thin-walled shell of ice.

3,721,104

**MARINE REFRIGERATION, FREEZING AND COOL STORAGE SYSTEMS**

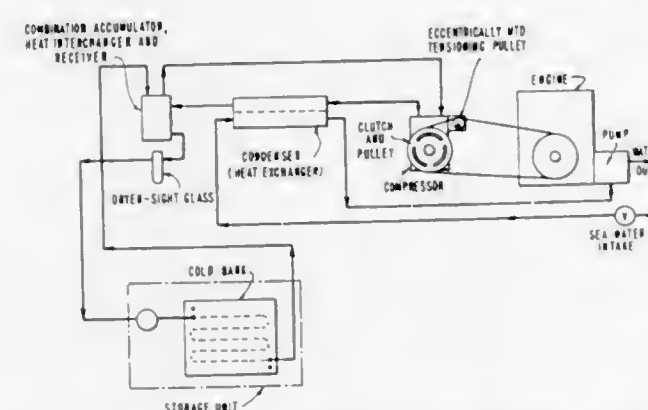
Ralph Michael Adler, 175 W. 93rd St., New York, N.Y.

Filed Jan. 22, 1969, Ser. No. 793,028

Int. Cl. F25b 27/00

U.S. Cl. 62-240

18 Claims



A refrigeration, freezing and/or storage system for use on marine vessels having insulated enclosures or cabinets comprises a plurality of components which may be flexibly located depending upon the size and available space in any particular boat or ship, the system comprising a compressor, nonelectri-

3,721,101

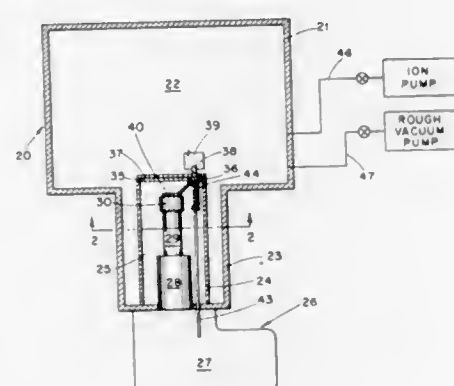
**METHOD AND APPARATUS FOR COOLING A LOAD**  
John C. Sheppard, Melrose, and Thomas P. Hosmer, Concord,  
both of Mass., assignors to Cryogenic Technology, Inc.,  
Waltham, Mass.

Filed Jan. 28, 1971, Ser. No. 110,678

Int. Cl. F25d

U.S. Cl. 62-56

39 Claims



Method and apparatus for cooling a load such as a sample for spectroscopic analysis, an electronic component or a cryopumping surface. A constant source of cryogenic refrigeration is controllably thermally engaged with the load by externally actuated means. That part of the refrigeration system requiring insulation is contained within an evacuable chamber while the working zone containing the load is normally contained within another separate evacuable chamber. These chambers may be in controllable fluid communication.

3,721,102

**COOL WORKING GAS GENERATOR**  
Charles J. Green, Vashon Island, Wash., assignor to  
Rocket Research Corporation, Redmond, Wash.

Filed Dec. 4, 1969, Ser. No. 882,221

The portion of the term of the patent subsequent to Mar. 11, 1986, has been disclaimed

Int. Cl. F17c 11/00

U.S. Cl. 62-48

16 Claims

Hot pressure gases are generated by burning a solid fuel grain. A portion of the gases are used to pressure feed a liquid from its storage chamber into a mixing zone. The remainder of the hot gases are directed into the mixing zone for mixing therein with the liquid. The hot gases provide the heat of vaporization for, and cause the vaporization of, the liquid. The liquid may be liquefied ammonia gas or a liquefied ammonia gas and water mix-

cal means for operating the compressor, a container, a eutectic solution disposed in said container and means for freezing the eutectic solution.

3,721,105

**REFRIGERATION, CONDENSATION COLLECTING AND REMOVAL APPARATUS**

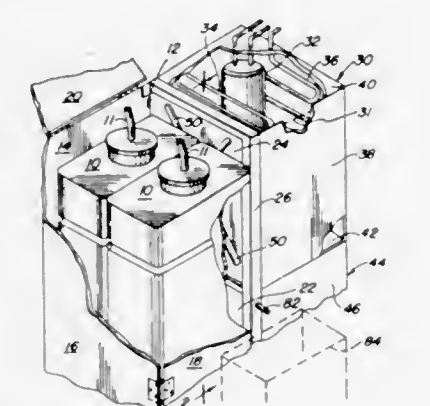
Owen J. Schwertfeger, Chicago, and Frank Daniel Brill, Norridge, both of Ill., assignors to The Seeburg Corporation, Chicago, Ill.

Filed Aug. 5, 1971, Ser. No. 169,331

Int. Cl. F25d 21/14

U.S. Cl. 62-289

9 Claims



An enclosed compartment is refrigerated by the heat transfer through a refrigerated wall positioned at the upper refrigerated wall is collected in a channel formed along the lower edge of the refrigerated wall. The channel is inclined to permit the condensed moisture to flow down the channel and out of a conduit through the wall of the compartment to a container.

3,721,106

**MOUNTING FOR ROOF TOP AIR CONDITIONER**

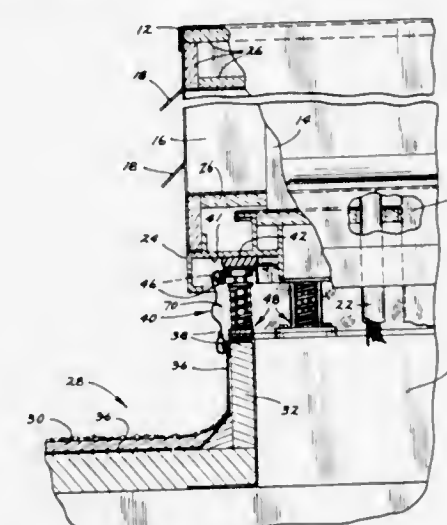
Henry C. Bierwirth, Wayzata, and James V. Foly, Minneapolis, Minn., assignors to Lear Siegler, Inc., Minneapolis, Minn.

Filed Aug. 18, 1971, Ser. No. 172,779

Int. Cl. F25d 19/00

U.S. Cl. 62-297

4 Claims



A rectilinear upstanding, continuous, rigid curb on a flat roof top defines an opening through the roof. Vibration isolation means are supported on top of the periphery of this curb and, in turn, support the main frame of a complete air conditioning unit. The vibration isolation means includes a continuous sheet of flexible material in sealing relationship to both the entire lower outer periphery of the air conditioning unit frame and the entire upper

outer periphery of the curb, and loosely disposed between the curb and frame. This sheet isolates the inside of the air conditioning unit and building from the outside thereof; and insulates the space within the curb and the unit from the temperature and weather conditions outside.

3,721,107

**HIGH CAPACITY PREFABRICATED AIR CONDITIONING SYSTEM**

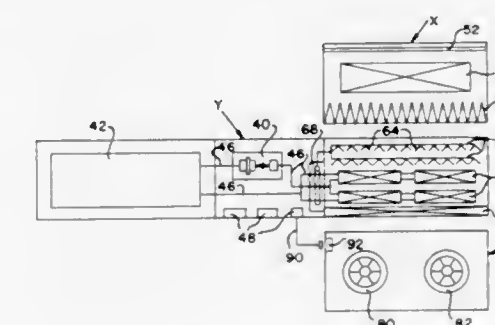
William F. Stockford, and Joseph M. Gamewell, both of Salisbury, N.C., assignors to Gamewell Mechanical, Inc., Salisbury, N.C.

Filed May 14, 1971, Ser. No. 143,319

Int. Cl. F25d 19/00

U.S. Cl. 62-298

4 Claims



An air conditioning system having a capacity in excess of 100-150 tons wherein the compressor, condenser, expansion means, cooling coils, and associated conduits and wiring are prefabricated and prepackaged into a single housing at the factory, hereafter referred to as the "cooling unit," that can be factory charged with refrigerant, if desired, and shipped to the construction site ready to connect to the building ductwork and electrical power system. Air intake and supply sections are set up on either side of the coil section of the cooling unit, and air is passed transversely of the cooling unit, through the coil section. A centrifugal compressor and a conventional condenser unit condition refrigerant which is directly introduced into the coil section through an expansion means and into heat exchange relation with the air to be cooled, without the use of a secondary coolant such as a water chiller and the insulated pipes and air handlers commonly associated with a system of this size. Such a system is used preferably in conditioning air for one or a few large areas as opposed to a plurality of smaller zones.

3,721,108

**REFRIGERANT COOLED COMPRESSOR**

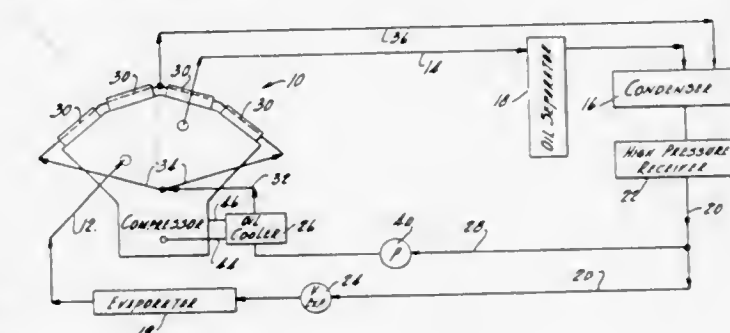
Erich J. Kocher, Milwaukee, Wis., assignor to Vilter Manufacturing Corporation, Milwaukee, Wis.

Filed June 15, 1971, Ser. No. 153,230

Int. Cl. F25b 31/00

U.S. Cl. 62-470

5 Claims



In a refrigerating system including a compressor, condenser, evaporator, and an oil cooler, a refrigerant cooling system for the compressor including a bypass line connected between the



condenser and evaporator, and including a pump for providing high pressure liquid to the oil cooler and to the heads of the compressors, and a return conduit connecting the discharge refrigerant from the compressor cooling system through a desuperheater in the compressor discharge line to the condenser.

3,721,109

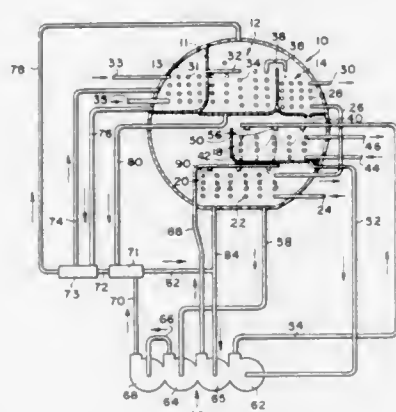
# HIGH PRESSURE MULTIPLE PUMP FOR ABSORPTION REFRIGERATION MACHINE

James M. Porter, La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.

Filed June 3, 1971, Ser. No. 149,552  
Int. Cl. F25b 15/06

U.S. Cl. 62—476

1 Claim



A pump for circulating a plurality of fluids in an absorption refrigeration machine, the pump having a plurality of fluid impellers, at least two of which are arranged in series.

3,721,110

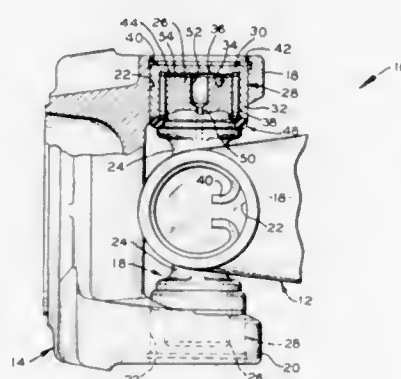
# UNIVERSAL JOINT BEARING CUP IMPROVEMENT

Glenn S. Borneman, 605 West Ridge Pike, Royers Ford, Pa.

Filed May 6, 1971, Ser. No. 140,766  
Int. Cl. F16d 3/41

U.S. Cl. 64—17 A

6 Claims



A cardan type universal joint having cup-shaped bearing races for pivotally and drivingly connecting a pair of yoke members to a journal cross in torque transmitting relation wherein the bearing cups are provided with an improved thrust receiving surface in the form of a tapered annular raised rib which is integral with the inner face of the end wall. In another embodiment this feature is combined with a crowned surface on the cylindrical side wall of the bearing race which is designed to permit better distribution of load over the mean span of the trunnion portions of the journal cross.

3,721,111

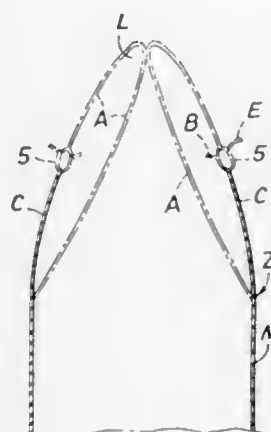
# CLOSED TOE HOSIERY

Giorgio Billi, Firenze, Italy, assignor to G. Billi C. S.p.A., Florence, Italy

Filed April 29, 1969, Ser. No. 820,088  
Claims priority, application Italy, May 3, 1968, 4547 A/68  
Int. Cl. D04b 9/56

U.S. Cl. 66—187

5 Claims



A closed toe for a circularly knit hose made upon the machine making the hose and comprising a deformed two-ply closed tubular welt structure wherein the circular seam joining the plies of the welt together is located in the outer ply of the welt between the ends thereof whereby the seam and the deformation of the welt are located on the sole side of the toe portion of the hose. The method of making the aforesaid closed toe construction by knitting a pair of nested separate tubular sections of fabric of unequal lengths as extension of the tubular foot of the hose and of then joining together the terminal portions of the tubular fabric extensions.

3,721,112

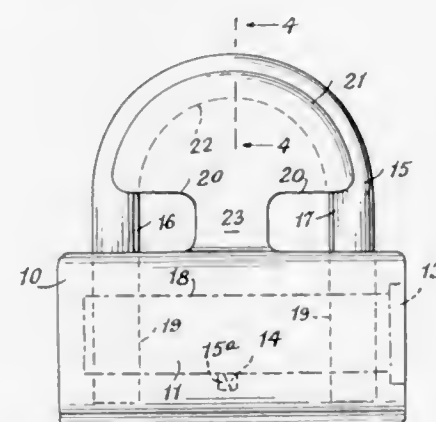
# LOCKS

John F. Wellekens, 51 East 42nd St., New York, N.Y.

Filed Aug. 18, 1971, Ser. No. 172,820  
Int. Cl. E05b 67/02, 65/08, 65/44

U.S. Cl. 70—39

6 Claims



A lock which can be either of the padlock type or bolt type comprising, in one embodiment, a substantially U-shaped yoke or hasp having one or both of its legs provided with notches, the notched part of the legs extending into a lock body or housing. The body or housing is provided with a bore or cavity that receives an axially movable cylindrical lock casing containing lock mechanism that is effective, when key-operated, to retract a latch that normally holds the lock casing within the housing. The lock casing extends across the legs of the yoke or hasp and the notches in the legs of the yoke are shaped to conform to the cylindrical curvature of the lock casing so that the engagement between the lock casing and the legs of the yoke is effective to hold the yoke from displacement out of the lock body or housing. When the latch is

retracted, the lock casing can be axially moved to withdraw it from the lock body or housing, thus freeing it from the yoke or hasp which can then be separated from the housing. A saddle or guard may be provided, attached to or separate from the lock housing, to receive the bight portion of the yoke when the yoke is in a locking position. Another embodiment of the invention involves a sliding bolt that is capable of being locked in either an advanced or retracted position by the engagement with a part provided on the cylindrical lock casing.

3,721,113

# ROLLING OF LITHIUM

Boghos Karnig Hovsepian, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Aug. 23, 1971, Ser. No. 174,227  
Int. Cl. B21b 45/00, 3/00; B23p 17/04

U.S. Cl. 72—46

11 Claims

A process for producing thin continuous lithium strips in thicknesses less than 0.40 cm. by cold rolling lithium metal while it is compressed between smooth surfaces of a solid polymeric composition which composition is non-reactive with lithium and has a critical surface tension of not over 46 dynes per centimeter at 20° C.

3,721,114

# APPARATUS FOR CONTINUOUS COLD ROLLING

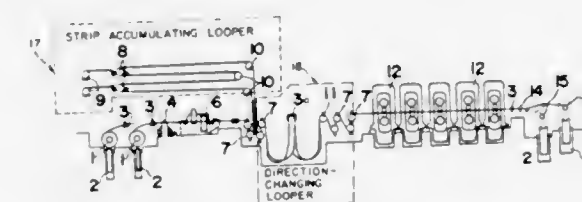
Yasaburo Yazawa, and Yoshiaki Kawazoko, Fukuyama, Japan, assignors to Nippon Kokan Kabushiki Kaisha

Filed Feb. 9, 1971, Ser. No. 113,937

Claims priority, application Japan, Feb. 13, 1970, 45/12148  
Int. Cl. B21b 41/06

U.S. Cl. 72—231

7 Claims



In a continuous cold rolling apparatus, the strip feeding out of the entry facilities is fed to a looper for changing the direction of the strip. The changed-direction strip is then fed to the rolling stands which may be arbitrarily located, such as in parallel or at right angles with the entry facilities.

3,721,115

# STRUCTURE FOR AND METHOD OF SURFACE CONDITION SENSING AND INDICATING AND MOTOR SPEED CONTROL

Robert W. Kearns, 20524 Rutherford Avenue, Detroit, Mich.

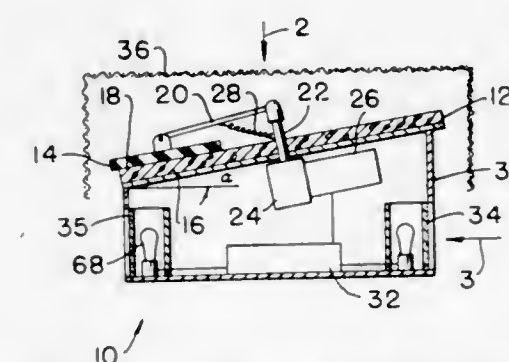
Continuation of Ser. No. 666,703, Sept. 11, 1967, abandoned.

This application June 8, 1970, Ser. No. 48,795

Int. Cl. G01n 19/02

U.S. Cl. 73—9

39 Claims



The condition of a surface is sensed by cyclically moving two members having engaged surfaces relative to each other,

driving the surfaces for only a portion of each cycle to set up a threshold kinetic energy level in accordance with the friction between the engaged surfaces, sensing the kinetic energy developed in one of the members due to moving the members relative to each other, comparing the developed kinetic energy with the threshold kinetic energy and controlling the cyclic movement of the members in accordance with the relationship between the kinetic energy threshold and the developed kinetic energy. The cyclic movement of the members is then used to provide a visual indication of the condition of one of the surfaces.

3,721,116

# METHOD FOR DETECTING STEAM LEAKAGE IN A HEAT EXCHANGER HAVING CIRCULATION TUBES SURROUNDED BY LIQUID SODIUM AND DEVICES FOR THE APPLICATION OF SAID METHOD

Alain Brachet, Orsay, and Louis Lannou, Montesson, France, assignors to Electricite de France (Service National), Paris, France

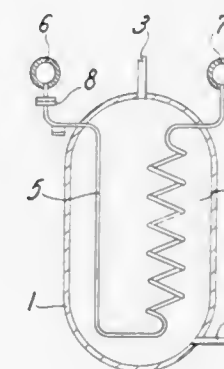
Filed Dec. 1, 1970, Ser. No. 93,940

Claims priority, application France, Dec. 3, 1969, 6941746

Int. Cl. G01m 3/04

U.S. Cl. 73—40

15 Claims



The leak flow rate, in particular for the determination of a micro-leak, in heat exchangers employed in conjunction with fast nuclear reactors which are cooled by liquid sodium is determined employing known means by locating a given group of tubes including the tube which exhibits leakage among all the tubes of a heat exchanger without modifying the operating conditions of the installation. The tube in the group in which a leak has developed is located. The defective tube is then plugged outside the tank without draining the sodium contained therein and without connecting the steam circulation tubes to the atmosphere.

3,721,117

# METHOD AND APPARATUS FOR DETECTING LEAKS IN PNEUMATIC WHEELS

Charles R. Ford, and Edward K. Percifield, both of Indianapolis, Ind., assignors to Carlisle Corporation, Cincinnati, Ohio

Filed Aug. 18, 1971, Ser. No. 172,826

Int. Cl. G01m 3/04

U.S. Cl. 73—40.7

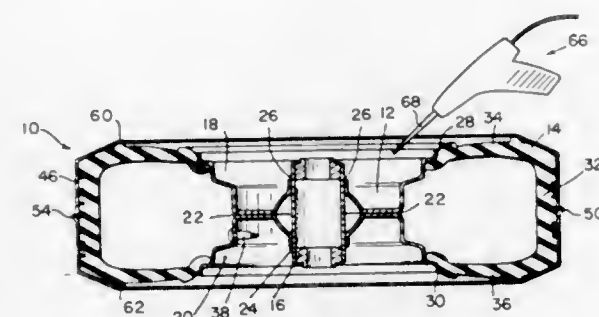
7 Claims

A method of detecting leaks in a wheel assembly including a rim and a pneumatic tire comprising the steps of inflating the tire with a mixture of air and an added probe gas, establishing a chamber enclosing at least the rim and an adjacent annular region of the tire, and then, after a period of time, testing the atmosphere in the chamber for the presence of such a probe gas.

An apparatus for detecting leaks in a pneumatic wheel assembly including a rim and a pneumatic tire mounted on the



rim and inflated with a mixture of air and an added probe gas, the apparatus including impermeable means for circumferentially sealably engaging at least the side wall portions of



such a tire to define a chamber enclosing such a rim and an adjacent region of such a tire, and a detector for the probe gas arranged to extend into such a chamber.

3,721,118

## CURVATURE CONTROL

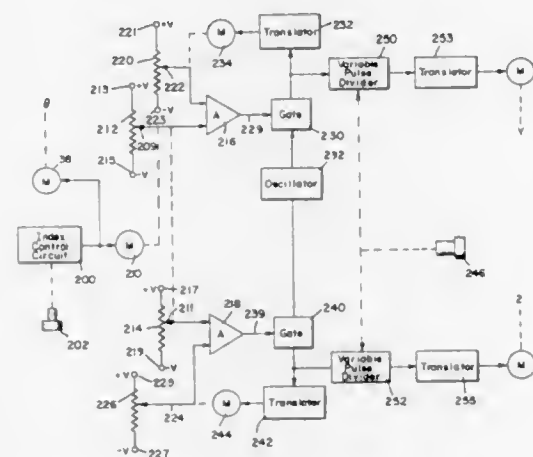
Nathaniel B. Jeffras, Woodland Hills, Calif., assignor to Automation Industries, Inc., Century City, Calif.

Filed Feb. 22, 1971, Ser. No. 117,417

Int. Cl. G01n 29/04

U.S. Cl. 73-67.8

16 Claims



Herein described in an electrical control system for guiding a search unit of a nondestructive material tester over sloped or curved surface shapes and particularly to an index system used on a scanning device. For the slope control, a linear control potentiometer is mechanically geared to one index axis and the linear feedback potentiometer is mechanically geared to the other index axis. An index command initiates an indexing causing the linear control potentiometer to advance. A tangent potentiometer sets the voltage across the linear control potentiometer in proportion to the slope of the angle. The advance of the linear control potentiometer unbalances the inputs to the operational amplifier which gates on the other axis control advancing the linear potentiometer until the inputs are balanced. For curvature control, a sine/cosine potentiometer is null balanced by the linear feedback control potentiometers by stepping motors to provide a closed loop curvature control program. Pulses are also applied to each search unit open loop coordinate axis through dividing circuits to provide reduction of the coordinate axis. Advance of the sine/cosine control during indexing, unbalances inputs to the operational amplifiers which gate on an oscillator. Outputs of each control gate is applied to the feedback motor and to an open loop search unit axis control. The feedback motor advances the feedback linear potentiometer until a null balance condition exists and the gate is turned off.

3,721,119

## TENSILE TESTING MACHINE

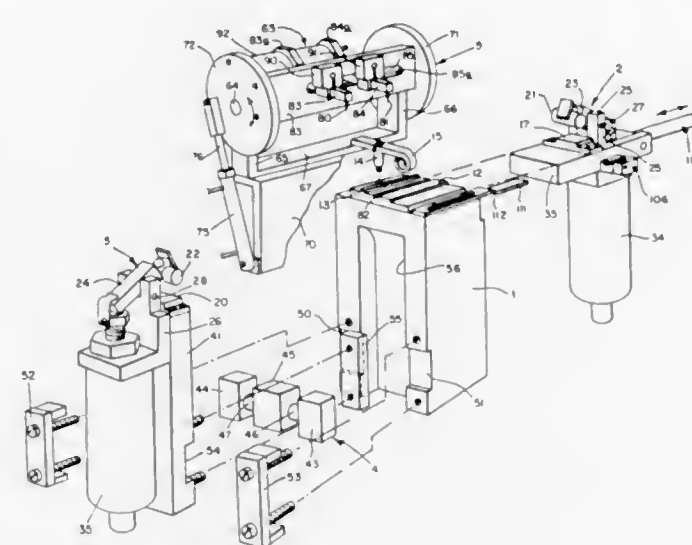
Robert S. Strimel, Penlynn, Pa., assignor to Tinius Olsen Testing Machine Co. Inc., Willow Grove, Pa.

Filed Sept. 17, 1971, Ser. No. 181,437

Int. Cl. G01n 3/08

U.S. Cl. 73-95

18 Claims



High speed repetitive testing machine for specimens such as paper, etc. The operator slides a specimen on a fixture which properly aligns the same along a test axis. A test button is pressed and the machine automatically carries out the following operation: the specimen is gripped, an extensometer positioned, load is applied, strain is measured directly from the specimen and at rupture the machine returns for another test.

3,721,120

## ENGINE PERFORMANCE INDICATOR

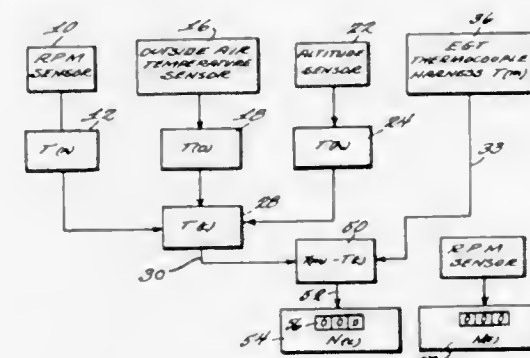
John S. Howell, and Richard L. Rowan, both of Fort Worth, Tex., assignors to Howell Instruments, Inc.

Filed Nov. 16, 1970, Ser. No. 89,580

Int. Cl. G01m 15/00

U.S. Cl. 73-117.3

8 Claims



A method and means for measuring changes in the quality of gas turbine engine performance, efficiency or engine trim by measuring at least a first engine parameter such as RPM, computing a second engine parameter value such as exhaust gas temperature (EGT) from the first measured parameter, also measuring the actual value of the second engine parameter and subsequently comparing the computed with the actual values (after possible correction factors have been taken into account) to indicate changes in engine performance or trim. The computed and actual values may also be integrated prior to comparison or a difference between the computed and actual values may first be taken and this difference subsequently integrated for comparison with a standard comparison value such as may be obtained by integrating one of the parameters or a time representative signal over the same timed interval. If the comparison takes the forming of a ratio, the periods of integration may be chosen to insure that the denominator is an

even power of ten such that the integral representing the numerator may be directly interpreted as a performance index.

3,721,121

## METHODS AND APPARATUS FOR INVESTIGATING MULTIPHASIC WELL FLUIDS

Claude Fierfort, Lozere, France, assignor to Schlumberger Technology Corporation, New York, N.Y.

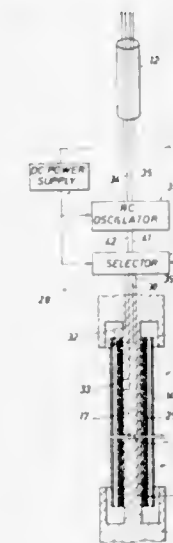
Filed Nov. 15, 1971, Ser. No. 198,848

Claims priority, application France, Nov. 20, 1970, 7041689

Int. Cl. E21b 47/00

U.S. Cl. 73-155

23 Claims



In the new and improved methods and apparatus disclosed herein for determining the volumetric proportions of the different phases of well fluids, a fluid-investigating tool adapted for positioning in a production well is provided with an enclosed chamber which is continuously communicated with multiphase well fluids exterior of the tool by upper and lower fluid siphon passages which isolate the chamber to allow fluids of different densities to remain in a segregated condition. A measuring device is cooperatively arranged within the fluid chamber for detecting the interface of segregated production fluids within the chamber to provide indications at the surface which are representative of the phase mixture or volumetric composition of the well fluids at the depth of investigation. Unique techniques and apparatus are also provided for calibrating the sampling tool from the surface to assure continued accurate measurements.

3,721,122

## AUTOMATIC RECORDING RAIN GAUGE

Colin Frank Lucas, Yateley, Camberley, England, assignor to National Research Development Corporation, London, England

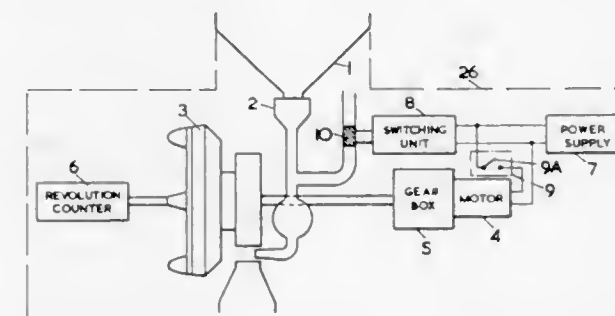
Filed Nov. 30, 1970, Ser. No. 93,716

Claims priority, application Great Britain, Dec. 1, 1969, 58,502/69

Int. Cl. G01w 1/14

U.S. Cl. 73-171

8 Claims



According to the present invention a rain gauge comprises a container for collecting rain, a pump operative to pump rain

water from the container, an electrical sensor responsive to the level of rain water in the container and operative to make and break the supply of power to the pump and means responsive to the drive motion of the pump for affording a measure of rain water collected in and pumped from the container.

In order that the amount of rain water pumped, during each revolution of the pump, is repeatable to a very high accuracy a peristaltic pump may be used.

Indicator means, for example a revolution counter or an electronic counter, may be provided to record the drive motion of the pump.

3,721,123

## GAS-FLOW MONITORING SYSTEM

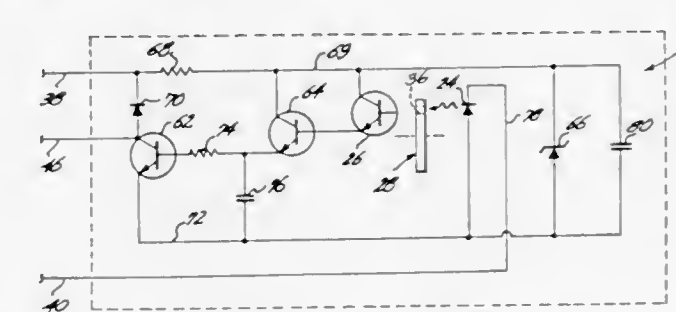
Joseph Heim, 728 N.E. Floral Place, Portland, Oreg.

Filed Feb. 17, 1972, Ser. No. 227,104

Int. Cl. G01f 1/00

U.S. Cl. 73-194 E

14 Claims



A gas-flow monitoring system employing an apertured rotor whose apertures, with turning of the rotor, alternately block and pass a beam of light between a light-emitting diode and a phototransistor. The diode and phototransistor are connected in a circuit wherein current that flows through the phototransistor also flows through the diode to change the intensity of light emitted from the diode. This circuit produces an output signal each time that the diode and phototransistor communicate with one another through a different successive aperture in the rotor.

3,721,124

## DEVICE FOR INDICATING THE TEMPERATURE AND DEPTH OF WATER

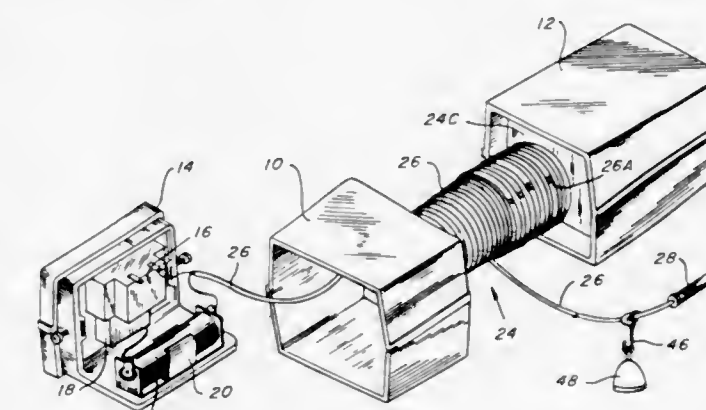
Buryl A. Franks, Tulsa, Okla., assignor to Lowrance Electronics, Inc., Tulsa, Okla.

Filed Dec. 10, 1970, Ser. No. 96,785

Int. Cl. G01k 1/14

U.S. Cl. 73-344

3 Claims



A device for indicating the temperature and depth of water, including a housing having a temperature indicating meter in one end, a spool extending from the other end of the housing having a cable wound thereon, one end of the cable being connected to the meter, a temperature sensing probe connected to the other end of the cable, the cable having depth markings at spaced intervals thereon, and a cover affixed to said spool and slidable between closed and opened positions, in the



opened position the cover being spaced away from the housing and exposing the spool whereby the cable may be wound onto and off the spool and in the closed position the cover contacting the housing and encompassing the spool.

3,721,125

# THERMAL ACTUATOR FOR A METER TEMPERATURE COMPENSATING MECHANISM

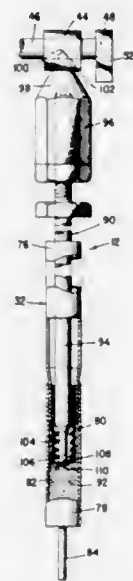
Carl J. Kugler, Philadelphia, and Norman Porter, Sellersville, both of Pa., assignors to The Singer Company, New York, N.Y.

Filed June 23, 1971, Ser. No. 155,952

Int. Cl. G01k 5/32; G01f 3/20

U.S. Cl. 73-368.3

5 Claims



A thermal actuator for a meter temperature compensating mechanism which includes a casing mounted in the meter housing within a temperature well so as to be exposed to the mainstream of throughput flow of the meter. The casing has a hermetically sealed chamber at its lower end filled with a thermally expansible liquid. A bellows enclosed the top of the chamber and extends downwardly therein. An actuator rod is mounted between the bellows and a temperature compensating mechanism in a friction-free manner by the opposite ends thereof, making point contact respectively with the bellows and said mechanism. The thermal actuator signals changes in the density of the throughput flow of the meter caused by variations in the fluid temperature. The actuator rod will move friction-free upwardly or downwardly in direct proportion to the temperature change, to thus cause a corresponding shift in said mechanism to compensate for the changing volume in the throughput flow.

3,721,126

# MEASURING PRESSURE IN A TUBULAR REACTOR FOR POLYETHYLENE

Charles D. Beals; George I. Fitzpatrick, and Kim L. O'Hara, all of Baton Rouge, La., assignors to Esso Research and Engineering Company

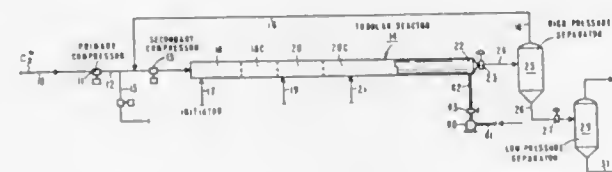
Division of Ser. No. 37,610, May 15, 1970, Pat. No. 3,628,918.

This application March 19, 1971, Ser. No. 126,299

Int. Cl. G01f 7/00

U.S. Cl. 73-388 R

1 Claim



The pressure in a tubular reactor for producing polyethylene under high pressure is measured by pumping an

inert or compatible liquid with a positive displacement pump into a line connected to the reactor and maintaining said pumping at small flow rates so that some flow occurs at all times and measuring the pressure head which said pump is pumping.

3,721,127

# DIAPHRAGM DEVICE, SENSITIVE TO ABSOLUTE PRESSURES

Giampaolo Garcea, 18 Milan, Italy, assignor to Alfa Romeo S.p.A., Milan, Italy

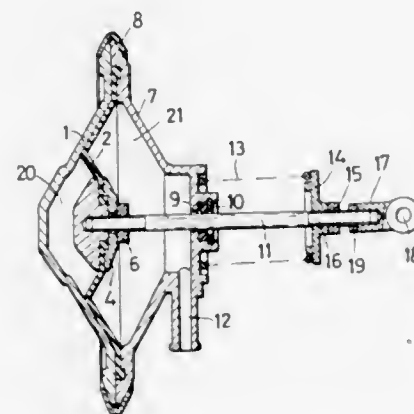
Filed May 13, 1971, Ser. No. 143,003

Claims priority, application Italy, June 19, 1970, 26302A/70

Int. Cl. G01f 7/08

U.S. Cl. 73-406

3 Claims



Device for measuring absolute pressures, of the pliable diaphragm type which cooperates with a capsule having rigid walls and containing the diaphragm. In the initial assembly stage, the diaphragm completely mates with the surface of either rigid wall of the capsule, so that virtually no air is sealed therebetween. On completion of the assembly, a preload is imparted to the diaphragm by means of an externally mounted spring, so that a vacuum is created between the diaphragm and the rigid wall confronting the diaphragm with the device being adapted not only to measure absolute pressures, but also to control servo devices in response thereto.

3,721,128

# CREDIT AND PASS CARD IDENTIFICATION DEVICE

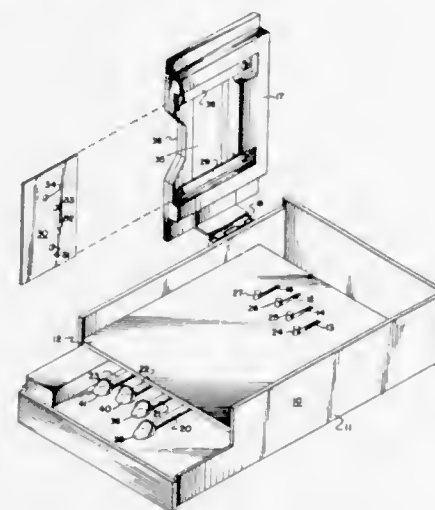
R. E. Thurman, 2216 Cascade Way, Longview, Wash.

Filed Dec. 28, 1970, Ser. No. 101,895

Int. Cl. A61b 5/10

U.S. Cl. 73-432 R

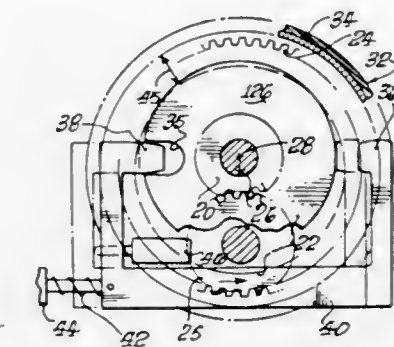
4 Claims



The method of making comparative identification between the holder of identification means and a selected person of this invention includes the steps of recording a multiplicity of indicia upon a carrying media wherein each of the indicia are

coincident with respective terminal ends of fingers extended of a hand of a preselected human being; placing the media into a holding apparatus; placing the extended fingers of a hand extended of the preselected human being in the holding apparatus, aligning the extended fingers of the preselected human being with respective indicia on the carrying media. The apparatus of this invention includes identification carrying media such as a card having prerecorded indicia thereon, each of the indicia on the media being coincident with the terminal ends of respective fingers of a hand extended of a preselected human being, a housing having means operable to engage and to hold the identification carrying media and means in the housing operable to align the terminal ends of fingers extended of a hand of the preselected human being with respective indicia on the identification carrying media.

ring gear of an eccentric planetary gear set having a sun gear input. The ring gear is journaled on the planet gear carrier ec-



## ERRATUM

For Class 73-152 see:  
Patent No. 3,721,960

3,721,129

# ECCENTRIC SYSTEM FOR VIBRATORY EARTH COMPACTOR

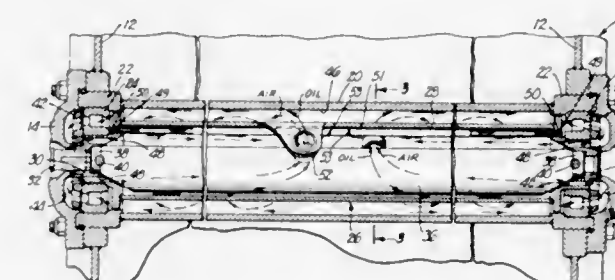
Paul C. Wallick, Long Beach, Calif., assignor to A-T-O Inc., Willoughby, Ohio

Filed Aug. 13, 1971, Ser. No. 171,567

Int. Cl. B06b 1/16

U.S. Cl. 74-87

10 Claims



An eccentric system for a vibratory apparatus, such as an earth compactor, comprising a tube having end closures, bearings respectively supporting the end closures for rotation of the end closures and the tube about the axis of the tube, and an eccentric bar within and extending longitudinally of and spaced radially inwardly from the tube, the eccentric bar having ends coaxial with the tube and respectively carried by the end closures of the tube. The tube, its end closures and the eccentric bar constitute an eccentric shaft which, together with its bearings, is enclosed by an outer housing. Impellers at the ends of and rotatable with the eccentric shaft circulate a lubricant, such as oil, between the interior of the tube and the outer housing by way of the bearings, thereby lubricating and cooling the bearings continuously. Air in the structure is also circulated through the bearings by the impellers for cooling purposes.

3,721,130

# POWERED ROLLER MECHANISM

James E. McKee, Goleta, Calif., assignor to Republic National Bank of Dallas, Irving Trust Company and Union Bank Division of Ser. No. 865,071, Oct. 9, 1969, abandoned. This application Dec. 10, 1970, Ser. No. 96,718

Int. Cl. F16h 1/44

U.S. Cl. 74-86

19 Claims

A powered roller movable laterally of its axis between a retracted position and an advanced position is unitary with the

# 3,721,131 MESHING GEARS WITH EACH PITCHLINE FORMED OF DIFFERENT NON-CIRCULAR CURVES AND A METHOD OF OBTAINING THEIR PITCHLINE PROFILE GEOMETRIES

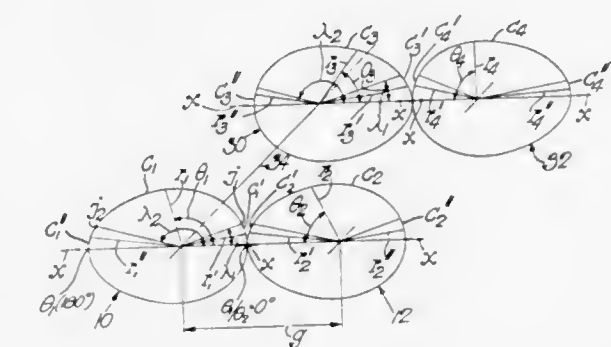
James D. Ingham, Thomaston, Conn., assignor to The Halden Machine Company, Thomaston, Conn.

Filed Feb. 24, 1971, Ser. No. 118,298

Int. Cl. F16h 35/02

U.S. Cl. 74-393

30 Claims



A pair of driving and driven gears of one-to-one gear ratio, with each gear having an axis of symmetry, and each symmetrical half of the pitchline of the driving gear being formed by at least two different non-circular curves of known polar equations having a junction point at a selected angle from the gear axis of symmetry, and a method of obtaining the pitchline profile geometries of these gears for their production.

3,721,132

# INTERMITTENT DRIVE FOR CONVEYORS AND THE LIKE

Roy W. Johnson, Woodland, Calif., assignor to Johnson Farm Machinery Co., Inc., Woodland, Calif.

Filed April 28, 1971, Ser. No. 138,024

Int. Cl. F16h 35/02; F16g 1/28; F16h 55/30

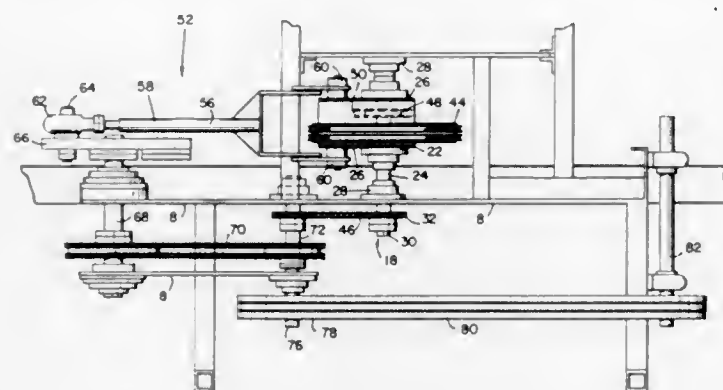
U.S. Cl. 74-394

13 Claims

An intermittent drive for periodically varying the speed and, if desired, the direction of a driven member comprising a driven shaft and a drive shaft coupled via a belt, a chain or the like. The driven shaft is stationary while the drive shaft is mounted to a pivoting frame. A wheel disposed between the shafts and concentric with the pivot axis of the frame spreads apart the belt strands between the shafts and maintains the



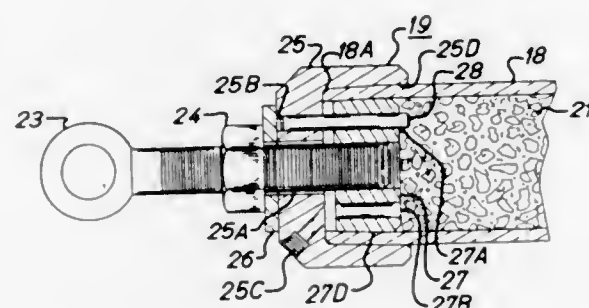
belts taut while the frame and the drive shaft pivot. The longitudinal speed of the belt is thus altered, and can be reversed,



**3,721,134**  
**MOTION TRANSFER CONNECTING DEVICE**  
Arland D. Lamke, Franklin, Wis., assignor to McGraw-Edison Company, South Milwaukee, Wis.  
Filed Aug. 4, 1971, Ser. No. 168,852  
Int. Cl. G05g 23/00

U.S. Cl. 74-586

16 Claims

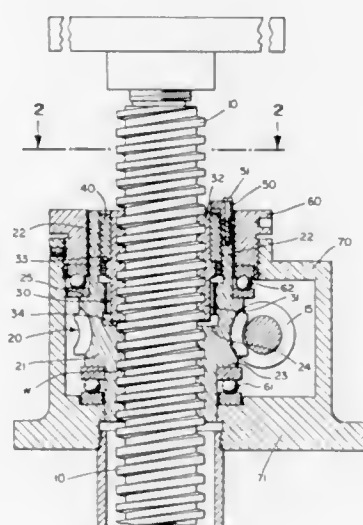


A pushrod assembly is connected between a switch actuating mechanism and a switch to transfer motion from the actuating member to the switch. The pushrod assembly has an elongated hollow fiberglass cylinder with hardware at each end for attachment to the respective mechanism and switch. The hardware at each end has an internal nut with a conical outer circumference and an end socket with a conical inner diameter. The internal nut is screwed on a threaded eyebolt, and the pulling of the nut into the end socket compresses the fiberglass tube between the outer diameter of the nut and the inner diameter of the socket. A nut and washer on the eyebolt enable adjustment of the length of the pushrod assembly.

**3,721,133**  
**ANTI-BACKLASH SCREW JACK**  
Walter J. Denkowski, King of Prussia, Pa., assignor to Philadelphia Gear Corporation, King of Prussia, Pa.  
Filed Oct. 7, 1971, Ser. No. 187,325  
Int. Cl. F16h 55/18

U.S. Cl. 74-441

4 Claims

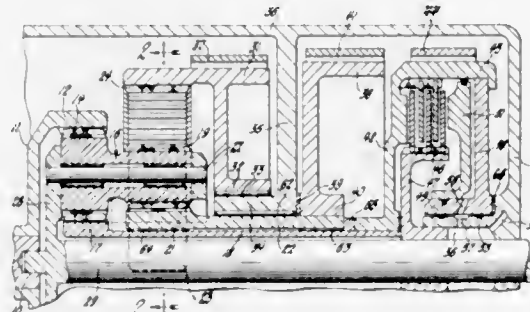


An anti-backlash screw jack has a worm gear which is supported by upper and lower annular bearings both of which remain fully loaded despite wear on the worm-gear threads and downward shifting of the anti-backlash nut. The worm gear has an integral upwardly extending sleeve portion, the lower portion of which is internally splined and the upper portion of which is internally threaded. The upper portion of the sleeve is thinner than the lower. Both portions of the sleeve are spaced radially from the load stem and an annular space is formed therebetween. Threaded on the load stem above the worm gear and within the annular space formed by the sleeve is an anti-backlash nut, the lower portion of which is externally splined to the worm-gear sleeve. There is an annular space between the upper portion of the anti-backlash nut and the internally threaded upper portion of the worm-gear sleeve into which is received a take-up nut which is externally threaded and in mesh with the upper portion of the worm-gear sleeve. An annular cap is screwed into the housing and bears down on an annular upper bearing which is outside the worm-gear sleeve. The lower race of this bearing bears against a shoulder on the worm gear which bears against the upper race of an annular lower bearing which is supported in the housing.

**3,721,135**  
**COMPOUND PLANETARY GEARING**  
Oliver K. Kelley, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.  
Filed Oct. 21, 1970, Ser. No. 82,599  
Int. Cl. F16h 57/10

U.S. Cl. 74-761

12 Claims

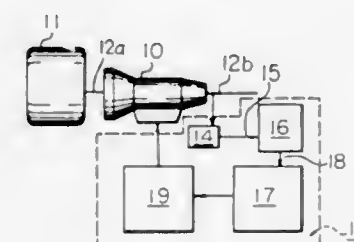


A compound planetary gearset in which the input ring gear drives the large pinion of a compound planetary pinion and the low brake holds the large sun gear meshing with the small pinion, the second brake holds the small sun gear meshing with the large pinion and the direct drive clutch locks the small sun gear to the output shaft and the reverse brake holds a second ring gear which meshes with a reverse pinion, also meshing with the large sun gear. The small pinion and the large pinion of the compound pinion have the same number of teeth. The small pinion has a small pitch and the gears meshing with it the same small pitch, and the large pinion has a large pitch and the gears meshing with it have the same large pitch. The compound pinions are finish cut by a one piece cutter which simultaneously cuts a pair of teeth, one tooth on the large pinion and one tooth on the small pinion, so

the teeth on both pinions of each compound pinion have an identical radial alignment relation to each other and all the compound pinions of the gearset are identical in this relation for equal load sharing.

**3,721,136**  
**ELECTRONIC CONTROL DEVICE FOR AUTOMATIC POWER TRANSMISSION MECHANISM**  
Namio Irie, Nissan-nishiterao-ryo, No. 714, Nishiterao, Kanagawa-ku, Yokohama, Japan  
Filed Oct. 13, 1970, Ser. No. 80,309  
Int. Cl. B60k 21/00; F16h 3/74; H03r 3/26  
U.S. Cl. 74-856

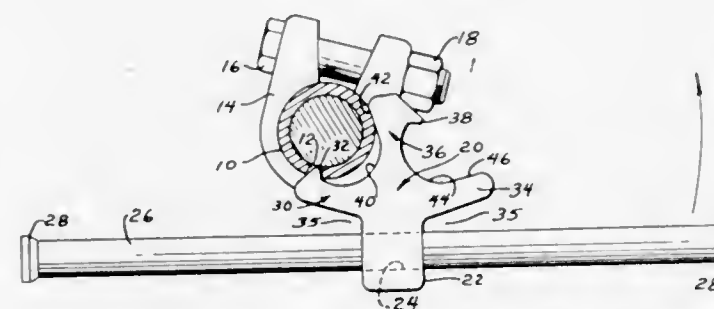
1 Claim



An electronic protection device adapted to prevent a vehicle engine from overrunning when a selector lever is carelessly shifted to lower speed ratios during high speed running. A sensor is provided to electronically detect the vehicle speed for generating a voltage signal corresponding thereto. A comparator circuit is provided to generate in response to the vehicle speed signal a plurality of signals each indicating that a transition to a particular speed ratio associated with the speed signal is possible preventing the vehicle engine from overrunning. A command circuit is provided to respond to the plurality of signals for generating a command signal which is applied to a hydraulic control device. The hydraulic control device is provided to respond to the command signal for controlling the automatic power transmission mechanism to prevent the vehicle engine from overrunning.

**3,721,137**  
**SPANNER TYPE TOOL**  
Charles L. Mosher, Owatonna, Minn., assignor to Owatonna Tool Company  
Filed Sept. 24, 1971, Ser. No. 183,331  
Int. Cl. B25b 13/02, 13/56  
U.S. Cl. 81-90 B

6 Claims

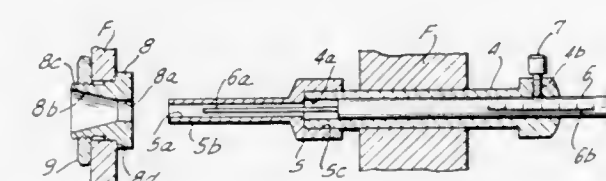


A spanner type tool particularly suited for working on automobile tie rods. The tool includes an extremely narrow base slidably receiving an elongated handle and mounting two hook-like members opening in the same circumferential direction and spaced approximately 90° apart. Dependent upon adjacent obstructions to movement of the tool when applied to work, either one of the hooks may be employed in a given job and the position of the handle varied to avoid interference.

**3,721,138**  
**DEVICE FOR CUTTING AN OUTER LAYER OF THE CONCENTRIC MULTILAYER ROD-LIKE STRUCTURE**  
Masato Kamimura, and Saburo Fukui, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Sept. 3, 1970, Ser. No. 69,287  
Claims priority, application Japan, Sept. 4, 1969, 44/70444  
Int. Cl. H02g 1/12

2 Claims



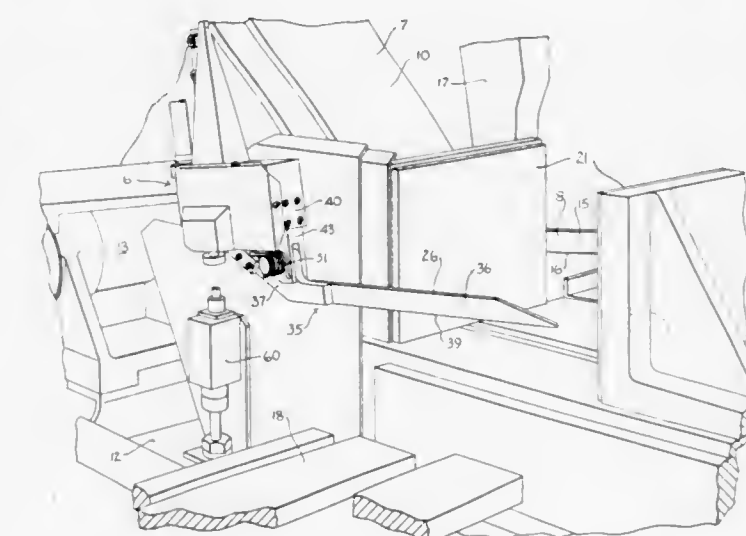
Apparatus for stripping a selected length of sheathing from a coaxial cable and the like. A die is positioned about the coaxial cable and a hollow cylindrical-shaped die is inserted beneath the sheathing to a depth commensurate with the amount to be stripped, accurate adjustment being controlled by an interior mounted slidable scale member. The two die members are brought into abrupt engagement with one another by being moved either linearly and/or rotationally relative to one another whereby the selected length of sheathing is stripped therefrom.

**3,721,139**  
**AUTOMATIC CONTROL FOR RETURN MOTION OF CUTOFF SAW HEAD**  
Le Roy E. Robinson, and Leslie J. Peltz, both of Savage, Minn., assignors to Continental Machines, Inc., Savage, Minn.  
Filed July 19, 1971, Ser. No. 163,612  
Claims priority, application Great Britain, Sept. 1, 1970, 41,789/70

U.S. Cl. 83-63

Int. Cl. B23d 55/00

7 Claims



A lever mounted on the cutting head of a cutoff saw has a feeler arm that normally extends across the path of stock feed, parallel to the cutting edge of the blade to engage the stock in position to be cut and, by its disengagement from the stock as the cutting head is raised after the cut is completed, it trips a switch and prevents further elevation of the head. When the cutting head is so positioned that advancing stock can strike it, the feeler, by engagement with the stock, is displaced from its normal position, and trips another switch to effect elevation of the head and prevent stock feed advance.



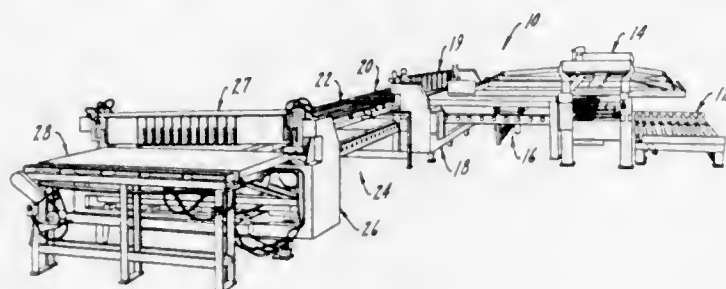
### 3,721,140 DISCHARGE UNIT FOR PANEL CUTTING APPARATUS

James W. Campbell, Fort Worth, Tex., assignor to Wetoma Corporation, Fort Worth, Tex.  
Original application Feb. 17, 1969, Ser. No. 805,943, now Patent No. 3,662,798. Divided and this application Sept. 10, 1970, Ser. No. 71,109

Int. Cl. B27b 5/18

U.S. Cl. 83—102

3 Claims



The method and apparatus for efficiently cutting accurately sized panels in an unlimited combination sizes and shapes from larger sheets. The sheets are automatically counted and stacked on a gauge table, the stack is clamped by jaws which establish a reference line relative to a cutting station, and the stack is advanced along the table for accurately dimensioned rip cuts. One or more of these cut stacks are then moved on a rip run-out unit to a cut-off infeed and gauge table where they are automatically aligned, clamped to establish a second reference line, and accurately advanced to a cut-off station where cross-cut swinging produces finished panels. The stacks are moved and gauged by either digital or analog hydraulic servo motors which accurately position the reference lines relative to the saw stations by controlled deceleration of the load to stop the stacks. At each saw station hold-downs prevent sheet displacement as the saw traverses. Each saw automatically senses cutting load and returns to its initial position immediately upon finishing a cut. Linear saw speed is controlled as a function of saw load. Means are provided to automatically remove trim and scrap.

### 3,721,141 MOVABLE BLADE GUARD AND MOUNTING FOR PORTABLE CIRCULAR SAWS

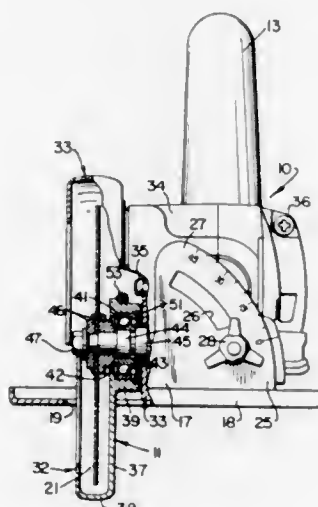
Lars Frostad, Syracuse, N.Y., assignor to Rockwell Manufacturing Company, Pittsburgh, Pa.

Filed July 6, 1971, Ser. No. 159,766

Int. Cl. B27g 19/04

U.S. Cl. 83—478

6 Claims



A movable guard and mounting for portable motor driven circular saws in which the movable guard is directly journaled

on the blade arbor shaft through an end thrust resisting antifriction bearing means arranged to isolate the movable guard from the rotational forces of the arbor shaft and accommodate the side thrust forces transmitted to the movable guard in use during its retractile movement effected by abutting engagement with the workpiece. The antifriction bearing means, being directly carried by the blade arbor shaft, is of minimal diameter permitting its installation well within the normal centrifugal discharge path of the chips and sawdust defined by the peripheral blade enclose lips of the fixed and movable guard in closely adjacent relation to the cutter blade mounting to form a labyrinth passage with the cutter blade mounting excluding entry of chips and sawdust.

### 3,721,142 MECHANISM FOR FASTENING A SAW BLADE

Joachim Csaki, Stuttgart, Germany, assignor to Ackermann u. Schmitt KG

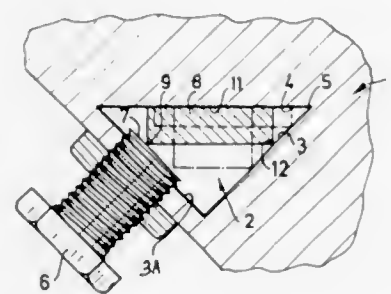
Filed Feb. 22, 1971, Ser. No. 117,447

Claims priority, application Germany, Feb. 1, 1971, P 20 15 006.5

Int. Cl. B27b 19/08, 11/06

U.S. Cl. 83—697

6 Claims



A mechanism for mounting the ends of saw blades of different sizes and configurations in a reciprocating chuck of a machine saw. The chuck is formed with an opening in which two flat inner walls intersect at an acute angle to form a corner. The saw blade is placed with one of its sides against one of the inner walls and a corner of the blade opposite the side is placed next to the other inner wall. A set screw then engages the free corner of the blade to press it firmly into the corner formed by the inner walls of the chuck.

### 3,721,143 PULP CUTTING AND LOADING MACHINE

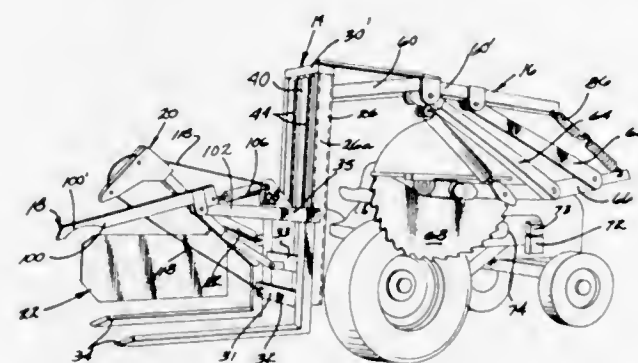
Franklin W. Domres, Route 01, Manistee, Mich.

Division of Ser. No. 656,257, July 26, 1967, Pat. No. 3,519,042. This application April 14, 1970, Ser. No. 32,505

Int. Cl. B27b 5/10

U.S. Cl. 83—646

3 Claims



Field use apparatus for high production cutting of pulp poles into uniform length "sticks", and loading of the cut sticks onto a haulage vehicle, employing in combination with a vehicle, a special cooperative pole evener and measuring

means, special compacting and gripping means, hoisting means, and specially mounted cutoff means.

### 3,721,144 PUNCHING TOOL

Masaji Yamamori, Nagoya, Japan, assignor to Mitsubishi Monsanto Chemical Company, Tokyo, Japan

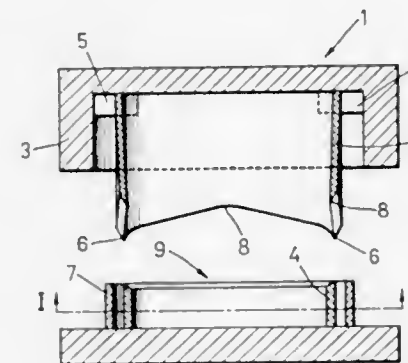
Filed Dec. 30, 1970, Ser. No. 102,782

Claims priority, application Japan, Feb. 25, 1970, 45/16095

Int. Cl. B26f 1/14

U.S. Cl. 83—685

8 Claims



A punching machine for cutting or forming workpieces from a synthetic resinous sheet having a number of formed vessels or the like thereon which comprises a steel die punch and a cutting die, characterized in that said steel die punch is provided with a fixed punching blade member and said cutting die with a flexible cutting blade member having portions resiliently slightly inflated inside of the punching blade member, said steel die punch being adapted to be forced to enter said cutting die by which the end of the steel die punch is surrounded to thereby attain a closest possible mating of said members for cutting or forming the workpieces with clean-cut peripheral edges.

### 3,721,145 SHUFFLE FEED POSITIONER AND CUTTER

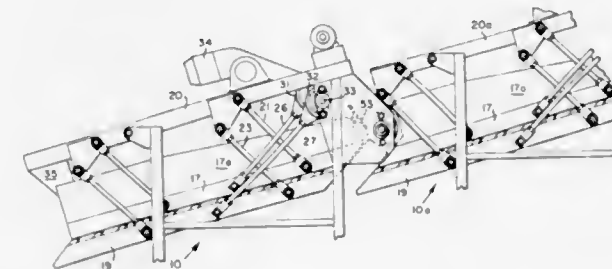
Louis P. Lazzarini, San Jose, Calif., assignor of a fractional part interest to Genevieve I. Hanscom, 225 Mt. Hermon Road, Lot 142, Santa Cruz, Calif., Genevieve I. Hanscom, Robert Magnuson, Lois J. Thomson, as trustees of the estate of Roy M. Magnuson

Filed Jan. 21, 1971, Ser. No. 108,311

Int. Cl. A23n 15/04

U.S. Cl. 83—732

7 Claims



A shuffle feed structure for feeding articles which require end trimming in which two shuffle feed mechanisms are placed in tandem so as to alternately feed an article in one direction by wedge-shaped surfaces on one shuffle feed mechanism and then feed the article in the other direction by oppositely facing wedge-shaped surfaces. At the time of carrying articles into cutting engagement with

the knife, a holding means is provided for each article to yieldably hold it against any tendency to become displaced due to irregularity in its contour.

### 3,721,146 PORTABLE SAWMILL HAVING A HORIZONTAL TRAVERSING BANDSAW

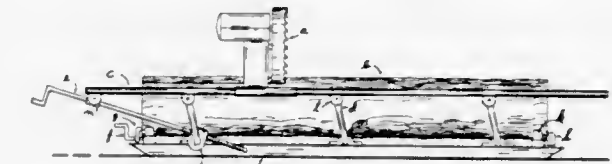
Charles E. McManama, 1734 N.W. Hoyt Street, Portland, Oreg.

Filed March 8, 1971, Ser. No. 89,919

Int. Cl. B27b 13/02

U.S. Cl. 83—795

4 Claims



A sawmill comprising a horizontal bandsaw which traverses upon paired rail members supported above and straddling a log supporting base by parallel pivotal arms which transmit structural rigidity to the rail members from the base while also providing an adjustable relationship to the base. The essence of advantage resides in this rigidity, which, in combination with a low loading-level at which a log can be loaded upon the mill, enables new methods and systems of operation purporting to reduce over-all investment requirement and increase versatility and efficiency.

### 3,721,147 PIN PLATE ARRANGEMENT FOR A PIANO

Toshimune Okugawa, and Kazue Nagai, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

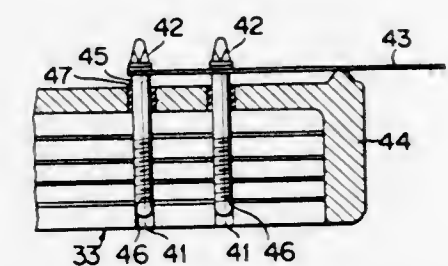
Filed March 10, 1971, Ser. No. 122,677

Claims priority, application Japan, March 12, 1970, 45/20658

Int. Cl. G10c 3/04

U.S. Cl. 84—186 WP

6 Claims



A pin plate arrangement for a piano comprises plural layers of wooden members and an adhesive agent bonding the adjacent ones of the layers to each other, the adhesive agent consisting of a pre-preg film impregnated with a thermosetting resin adhesive. The pin plate arrangement is kept for a long period of time having a less and constant moisture content and a smaller drop in the pin-holding power.

### 3,721,148 PIANO

Edmund S. Goss, 3561 Homestead Road, Santa Clara, Calif.

Filed Nov. 15, 1971, Ser. No. 198,512

Int. Cl. G10c 3/06

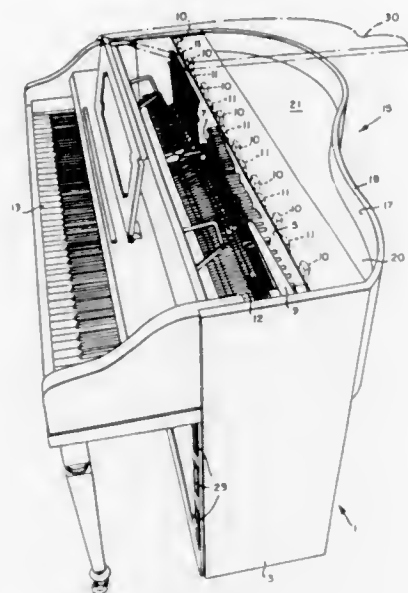
U.S. Cl. 84—189

5 Claims

An improved upright piano having a case with a reverberating sound chamber secured about the exterior of the case and



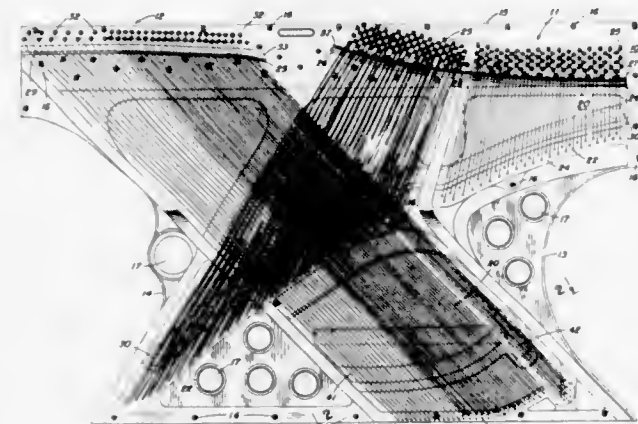
the vertical sounding board of the piano. Said reverberating sound chamber establishes a harp-shaped wall of which the



lateral edges are secured to the back side of the case. A secondary sounding board is engaged to the back side of the case adjacent to and spaced from said sounding board.

**3,721,149**  
**SCALE FOR UPRIGHT PIANOS**  
Salvatore Pagliaro, 21-16 21st Avenue, Astoria, N.Y.  
Filed Oct. 26, 1971, Ser. No. 191,991  
Int. Cl. G10c 3/08  
U.S. Cl. 84-197

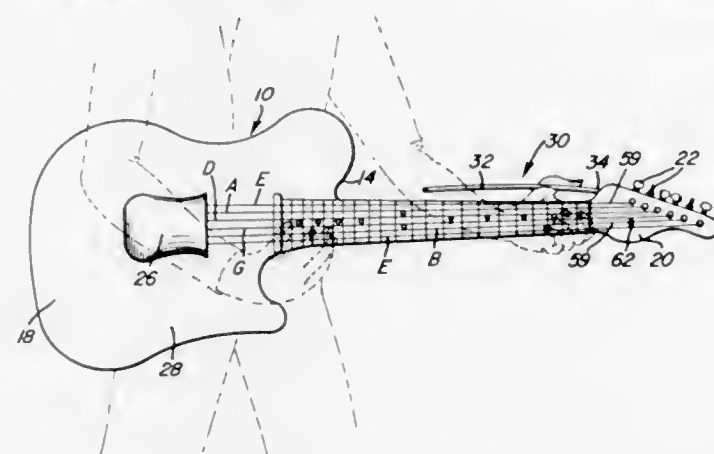
7 Claims



A scale for upright pianos adapted to provide improved tonal quality and volume is disclosed, in which the bass scale includes the strings corresponding to at least four notes at the low end of the treble scale in a conventional piano. The bass strings and the four treble note strings are positioned parallel to each other and extend diagonally across the piano scale at approximately a 45° angle with respect to a horizontal reference line to obtain maximum string length without increasing the overall piano size, and are supported by a pair of bass bridge sections disposed therebeneath. The first section of the bridge is in the form of a continuous curve and is adapted to receive all of the bass strings, and the second section is of irregular shape disposed approximately perpendicular to the first section and receives the strings corresponding to the four treble notes.

**3,721,150**  
**PITCH RAISING AND LOWERING DEVICE FOR GUITARS**  
Rickie R. Hoffman, and Roland F. Hoffman, both of P.O. Box 25, RR1, Lemmon, N. Dak.  
Filed Oct. 20, 1971, Ser. No. 190,830  
Int. Cl. G10d 3/00  
U.S. Cl. 84-313

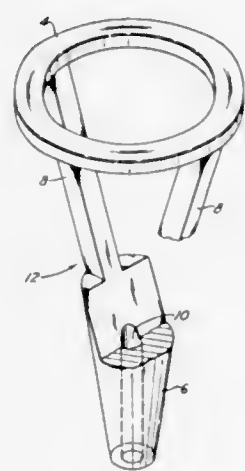
8 Claims



A pitch raising and lowering device which is unique in that, unlike prior art pitch changing devices, it is operatively mounted on the usual key-equipped string-end tuning head of the instrument. It comprises a rod having a thumb-actuated lever poised alongside the neck of the instrument (guitar or the like). This rod embodies a crank portion rockably mounted in a fixed bearing bracket. An arm of the crank carries and actuates a mechanical finger which has a terminal depressor which overlies one or more strings in a manner to optionally stress and release the same while the instrument is being played. When the lever is pressed the crank actuated mechanical finger progressively bends and tensions the string (or strings) and produces an ascending and diminishing glissando, that is, a sliding sound comparable to and obtainable only with a Hawaiian steel guitar.

**3,721,151**  
**TEACHING AID**  
Harold L. Dimond, 10629 Grimsby Lane, Cincinnati, Ohio  
Continuation-in-part of Ser. No. 113,891, Feb. 9, 1971, abandoned. This application July 19, 1971, Ser. No. 163,724  
Int. Cl. G10d 9/02  
U.S. Cl. 84-398

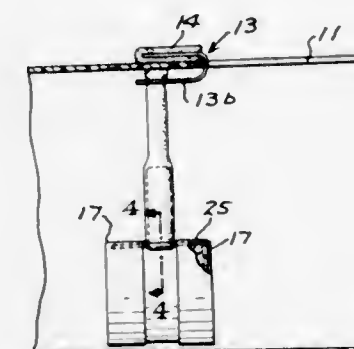
10 Claims



A teaching aid for use in combination with brass instruments composed of a rim, a tapered shank and one or more arms, each of which is securely attached at one end to said rim and the other end thereof to the larger end of said tapered shank. In a preferred embodiment the tapered shank is provided with an opening extending longitudinally therethrough.

**3,721,152**  
**HUMIDIFIER ATTACHMENT FOR GUITARS AND THE LIKE**  
Walter G. Von Meyer, 1504 Port Jefferson Road, Sidney, Ohio  
Filed April 27, 1972, Ser. No. 248,016  
Int. Cl. G10g 7/00  
U.S. Cl. 84-453

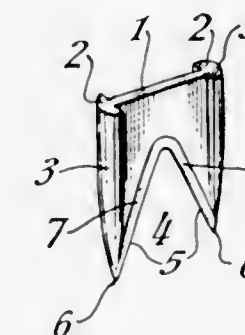
8 Claims



A humidifier attachment for a guitar which comprises a mounting clip for attachment to the opening of the guitar, resilient arms extending from said mounting clip and a housing mounted on the resilient arms and supporting a body of porous material containing water within the housing of the guitar or the like.

**3,721,153**  
**RELATING TO NAILS**  
Sidney Rosen, 11 Park Lodge, Friern Park, London, England  
Filed Sept. 8, 1971, Ser. No. 178,552  
Int. Cl. F16b 15/00  
U.S. Cl. 85-11

1 Claim



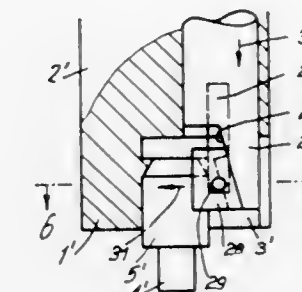
A nail of "I" section having a flat web the flanges along the opposite sides of the web of the section extending in the lengthwise direction of the nail, the web having a gap of V form extending inwardly of the web from the leading end of the nail the edges of the gap diverging from the inner end thereof so as to provide a pointed end at each side of the web at said leading end of the nail. The edges of the gap can each be formed as a knife edge to facilitate penetration of the nail.

**3,721,154**  
**TOOL CARRIER CONSTRUCTION**  
Berthold Leibinger, Gerlingen; Eugen Herb, Ditzingen, and Hans Klingel, Korntal, all of Germany, assignors to Trumpf & Co., Stuttgart, Germany  
Filed Aug. 18, 1971, Ser. No. 172,675  
Claims priority, application Germany, April 9, 1970, P 20 43 855.5  
Int. Cl. B26d 1/06

U.S. Cl. 83-698  
A tool carrier which is adapted to be arranged on a ram or work spindle of a processing machine, particularly a machine

10 Claims

tool, comprises a tool carrier formed as a laterally opened slot of the work spindle and including a slideable member which reciprocates in a bore overlying the outer end of the slot and closes the outer end to hold the tool in a position when it is

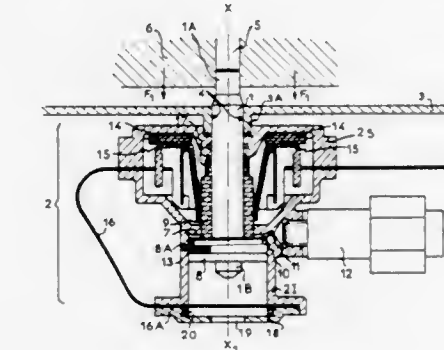


lowered alongside the tool. The slot is advantageously provided with a projection in the form of an engagement ledge which fits under a recessed end of the tool in order to hold it in position.

**ERRATUM**  
For Class 85-11 see:  
Patent No. 3,721,153

**3,721,155**  
**SAFETY DEVICE FOR LOCKING A MISSILE ON ITS LAUNCHER OR IN ITS CONTAINER IN EITHER THE TRANSPORT OR THE LAUNCHING POSITION**  
Emile Stauff, Versailles; Michel Maree, Chilly-Mazarin, and Jacques Roze des Ordon, Paris, all of France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France  
Filed Feb. 19, 1971, Ser. No. 116,959  
Claims priority, application France, Feb. 23, 1970, 7006411  
Int. Cl. F41f 3/04  
U.S. Cl. 89-1.807

7 Claims



A safety device for locking a missile either in the transport position in its container, or in the firing position on its launcher, in which means maintains electric circuit for energizing the missile propellant igniters short-circuited as long as the missile is not in a condition to be fired, and actuating means with movable restraining means permitting to fetch the missile from an initial locking position to a final retracted position and latching said movable means in their final retracted position.

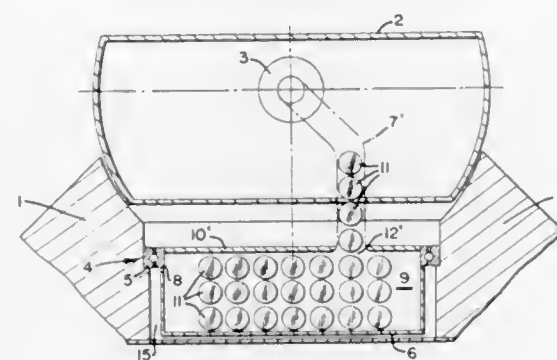
**3,721,156**  
**ARMORED VEHICLE TURRET**  
Hans-Georg Schallehn, Hummelweg, Germany, assignor to Rhein Stahl Aktiengesellschaft, Essen, Germany  
Filed Sept. 5, 1969, Ser. No. 857,294  
Int. Cl. F41h 5/20

U.S. Cl. 89-36 K  
An armored vehicle in which a turret is mounted in the well of a vehicle body for rotation about a vertical axis, there being

1 Claim



an ammunition bunker located outside the turret and in the well. The bunker is arranged centrally with respect to the turret and is rotatable therewith about the vertical axis, and is



connected to the turret for movement with only those parts of the turret which partake only of rotation of the turret about the vertical axis.

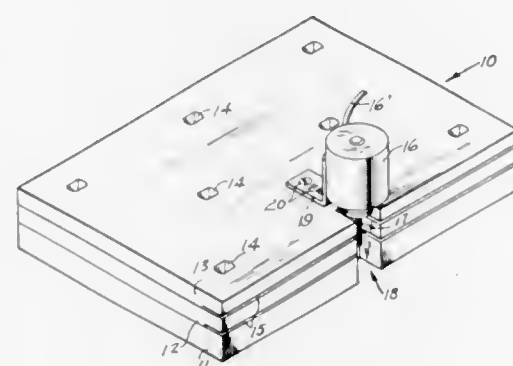
3,721,157

### LAMINATED TRIMMER FOR HIGH PRESSURE LAMINATED MATERIALS

Charles Bacher, 710 Island Ave., McKees Rocks, Pa.  
Filed June 3, 1971, Ser. No. 149,531  
Int. Cl. B23c 3/12

U.S. Cl. 90—18

3 Claims



A trimming machine for laminated materials. This device includes a multiple number of plates to which is secured a motor with a bit which will trim the edges of materials to a finished edge.

3,721,158

### ELECTRO HYDRAULIC MOTORS

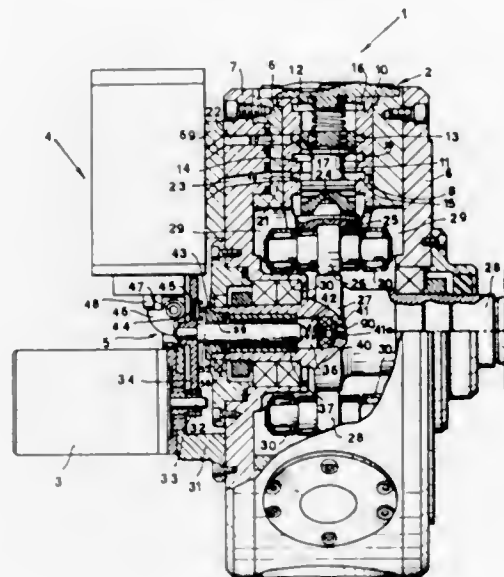
Nuzio D'Addea, Cinisello; Cesare Panzeri, Macherio, and Ruggero Chiappulini, Sesto San Giovanni, all of Italy, assignors to Consiglio Nazionale Delle Ricerche, Rome, Italy  
Filed Feb. 2, 1971, Ser. No. 112,000  
Claims priority, application Italy, Feb. 6, 1970, 67382 A/70  
Int. Cl. F15b 21/02

U.S. Cl. 91—35

10 Claims

An electro-hydraulic motor is described in which a rotary hydraulic motor is slaved to a stepping pilot motor by the operation of a fluid distributor valve which is controlled by a differential device responsive to the angular discrepancy between the shafts of the pilot and hydraulic motor. In this invention, the differential device consists of a toothed wheel coupled to the electric pilot motor to drive a shaft which is slidable coaxially and rotatable relative to the hydraulic motor

shaft: a frontal cam carried by the latter shaft cooperates with a roller mounted on a face of the toothed wheel to cause pro-



portional axial displacement of the differential shaft, which is transmitted to the spool of the distributor valve, preferably mounted at right angles to the hydraulic motor shaft.

3,721,159

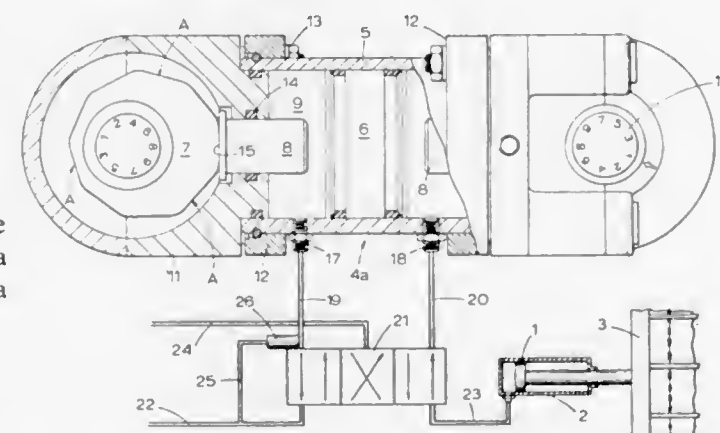
### HYDRAULIC CONTROL DEVICES

Wolfgang Schwandt, Altunnen, Germany, assignor to Gewerkschaft Eisenhütte Westfalen, Wethmar near Lunen, Westfalen, Germany  
Filed Dec. 31, 1970, Ser. No. 103,081  
Claims priority, application Germany, Jan. 30, 1970, P 20 04 056.6

Int. Cl. F15b 11/16

U.S. Cl. 91—418

1 Claim



A hydraulic control device connected to one of a series of shifting rams in a hydraulic system for shifting a conveyor in a mine working. The device is composed of a piston disposed in a cylinder and one or more displaceable stop members for limiting the movement of the piston and thereby regulating the quantity of pressure medium supplied to the ram. The position of the, or each, stop member can be altered with a cam or similar eccentric rotatable member connected to a manually operable control knob. An automatic change-over valve is preferably used to connect the working chambers on either side of the piston to either a pressure source or to the ram.

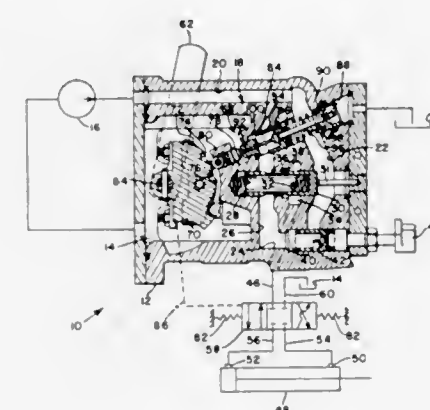
3,721,160

### HYDRO-MECHANICAL DETENT MECHANISM

Carl Edwin Kittle, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.  
Filed Oct. 26, 1970, Ser. No. 84,053  
Int. Cl. F15b 13/04

U.S. Cl. 91—426

10 Claims



A detent mechanism is provided for holding a selective control valve in a pair of active positions respectively wherein one or the other of the work ports of a double-acting hydraulic cylinder is connected to a source of fluid pressure while the remaining work port is connected to a sump. The detent mechanism includes a cam which is fixed to and swings with a lever for shifting the control valve. When the lever is swung to shift the control valve to one or the other of the active positions, one or the other of a pair of recesses in the cam is respectively placed in register with a roller of a cam-following detent element. A piston rod is bearingly engaged with the detent element and a force for holding the roller in the recesses is derived from the co-action of a biasing spring positioned against a piston carried by the rod and a pressure drop coupled across the piston, which pressure drop is induced by a metering valve for metering flow to the cylinder. The piston rod includes sections of different diameters exposed to fluid pressure at the opposite sides of the piston and when the pressure drop across the piston falls to zero as the cylinder reaches an end of a stroke, the pressure then normally existing at the opposite sides of the piston acts upon the different axially-projected areas of the rod and piston to exert a force substantially equal and opposite to that of the biasing spring. Thus, the detent force tending to keep the roller in one or the other of the recesses is reduced to the point where the force to a return-to-neutral spring acting on the control valve overcomes the detent force and moves the cam to disengage the roller from the recess.

3,721,161

### AXIAL PISTON HYDRAULIC APPARATUS

Gerhard Bobst, Oensingen, Switzerland, assignor to Von Roll AG, Gerlafingen, Switzerland  
Filed Dec. 24, 1970, Ser. No. 101,362  
Claims priority, application Switzerland, Dec. 30, 1969, 19443/69

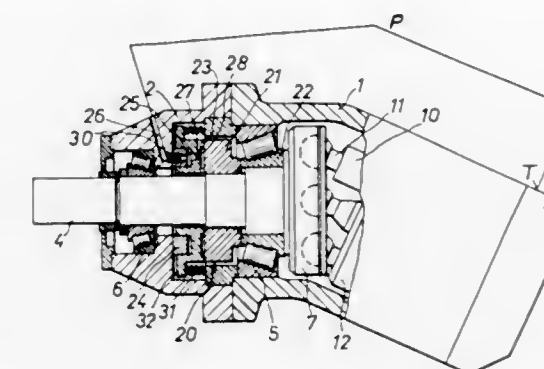
U.S. Cl. 91—486

Int. Cl. F01b 3/00, 13/04

13 Claims

To decrease mechanical loading on the roller thrust bearings in hydraulic pressure fluid apparatus, a hydrostatic axial slide bearing is provided, having a rotating part with an axially directed face secured to the rotating elements of the apparatus; and a stator part, formed as an axially movable element, such as a piston, within a cylinder which has pressure

fluid applied thereto from a pressure fluid tap of the apparatus, the piston being formed with an opening, preferably including a choke, through which pressure fluid is applied in



the region between the piston and the axially facing surface of the rotor element, to provide a counterforce against the mechanical force exerted against the thrust bearing.

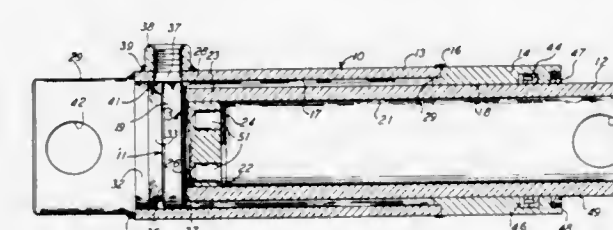
3,721,162

### FLUID-ACTUATED CYLINDER ASSEMBLY

Joseph T. Kulhavy, Davenport, Iowa, assignor to J. I. Case Company, Racine, Wis.  
Filed Jan. 10, 1972, Ser. No. 216,634  
Int. Cl. F01b 29/00; F16j 1/00

U.S. Cl. 92—128

7 Claims



A fluid-actuated cylinder assembly of a type which can be readily serviced or repaired, even in the field. A cylinder has an end cap and a piston and rod are slidable within the cylinder. The piston and rod can be threaded into assembly, and the rod is hollow so that a work tool can extend into the rod and engage the piston for controlling the piston in the screwing action between the rod and the piston for assembly and disassembly thereof. A fluid seal and a rod wiper exist between the cylinder and the rod and the seal is spaced inwardly from the end of the cylinder but is accessible for replacement when the rod is unscrewed relative to the piston and is removed from the cylinder. Also, the end cap and a fluid port and the piston itself are all arranged so that fluid can enter the cylinder to provide a working force on the piston, even when the piston is in its end limit position abutting a wall or face presented on the end cap.

3,721,163

### PISTONS

Harold Taylor Hill, and Ronald Morris Caton, both of Sway, Lymington, England, assignors to Wellworthy Limited, Lymington, England  
Filed Sept. 23, 1970, Ser. No. 74,593  
Int. Cl. F16j 1/08

U.S. Cl. 92—158

7 Claims

This invention relates to pistons comprising a crown and side wall. In order to enhance lubrication of the skirt, the side wall is formed with a circumferentially extending helical



groove; at least a part of this groove has a predetermined profile. For example, that part of the groove next adjacent the crown has a predetermined profile and the profile of at least a portion of the remainder of the groove is of random nature.



The groove may either be symmetrical or asymmetrical. The invention also relates to a method for making a piston which includes the step of cutting in the side wall thereof a circumferentially extending helical groove, at least part of which is of predetermined profile.

#### ERRATUM

For Class 94—10 C see:  
Patent No. 3,721,168

3,721,164

#### PHOTOELECTRIC DEVICE FOR RECORDING SYMBOLS AND FOR DRAWING SMALL DIAGRAMS AT HIGH RECORDING AND DRAWING SPEED FOR USE IN AN AUTOMATIC DRAFTING MACHINE

Karl Blattner, Kuttigen, and Roland Picard, Rombach, Switzerland, assignors to G. Coradi A.G., Zurich, Switzerland

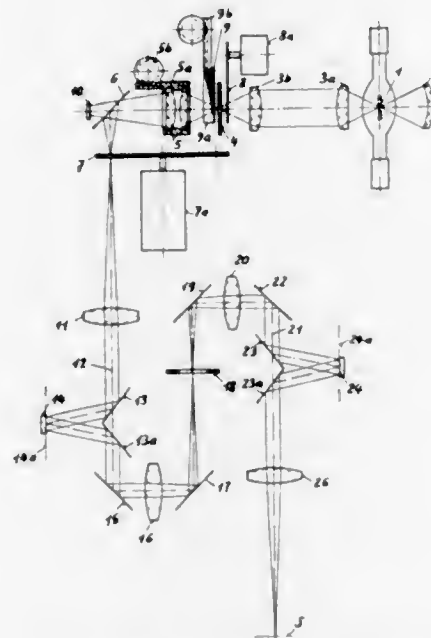
Continuation of application Ser. No. 796,981, Feb. 6, 1969. This application Nov. 30, 1971, Ser. No. 203,175

Claims priority, application Switzerland, Feb. 7, 1968, 1,994/68

Int. Cl. G03

U.S. Cl. 95—1 R

10 Claims



A virtually inertialess automatic drafting machine for recording symbols and diagrams, at high recording speeds, on a photographic layer. An adjustable illuminating system produces an image of a line-thickness-determining aperture, the image being directed to a pair of rotatable mirrors so that it is deflected in a direction of one or the

other coordinates and onto the photographic layer, the mirrors being controlled by signals supplied by a storage medium.

3,721,165

#### PHOTOTYPE COMPOSING MACHINE WITH ROTARY CHARACTER DRUM

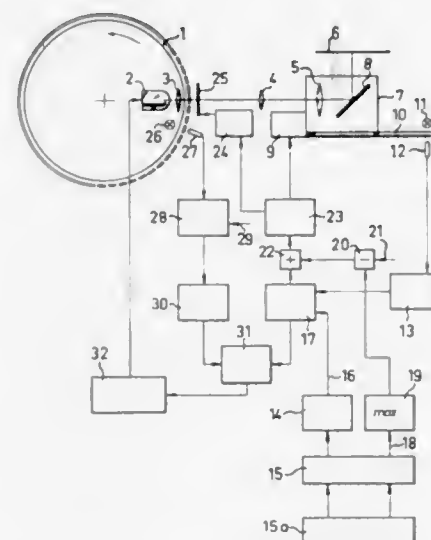
Alois Knoll, Bahnhofstrasse 33, 6079 Buchschlag, Germany  
Filed Dec. 1, 1970, Ser. No. 93,988

Claims priority, application Germany, Dec. 1, 1969, P 19 60 161.7

Int. Cl. B41b 17/10

U.S. Cl. 95—4.5 R

4 Claims



A phototype composing machine having a continuously rotating character drum and a continuously moving line composing carriage is disclosed. The arrangement is such that by varying the carriage speed and the position from which a character is projected from the drum, the image of the character will be properly located on the recording medium.

3,721,166

#### COMPENSATED ELECTRICALLY CONTROLLED FOCAL PLANE SHUTTER

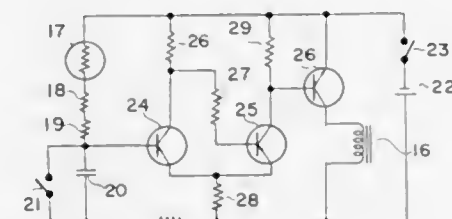
Akio Yanagi, Shoichiro Kakuta, both of Tokyo, and Kintaro Yata, Ikeda, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka-shi, Japan

Filed Nov. 13, 1970, Ser. No. 89,407

Int. Cl. G03b 7/08, 9/62, 9/34

U.S. Cl. 95—10 CT

2 Claims



Circuitry is provided for determining the time delay for release of a shutter curtain from a cocked position to compensate for exposure errors generated by the overlapping of first and second shutter curtains in their cocked positions. The non-uniformity between different shutter mechanisms is corrected by adjustment of a variable resistance. A switching circuit responsive to a voltage related to the brightness of an object as well as the required compensation releases the second curtain to terminate the exposure.

3,721,167

#### EXPOSURE VALUE CONTROLLING APPARATUS

Mitsutoshi Ogiso, Kawasaki-shi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

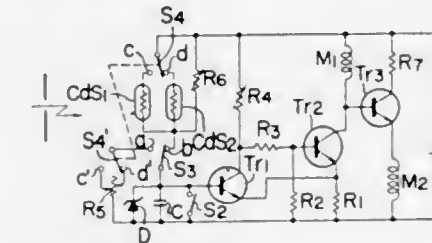
Filed Oct. 29, 1969, Ser. No. 872,030

Claims priority, application Japan, Nov. 6, 1968, 43/81,430

Int. Cl. G03b 7/08

U.S. Cl. 95—10 CT

15 Claims



Timing circuit arrangements for control of camera aperture opening and shutter speed wherein a single timing capacitor controls aperture opening in one timing operation during charging thereof and thereafter controls shutter speed in a second timing operation during discharge thereof.

3,721,168

#### PHOTOGRAPHIC CAMERA

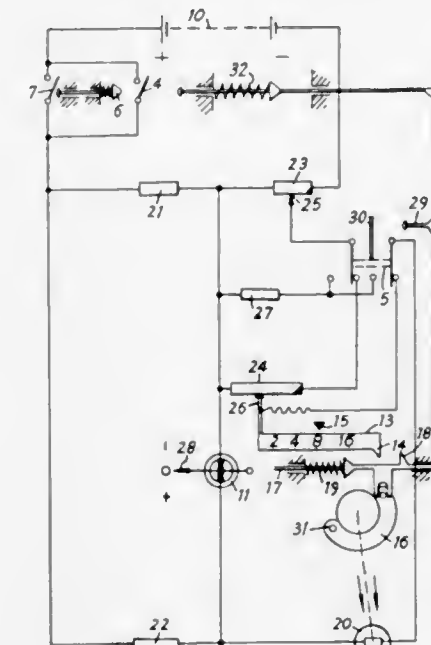
Rolf Noack, and Heinz Schulze, both of Dresden, Germany, assignors to VEB Pentacon, Kamera-und Kinowerke, Dresden, Germany

Filed Aug. 2, 1971, Ser. No. 167,941

Int. Cl. G03b 7/02

U.S. Cl. 95—10 C

5 Claims



The photographic camera is provided with a photoelectric exposure-measuring apparatus which functions in dependence upon the light passing through the objective lens. The measurement may be made with the diaphragm fully open or stopped down to an aperture at which an exposure is to be made. A change-over switch is provided by which either the variable resistor, which is variable together with the diaphragm-setting member in the case of open aperture measurement, or a substitute resistor lying in parallel therewith in the case of working aperture measurement, is connectible into the measurement circuit. For the optional measurement either with open aperture or with working aperture, measuring key means are provided coupled with the change-over switch so that on selection of open aperture measurement the variable resistor is connectible into the measurement circuit and on

selection of working aperture measurement the substitute resistor is connectible into the measurement circuit.

3,721,169

#### RANGE RESPONSIVE FLASH UNIT

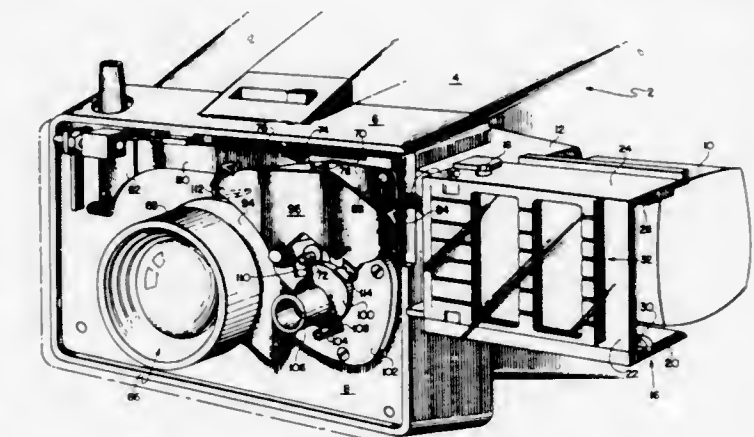
Bruce K. Johnson, Andover, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 24, 1970, Ser. No. 101,336

Int. Cl. G03b 3/02, 15/03

U.S. Cl. 95—11 L

26 Claims



The subject disclosure describes a flash unit, the light output of which is automatically adjusted throughout a given range of illumination values by mechanical means in conformance with the distance settings of a camera with which it is incorporated to provide so-called "follow-focus" operation. A cooperating manually operable "trim" means enables an optional overall modification or shift in the degree of light output independent with the aforesaid distance settings. The flash unit may be of the electronic flash or "strobe" type or may comprise a flash cube or the like.

The subject flash unit includes a plurality of telescoping apertured plates which are sequentially advanced through a cam and linkage assembly connected to the camera focus adjusting means so as to selectively vary the net aperture through which illumination from the flash lamp may travel to a subject.

3,721,170

#### APPARATUS FOR ADAPTING A REFLEX CAMERA TO USE WITH A MONOCULAR MICROSCOPE

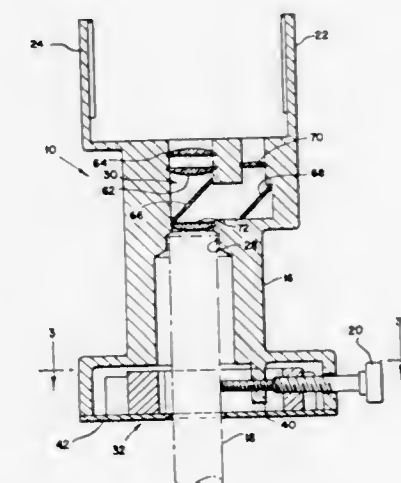
Bruce K. Johnson, Andover, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed April 25, 1972, Ser. No. 247,410

Int. Cl. G03b 29/00

U.S. Cl. 95—12

2 Claims



An apparatus for attaching a reflex camera, with an automatic exposure control, to a standard monocular microscope is disclosed. The apparatus includes a self-centering clamp to attach it to the draw tube of a monocular microscope and a



support for holding the camera in alignment with the optic axis of the microscope. The support contains an eyepiece modified to provide a way of operating the camera's automatic exposure control and an optional polarizer for dark field microscopy. It does not interfere with the camera's automatic operation.

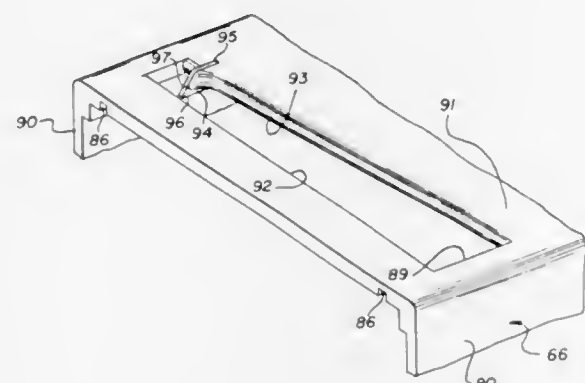
### 3,721,171 PRINT STRIPPING DEVICE

Frederick W. Kern, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed March 29, 1972, Ser. No. 239,014  
Int. Cl. G03b 17/50

U.S. Cl. 95-13

7 Claims



A self-processing camera is provided for use with film units comprising a preregistered, integral image-recording unit separably attached along its lateral margins to side rails of a rigid frame. As each film unit moves endwise in the camera during processing, its image-recording unit is separated from the frame and ejected through an exit slot in the camera housing to provide the desired photographic print. A novel stripping device initiates the separation at a leading corner of the image-recording unit and then progressively detaches that unit from the frame by means of an angularly disposed stripping shoe that guides the image-recording unit into and through the exit slot.

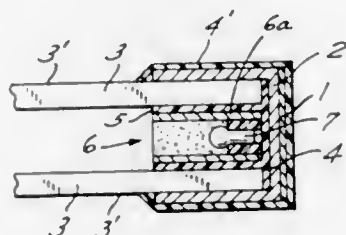
### 3,721,172 CAPPING SHUTTER WITH EXPLOSIVE CHARGE OF CARBON POWDER

Frank Frungel, and Horst Lohse, both of Hamburg, Germany, assignors to Impulsphysik GmbH, Hamburg, Germany

Filed Nov. 24, 1970, Ser. No. 92,440  
Int. Cl. G03b 9/08; G02f 1/28

U.S. Cl. 95-53

22 Claims



A shutter comprises a frame of elastomeric material which bounds an opening for the passage of light. A pair of parallel transparent plates are sealingly accommodated in the frame exteriorly across the opening and define between themselves and with the frame an internal chamber. One or more shutter-closing units are embedded in the frame and each include a housing or shell having an open side communicating with the chamber, a charge of carbon powder accommodated in the open shell with a frangible layer extending across the open side to retain the carbon powder in the shell until the time of

operation, and an explosive charge which can be triggered electrically and which blows the carbon powder into the chamber to thereby close the shutter, that is prevent further passage of light through the opening.

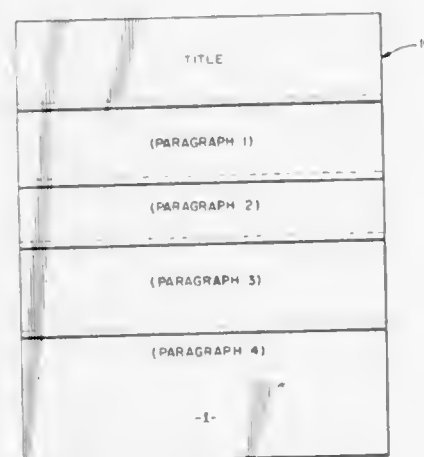
### 3,721,173 APPARATUS FOR COMPOSING DOCUMENTS

Leo Jaffe, Bassett Tower, El Paso, Tex.

Filed Dec. 12, 1969, Ser. No. 884,613  
Int. Cl. G03b 27/02

U.S. Cl. 95-85

2 Claims



Each paragraph of a document is separately typed to define a master strip. An identical distance is maintained between the printed matter and the top of each strip, and a second distance is maintained between the printed matter and the bottom of each strip. The several master strips are placed in a document carrier. The carrier is in turn placed in a composition board for visual alignment of the individual paragraphs. Static electricity is applied to maintain the master strips in alignment with each other. Copies of the composite document are then made.

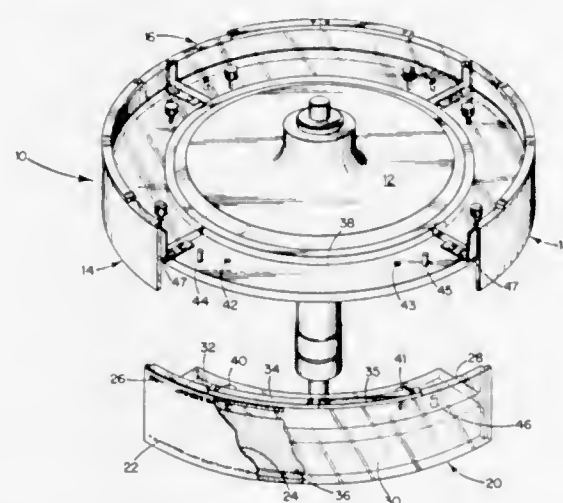
### 3,721,174 CHARACTER STORAGE APPARATUS WITH INDIVIDUALLY REPLACEABLE, ACCURATELY LOCATED CHARACTER FONTS

James Alfred Tidd, Haverhill, Mass., assignor to Graphic Systems, Inc., Lowell, Mass.

Filed Aug. 30, 1971, Ser. No. 176,222  
Int. Cl. G03b 15/00

U.S. Cl. 95-85

13 Claims



This disclosure depicts character storage apparatus especially for use in a phototypesetting machine or the like for storage characters for selective presentation at a character display location, including a plurality of discrete character carriers each carrying a font of characters which revolve on a cylinder of revolution when the phototypesetting machine is in

operation, the carriers being dimensionally rigid at least in the said cylinder of revolution. The apparatus includes carrier mounting means and means for attaching the carriers to the carrier mounting means such that the characters are located with extreme accuracy.

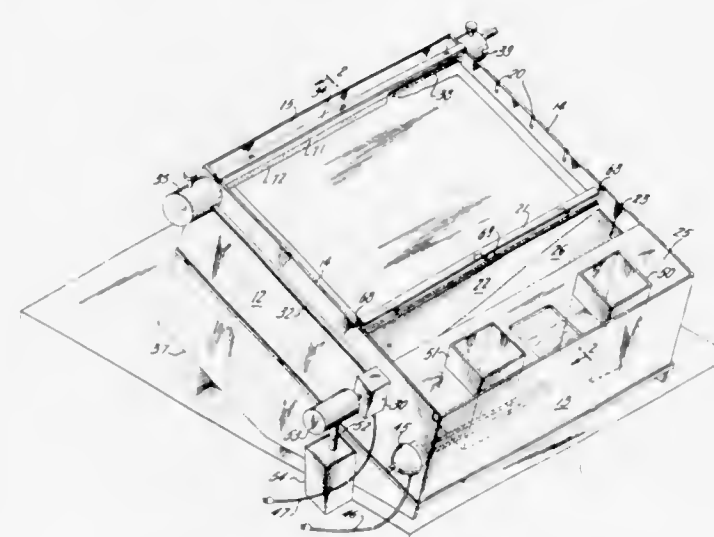
### 3,721,175 PHOTOGRAPHIC PROCESSING APPARATUS

Samuel Needleman, 177 Louis Street, Maywood, N.J.

Continuation-in-part of Ser. No. 826,501, May 21, 1969, Pat. No. 3,601,029. This application July 2, 1971, Ser. No. 159,420  
Int. Cl. G03d 13/04

U.S. Cl. 95-95

4 Claims



A photographic sheet material processing apparatus wherein, in one embodiment, the apparatus comprises a platen which may be tilted to present an inclined surface. A solution applicator channel, flush with the surface of the platen, extends thereacross and communicates with a solution chamber. A pump is provided for forcing processing solutions into the chamber and through the applicator channel. Solution flow modifying members are provided between the chamber and the applicator channel in order to assure that the solution flows in a uniform stream over the active surface of the platen. The material to be processed is placed emulsion side down over the platen and positioned to extend above and beyond the applicator channel. In another embodiment, the platen is of arcuate shape and is placed in an upright position.

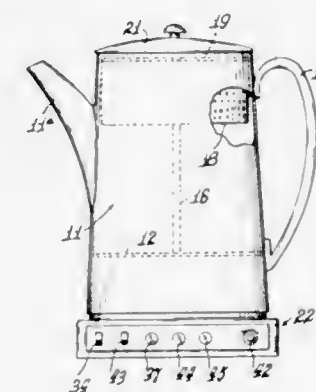
### 3,721,176 BEVERAGE BREWING APPARATUS

Malcolm Logan, 535 Noble Street, Chicago, Ill.

Filed April 15, 1971, Ser. No. 134,147  
Int. Cl. A47j 31/00

U.S. Cl. 99-280

11 Claims



Beverage brewing apparatus of the character having a container for water and a basket to contain ground coffee. It also includes a flow stem supporting the basket, at the lower end of

which there is an electrically actuated pump operable to cause fluid to flow upwardly through the flow tube and spill over into the basket. Suitable means is provided for heating the water to brew the coffee or to re-heat same.

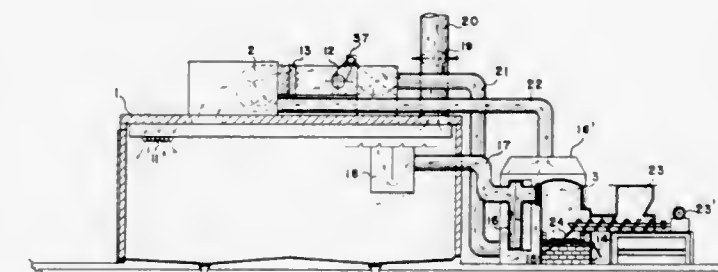
### 3,721,177 COMMERCIAL BARBEQUE COOKER

William E. Booker, 3039 Kingston Pike, Knoxville, Tenn.

Filed Nov. 5, 1971, Ser. No. 195,969  
Int. Cl. A23b 1/04

U.S. Cl. 99-331

9 Claims



A commercial barbecue cooker has a cooking room in which the meats to be barbecued are supported on racks. The room is heated by a remote hardwood burner which discharges hot smoke and gases into the circulating duct system of the room. The meat is subjected to the heat of the combustion gases from the hardwood burner in the range of 225 to 260°F. to barbecue the meat. Smoke from a separate smoke generator is admitted into the circulating duct system of the room as required. The circulation of the hot combustion gases is uniform and downward from the top of the room through the meat in the racks and then upwardly for recirculation.

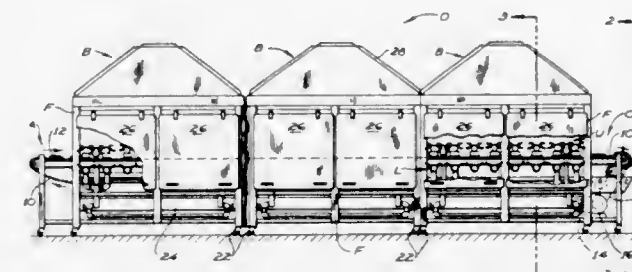
### 3,721,178 FOOD BROILER

Robert H. Szabrak, and Richard A. Smith, both of Sandusky, Ohio, assignors to Sam Stein Associates, Inc., Sandusky, Ohio

Filed March 25, 1971, Ser. No. 128,057  
Int. Cl. A47j 37/00

U.S. Cl. 99-386

2 Claims



A food broiler including a horizontally extending furnace having an endless food conveyor belt extending through the furnace for carrying food portions such as hamburger patties therethrough for broiling. The hamburgers are broiled by an upper row of spaced gas burners disposed horizontally through the furnace above the conveyor belt for heating the upper surfaces of the hamburgers, and a lower row of spaced gas burners disposed horizontally through the furnace below the conveyor belt for heating the lower surfaces of the hamburgers. Each upper row burner has a V-shaped heat baffle disposed above the burner (in inverted V position) for directing heat down onto the hamburgers. Each lower row burner has a W-shaped burner plate disposed above it to radiate heat to the bottom of the hamburgers and to hold grease drippings

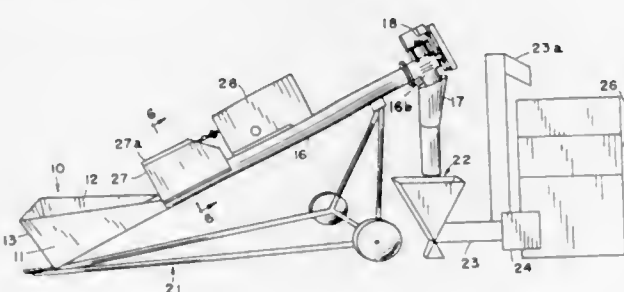


from the hamburgers for flame flare-up to brown the hamburgers. The furnace includes a plurality of substantially identical individual modular furnace sections secured together to form the furnace, whereby the length of the furnace may be effected by adding or subtracting one or more of such modular sections to increase or decrease broiling time. The broiler is provided with a hamburger removal mechanism for removing the hamburgers from the conveyor belt and delivering them to a discharge chute.

**3,721,179**  
**CHEMICAL APPLICATOR FOR GRAIN**  
Robert D. Applegate, Attica, Ind., assignor to  
Driall Driers, Inc.  
Filed Aug. 20, 1971, Ser. No. 173,449  
Int. Cl. A23b 9/00

U.S. Cl. 99—487

12 Claims

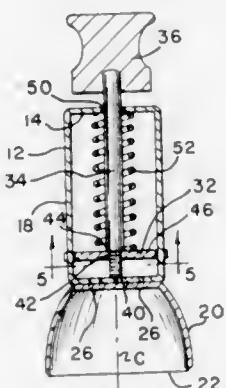


Disclosed is an applicator for applying liquid preservatives to grain as it is moved by an auger conveyor from a receiving bin; a switch, responsive to the grain level in the receiving bin, assures that operation of the auger conveyor and flow of the liquid preservatives can occur only when the grain level in the receiving bin is above the intake end of the auger conveyor thus providing a seal preventing discharge of the liquid or its fumes into the atmosphere.

**3,721,180**  
**EGGSHELL OPENER**  
Herman D. Strang, 308 Ridge, Algonquin, Ill.  
Filed Jan. 18, 1971, Ser. No. 107,277  
Int. Cl. A47j 43/14

U.S. Cl. 99—571

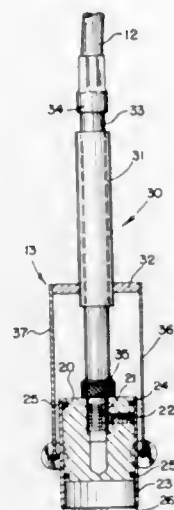
4 Claims



A sanitary eggshell opener includes a circular skirt dependent from a fixed frame and a traveling ram biased toward said skirt. The motion of the ram is limited by guide means to movement along a line which is perpendicular to the center of the plane of the mouth of the dependent skirt which is adapted to be received over an end of an egg.

**3,721,181**  
**EGG CUTTER**  
Douglas S. Fraser and Charles E. Bender, New Paltz, N.Y., assignors to Cenco Medical/Health Supply Corporation, Chicago, Ill.  
Filed Oct. 30, 1970, Ser. No. 85,386  
Int. Cl. A23b 5/00; B25b 3/00; B23q 3/157  
U.S. Cl. 99—576

4 Claims

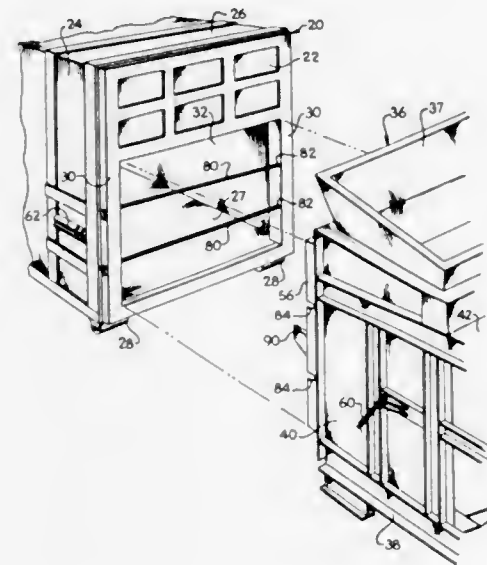


An egg cutter to hold and cut an end of the shell of an egg to permit inspection, sampling or the like. A cylindrical cutter having abrading means on one end is rotated through a flexible shaft. The cylindrical member is on a circle approximating the size of the end of an average egg. Gripping means in the form of wheels to engage the end of the egg assures accurate positioning as the cutter is moved against the egg. The gripping means is retractable to permit the cutter to be used independently.

**3,721,182**  
**STATIONARY REFUSE PACKER AND ASSOCIATED CONTAINER APPARATUS**  
Donal W. Chaney, Gallion, Ohio, assignor to Harsco Corporation, Camp Hill, Pa.  
Filed Dec. 30, 1970, Ser. No. 102,833  
Int. Cl. B30b 13/00

U.S. Cl. 100—35

5 Claims

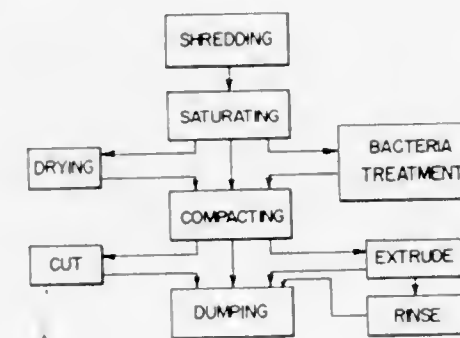


A stationary refuse packer and associated portable refuse container apparatus that comprises a novel automatic control system adapted for sophisticated control of the packer ram that loads the container. Such control includes jog type cycling wherein portions of the packer ram cycle can be precisely individually controlled; single cycling wherein the

machine will go through one complete cycle and then stop; automatic cycling wherein the machine will cycle continuously until stopped; and timer cycling wherein the machine will continue to cycle until automatically stopped after a predetermined period of time. In addition, other aspects of control can be uniquely accomplished.

**3,721,183**  
**METHOD OF DISPOSING BULK RUBBISH**  
John V. Dunlea, Jr., 2 Wellesley Avenue, Wellesley, Mass.  
Continuation-in-part of Ser. No. 888,268, Dec. 29, 1969, abandoned. This application Nov. 8, 1971, Ser. No. 196,822  
Int. Cl. A61l 11/00; B30b 13/00  
U.S. Cl. 100—39

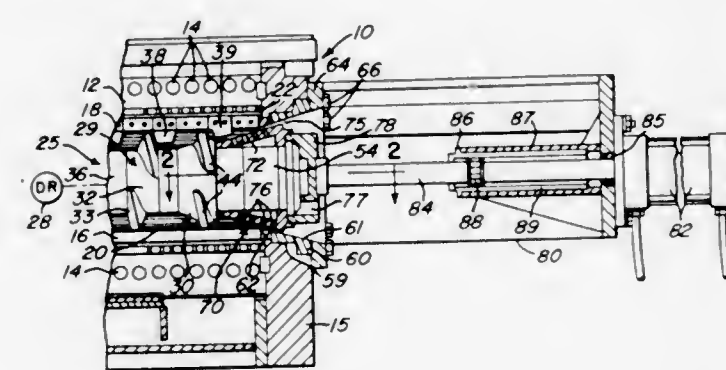
1 Claim



Bulk rubbish is shredded, saturated with a binding agent, compacted on a continuously extruded or piecemeal basis, reduced in size, rinsed and disposed of either as land fill or dumped at sea. Further steps include treatment of the rubbish to kill bacteria, drying prior to compaction and cutting or chipping the compacted rubbish into small pieces.

**3,721,184**  
**MECHANICAL SCREW PRESS**  
Alfred W. French, and Forest J. Starrett, Jr., both of Piqua, Ohio, assignors to The French Oil Mill Machinery Company, Piqua, Ohio  
Filed July 9, 1971, Ser. No. 161,132  
Int. Cl. B30b 9/14, 3/02, 15/00  
U.S. Cl. 100—117

15 Claims



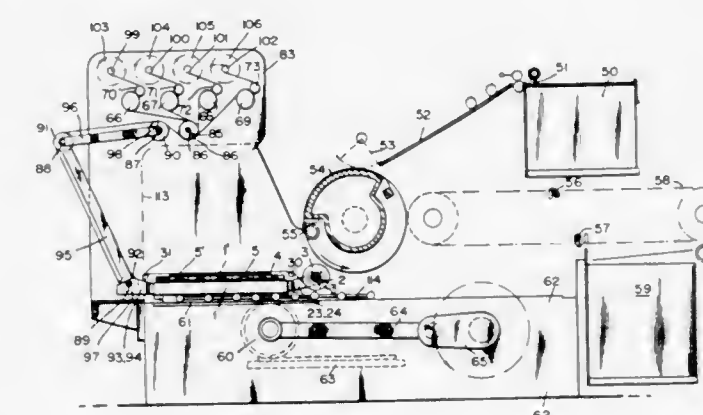
A cylindrical cage is lined with spaced screen bars to define drainage slots, a screw extends through the cage and has a plurality of axially spaced worms mounted on a shaft, and axially spaced stationary breaker lugs project inwardly between the flights of the worms. The final discharge worm has a tapered body and two diametrically opposed helical flights each of which extend circumferentially about 170°. The flights are effective to balance lateral forces acting on the discharge end portion of the screw and provide for generally axial flow of material between the flights. The final discharge worm is also

908 O.G.—23

adapted to be pulled axially from the shaft without opening the cage, by a fluid cylinder which primarily serves to position a frusto-conical drainage sleeve within a surrounding discharge ring to vary the size of the discharge orifice.

**3,721,185**  
**DEVICE FOR HOT EMBOSsing WITH COLORED ROLL FOILS**  
Hugo Rambausek, Wiesloch, Germany, assignor to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Germany  
Filed Nov. 20, 1970, Ser. No. 91,330  
Claims priority, application Germany, Nov. 22, 1969, P 19 58 824.0  
Int. Cl. B41f 3/18; B41k 3/58  
U.S. Cl. 101—25

6 Claims



Cylinder printing press includes a press bed, a device for hot embossing with colored roll foil including means for mounting a plurality of stamping dies on the press bed, a spindle for carrying a colored foil roll located at one end of the press bed, foil transfer rollers and a take-up spindle for depleted colored foil roll located at the other end of the press bed, and a plurality of guide rods disposed between the spindles for guiding the foil in a path over and slightly spaced from the stamping dies, a machine frame for carrying the foil transfer rollers, the foil take-up spindle being mounted on the machine frame, oscillating drive or transmission means forming a connecting bridge between the type bed and the machine frame, the oscillating transmission means comprising a coupling member and a rocker arm pivotally connected to one another and respectively connected pivotally to the type bed and to the machine frame, a plurality of deflecting rollers mounted respectively at the pivotally points of the coupling member and the rocker arm, the oscillating transmission means being actuable for drawing discharging foil lengths stepwise over the deflecting rollers from the foil transfer rollers and the take-up spindle located at the machine frame.

**3,721,186**  
**ROCKABLE IMPRESSION DEVICE FOR A PRINTING MACHINE**

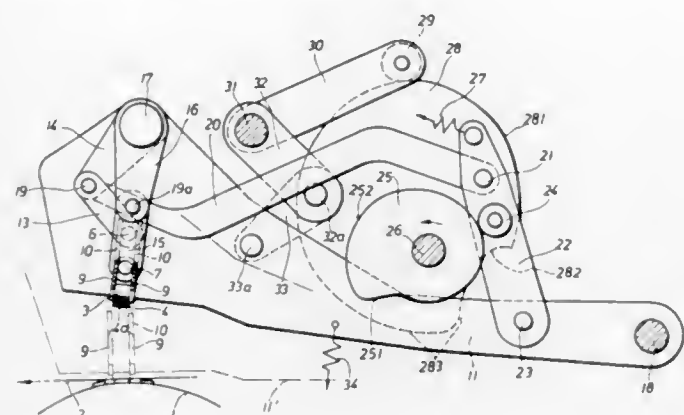
Paul Thevis, Oberndorf; Adolf Schneider, Altoberndorf, and Horst Jakubaschk, Oberndorf, all of Germany, assignors to Olympia Werke AG, Wilhelmshaven, Germany  
Filed Jan. 20, 1971, Ser. No. 108,104  
Claims priority, application Germany, Feb. 5, 1970, P 20 05 143.8  
Int. Cl. B41f 1/04  
U.S. Cl. 101—297

10 Claims

An impression device for a parallel printer, in which a row of characters or digits is imprinted by a row of types, has an impression member with a convex curved impression surface



rocking on a copy sheet and on an inked ribbon covering the row of types so that imprints of the characters are made. The rocking motion of the impression member is obtained by al-



ternately moving the ends of the same toward and away from the row of types after a frame carrying the impression member, has been rapidly moved to a position in which one end of the impression member abuts the sheet.

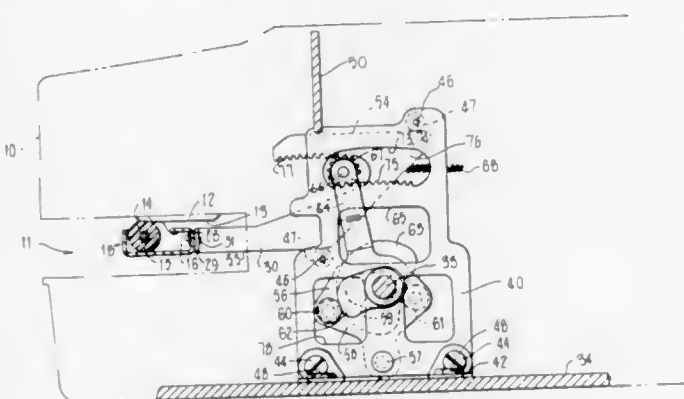
3,721,187

**INKING DEVICE FOR A PLANAR PRINTING DIE PLATE**  
Leo Levinson, Berkeley, Calif., assignor to The Singer Company, New York, N.Y.

Filed April 22, 1971, Ser. No. 136,421  
Int. Cl. B41f 1/46, 1/52

U.S. Cl. 101—359

12 Claims



A reciprocable inking mechanism for applying ink to the printing surface of a printing die plate in a postage metering device. An ink impregnated roller is moved to and fro across the face of the die plate with each operation of the metering device. The inking roller moves in a linear path under control of a rotary drive mechanism.

3,721,188

**PRINTING CYLINDER ASSEMBLY**

John C. Jacobsen, Town and Country, and John S. Wilson, Kirkwood, Mo., assignors to Allied Gear and Machine Co., Inc., St. Louis, Mo.

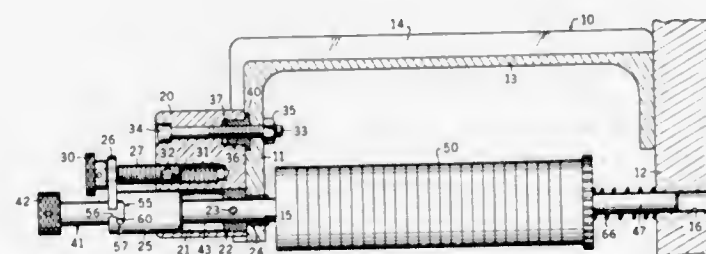
Filed Feb. 23, 1972, Ser. No. 228,689  
Int. Cl. B41f 13/20, 13/44

U.S. Cl. 101—375

3 Claims

A printing cylinder assembly including a shaft having longitudinally and axially spaced first and second shoulder portions with an intermediate shaft portion therebetween, the second shoulder portion being located nearer to the shaft end, and the first shoulder portion being provided with a cross-sectional dimension larger than that of the second shoulder portion and intermediate shaft portion, and the second shoulder portion being provided with a

cross-sectional dimension larger than the shaft end. The printing cylinder is provided with a longitudinal passage therethrough that receives the shaft. First and second ball bearings are carried by opposite ends of the cylinder with their rotative axes in longitudinal alignment, the outer races of the ball bearings being fixed to the cylinder. The inner race of the first ball bearing is provided with a cross-sectional dimension larger than that of the inner race of the second ball bearing and only slightly smaller than that of the first shoulder portion. The inner race of the second ball bearing is provided with a cross-sectional dimension only slightly smaller than that of the second shoulder portion yet larger than that of the shaft end, whereby the inner race of the first ball bearing will pass over the shaft end, second shoulder portion and intermediate shaft por-



tion for a press-fit on the first shoulder portion. The inner race of the second ball bearing will pass over the shaft end for a press-fit on the second shoulder portion. The outer circumference of the cylinder is concentric with the longitudinally aligned rotative axes of the ball bearings to provide a precisely in-round cylinder diameter for accurate printing. The intermediate shaft portion has a cross-sectional dimension larger than the second shoulder portion to provide a stop abutment against which the inner race of the second ball bearing is positioned. The shaft has a portion adjacent to the first shoulder portion and on the opposite side of the first shoulder portion from the intermediate shaft portion to provide a stop abutment against which the inner race of the first ball bearing is positioned.

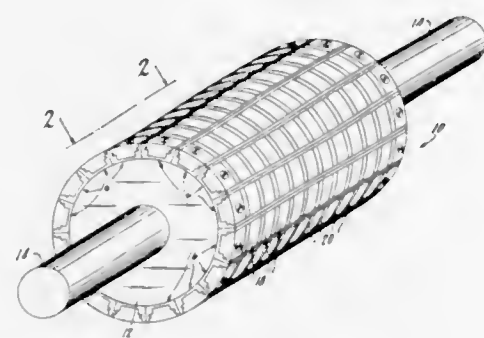
3,721,189

**MAGNETIC PRINT CYLINDER**

Andrew M. Bray, Little Suamico, Wis., assignor to Magna-Graphics Corp., Dayton, Ohio  
Filed June 28, 1971, Ser. No. 157,183  
Int. Cl. B41f 27/00

U.S. Cl. 101—382 MV

6 Claims



A magnetic print cylinder for use with flexible, magnetizable printing plates, the cylinder having a plurality of axially extending, magnetic assemblies mounted in a side-by-side relation on the surface thereof, each of the assemblies including a

channel member of magnetic flux insulating material, a plurality of permanent magnetic parts aligned in a spaced relation in the channel member, and a magnetizable pole piece positioned between each pair of magnets, the outer surface of the magnetic assemblies forming the plate mounting surface for the printing plates.

3,721,190

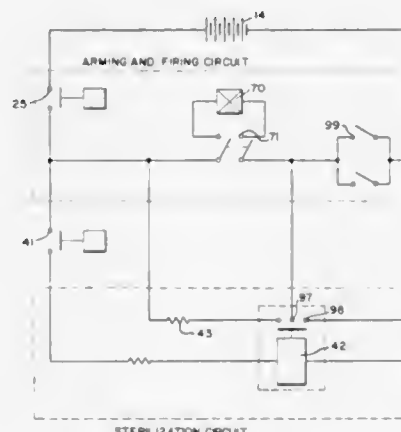
**ANTIMINE PISTOL**

Charles A. Lewis, Silver Spring, John Homza, Lanham, Eldon A. Volkmer, Takoma Park, and George P. Kalaf, Rockville, Md., Carl D. Coddington, Washington, D.C., and Charles J. Zablocki, Glendore, Calif., assignors to the United States of America as represented by the Secretary of the Navy

Filed June 7, 1961, Ser. No. 126,391  
Int. Cl. F42b 21/34, 5/08

U.S. Cl. 102—16

21 Claims



16. A pistol for initiating an underwater destructor charge comprising a casing, a hydrostatically electrical switch mounted in said casing and exposed to the exterior environment of said casing, a detonator mounted for rotation in said casing and moveable from a safe position to an armed position, a hydrostatically operated drive means mounted in said casing and exposed to the exterior environment thereof, linkage means connecting said hydrostatically operated drive means and said detonator for rotating said detonator from said safe position to said armed position a predetermined time period after said pistol reaches a predetermined depth of submergence, first electrical switch means mounted in said casing and closed by the rotation of said detonator from the safe position to the armed position, mechanical time delay means mounted in said casing and connected to said linkage means for actuation by said hydrostatically operated drive means, second electrical switch means integrally formed in said mechanical time delay means, said second electrical switch means closing a predetermined time after actuation of said mechanical time delay means, a battery, circuit means connecting said battery, said hydrostatically operated electrical switch, said first and said second electrical switch means and said detonator in electrical series circuit whereby when said second electrical switch means closes said detonator is initiated.

3,721,191

**WELL SCREEN CLEANING DEVICE**

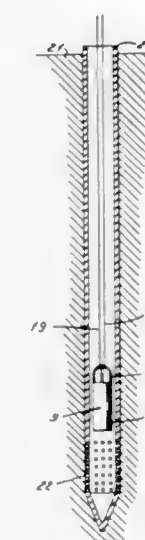
James E. L. Hastings, 2169 Vermont Avenue, Troy, Mich.  
Filed Oct. 21, 1970, Ser. No. 82,586  
Int. Cl. F42b 3/04

U.S. Cl. 102—20

2 Claims

A well-screen cleaning device for unblocking clogged wells by blowing accumulated foreign material from the mesh of the well screen with rapidly expanding gasses without damaging

the screen to provide screening for water after the cleaning operation and to obviate replacing the screen, comprising a case having an axial channel opening downwardly from the case and an explosive charge in the channel for producing the expanding gasses upon its detonation. Electric wires leading to the charge comprise both the lowering means for the device in



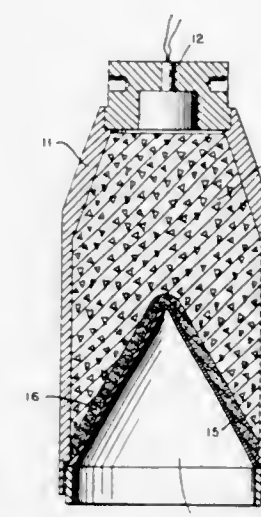
a well casing and the means for detonating the charge. A top vent aperture in the case emits a small volume of gas upwardly creating a resilient blocking turbulence in the casing above the main volume of expanding gasses to hold down the major volume of the expanding gasses for projection against the screen without damaging the screen.

3,721,192  
**SHAPED CHARGE**

William S. McEwan, and Herbert Dean Mallory, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy  
Filed March 19, 1969, Ser. No. 808,706  
Int. Cl. F42b 1/02

U.S. Cl. 102—24 HC

2 Claims



A shaped charge which has as an improvement a layer of fine quality explosive positioned between the normal bulk explosive charge and liner thereby providing a detonating front which exhibits a low degree of turbulence along the interior



wall of the metallic liner which makes a better shaped charge for use in precision metal deformation and other uses.

3,721,193

**MULTI-STAGE MODEL ROCKET ASSEMBLY**

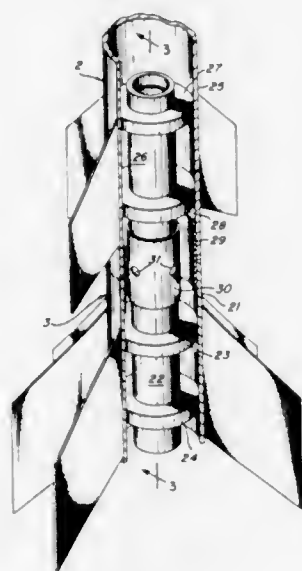
Leroy E. Piester and Robert E. Royal, Phoenix, Ariz., assignors to Centuri Engineering Company, Inc.

Filed Mar. 25, 1970, Ser. No. 22,617

Int. Cl. F24b 13/28, 15/14

U.S. Cl. 102—34.5

1 Claim



Reliable sequential ignition of successive engines in a multi-stage model rocket is achieved by releasably positioning successive engines in end-to-end relationship and by coupling either the engines or tubular shells containing the engines with a coupler ring having holes sized to vent the pressure front formed when the preceding engine burns to its leading end to delay separation of the engines until the next engine ignites at its discharge end.

3,721,194

**DIVERSIFYING THE SHOOTING CHARACTERISTICS OF SHOTGUNS**

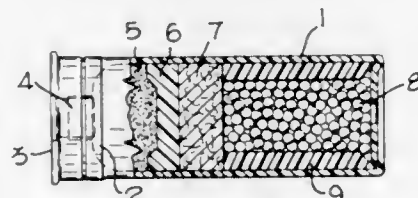
Charles N. Weston, Jr., 105 Ruth Drive, Florissant, Mo.

Filed April 13, 1970, Ser. No. 27,708

Int. Cl. F42b 7/08

U.S. Cl. 102—42 C

13 Claims



Simulating, with a standard gauge shotgun, the shooting characteristics of a smaller gauge shotgun by using a shotshell whose case fits the chamber of the standard gauge gun, but whose propellant charge, shot charge, priming and confinement are coordinated to produce ballistic results resembling those of the smaller gauge gun, and the shot charge is circumferentially surrounded by a bushing whose outside diameter corresponds with the standard gauge, and whose inside diameter corresponds with the smaller gauge.

3,721,195

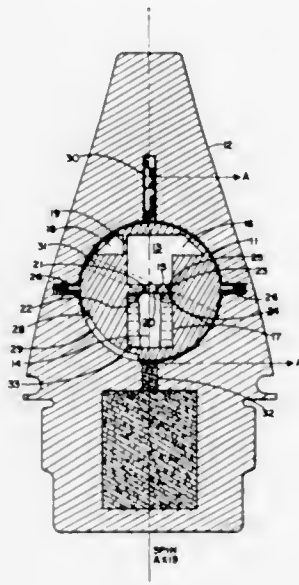
**LIQUID REVOLUTION COUNTER FOR FUZE ARMING**  
Werner Hans Egli, and Asbjorn M. Severson, both of Minneapolis, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed June 1, 1971, Ser. No. 148,460

Int. Cl. F42c 15/26

U.S. Cl. 102—79

1 Claim



A safing and arming apparatus for use in a spinning projectile in which after a predetermined number of revolutions of the projectile a rotor is unbalanced by the relocation of liquid within the rotor thus causing the rotor to rotate and bring a detonator in line with a firing train.

3,721,196

**CHAFF DISPENSING SYSTEM**

Edward O. Willis, Copley; Lester W. Musser, Jr., Barberton, and James E. Seagraves, Uniontown, all of Ohio, assignors to The United States of America as represented by the Secretary of the Navy

Filed July 30, 1970, Ser. No. 64,916

Int. Cl. F42b 13/42

U.S. Cl. 102—89

2 Claims



A method and apparatus for dispensing chaff from a rocket delivered warhead. A chaff head is explosively opened a predetermined time after the rocket is fired. This exposes the chaff to the air which quickly disperses it into a cloud.

3,721,197

**INJECTION-EXPANSION MOLDED SHOTSHELL WAD AND METHOD OF FORMING THE SAME**

John H. Hughes, St. Louis, Mo., and Daniel F. Duryea, Madison, Ill., assignors to Olin Corporation

Filed Dec. 4, 1970, Ser. No. 95,073

Int. Cl. F42b 7/08

U.S. Cl. 102—95

10 Claims

A one-piece plastic wad structure for use with a shotshell, the wad structure having a projectile-receiving pocket, an obturating pocket, and a transverse wall integral with the

pockets and separating one pocket from the other. The projectile pocket and obturating pocket have side walls of solid plastic, and at least a portion of the transverse wall is foamed plastic. The transverse wall is of substantial thickness so as to cushion the shot charge when a cartridge containing the wad is

are supported upon bolsters that rest on the side sills and are resiliently connected to the center frame. A side bearing arrangement between adjacent units includes opposed overlapping members. The resilient structure allows a container to span over an articulated connection.

3,721,200

**FREIGHT RESTRAINING BAR**

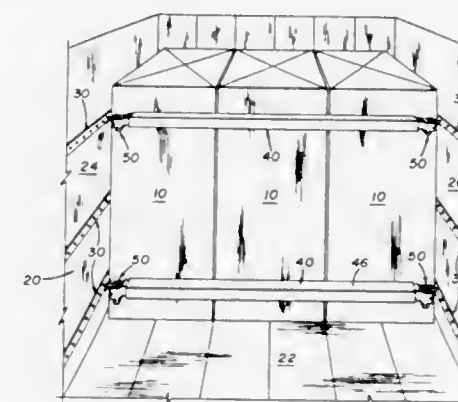
Dana M. Schmidt, Barrington, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Apr. 2, 1971, Ser. No. 130,675

Int. Cl. B61d 45/00; B60p 7/16

U.S. Cl. 105—369 B

25 Claims



fired. The wad structure is formed by injecting a molten mixture of a resinous material and a foaming agent into a mold cavity, cooling the injected mixture so as to partially solidify the mixture in the cavity, and then reducing pressure in the cavity by enlarging its volume to permit the transverse wall portion of the injected mixture to foam in situ.

3,721,198

**LIFT CONTROL FOR RAIL CAR**

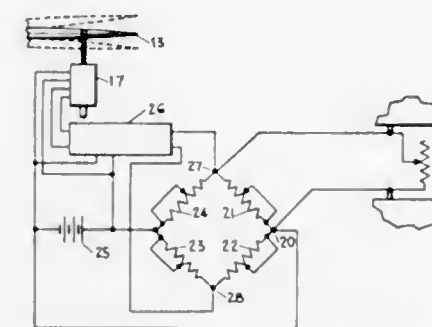
Lindsay M. Applegate, 7045 Molokai Drive, Paradise, Calif.

Filed April 5, 1971, Ser. No. 130,926

Int. Cl. B64f 3/00

U.S. Cl. 104—23 R

7 Claims



Method and means for controlling an air foil for regulating the weight carried by slippers supporting a rail car at high speeds travelling on conventional rails.

3,721,199

**ARTICULATED CONTAINER CAR**

Robert L. Hassenauer, Wilmette, Ill., assignor to Amsted Industries Incorporated, Chicago, Ill.

Filed Nov. 16, 1970, Ser. No. 89,614

Int. Cl. B65j 1/24; B60p 7/16; B61d 45/00

U.S. Cl. 105—366 A

8 Claims



The articulated car includes three car components connected by semi-permanent connections supported on railway trucks. Each component includes a center frame resiliently longitudinally supported between the side sills. The containers

A freight-restraining bar and head wherein a single rail-engaging member is used to connect the head with two different, alternatively used, securing means in the freight chamber. The rail-engaging member is pivoted to rotate between the two positions it must take to penetrate the two differentially oriented securing means. Locking provisions are provided to prevent accidental dislodging of the heads, once engaged.

3,721,201

**BOMB RECOVERY AND SHIELD APPARATUS**

William A. Boller, 2700 Del Medio Ct., No. 115, Mountain View, Calif.

Filed Sept. 30, 1971, Ser. No. 185,301

Int. Cl. E06b 9/00

U.S. Cl. 109—49.5

16 Claims



Bomb recovery and shield apparatus includes a cage shaped to slip over a bomb, and a clip in the cage adapted to engage the bomb and retain it inside the cage. The apparatus also includes an explosion-resistant tubular shell having an upwardly opening end and a post extending above the open end. The post supports a pulley, and a line reeved over the pulley is secured to the cage. A workman standing a safe distance from the bomb pulls the line to slip the cage over the bomb and thereafter guide the bomb into the shell. A remote-controlled lid with an open mesh screen can be closed over the open end of the shell after the bomb is safely inside.



3,721,202

**METHOD OF, AND APPARATUS FOR, STITCHING TOGETHER TWO LAYERS OF MATERIAL**

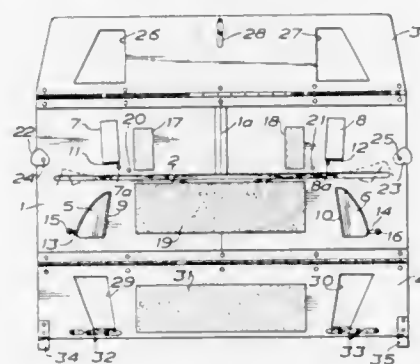
Alfred Manston Heeley Dodsworth, Guiseley, England, assignor to W. J. Clarkson Limited, Leeds, England  
Filed June 11, 1971, Ser. No. 152,178

Claims priority, application Great Britain, June 19, 1970, 29,797/70; March 29, 1971, 8,075/71

Int. Cl. D05b 21/00

U.S. Cl. 112-121.15

21 Claims



The specification discloses a method and apparatus for stitching together two or more pieces of material along desired stitching lines which follow different curves when the pieces of material are flat. The pieces of material are arranged over a base plate having a guide slot corresponding in contour to the required stitching line and one or more of said pieces of material is distorted out of its own plane in such a way that the stitching lines in all the pieces of material are located in substantially congruent relationship overlying said guide slot. The distorting means may be a plate hinged between the base plate and an upper plate and having an upward projection receivable in an opening in the upper plate. Alternatively the distorting means may be projections upstanding from said base plate and receivable in openings in one or more upper plates hinged to the base plate. The apparatus causing the required distortion is conveniently designed for use with a sewing machine so that it may be guided beneath the needle of the sewing machine by the guide slot and the pieces of material thus stitched together.

3,721,203

**APPARATUS FOR MEASURING ELASTIC FED TO A SEWING MACHINE**

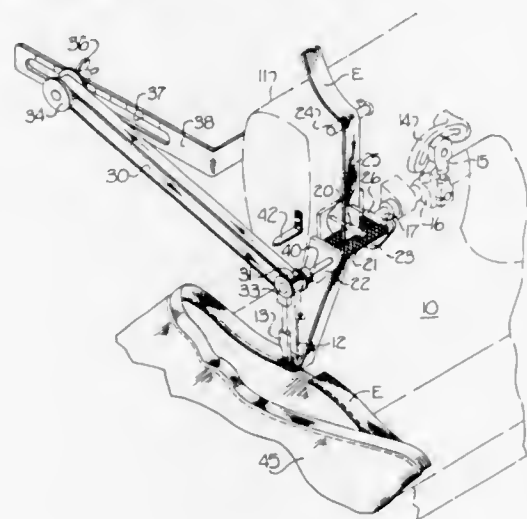
McCona L. George, Sweetwater, Tenn., assignor to Charles H. Bacon Company, a division of Genesco, Inc., Lenoir City, Tenn.

Filed Sept. 17, 1971, Ser. No. 181,361

Int. Cl. D05b 21/00

U.S. Cl. 112-121.26

5 Claims



This apparatus permits the operator of a sewing machine to accurately determine the length of elastic tape which is at-

tached to a garment, such as the elastic waist band of panty hose and the like. The apparatus includes an endless flexible band supported adjacent the sewing machine head and in clear view of the sewing machine operator. An indicating mark is provided on the band so that the operator can determine when one revolution of the band has been completed. The elastic band is driven in timed relation to the elastic tape fed device on the sewing machine so that its movement constantly indicates the length of elastic tape which has been attached to the garment.

3,721,204

**AUTOMATIC NEEDLE POSITIONING AND PRESSER FOOT LIFTING MECHANISM**

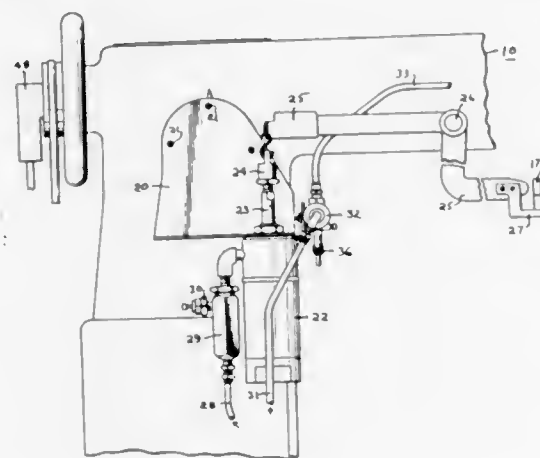
Philip O. Schaffer, Mohnton; Bryce E. Hoverter, Reinholds, and Kenneth C. Haas, Shillington, all of Pa., assignors to Teledyne, Inc., Los Angeles, Calif.

Filed Nov. 17, 1971, Ser. No. 199,555

Int. Cl. D05b 69/22, 71/04, 29/02

U.S. Cl. 112-218 R

11 Claims



Needle cooling apparatus, and needle and presser foot position controlling apparatus for use with sewing machines of the type having reciprocable needles and a raisable and lowerable presser foot, the needle cooling being effected by discharging cool air directly onto the needles while they are carrying out stitching with the air discharge being terminated as soon as stitching ceases. On-off operation of the air is provided by a control operated by the sewing treadle. Relative position control of the needle and presser foot is carried out automatically under control of the operator by means of a mode control, a needle positioner mechanism, a presser foot actuating device and a second control operated by the sewing treadle when the latter is heeled. During stitching the presser foot is always down, and when stitching is terminated, the needle is always down while the presser foot may remain down or move up as determined by the position of the mode control. Heeling of the treadle causes the needle to rise and causes the presser foot to rise if it were down, but if the presser foot had been up it is caused to descend until the needle rises and to thereafter rise. Release of the treadle from its heeled position causes the presser foot to descend.

3,721,205

**TENSION DEVICE FOR A SEWING MACHINE**

Takeshi Ono, Nagoya; Takashi Hirayama, Toyota, and Kimihiko Yamamoto, Nagoya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Aichi Pref., Japan

Filed Feb. 3, 1971, Ser. No. 112,203

Claims priority, application Japan, Feb. 9, 1970, 45/11245

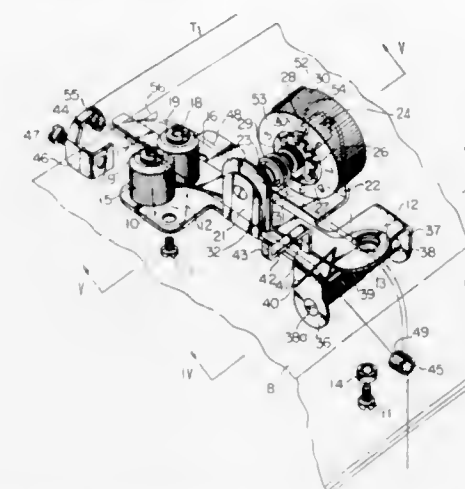
Int. Cl. D05b 47/00

U.S. Cl. 112-254

3 Claims

A tension device adapted for the sewing machine including an assembly consisting of two nip forming members at least one of which rotates freely on its stud. An adjusting means is provided to tighten or loosen spring means by means of which

the two nip forming members are always passed against one another. The tension is applied to the thread by a friction force produced by the rotation of the roll or rolls on their



studs, whereby unevenness of the thread does not cause breaking of the thread and the skipping of stitches when the thread passes the nip.

3,721,206

**SEWING MACHINE AND AN ADAPTER FOR CHANGING THE ELEVATION THEREOF**

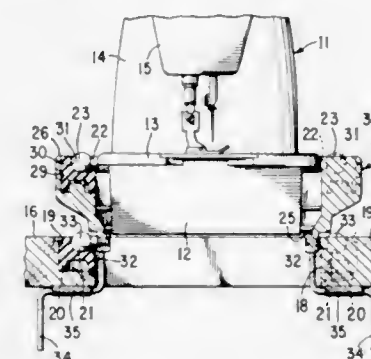
Heinrich Ciecior, D-7505 Ettlingen, and Peter Herbold, D-752 Bruchsal, both of Germany, assignors to The Singer Company, New York, N.Y.

Filed Oct. 8, 1971, Ser. No. 187,711

Int. Cl. D05b 75/00

U.S. Cl. 112-258

1 Claim



An adapter for elevating the work supporting surface of a sewing machine above the level of a machine supporting table top in which the adapter is formed with mounting means complementary to the regular mounting facilities on the machine supporting table top and on the sewing machine so that the adapter may be positioned in place without the use of tools.

3,721,207

**COLLECTION AND DISPOSAL OF SHIP'S SEWAGE**

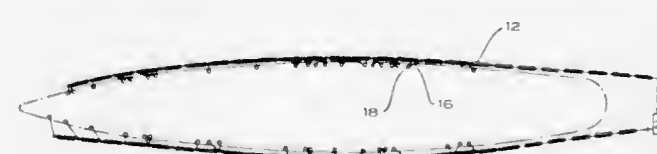
Charles W. Walker, Tustin, Calif., assignor to the United States of America as represented by the Secretary of the Navy

Filed April 15, 1971, Ser. No. 134,284

Int. Cl. B63b 35/00

U.S. Cl. 114-0.5 R

3 Claims



A system for collecting waste discharge by gravity into float supported pipes. The pipes terminate into a submerged

sewage holding and pumping station. From there it is pumped into existing sanitary sewer lines on shore.

3,721,208

**VEHICLE AND APPARATUS FOR MOVING THE VEHICLE THROUGH A FLUID**

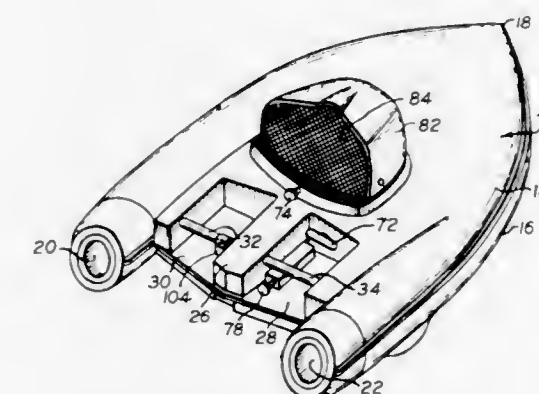
Laurence L. Lampert, and Arthur B. Joyal, both of New York, N.Y., assignors to Minijet Sportscrafts Inc., New York, N.Y.

Filed Aug. 20, 1971, Ser. No. 173,450

Int. Cl. A63c 11/10

U.S. Cl. 115-6.1

21 Claims



The vehicle comprises a buoyant body and moving means within the body for moving the body through a fluid. The moving means includes a chamber having an intake port and an outlet port, and propelling means in the chamber for drawing the fluid into the chamber through the intake port and for propelling the fluid out of the chamber through the outlet port to propel the vehicle. A motor is provided for operating the vehicle. An air inlet passage communicates with the chamber adjacent the upstream end of the propelling means and closure means is provided which is selectively operable to open and close the air inlet passage to prevent the propelling means from drawing fluid into the chamber through the intake port when the closure means is in the open position.

3,721,209

**DEVELOPING UNIT FOR ELECTROSTATIC COPYING APPARATUS**

Roland Szostak, Grunwald; Karl Hartwig, Unterhaching; Gunter Maurischat; Gunter Schnall, both of Munich, and Jurgen Vossnacke, Pullach, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 7, 1971, Ser. No. 187,405

Claims priority, application Germany, Oct. 9, 1970, P 20 49 650.8

Int. Cl. B05c 11/00; G03g 13/00

U.S. Cl. 118-2

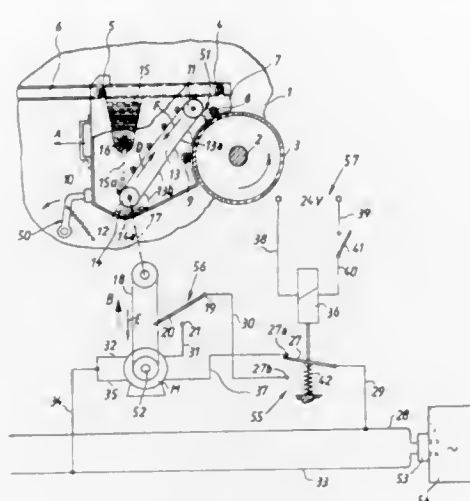
11 Claims

An electrostatic copying apparatus wherein a driven xerographic surface which carries electrostatic latent images receives developer material from the buckets of a conveyor which is normally driven in a first direction but can be driven in a second direction to thereby retract the foremost filled bucket away from a dumping position. The conveyor is driven by a reversible electric motor which is automatically started in reverse in response to deenergization of a relay and is automatically arrested after a predetermined interval of operation in reverse to thus insure that the contents of filled buckets on the conveyor are unlikely to spill into the copying apparatus when a carriage which supports the conveyor and a magazine for developer material is moved to and from a retracted position. The circuit of the motor is opened by a switch which is held in closed position by a power train between the conveyor



and the motor when the conveyor is driven in the first direction. The switch is caused to open in response to such

tioned side surfaces with openings which are arranged coaxially to one another and through which the wire is guided into or out of the bath. The axis of said openings is eccentric with



operation of the power train that the conveyor is driven in the second direction.

3,721,210

#### LOW VOLUME DEPOSITION REACTOR

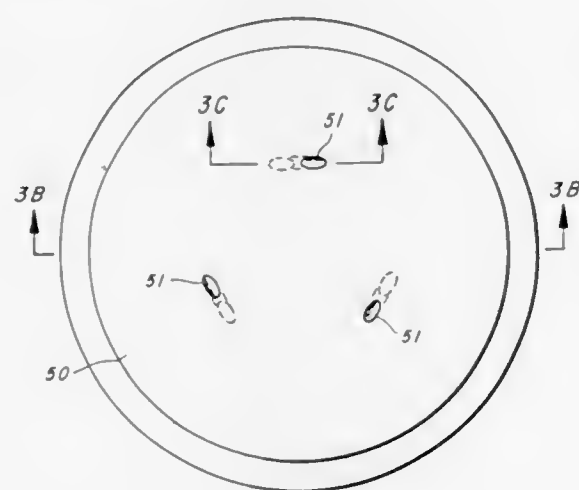
John D. Helms, and Olin B. Cecil, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed April 19, 1971, Ser. No. 135,255

Int. Cl. C23c 13/08

U.S. Cl. 118—48

8 Claims



A reactor system for sequentially forming layers on substrates, by either reacting a gas with a surface of a substrate or by selective precipitation of constituents of a gas on a surface of a substrate, is disclosed. The uniformity of the layer is increased by rotating the substrate as the gas is passed over the surface of the substrate. Improved substrate temperature control is provided by optical heaters. Each reactor chamber has a low volume, thereby reducing the contamination problems associated with loading and unloading the reactor. Automatic load/unload apparatus is provided, permitting the reactor to be loaded and unloaded without a clean-up cycle.

3,721,211

#### APPARATUS FOR TINNING OF METAL WIRE

Siegfried Stolber, A-4020 Linz, Austria, assignor to Firma Gebauer & Griller, Vienna, Austria

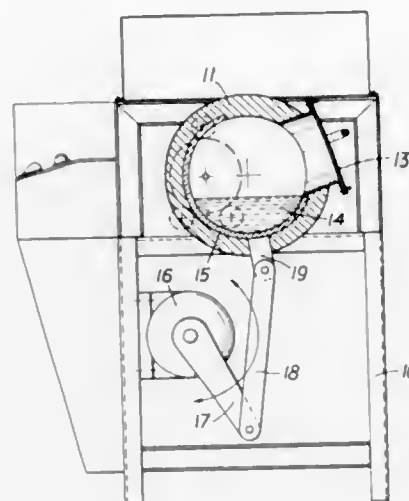
Filed Dec. 3, 1970, Ser. No. 94,904

Int. Cl. B05c 3/12

U.S. Cl. 118—405

1 Claim

Apparatus for tinning of metal wire, particularly copper wire, at a high running speed. The apparatus has a trough filled with a tin bath and is provided on two oppositely posi-



respect to the central axis of the trough and means pivot said trough about the axis of the openings to selectively effect immersion, or removal therefrom, of the wire.

3,721,212

#### AQUARIUM COVER

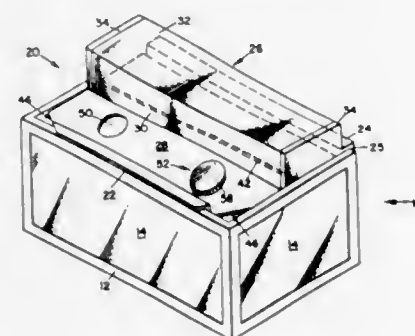
Daniel F. Groth, 14 Brookdale Drive, Wilbraham, Mass.

Filed July 28, 1971, Ser. No. 166,760

Int. Cl. A01k 64/00

U.S. Cl. 119—5

5 Claims



The combination with an open topped aquarium of a cover formed with stepped flanges for resting on the ends of the aquarium walls and having an integral upstanding housing for a light source, an opening in the cover below the light source and a clear, transparent plate for closing off the opening, the plate permitting the passage of light to the interior of the aquarium but serving as a barrier to contaminants dropping into the aquarium, the cover having feeding openings therein and feeding units for optional use in the feeding openings and extending into the aquarium.

3,721,213

#### ANIMAL REARING CAGES

Frans Bruggeman, Zulzeke, Belgium, assignor to N. U. Bekaert S.A., Zvevegem, Belgium

Filed July 30, 1971, Ser. No. 167,577

Claims priority, application France, Aug. 7, 1970, 7029271

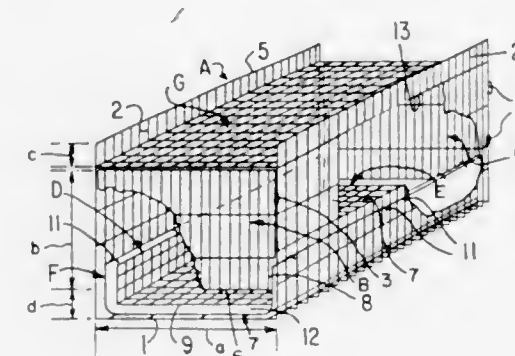
Int. Cl. A01k 31/06

U.S. Cl. 119—17

10 Claims

A cage useful for rearing animals that is constructed of a number of wire mesh panel members includes a U-shaped panel member having a central panel section and two contiguous side wall sections, two end wall panel members releasably connected to the side wall sections and having their bottom edges spaced above the level of the central panel sec-

tion and their top edges spaced below the level of the top edges of the side wall sections and a floor panel member disposed above the central panel section at the same level as the bottom edges of the side wall sections and releasably connected to the side wall sections. The bottom edge of each of the end wall panel members has an offset shoulder defining a rectangular cutout at each of its ends. A U-shaped tray may be



inserted into and withdrawn from the U-shaped space defined generally by the space between the U-shaped panel member, the floor panel member, and the bottom edges of the end wall panel members. A roof panel member may be disposed at the same level as the top edges of the end wall panels. A battery of rearing cages may be formed by an arrangement in which a number of the cages are stacked and/or juxtaposed together.

3,721,214

#### REMOVAL AND DISPOSAL OF MANURE FROM SUSPENDED CAGE CHICKEN HOUSES

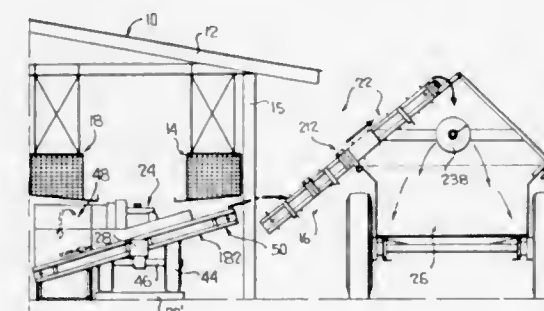
William R. Staples, P.O. Box 147; Russell E. Staples, Rt. 3, Box 576, and Wesley A. Staples, Rt. 3, Box 189, all of Palatka, Fla.

Filed July 21, 1971, Ser. No. 164,743

Int. Cl. A01k 31/04

U.S. Cl. 119—22

3 Claims



A self-powered pitcher unit has an adjustably inclined pick up conveyor that picks up manure disposed in piles on the ground below the suspended cages of the middle rows in a chicken house, as the pitcher unit is pulled down the aisles between the outer and middle rows of cages by a small tractor, and transports the manure to a cross thrower conveyor operating from a hopper at the upper outlet end of the pick up conveyor with the manure being thrown out the open sides of the chicken house by the upwardly and outwardly inclined thrower conveyor onto a loader unit that is pulled along the outside of the house by a farm tractor in synchronized travel with the pitcher unit. The loader unit, which is mounted on a manure spreader and is driven by the power take-off on the tractor, has an inclined foldable platform onto which the manure is thrown and a conveyor carries the manure up the platform and drops it on an auger in advance of the spreader. Initially, the pitcher unit functions alone with a deflector hood on the thrower conveyor to transfer manure piles from under the outer rows to the middle rows of cages.

3,721,215

#### CONNECTOR-SPACER AND FLOOR CONSTRUCTION USING SAME

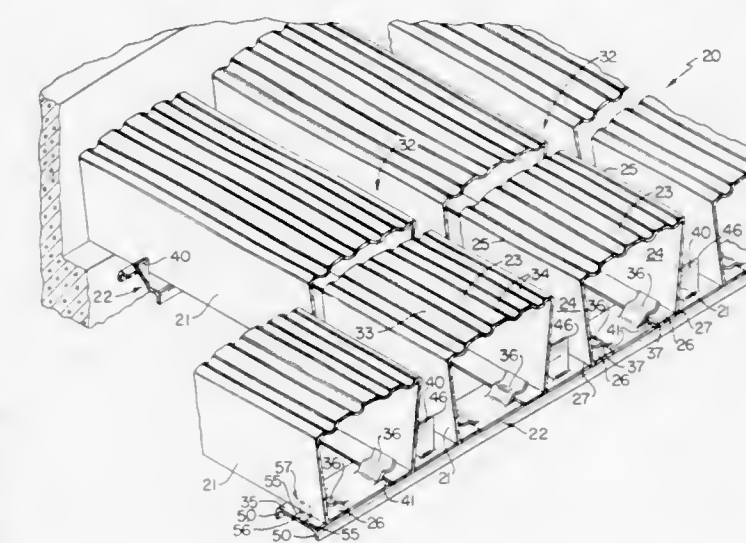
Donald E. Vickstrom, and George F. Swenck, both of Richmond, Va., assignors to Reynolds Metals Company, Richmond, Va.

Filed Aug. 13, 1971, Ser. No. 171,529

Int. Cl. A01k 1/00

U.S. Cl. 119—28

16 Claims



An improved connector-spacer for holding together in spaced parallel relation a plurality of floor-forming channel members which have substantially vertically arranged side walls terminating in bottom fastening flanges and a floor construction using such connector-spacer are provided. The connector-spacer has a plurality of upwardly and laterally extending fastening legs each defining a recess which is adapted to receive an associated fastening flange therewithin and each channel member is made of a resilient material which provides a normal resiliency therefor and holds its fastening flanges within associated recesses and in grasping contact against such fastening legs. The connector-spacer has integral means retaining an associated fastening flange of a channel member within an associated recess to assure each member is held firmly in position even after extended use.

3,721,216

#### BELT OR COLLAR WITH RUNNER TRACK

Joan M. Lippe, 303 West Price Street, Linden, N.J.; Irving Goldfarb, 8101 Glenwood Road, Brooklyn, N.Y., and Harry Jablon, 602 Birchwood Road, Linden, N.J.

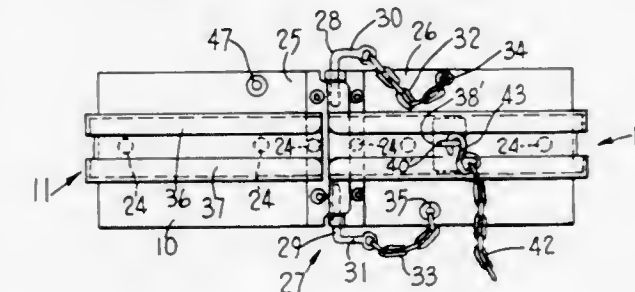
Continuation-in-part of Ser. No. 832,400, June 11, 1969,

abandoned. This application April 13, 1970, Ser. No. 27,486

Int. Cl. A01k 27/00

U.S. Cl. 119—106

8 Claims



In a belt-type toy or collar, adapted to encompass a wearer, the belt has a circumferential track at its outer side which retains a slide member therein adapted to be connected to a ball or other object by an elongated flexible connecting member, the slide member is adapted to move in the track to permit relative circumferential movement of the object with respect to the wearer and the belt may include a chordally ex-



tending elastic member fixed at each end to an interior portion of the belt to accommodate various sized wearers.

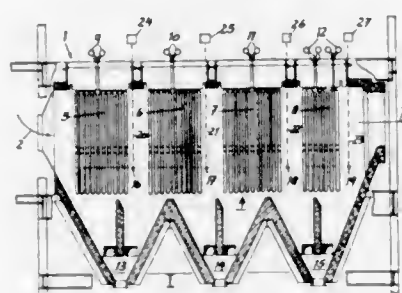
3,721,217

**WASTE HEAT BOILER FOR HEAT FURNACES**  
Rudolf Willach, Oberhausen, and Aruth Rafael, Wesel, both of Germany, assignors to Deutsche Babcock & Wilcox Aktiengesellschaft, Oberhausen, Rhineland, Germany  
Filed July 13, 1971, Ser. No. 163,538  
Claims priority, application Germany, July 21, 1970, P 20 36 061.6

Int. Cl. F22b 37/48

U.S. Cl. 122—379

5 Claims

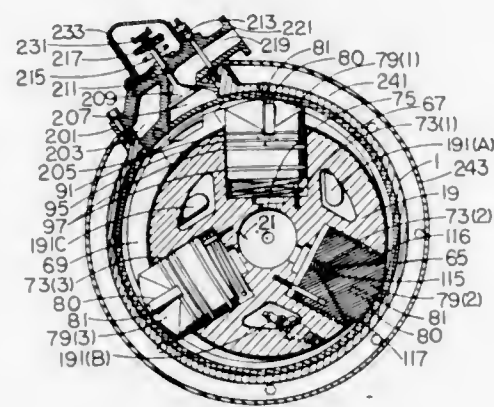


A heat waste boiler having a waste gas duct in which two bundles of coiled pipes are mounted. The pipes are provided with vibrators for removing collected dust particles from the pipes, and thermostatic elements for measuring the temperature behind each cluster of pipes. The vibrators are independently controlled to remove the dust particles collected on the pipes.

3,721,218

**ROTARY INTERNAL COMBUSTION ENGINE**  
Victor G. Null, 19 Kingsway Drive, Wentzville, Mo.  
Filed Nov. 18, 1970, Ser. No. 90,750  
Int. Cl. F02b 53/06, 53/10  
U.S. Cl. 123—8.13

30 Claims



A rotary internal combustion engine has a cylindrical rotor eccentrically mounted within a circular cavity in the stator, the rotor being formed with a central axial fuel mixture inlet passageway and with a plurality of radial cavities in which are slidably mounted piston vanes, the crowns of which protrude from the rotor and are biased into closely spaced relation with the periphery of the block cavity to form therewith sealed compression-combustion chambers in the crescent-shaped spaces between the rotor and periphery of the block cavity. Sealing elements closely spaced from the block cavity periphery bisect the piston vane crowns in planes coincident with the rotor axis and each piston vane is formed with a pair

of intake valves disposed respectively fore and aft of the sealing elements and sequentially operable to pass fuel mixture from the central inlet passageway into the combustion chambers defined within the crescent-shaped spaces by a pair of adjacent pistons and thereby materially increase the volumetric efficiency of the engine as compared with engines of the prior art having only a single inlet valve per combustion chamber. In one embodiment, wiper bars engageable with the block cavity surface are resiliently mounted in the piston crown so as to maintain a tight seal against the periphery of the block cavity while yieldably spacing the piston crown rings therefrom.

3,721,219

**FUEL FEED DEVICES FOR INTERNAL COMBUSTION ENGINES**

Francois Mennesson, Nanterre, France, assignor to Societe Industrielle de Breuets et d'Etudes S.I.B.E., Neuilly S/Seine, France

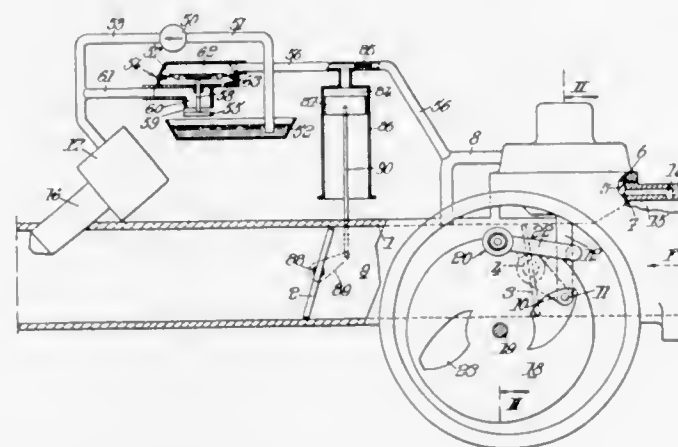
Filed Oct. 15, 1971, Ser. No. 189,532

Claims priority, application France, Oct. 30, 1970, 39332

Int. Cl. F02b 3/10; F02m 51/02

U.S. Cl. 123—32 EA

2 Claims



The fuel feed device includes an injection valve actuated by an electromagnet which is energized over a variable fraction of each revolution of a rotating member driven by the engine. On acceleration with the opening of the main throttle member of two throttle members it is advantageous to increase the richness of the air/fuel mixture admitted to the engine to obtain freer and more regular acceleration. The source of fuel under pressure is constituted by a fuel pump on the delivery pipe of which acts a pressure regulator which comprises a relief valve tending to open under the effect of the delivery pressure of the pump and to close under the effect of the suction existing in the section of the intake pipe comprised between its two throttle members. The suction is transmitted by a linking channel to a diaphragm to which the relief valve is coupled. The variable volume chamber is connected to the linking channel between a calibrated orifice and the diaphragm of the pressure regulator and is controlled by means adapted to increase its volume on opening of the main throttle member.

3,721,220

**VARIATOR FOR THE SETTING OF THE CAM-SHAFTS OF AN INTERNAL COMBUSTION ENGINE**

Giampaolo Garcea, Milan, Italy, assignor to Alfa Romeo S.p.A., Milan, Italy

Filed July 9, 1970, Ser. No. 53,381

Int. Cl. F01I 1/34

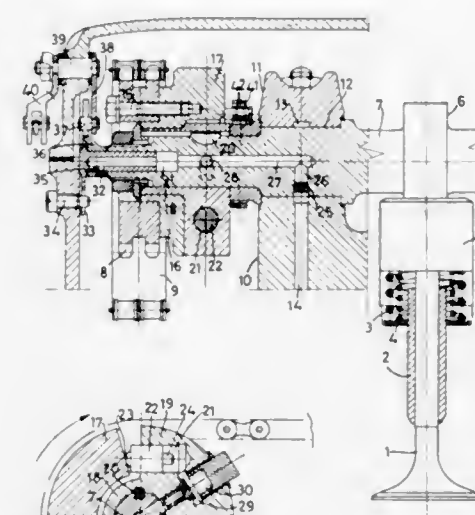
U.S. Cl. 123—90.15

4 Claims

The advance or delay of opening of the intake and/or exhaust valve in an internal combustion engine is obtained

with the device disclosed herein as a function of the power instantaneously delivered by the engine. The indicating parameters can be the degree of opening of the throttle(s), the number of revolutions per minute of the crankshaft

to prevent the throttle valve from complete closure in case the vehicle is decelerated from the speed above said predetermined value thereby to greatly reduce the exhaust of noxious gas from the internal combustion engine.



and the feeding pressure of the engine. A pressure-sensitive device exploits the pressure of the lubricant (oil) for effecting the phase adjustment of the camshaft.

3,721,221

**INTERNAL COMBUSTION ENGINE EXHAUST GAS CONTROLLING DEVICE**

Masashi Okada, Kariya, Japan, assignor to Nippondenso Kabushiki Kaisha, Aichi-Ken, Japan

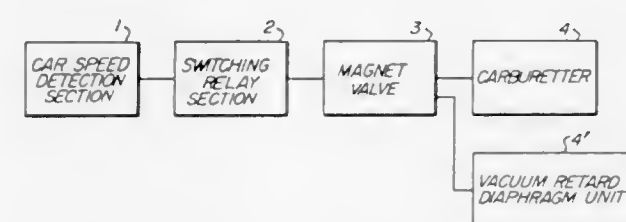
Filed Feb. 27, 1970, Ser. No. 14,968

Claims priority, application Japan, April 9, 1969, 44/32342

Int. Cl. F02d 31/00; F02p 5/04

U.S. Cl. 123—97 B

1 Claim



An internal combustion engine exhaust gas controlling device which operates a solenoid valve in response to a predetermined value of the car speed driven by the engine, said solenoid valve being operative to communicate a throttle valve mechanism of a carburetor of said engine to an atmospheric pressure circuit and simultaneously a vacuum retard diaphragm unit for a distributor with a vacuum circuit conducted to a suction manifold of said engine when the vehicle speed exceeds a predetermined value, whereby the vacuum produced at deceleration of the vehicle is utilized to automatically operate the distributor vacuum retard diaphragm to retard spark timing and the atmospheric pressure communicated to the throttle valve mechanism operates

Apparatus for automatic control of the throttle valve of an internal combustion engine comprises an adjusting mechanism for the throttle valve idle position operated by the negative pressure in an air inlet pipe via a negative pressure operated mechanism so that the idling position of the throttle valve can be adjusted. A temperature sensitive valve apparatus is operated by engine temperature and is interposed in a communicating passage between the inlet pipe and the negative pressure operated apparatus. The valve apparatus is so constructed that the negative pressure operated apparatus is brought into its operating condition by being in communication with the inlet pipe when the engine temperature is low, but is brought into inoperative condition by being in communication with the ambient air when the engine is heated to a predetermined temperature.

3,721,223

**DISTRIBUTOR**

Helmut Klaus Randau, Wolfsburg, and Bodo Egon Tapphorn, Vorsfelde, Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Continuation of abandoned application Ser. No. 836,229, June 25, 1969. This application May 18, 1971, Ser. No. 144,626

Claims priority, application Germany, June 28, 1968, P 17 51 612.0

Int. Cl. F02d 11/10

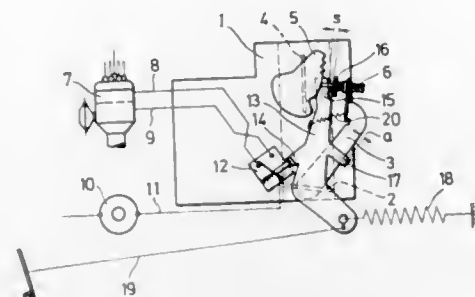
U.S. Cl. 123—102

6 Claims

Device to determine the current path in an ignition



distributor for motor vehicle engines having a switch operated by a throttle valve linkage and a circuit breaker system controlled by the switch and provided with an intermediate lever to change the switch.



tem controlled by the switch and provided with an intermediate lever to change the switch.

3,721,224

### IGNITION CIRCUIT FOR SPARK PLUGS OF INTERNAL-COMBUSTION ENGINE

Giorgio Del Zotto, Milan, Italy, assignor to Ates Componenti Elettronici S.P.A., Milan, Italy

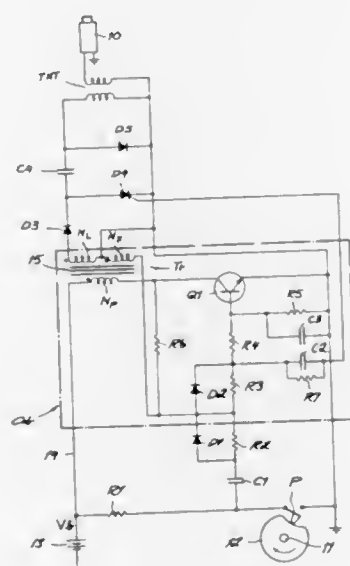
Filed March 15, 1971, Ser. No. 124,173

Claims priority, application Italy, March 13, 1970, 21916 A/70

Int. Cl. F02p 3/06

U.S. Cl. 123-148 E

10 Claims



The ignition circuit of a spark plug of an internal-combustion engine includes a storage condenser in series with a controlled rectifier which is periodically triggered under the control of an engine-driven cam switch by a blocking oscillator comprising a transistor with grounded emitter in series with the primary of a coupling transformer. One secondary winding of that transformer is inserted, together with a pair of diodes, in a charging path for the storage condenser while another secondary winding lies between the emitter of the transistor and its base which is connected through a feedback resistor to the collector thereof and via an R/C network to the gate of the controlled rectifier. During the open phase of the cam-switch cycle, the base is grounded through the last-mentioned secondary winding which is so poled as to intensify a firing pulse capacitively transmitted to the base upon the opening of the switch; at the same time the controlled rectifier is turned on to discharge the previously charged storage condenser through the ignition circuit, whereupon the transistor cuts off and the condenser is recharged by the reversed transformer voltage.

### 3,721,225 FACTORY FABRICATED FIREPLACE CONSTRUCTION

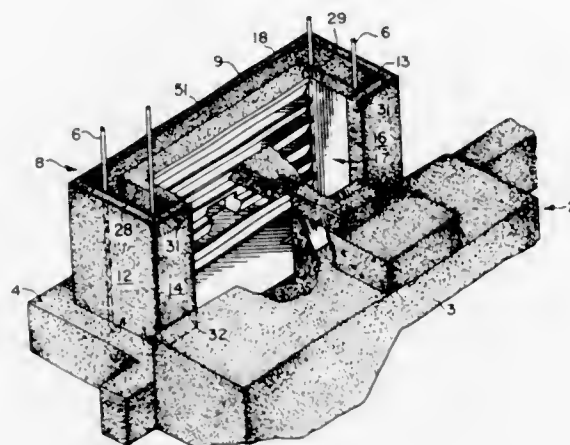
Joe Dean Tidwell, 3404 Polaris Street, Modesto, Calif.

Filed Dec. 6, 1971, Ser. No. 204,927

Int. Cl. F24b 1/18

U.S. Cl. 126-120

11 Claims



Presented is a fireplace construction all major components of which are factory fabricated and merely assembled at the job site. The fireplace construction incorporates apparatus for adjusting the height of the hearth dependent upon conditions at the site such as grade, height, and level.

3,721,226

### HOT BOX FOR ASPHALT

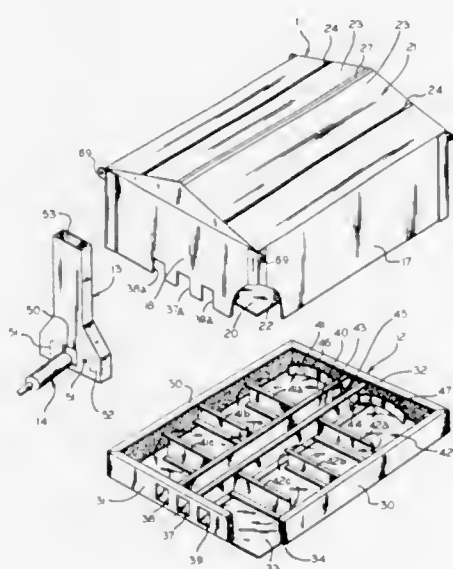
Herman T. Childree, Tyler, and Stewart T. Trawick, Dallas, both of Tex., assignors to Sabine Manufacturing Inc., Dallas, and Howe-Baker Engineers, Tyler, both of Tex., part interest to each

Filed Aug. 30, 1971, Ser. No. 176,108

Int. Cl. E01c 19/45

U.S. Cl. 126-343.5 A

9 Claims



A hot box for maintaining asphalt at elevated temperatures including a closed and insulated container, a service apron, a heat exchanger for heating the container, a burner capable of producing high velocity hot gases for driving a mixture of hot gases and air through the heat exchanger and a temperature control system.

3,721,227

### TRANSDUCER FOR PULSE-ECHO ULTRASONIC EXPLORATION

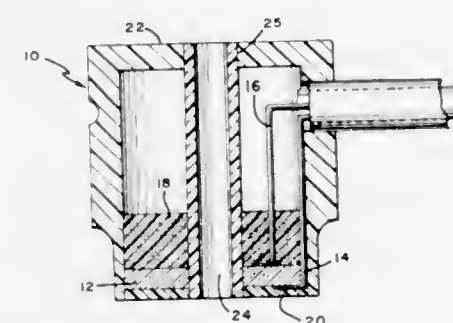
Eugene A. Larson, P.O. Box 552, Lewistown, Pa. 17044; Le Roy A. Kopel, 20 E. Market St., McVeytown, Pa. 17051; and Daniel E. McNulty, R.D. 4, Box 75B, Lewistown, Pa. 17044

Filed Aug. 24, 1971, Ser. No. 174,319

Int. Cl. A61b 5/00

U.S. Cl. 128-2 V

9 Claims



A transducer for pulse-echo ultrasonic exploration is provided with a substantially centrally disposed aperture through which a surgical instrument is passed. The transducer aids in locating the surgical instrument accurately within an opaque body and monitoring the progress of the particular procedure.

3,721,228

### DEVICE FOR THE EVALUATION OF DECONGESTANT DRUGS

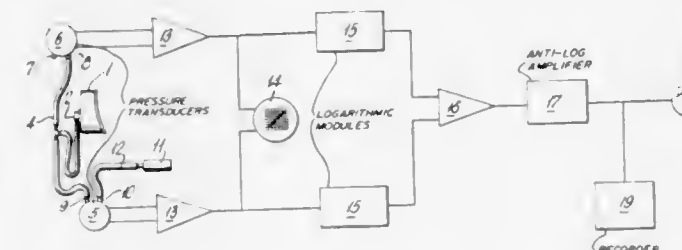
Fred Robert Prediger, Westfield, and Michael Kulazuk, Mountainside, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 14, 1971, Ser. No. 143,512

Int. Cl. A61b 5/00

U.S. Cl. 128-2 R

3 Claims



Device for measuring pharyngeal pressure and nasal airflow in order to evaluate the effectiveness of decongestant drugs in which a conventional circular orifice is inserted into a face mask. As a patient breathes through this orifice, with accompanying pharyngeal tube passing between his lips, the pressure-flow relationships between the nose and mask orifice are continuously compared by a specifically designed analog computer. For simplicity of clinical work, the recorded comparison signal can represent a percentage of, or an area relative to, that of the standard mask orifice. For precise calculations, the answer may be converted to absolute units of flow (liters/sec.) and pressure (cm. H<sub>2</sub>O) after absolute calibration of the particular face mask orifice employed.

3,721,229

### OBTURATOR DEVICE FOR HYSTEROSALPINGOGRAPHY AND THE LIKE

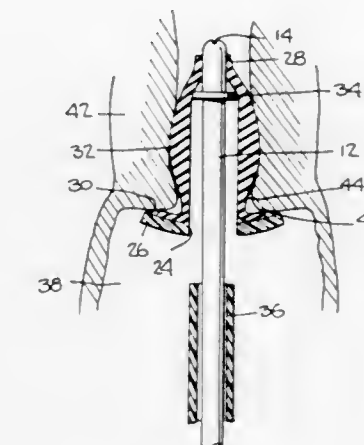
Norman Panzer, 71 Blanchard Road, South Orange, N.J.

Filed April 6, 1972, Ser. No. 241,770

Int. Cl. A61b 19/00; A61m 3/00

U.S. Cl. 128-2 A

11 Claims



An obturator device for the injection of fluid into a body cavity through a narrow passageway, comprising an injection tube reciprocally moveable through an obturating collar and secured thereto by an elastic sleeve of intermediate enlarged diameter disposed around the tube, with the sleeve adapted to be distended to reduced diameter for movement of the tube through the passageway and, on release, to return to its natural expanded diameter thereby to lock the tube to the passageway wall.

3,721,230

### HIGH-GAIN MONITOR TO DETERMINE ELECTRO-CEREBRAL SILENCE

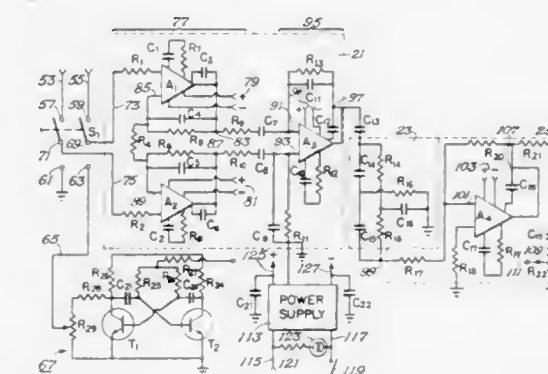
Robert S. Ziernicki, Dallas, Tex., assignor to Marvin C. Overton III, Fort Worth, Tex.

Filed Nov. 23, 1970, Ser. No. 91,629

Int. Cl. A61b 5/00

U.S. Cl. 128-2.1 B

19 Claims



An apparatus for measuring physiological conditions of human and animal bodies characterized by; in addition to a preamplifier, filter, amplifier, recorder, and power supply; a common mode noise rejection circuit and a shield for the noise-sensitive components; whereby the apparatus may be employed at a patient's location, even in the presence of electrical noise. The apparatus is characterized by other improved concepts that are also disclosed; such as, front end loading of paper for the recorder; a channel selector for selecting the electrodes to be monitored; a small portable unit that includes a self-contained calibrate and test circuit to ensure correct operation regardless of the electrical noise in a given area or location; and a specific electrical schematic diagram.



3,721,231

**CATHETER FOR HIGH PRESSURE INJECTIONS**

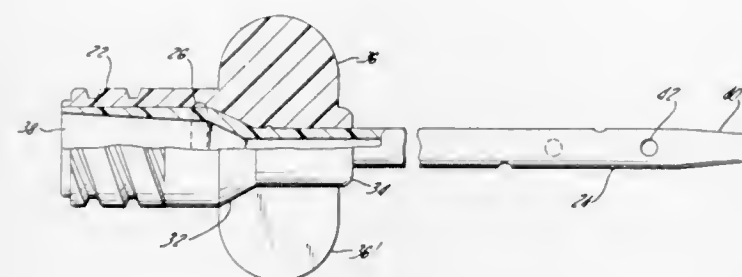
Franz Hans Hubert, Carlstadt, N.J., assignor to Becton, Dickinson and Company, East Rutherford, N.J.

Filed Feb. 1, 1971, Ser. No. 111,285

Int. Cl. A61m 25/00

U.S. Cl. 128—2.05 R

8 Claims



A medical catheter is formed from a hub within which an elongated flexible tube is disposed. The bore of the tubing within the hub is tapered to accept the tapered tip of a male connector. The tubing is coextensive with the shaft of the hub. A method for fabricating the medical catheter involves mounting the hub on a mandrel, which has a tapered portion, adapted to be positioned within the hub, and an elongated pilot extending from the tapered portion through the hub. Heat softenable catheter tubing is fed onto the tapered portion until resistance is met, then the tubing while heat softened, is forced over the tapered portion of the mandrel in the recess between the tapered portion and the hub. The tubing is solidified and the joined catheter removed from the mandrel.

3,721,232

**SURGICAL PAD METHOD FOR DECUBITUS ULCER MANAGEMENT**

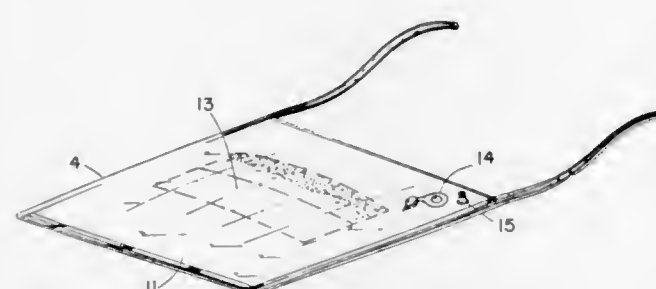
Sidney C. Trenchard, Westmont, N.J., assignor to Margaret R. Trenchard, Westmont, N.J.

Filed May 24, 1968, Ser. No. 731,864

Int. Cl. A61h 1/00

U.S. Cl. 128—24 R

9 Claims



Method and surgical system for decubitus ulcer management, in which the surgical devices in the system each comprise a flexible, fluid-imperious bladder containing a gel or jelly formed as a colloidal system from water and a water-soluble resin which is a carboxy vinyl polymer of extremely high molecular weight and capable of displacement or flow within the bladder distributing the weight of the body of the user supported thereon. The mucilage or jelly has some form of elasticity and has yield value, both of which are controllable and variable and is capable of distributing pressure over an entire portion of the body resting on the bladder and avoids excessive pressure points thereon.

3,721,233

**T-SHAPED TRACHEAL STENT**

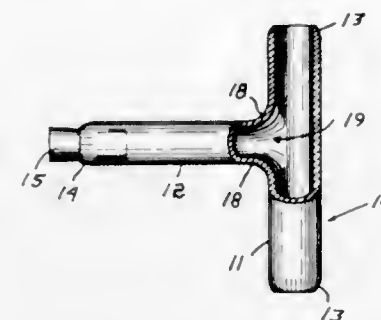
William W. Montgomery, 3 Wachusett Road, Wellesley, Mass., and Eugene B. Hood, 211 Vine Street, Duxbury, Mass.

Filed Oct. 30, 1970, Ser. No. 85,530

Int. Cl. A61m 16/00

U.S. Cl. 128—351

2 Claims



A T-shaped stent for use following surgical reconstruction of the cervical trachea and surgical correction of tracheal and subglottic stenosis. The stent comprises a tubular intraluminal portion and a tubular tracheotomy portion connected thereto between its ends and provided with a removable plug. The tubular portions are of a resiliently yieldable stock enabling the ends of the intraluminal portion to be folded together or against the tracheotomy portion for insertion and removal through a tracheotomy orifice. The intraluminal portion provides internal support for the repaired part of the trachea and the cross sectional area of the tracheotomy portion increases at its junction with the intraluminal portion to an axial extent such that external tapering surfaces are provided for entry into the posterior end of the orifice to provide molding support for and overcorrecting the inferior margin of adjacent portions of the anterior tracheal wall.

3,721,234

**DISPOSABLE SURGICAL COVER SHEET**

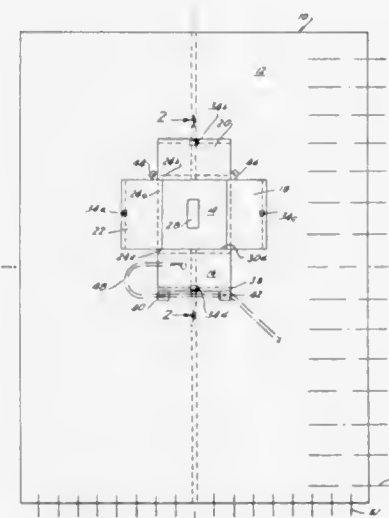
Frederick B. Hadtke, New Providence, and Martin P. Galen, Parsippany, both of N.J., assignors to Becton, Dickinson & Company, East Rutherford, N.J.

Filed April 23, 1971, Ser. No. 136,840

Int. Cl. A61t 13/00

U.S. Cl. 128—132 D

9 Claims



A disposable, surgical cover sheet is provided comprising a main sheet formed of a nonwoven, cellulosic material having an enlarged opening therein, the opening covered by a sheet of plastic material. The plastic sheet is secured to the main sheet along a bonding zone surrounding the main sheet opening. A the bonding of absorbent pads is also provided surrounding the opening and secured to the main sheet and plastic sheet in the bonding zone. Portions of the plastic sheet project beyond the bonding zone and may be used to retain a

suction tube or the like without risking the puncture or tearing of the cover sheet as a result of mishandling of the tube.

3,721,235

**BUBBLE TRANSFER DEVICE FOR OPEN SYSTEM SCUBA DIVING APPLICATIONS**

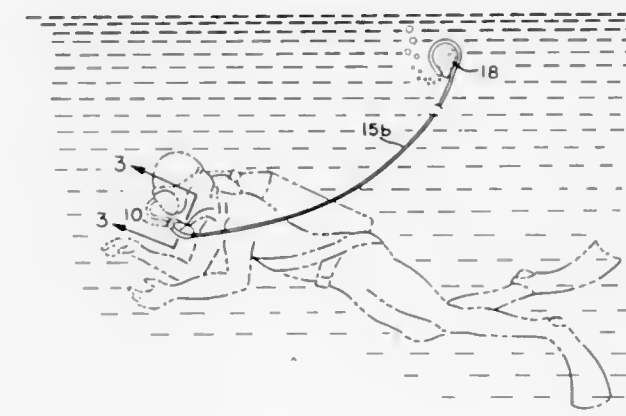
Stephen D. Ball, 3004 Altadena Avenue, San Diego, Calif., and Gary L. Keck, 4137 Front Street, San Diego, Calif.

Filed July 19, 1971, Ser. No. 163,851

Int. Cl. A62b 7/04

U.S. Cl. 128—142.2

6 Claims



A device readily attached to a conventional scuba regulator mouthpiece ensures a controlled venting of exhaust gases at a remote location thus removing bubbles from the diver's immediate vicinity. Exhaust gases are fed into a hollow body member and outwardly displace a flexible diaphragm member. Outward displacement of the diaphragm member removes it from its position normally sealing the inlet orifice of an exhaust tube leading to the remote location. Immediately after the exhalation portion of the breathing cycle, the diaphragm member is returned to its normally sealing position on the exhaust tube to prevent free flow of the scuba regulator during the remainder of the breathing cycle.

3,721,236

**DIVING MASK WITH TRANSPARENT FACE PLATE**

Heinz Erich Bardehle, Herrnstrasse 15, Munkh, Germany

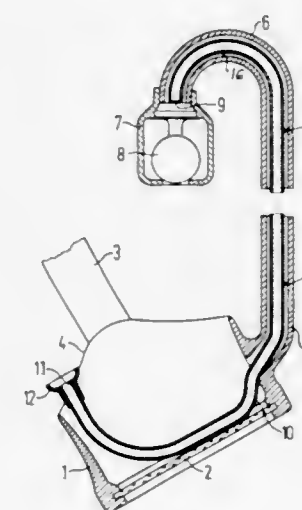
Filed July 23, 1970, Ser. No. 57,540

Claims priority, application Germany, July 31, 1969, P 19 39 019.3

Int. Cl. A62b 7/12; A61m 16/00

U.S. Cl. 128—145 A

6 Claims



This invention relates to diving masks with a snorkel wherein an exhaling tube is led from the mouth through the snorkel to the end of the snorkel to prevent fogging inside the mask.

3,721,237

**HEEL AND ANKLE PROTECTOR**

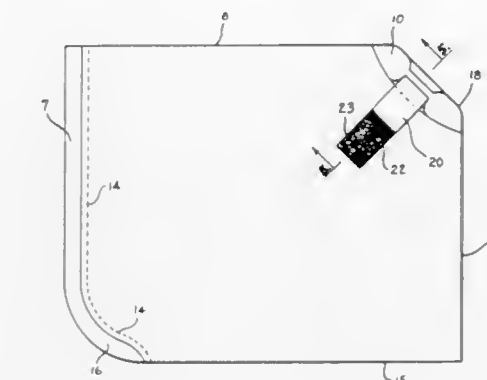
Dino Alessio, Mission, Kans., assignor to H. G. Enterprises

Filed July 13, 1970, Ser. No. 54,208

Int. Cl. A61b 19/00

U.S. Cl. 128—149

4 Claims



A heel and ankle protector of sheet polyurethane of sufficient thickness to have a cushioning action, which has a body portion made of a single ply of polyurethane. The body portion is generally rectangular except for a slightly widened portion at one end for mounting Velcro fasteners thereon, and a side edge straight throughout the major portion of its length, with a central notch of modified V shape. The notch has curved edges secured together to form a socket for receiving the heel. The straight edge portions are fastened together so that a pocket is formed to enclose the ankle and heel when the two portions of the Velcro fastener are secured together to overlap the corners of the body portion at its wider end.

3,721,238

**DISPOSABLE ANESTHESIA DEVICE**

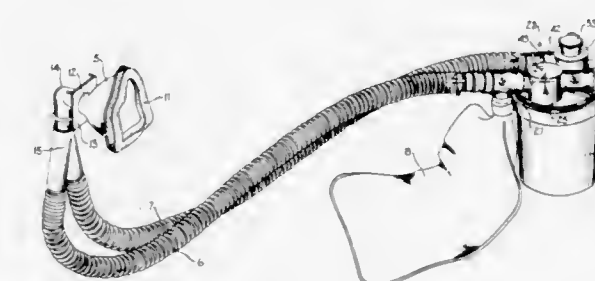
Lewis Abraham Wise, and John E. Grimm, both of Milwaukee, Wis., assignors to Will Ross, Inc., Milwaukee, Wis.

Filed Oct. 29, 1970, Ser. No. 85,201

Int. Cl. A61m 17/00

U.S. Cl. 128—188

15 Claims



A disposable anesthesia device that is completely assembled and ready to use in administering anesthetic gas from a source thereof to a patient. The device provides a closed circuit connectable with a conventional anesthesia machine and consisting of a face mask, a rebreathing bag, a canister containing granular carbon dioxide absorbing material, flexible inhalation and exhalation tubes connecting the face mask with the canister and the rebreathing bag, and flap-like inhalation and exhalation valves, all parts of the device, with the exception of the granular canister contents, but including the valves, being molded or otherwise made of plastic and hence economically disposable after one use thereof to preclude the danger of patient cross contamination.

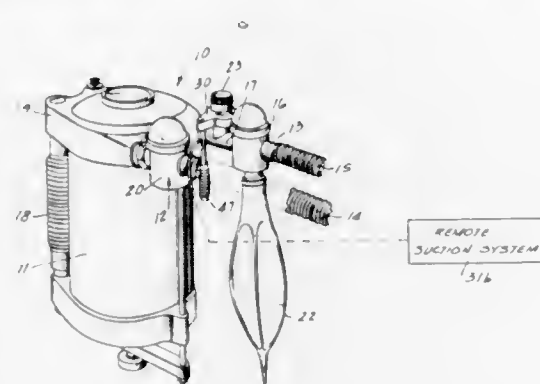


**3,721,239**  
**ANESTHETIC GAS EXHAUST SYSTEM**  
 Robert T. Myers, 2521 W. Bacon Drive,  
 Peoria, Ill. 61614

Filed July 9, 1969, Ser. No. 840,439  
 Int. Cl. A61m 17/00

U.S. Cl. 128—188

21 Claims

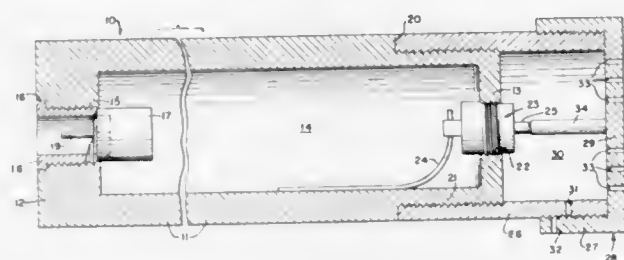


A system utilizing the air suction system of an operating room to exhaust anesthetic gases from an anesthesia supply in assembly and especially in a preferred embodiment by use of an exhaust manifold in association with the pop valve of a rebreather system.

**3,721,240**  
**MECHANICAL SMOKING DEVICE**  
 Michael Tamburri, 22 Harvest Avenue, East Hanover, N.J.  
 Continuation-in-part of Ser. No. 767,051, Sept. 30, 1968,  
 abandoned, which is a continuation-in-part of Ser. No.  
 584,277, Oct. 4, 1966, abandoned. This application Nov. 10,  
 1970, Ser. No. 88,273  
 Int. Cl. A61m 15/06

U.S. Cl. 128—208

7 Claims



This specification discloses a smoking device to be carried on the person of a user as one does a cigar, cigarette, or pipe and which includes a refillable storage chamber for a liquefied flavored and perfumed gas under pressure, said chamber having an inlet or refill valve and a discharge valve connecting with a suction chamber having an air passage to facilitate sucking or puffing of gases from the suction chamber.

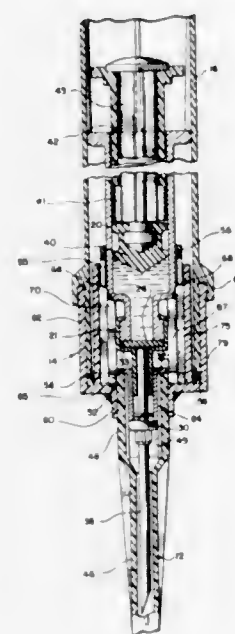
**3,721,241**  
**RIGID CONTAINER ASSEMBLY FOR SYRINGE**  
 Robert Klohr, Fenton; Edward R. Tascher, Manchester; John  
 W. Beld, O'Fallon, and Elmer A. Koenig, Kirkwood, all of  
 Mo., assignors to Sherwood Medical Industries, Inc.  
 Filed April 8, 1970, Ser. No. 26,681  
 Int. Cl. A61m 5/00

U.S. Cl. 128—221

10 Claims

A rigid packaging container assembly for protecting, and assisting the arming of a sealed prefilled syringe barrel and insertable needle assembly including a sheath surrounding the needle assembly, slidable on the barrel and having a shoulder which engages a portion of the needle assembly to permit the operator to grasp the sheath and fully insert the needle as-

sembly from a partially inserted position, with a sheath retainer surrounding the sheath and having a plurality of shelf projections extending through openings in the sheath and engageable with the underside of the syringe barrel to limit sliding movement of the sheath retainer upwardly along the syringe barrel so that a cooperating cap insertable within the sheath retainer and engageable with a portion of the sheath

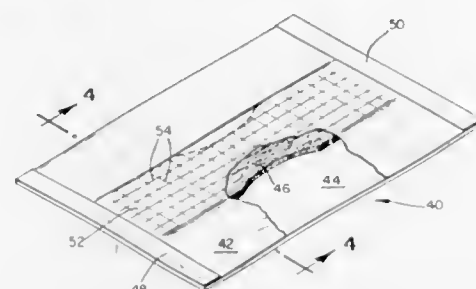


prevents movement of the sheath when the syringe is in its packaged condition thereby preventing arming of the syringe until the cover or cap is removed. There are also provided a plurality of tabs extending from the sheath so that in the disassembled condition of the container with only the sheath surrounding the needle assembly, the syringe will not be permitted to roll on a supporting surface.

**3,721,242**  
**DISPOSABLE DIAPERS**  
 Evelyn H. Krusko, Philadelphia, Pa., assignor to Scott Paper  
 Company, Delaware County, Pa.  
 Filed March 30, 1970, Ser. No. 23,752  
 Int. Cl. A61f 13/16

U.S. Cl. 128—287

39 Claims



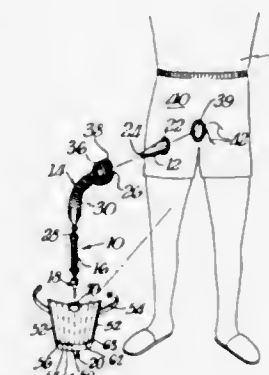
Disposable diaper having a moisture absorbent fluff pad which is contoured in the crotch area and which is disposed between a facing sheet and a backing sheet, said facing sheet being adapted to contact the body of a child. Both the facing sheet and backing sheet have a basis weight in the range of approximately 1.0-2.0 ounces per square yard, and each are comprised of a batt of moisture-absorbent, self-sustaining, adhesively bonded, intermingled cellulosic fibers. The outer surface of the facing and backing sheets each have a pattern defined by ridges and valleys extending over substantially the entire surface of the batt, the density of the sheets in the regions of said valleys being greater than the density of the sheets in the regions of said ridges. A method for manufacturing the facing sheet and backing sheet of the disposable diaper by forming a randomly arranged, intermingled cellulosic fibrous batt having a basis weight of approximately 1.0 ounces per square yard, passing said batt through a nip defined

between a patterned roll and a moistened rubber roll to provide a pattern in one surface of the batt and raise a nap on the other surface, spraying opposite surfaces of said batt with adhesive, drying said adhesive and setting said adhesive.

**3,721,243**  
**MALE URINARY INCONTINENCE DEVICE**  
 Dennis Hesterman, 910 5th St., Delaware City, Del.  
 19706, and Lewis E. Greth, Cinnaminson, N.J.; said  
 Greth assignor to said Hesterman  
 Filed July 16, 1970, Ser. No. 55,399  
 Int. Cl. A61f 5/44

U.S. Cl. 128—295

18 Claims

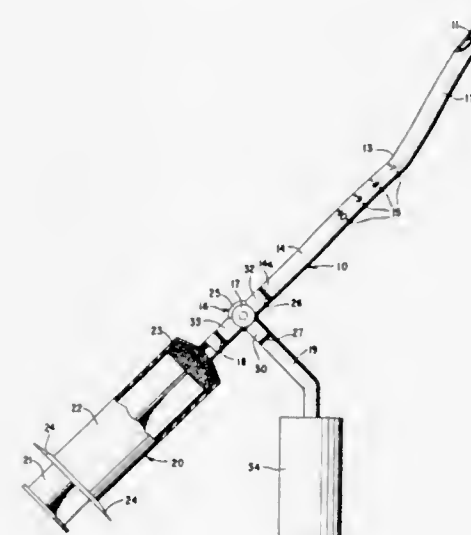


A male urinary incontinence device includes an elongated tubing which has an open proximal end for insertion over the male organ and an open distal end which communicates with a collector through conveying means. The tubing is designed to be compressible and extendable so as to create a negative pressure therein upon compression and subsequent extension.

**3,721,244**  
**MANUAL SUCTION CURETTAGE INSTRUMENTS**  
 Leonard R. Elmaleh, New York, N.Y., assignor to Solly  
 Schelner, Great Neck, N.Y.  
 Filed Jan. 28, 1971, Ser. No. 110,407  
 Int. Cl. A61b 17/42

U.S. Cl. 128—304

5 Claims



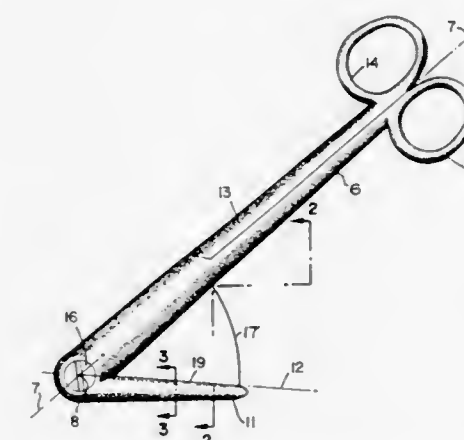
A disposable aspiration system for the manual performance of abortion during early uterine gestations includes a scoop-like curette tube adapted to be inserted in the vaginal uterine tract and an aspirator connected to the curette tube. In one

form of the invention, a stopcock assembly is included between tube and aspirator to permit discharge of the aspirator during intermediate steps of the tissue removal process.

**3,721,245**  
**PAIR OF SURGICAL SCISSORS**  
 Andrew J. Campbell, 1632 Dale Avenue, San Mateo, Calif.  
 Filed May 4, 1971, Ser. No. 140,151  
 Int. Cl. A61b 17/32

U.S. Cl. 128—318

1 Claim

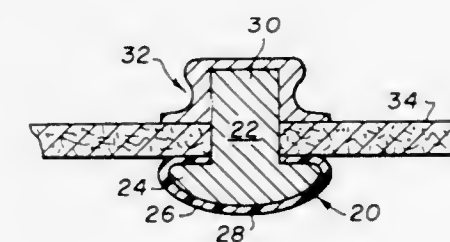


A pair of surgical scissors includes two levers pivoted about a center axis and extending alongside a first axis at right angles thereto and having a pair of finger loops at their ends remote from the pivotal center axis. Forming part of one lever and extending from the center axis along a second axis at approximately 45 degrees to the first axis is one of the scissor blades. Similarly extending from the other lever alongside the same second axis is the other scissor blade. Preferably, the second blade is substantially solid so that the space between the two axes is approximately filled with the second blade terminating in a sharpened edge arcuate about the center axis and also sharpened along the second axis as is the first blade.

**3,721,246**  
**APPLICATOR ELECTRODES WITH A VERY THIN NON-METALLIC, CURRENT DISTRIBUTING LAYER**  
 David M. Landis, Fullerton, Calif., assignor to Thomas & Betts  
 Corporation, Elizabeth, N.J.  
 Filed Dec. 10, 1970, Ser. No. 96,893  
 Int. Cl. A61n 1/04

U.S. Cl. 128—404

8 Claims



An improved body contacting electrode having a dry, current distributing, skin contacting layer selectively disposed adjacent a conductive portion thereof to provide a high resistance electrode uniquely arranged to effectively limit and uniformly disperse the current from an electrical source through the skin area adjacent the electrode. The current distributing layer is comprised preferably of conductive particles uniformly distributed in a nonconducting medium such as



resin or the like. Means are provided to couple the electrode to an external electrical source and to releasably support said electrode adjacent a preselected area of the body.

3,721,247

## METHOD FOR CIGARETTE MAKING

Julian L. Paynter, 915 North College Avenue, Salem, Ind.

Filed March 9, 1971, Ser. No. 122,443

Int. Cl. A24c 5/42, 5/52

U.S. Cl. 131-72

1 Claim



Filter tip cigarettes are produced from a charge of loose tobacco and a filter plug by positioning a cigarette component in a chamber of a manually operated cigarette making machine, advancing the component from the chamber into a cigarette paper tube spaced on a nozzle aligned with the chamber a predetermined distance, positioning the other component in the chamber and advancing the other component into the paper tube a predetermined distance. A manual cigarette maker operates to introduce, stepwise, a charge of tobacco and a filter plug into a cigarette paper tube affixed to the cigarette maker. The cigarette maker has a housing with the chamber adapted to receive the tobacco charge and filter plug, a nozzle adapted to hold the paper tube in communication with the chamber and a means for compressing the tobacco charge and filter plug for introduction into the paper tube. An elongated plunger has a stop forming an end wall of the housing chamber for injecting the tobacco charge and filter plug, stepwise, into the paper tube. First and second stop means on the housing are associated with the stop on the plunger for defining tobacco receiving and filter receiving compartments in the housing chamber. To properly index the cigarette components in the cigarette paper tube the axial length of the plunger is less than the axial length of the tobacco receiving compartment.

3,721,248

## CIGARETTE MAKING APPARATUS

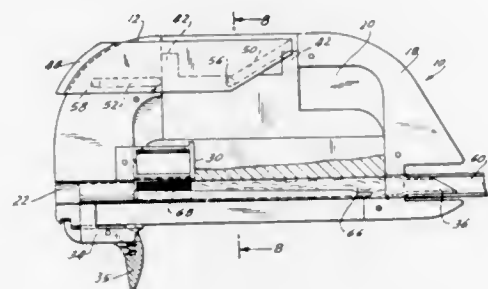
Julian L. Paynter, 915 N. College Avenue, Salem, Ind.

Filed April 7, 1971, Ser. No. 131,997

Int. Cl. A24c 5/42, 5/52

U.S. Cl. 131-72

2 Claims



In manual cigarette making apparatus a housing is provided having a chamber with a channel at an end of the chamber to receive tobacco and a filter. The housing has an opening for admitting tobacco and a filter into the chamber adjacent the

channel. A compacting slide mounted within the housing is adapted for movement toward and away from the channel for compressing the tobacco and for moving the filter into the channel. An improved mechanism to move the compacting slide with respect to the channel employs an elongated actuator mounted in the housing adapted for reciprocal movement with respect to the housing. The actuator is connected to the compacting slide and is adapted to move the slide either toward or away from the channel during reciprocation.

3,721,249

Patent Not Issued For This Number

3,721,250

## MIST APPLICATOR COMB

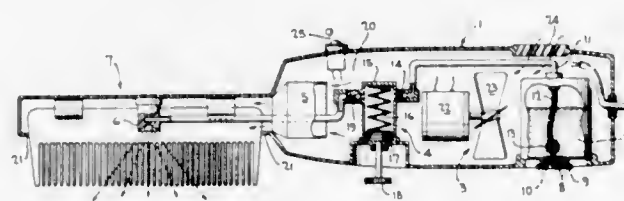
Henry J. Walter, Wilton, and Harvey Levine, Fairfield, both of Conn., assignors to Clairol Incorporated, New York, N.Y.

Filed April 16, 1971, Ser. No. 134,656

Int. Cl. A45d 24/00

U.S. Cl. 132-11 A

3 Claims



The subject invention relates to a comb having a handle in which is situated a reservoir for water or other liquid and having means for spraying the fluid from the reservoir directly on the hair while combing. Also provided is a hot air generating system which allows hot air to be blown on the hair while the comb is being used. The heater of the hot air generating system may be used to heat the fluid which is sprayed directly on the hair.

3,721,251

## METHOD OF MANUFACTURING WIGS

Leonie Kathleen Mason, Christchurch, New Zealand, assignor to Lori Lana Wigs Limited, Christ Church, New Zealand

Filed Oct. 14, 1970, Ser. No. 80,770

Claims priority, application New Zealand, July 16, 1970, 160847

Int. Cl. A45d 7/02

U.S. Cl. 132-7

6 Claims

This invention relates to a method of rendering natural wool fibers into a formable condition and also relates to a wig wherein the simulated hair is formed by the method of this invention. The method resides in the application of dry heat, such as steam, to natural wool fibers, the heat being applied at a temperature of at least 50°C for a period of at least 30 seconds. The process renders the fibers formable and the simulated hair of a wig, of the treated fibers, is able to retain springiness and the tendency to curl and is able to be set into any number of different forms or styles any number of times without the use of usual setting and styling aids.

3,721,252

## SPRING GUIDE WASHER

Robert J. Ayella, Lutherville, Md., assignor to United States Catheter and Instrument Corporation, Glen Falls, N.Y.

Filed April 1, 1971, Ser. No. 134,097

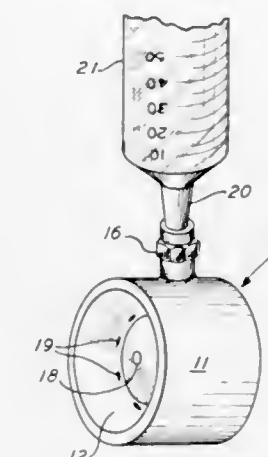
Int. Cl. B08b 3/02, 1/00

U.S. Cl. 134-122

3 Claims

A spray head adapted for connection to a supply of washing liquid under pressure, such as a water-filled syringe, the spray head having a hole through which a spring guide may be

drawn and a plurality of jet openings through which streams of liquid can be projected from several directions toward a point



of convergence located in the path of the spring guide and adjacent one end of the hole through which it is passed.

3,721,253

## CONTROLLING APPARATUS AND METHOD

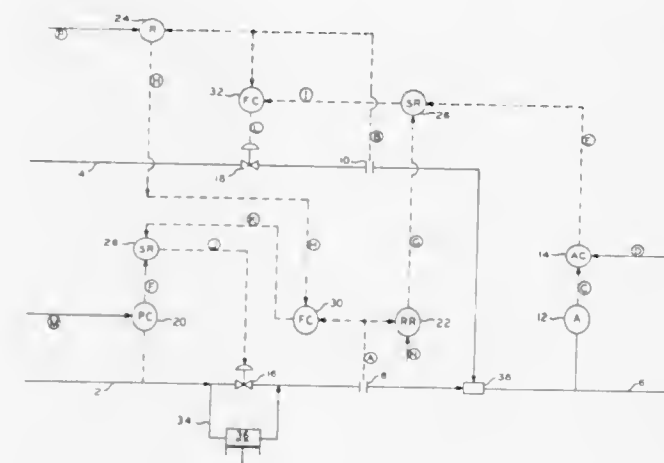
Marvin A. Remke, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 24, 1971, Ser. No. 183,473

Int. Cl. G05d 11/02

U.S. Cl. 137-3

10 Claims



This invention resides in a method and apparatus for controlling the flow of first and second fluid streams together to form a composite stream having a preselected composition range. Said composition range is maintained by the controlling apparatus and method during fluctuation of the supply of one or both of said fluid streams.

3,721,254

## DEVICE FOR AUTOMATICALLY DRIVING AN IRRIGATION INSTALLATION

Pierre L. Rutten, Nimes, France, assignor to Compagnie Nationale D'Amenagmt de la Region du Bas-Rhone Languedoc, Nimes, France

Filed Feb. 3, 1971, Ser. No. 112,182

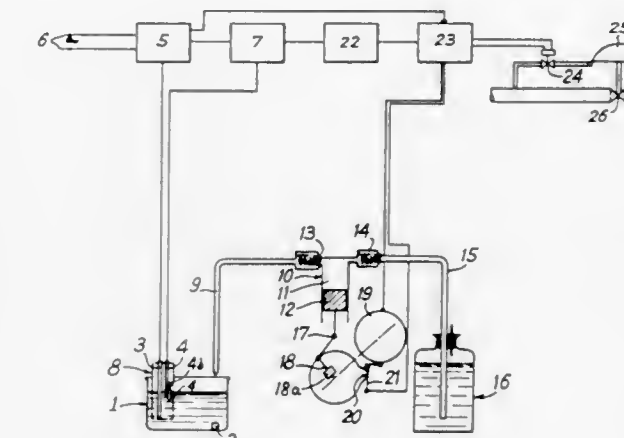
Claims priority, application France, Feb. 9, 1970, 7004535

Int. Cl. A01g 25/00

U.S. Cl. 137-78

7 Claims

This invention relates to a device for automatically controlling the manoeuvres of motorized obturators controlling the distribution of irrigation water, composed of a cyclic pro-



grammer and independent of the obturators, for injecting a determined amount of water into the tank, during each cycle of the programmer.

3,721,255

## FLUIDIC DEVICE

Fumio Suzuki, Fumio Naito, and Shoji Sugaya, all of Osaka, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

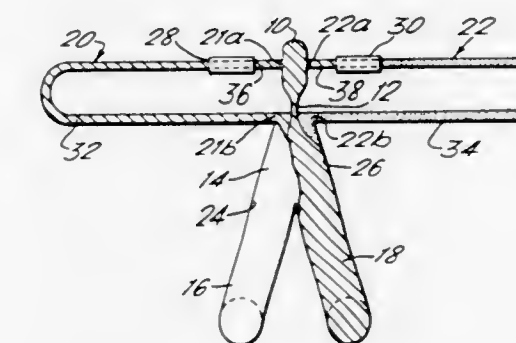
Filed Aug. 20, 1970, Ser. No. 65,492

Claims priority, application Japan, Aug. 23, 1969, 44/66596

Int. Cl. F15c 1/04

U.S. Cl. 137-807

12 Claims



A fluidic device comprising an inlet passage for receiving a heat vaporizable supply liquid, a main power nozzle connected to the inlet passage, a pair of outlet passages communicated through an interaction chamber with the outlet of the power nozzle and at least one, preferably a pair of by-pass control passages for directing the main stream of liquid through the device to one or the other of the outlet passages. The by-pass control passage communicates the inlet passage directly with the interaction chamber by-passing the power nozzle.

It includes heating means for vaporizing the flow of liquid therethrough. A small portion of the main liquid stream through the inlet passage of the device is diverted to the control by-pass to be used as control flow. During passage through the control by-pass, the control liquid flow may be vaporized into gas flow by heating means. The vaporization of the control liquid causes a decrease in the mass flow of the control fluid which is effective to produce a transverse pressure differential across the main liquid stream through the interaction chamber sufficient to bias it for flow through the desired one of the two outlet passages.



A refrigeration system includes a pair of evaporators, means for supplying a liquid refrigerant to the evaporators and a fluidic device of the type described. The fluidic device is provided between refrigerant supplying means and a pair of evaporators with its inlet passage connected to refrigerant supplying means for receiving the refrigerant and each of its two outlet passages connected to respective one of the evaporators. Heating means on the control by-passes are adapted to be operated in response to predetermined temperature conditions within the spaces where the evaporators are disposed so as to bias the flow of refrigerant through the fluidic device to one or the other of its outlet passages for supply into corresponding one of the evaporators.

3,721,256

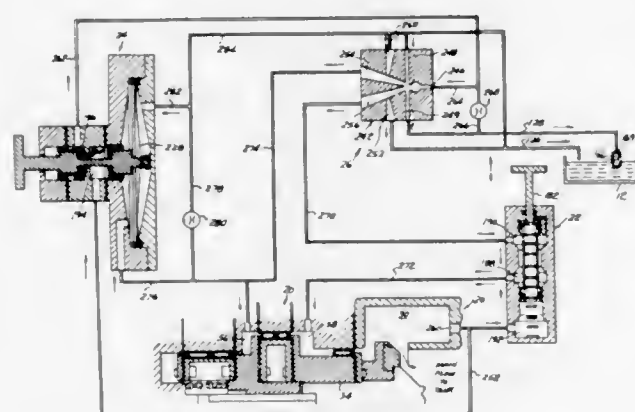
# FLOW CONTROL DEVICE WITH A BISTABLE FLUID SWITCH

Daniel D. Barnard, Birmingham, Mich., assignor to The Bendix Corporation, Southfield, Calif.

Filed Sept. 30, 1970, Ser. No. 76,868  
Int. Cl. F15c 1/10, 3/04

U.S. Cl. 137—81.5

16 Claims



A flow control device which senses the liquid level in a tank filled thereby and automatically shuts off flow upon reaching a predetermined tank level by means of a fluidic sensing and control circuit. A bistable fluid switch is used to initiate the automatic filling operation, and also to discontinue supply flow to the control circuit after performance of its sensing and control function. The sensing and control circuit includes a monostable jet-on-jet fluid amplifier with a power jet which is switched to an alternate outlet by a sensing line disposed in the tank with floats adapted to block the sensing line upon attainment of the predetermined level, the output of the alternate outlet causing operation of a main flow control valve to discontinue further flow, as well as to operate the bistable fluid switch to discontinue supply flow to the fluid amplifier.

3,721,257

# ELECTRO-FLUIDIC SIGNAL CONVERTER

Michael J. De Santis, Lyndhurst; Robert H. Page, Piscataway, and Edward L. Rakowsky, Kinnelon, all of N.J., assignors to The Singer Company, New York, N.Y.

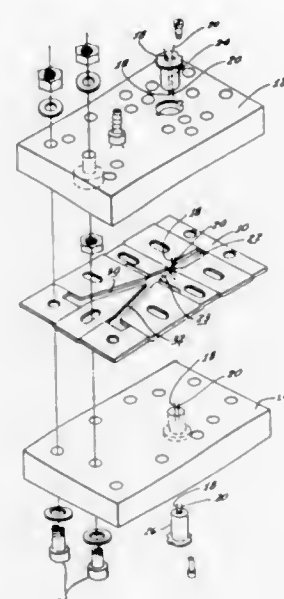
Filed June 8, 1971, Ser. No. 151,031  
Int. Cl. F15c 1/04

U.S. Cl. 137—828

3 Claims

An improved digital device is provided for converting alternating current or direct current electrical signals into corresponding fluidic signals either of the pressure or flow type. The device of the invention is basically a bi-stable fluid amplifier having a multiplicity of heating wires mounted in the power jet port thereof. These wires act to impede the gas flow through the port, and the physical impedance of the wires to the gas flow is a function of the heating electric current flow-

ing through the wires. As will be described, the wires control the device to produce a desired fluidic output in response to



3,721,258

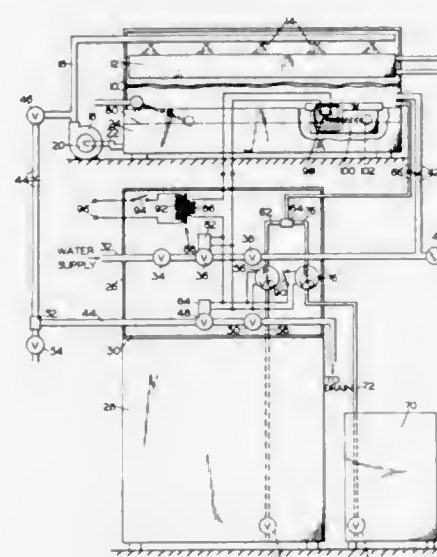
# APPARATUS FOR SUPPLYING COOLANT LIQUID FOR REFRIGERATION COILS

John F. Dermiah, 2221 S. Glenmorrie Drive, Lake Oswego, and Delmar L. Montgomery, 4323 N. E. 66th Avenue, Portland, both of Oreg.

Filed Dec. 28, 1970, Ser. No. 101,610  
Int. Cl. G05d 1/10

U.S. Cl. 137—111

1 Claim



A concentrated aqueous solution of corrosion inhibiting chemical is metered from a container through an electrically operated metering pump and chemical supply line to the sump of a cooling tower for mixing with cooling water contained in the sump. Pump operation is controlled by an electric switch which is operated by a float in the sump. The electric switch also controls operation of a solenoid valve in a make-up water supply line to the sump, which line is independent of the chemical supply line. A second electrically operated metering pump may be controlled by the switch to meter acid from a receptacle to the sump to maintain the pH of the coolant liquid at a desired level.

3,721,259

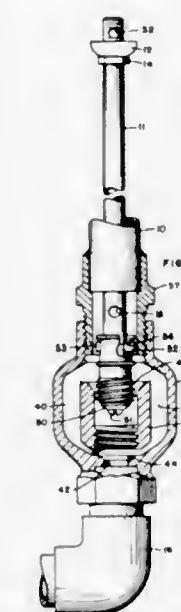
# APPARATUS FOR REMOVING FLUIDS FROM FLUID SUPPLY PIPES

Cecil Wayne True, 825 South Maple St., Watertown, S. Dak.  
Filed Sept. 9, 1971, Ser. No. 179,107

Int. Cl. F16k 1/00

U.S. Cl. 137—270

14 Claims



A rigid, hollow pipe having an external diameter which is smaller than the diameter of a riser pipe is provided with a resilient washer near one end; so that upon insertion of that end of the hollow pipe into the riser pipe, the washer compresses liquid in the riser pipe and forces it up through the hollow pipe where it is discharged from an opening at the other end thereof. The hollow pipe also is used to insert and operate a valve closing member at the bottom of the riser pipe.

3,721,260

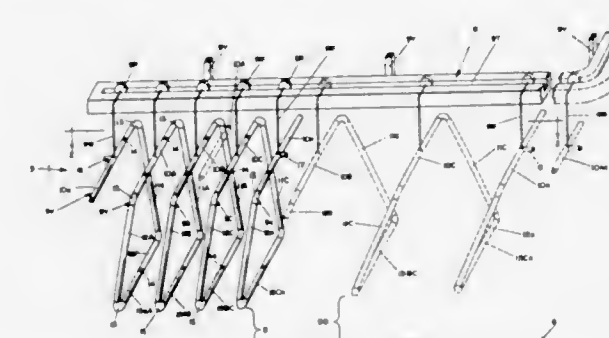
# PLEATED EXTENSIBLE CARRIAGE FOR CONVEYING FLOWABLE ENERGY THEREALONG

Bernhardt Stahmer, 1509 Chicago Street, Omaha, Nebr.  
Filed Dec. 16, 1971, Ser. No. 208,559

Int. Cl. B65h 75/36

U.S. Cl. 137—355.16

12 Claims



There is described herein a pleated carriage longitudinally extensible along and guidable by a tracking means and adapted to convey in conduit and other pleated paths therealong flowable energy sources to reciprocating machines. The longitudinally extensible pleated carriage comprises for consecutive carriage pleats a transversely extending shoulder member together with a pair of transversely separated elongate upright legs that have a longitudinally spreadable relationship with respect to each other and to the shoulder, consecutive pleats remote of the shoulder and at opposite legs being connected with a transversely extending bridge member; when flexible conduits are employed, there are means to protect them from pinching, kinking, or undue strain as the carriage is longitudinally extended and retracted.

3,721,261

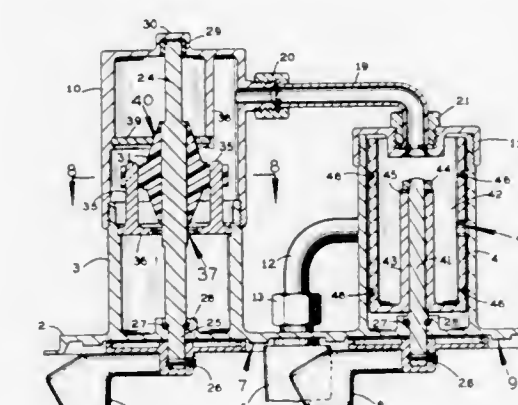
# TEMPERATURE AND WATER DISTRIBUTION REGULATING MECHANISM FOR BATHTUBS AND WASHBASINS

Ildefonso Martinez, Miami, Fla.

Continuation-in-part of Ser. No. 837,762, June 30, 1969, abandoned. This application May 17, 1971, Ser. No. 145,075  
Int. Cl. F16k 19/00

U.S. Cl. 137—597

5 Claims



A water control device having a manual control for selectively mixing and dispensing quantities of hot and cold pressurized water to a predetermined desired temperature within the temperature range of the hot and cold water and conducting same into a distribution cylinder controlled by a second manual control which may be adjusted from an "off" position to conduct the water to and from a spout for tube use or conduct the water to and from a shower head at the aforesaid desired temperature.

3,721,262

# PRESSURE CONTROL APPARATUS FOR CONTROLLING THE FLOW OF VISCOUS FLUIDS

Peter Twatt Work, Irvine, Scotland, assignor to Ceramic Engineering Limited, Glasgow, Scotland

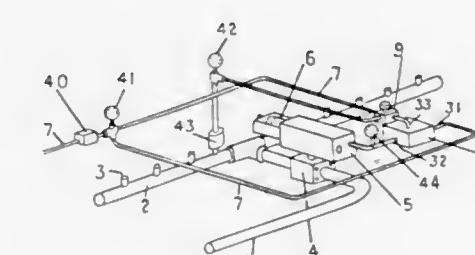
Filed Dec. 1, 1971, Ser. No. 203,557

Claims priority, application Great Britain, Dec. 4, 1970, 57,696/70

Int. Cl. F16k 31/36

U.S. Cl. 137—488

4 Claims



This invention relates to pressure control apparatus for controlling the flow of viscous fluids particularly casting slip from a main supply to a feed manifold and comprises a ball valve located in the main supply to allow or prevent the flow of slip to the feed manifold. The ball valve is actuated by an actuator device and damper means and the actuator is controlled by a pressure regulating valve and a pressure sensitive relay valve which monitors the feed manifold pressure and supplies a signal to actuate the pressure regulating valve which converts a signal of low flow characteristics to an equal signal pressure of high flow characteristics.



### 3,721,263 STEPPED OPENING FLUID PRESSURE OPERATED VALVE

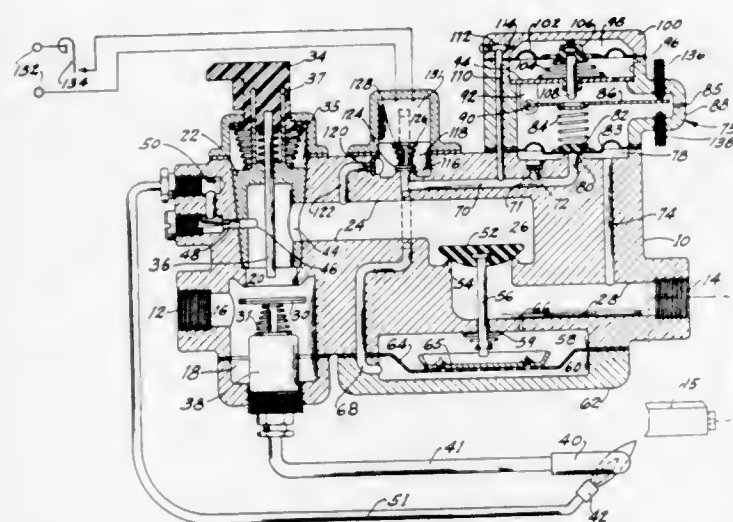
Charles D. Visos, Manchester, and John J. Love and  
Ralph E. Banes, St. Louis, Mo., assignors to Emerson  
Electric Co., St. Louis, Mo.

Filed Nov. 10, 1971, Ser. No. 197,438

Int. Cl. F16k 31/12

U.S. Cl. 137—495

8 Claims



A biased closed gas valve controlling a main passageway is moved openward by a first expansible chamber as it expands. A restricted pressure passageway having a control valve therein connects the chamber with the upstream side of the gas valve and a more highly restricted bleed-off passageway connects the chamber with the downstream side of the gas valve. The pressure in the chamber therefore increases and the gas valve is moved openward when the control valve is opened. A bypass controlled by a biased closed pressure regulator valve permits additional bleed off so as to limit opening of the gas valve to a predetermined partially open position. A second, smaller, expansible chamber having a lost motion operative connection with the pressure regulator operates when it has expanded a predetermined amount to increase the closing bias on the regulator valve, thereby reducing the bleed off through the bypass and causing the gas valve to be fully opened. A passageway connects the second, smaller, expansible chamber with the first expansible chamber and includes a restricting orifice to delay expansion of the second smaller chamber.

### 3,721,264 COMBINATION SHUT-OFF CHECK AND PRESSURE SURGE RELIEF VALVE

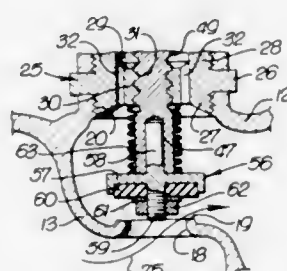
Donald W. Coughlin, P.O. Box 2025, Lake Arrowhead, Calif.

Filed Oct. 20, 1971, Ser. No. 190,895

Int. Cl. F16k 11/10

U.S. Cl. 137—596.2

3 Claims



A threaded manually rotatable valve stem screws into the valve body with the valve head slideably mounted on the inner end of the stem and biased downwardly by a very light coil spring into engagement with the valve seat. When the stem is screwed to its innermost limit, it positively forces the valve head against the valve seat in "shut-off" position. When water

under substantial (normal) pressure is delivered to the in-flow chamber of the valve, its flow through the valve is prevented when the latter is thus shut off. When the stem is now reversely screwed manually to release the valve head from downward pressure by the stem, the incoming water pressure readily overcomes the light spring pressure biasing the valve head downwardly and lifts the valve head until further upper movement of the valve head is prevented by its coming into contact with the stem. This of course opens the valve to a flow of water through the same, with practically the same effect as if the valve head were directly mounted on the stem.

When a temporary failure of the supply of water to the valve occurs, the valve head is automatically lowered by its biasing spring into engagement with the valve seat, thus closing the valve against a reverse flow of liquid therethrough.

A pressure surge relief piston is slideable on said stem in a bore provided in the valve body (which bore connects with the out-flow chamber), this piston being biased downwardly by a heavy coil spring, with screw controlled tension, said tension being set to confine liquid under normal operating pressures but to yield to an abnormal pressure surge, thereby uncovering ports leading from said bore and relieving the out-flow chamber and the domestic water system connected therewith of said abnormal pressure surge.

### 3,721,265 THREE-WAY VALVE

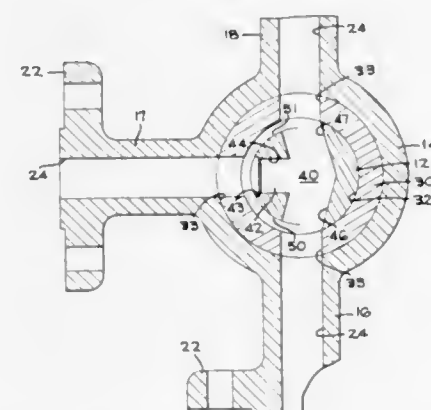
Joseph V. Hoffland, Minneapolis, Minn., assignor to FMC Corporation, San Jose, Calif.

Filed April 29, 1971, Ser. No. 138,507

Int. Cl. F16k 11/00

U.S. Cl. 137—625.47

6 Claims



A three-way valve includes a rotatable valve plug which has a generally T-shaped passageway therethrough to permit transfer of fluid between a main port selectively to or from either or both side ports of the valve. The plug is exteriorly recessed so as to provide secondary flow paths on the periphery of the plug from the central leg of the T-shaped passageway to the side legs thereof so that there will be no spaces in the plug passageway where fluid will stagnate when the plug is rotated to direct the flow between the main port and only one of the side ports.

### 3,721,266 ROTARY PILOT VALVE

Yo Ikebe; Jun Ikebe, both of Tokyo, and Seiuemon Inaba, Kawasaki-shi, all of Japan, assignors to Fujitsu Limited, Kawasaki-shi, Japan

Filed Nov. 18, 1970, Ser. No. 90,638

Claims priority, application Japan, Nov. 19, 1969, 44/109822; Nov. 19, 1969, 44/109823

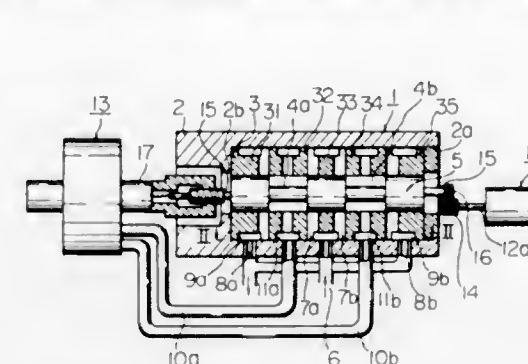
Int. Cl. F16k 11/00

U.S. Cl. 137—625.69

2 Claims

In the rotary pilot valve of the present invention, the opening area of the port varies with a linear relation to the amount

of the displacement of the spool, only when the amount of the displacement of the spool is small. In the high speed feeding range, the above-mentioned linear relation is not necessary.



Accordingly, in the above-mentioned range, the ratio between the amount of the displacement of the spool and the amount of the opening area of the port has a larger quantity than the ratio in the above-mentioned linear relation.

### 3,721,267 VALVE CONTROL DEVICE

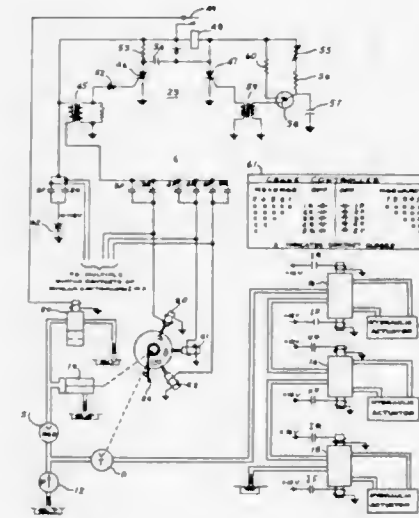
Arthur F. Sholl, Omaha; Donald L. Wolfe, Wahoo, and Armando R. Benitez, Omaha, all of Nebr., assignors to Paxton-Mitchell, Omaha, Nebr.

Filed Oct. 28, 1971, Ser. No. 193,277

Int. Cl. F15b 11/04

U.S. Cl. 137—624.18

11 Claims



A control device operably connected to a pressure compensated flow control valve for controlling the rate of flow of fluid therethrough. The device includes a spring connected to the shaft of the valve to bias it to a normal position, a stop assembly secured to the shaft and having a plurality of stops wherein each stop limits the movement of the shaft to a predetermined amount, a stop control actuator operably connected to the shaft and having a shaft control means connected thereto, wherein the actuator in response to the shaft control means is operable to apply force to the shaft to move it in step relation against the bias of the spring to any predetermined position as established by the position of the stops in step relation.

### 3,721,268 MULTI-PORT VALVE WITH ROTATABLE COVER

Giora Erlich, 220 West Jersey Street, Elizabeth, N.J., and Marc Lerner, Swan Lake, N.Y.

Filed Dec. 3, 1970, Ser. No. 94,727

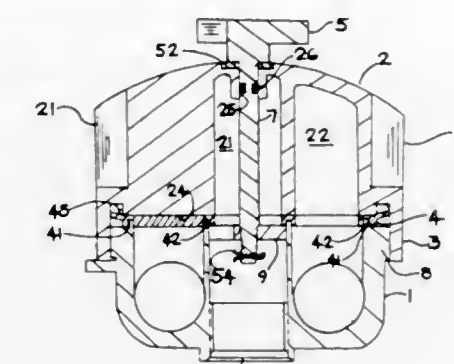
Int. Cl. F16k 11/06

U.S. Cl. 137—625.46

13 Claims

A multiport valve is provided having a valve body and a manually rotatable cover mounted on the body for selectively directing fluid flow among a plurality of influent and effluent

lines. A valve seat comprising a unitary resilient seal ring is disposed between the rotatable cover and the valve body to prevent internal and external leakage therebetween during rotation of the valve cover and in the selected position.



prevent internal and external leakage therebetween during rotation of the valve cover and in the selected position.

### 3,721,269 ORIENTED POLYBUTENE-1 TUBING

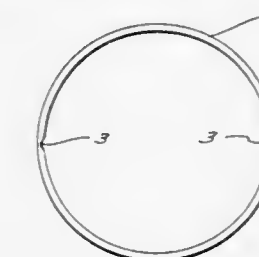
Luther J. Choate, Baytown, and Gaylon T. Click, Pearland, both of Tex., assignors to Petro-Tex Chemical Corporation, Houston, Tex.

Filed Nov. 23, 1970, Ser. No. 91,932

Int. Cl. B23b 27/00; F16l 11/04, 11/12

U.S. Cl. 138—119

2 Claims



Oriented polybutene-1 flexible, collapsible tubing having the highest degree of tear strength is obtained by maintaining the ratio of machine direction orientation to transverse direction orientation in the range of about 0.7 to 0.9. Unexpectedly this ratio rather than a ratio of 1.0 which represents a balanced film gives the best tear strengths because of the crease lines formed in the tubing during production. The crease lines have a tear strength that totally disrupts the expected and predictable tear properties of the tubing.

### 3,721,270 SAFETY INSTALLATION FOR PREVENTING POLLUTION BY PIPELINES

Gerard Francis Wittgenstein, 29 Champrond Way, Lausanne, Switzerland

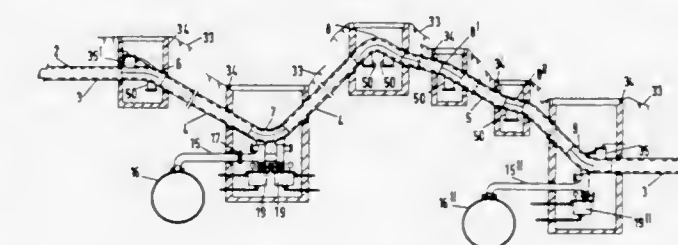
Filed Sept. 2, 1970, Ser. No. 68,949

Claims priority, application Switzerland, Sept. 2, 1969, 13849/69

Int. Cl. F16l 55/00

U.S. Cl. 138—104

6 Claims



A safety installation for preventing pollution by pipelines, is provided with at least one sector equipped with a jacket of



plastic material, the jacket surrounding the pipeline and being sealed at its ends on the latter, with the annular gap formed between the pipeline and its jacket containing a fluid and inserts and spaces. At least one vessel is provided for collecting the evacuated flow and liquid presence detector which gives a warning and remotely controls operations. A fluid-tight hollow space contains a gas under a pressure different from atmospheric pressure and connects the interior of at least one vessel to a crack in the pipe wherever the crack occurs. Instruments permanently monitor the tightness of the space, which comprises at least one perforated gap. Near each vessel is a liquid presence detector and every horizontal run gap of the space is filled with water. The jacket is pierced by at least one perforation, and there is a chimney surrounding the perforation. A channel leads into the chimney above the level of water and leads to a vessel to form part of the space. Every inclined run gap of the space is perforated at a low point in its jacket, and the channel surrounding the perforation and leading to the vessel forms part of the space.

3,721,271

## HOSE CONSTRUCTION

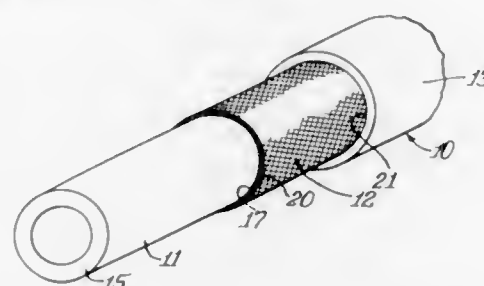
Anil H. Chudgar, Manitowoc, Wis., assignor to Imperial-Eastman Corporation, Chicago, Ill.

Filed Oct. 28, 1971, Ser. No. 193,250

Int. Cl. F16I 11/00

U.S. Cl. 138—141

13 Claims



A hose construction having an inner tubular portion defining an outer substantially smooth nylon surface and reinforcing means surrounding the outer surface and having nylon fibers nonsolvently, autogenously bonded to the duct surface. Alternatively, or cumulatively, the reinforcing nylon fibers may be nonsolvently, autogenously bonded to the inner surface of a surrounding sheath having an inner substantially smooth nylon surface. A plurality of reinforcing layers may be provided. The securing of the reinforcing fibers to the confronting nylon surface means is effected substantially free of hooked interlocks therebetween.

3,721,272

## TERRY FABRIC HAVING HIGH-LOW PILE

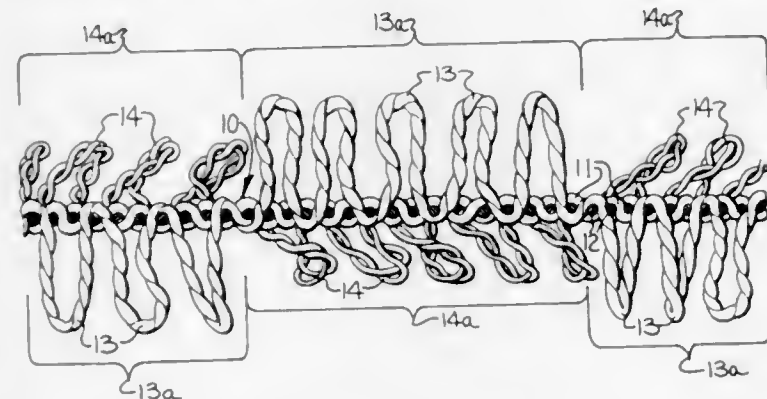
John Grayson Hager, Fieldale, Va., assignor to Fieldcrest Mills, Inc., Eden, N.C.

Filed Dec. 30, 1971, Ser. No. 213,883

Int. Cl. D03d 27/08; D06c 23/00

U.S. Cl. 139—396

5 Claims



A woven terry fabric having on each side thereof a predetermined pattern of clearly defined high and low pile areas and

wherein those terry yarns forming the low pile areas have pile loops of a length about as long as the height of the high pile areas but are self-restrained or disposed to lie at an incline relative to the base and form the low pile areas.

3,721,273

## TERRY TOWEL HAVING ENHANCED BRILLIANCE

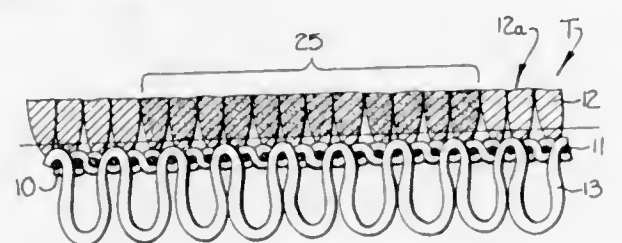
Ernest Kohn Sherrill, Eden, and John Paul Taylor, Greensboro, both of N.C., assignors to Fieldcrest Mills, Inc., Eden, N.C.

Filed Dec. 30, 1971, Ser. No. 214,018

Int. Cl. D03d 27/08; D06c 23/00

U.S. Cl. 139—396

5 Claims



A woven terry towel having one face of cotton terry pile and having its opposite face of rayon terry pile exhibiting a high sheen or brilliance as compared to the cotton terry pile. Preferably, the rayon terry pile is in the form of cut pile and has a printed design or pattern of a suitable colorant thereon which penetrates the rayon cut pile very nearly to the base of the towel.

3,721,274

## SOFT, DURABLE, LOW SHRINKING TOWEL

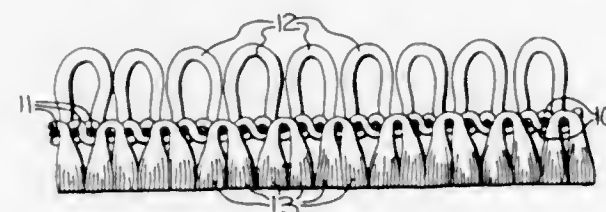
Ernest Kohn Sherrill, Eden, and John Paul Taylor, Greensboro, both of N.C., assignors to Fieldcrest Mills, Inc., Eden, N.C.

Filed Dec. 30, 1971, Ser. No. 214,055

Int. Cl. D03d 27/08; D06c 23/00

U.S. Cl. 139—396

10 Claims



A woven terry towel whose ground warp and/or filling yarns are composed of a blend of polyester and cellulosic fibers so as to increase the towel's resistance to shrinkage, increase the resistance of the selvage and hem areas of the towel to abrasion, increase the overall tensile strength of the towel, and to give the towel enhanced limpness and drape.

3,721,275

## PROCESS AND APPARATUS FOR MAKING POLYGONAL SPECTACLE GLASS RIMS

Volker Redinger, Pforzheim, Germany, assignor to Robert Hellerich K.G., Eutingen, Baden, Germany

Filed Apr. 26, 1971, Ser. No. 137,482

Claims priority, application Germany, Sept. 12, 1970, P 20 45 240.8

Int. Cl. B21f 37/00

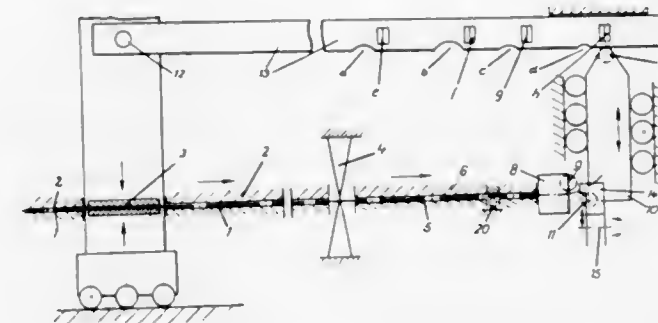
U.S. Cl. 140—88

16 Claims

A profiled wire is cut into pieces having a desired length. Each of said pieces is fed through a curved pas-

sage having an outlet portion to prebend said piece. Each of said pieces having left said outlet portion is subjected to an automatically controlled, intermittent hammering

wardly from the ends of the cable to be spliced, the strands are cut and interleaved to provide a mechanical splice portion which is then inserted in a mold and heated to a high temperature, liquid plastic at a high temperature is then injected in the mold to flow into the cable ports and open spaces and the mold is then cooled to provide a completely jacketed splice;



operation in a direction at an angle to said outlet portion to form predetermined bends in said piece after it has been prebent.

3,721,276

## EYELET MAKING DEVICE FOR SPRINGS, TO BE COUPLED TO WINDING MACHINES AND OPERATING AT THE SAME OUTPUT SPEED OF THE LATTER

Enrico Lamperti, Via Ercole Ferrario 4, Gallarate, Varese, Italy

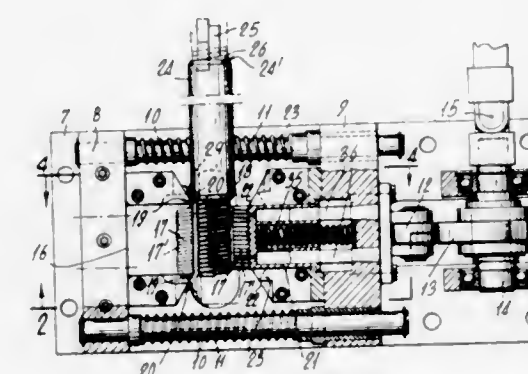
Filed June 26, 1970, Ser. No. 50,145

Claims priority, application Italy, June 26, 1969, 18726-A/69

Int. Cl. B21f 35/02

U.S. Cl. 140—103

11 Claims



The device is for forming an anchoring ring on one or both of the ends of a helical spring. It comprises: guide means for the spring, spring gripping means in the form of jaws, at least one of which is movable, means on the sides of the jaw for eyelet bending at least one end of the spring and means for shearing the surplus wire, conveyor means are provided in the form of a cradle for receiving the spring and carrying it to the deformation zone.

The device is mounted at the discharge of a helical spring forming machine to finish springs with the end eyelets.

3,721,277

## METHOD AND APPARATUS FOR SPLICING JACKETED CABLE

David Albert Rauscher, Columbia, S.C., and Robert Warren Alexander, Fort Lee, N.J., assignors to Carolina Steel and Wire Corporation, Lexington, S.C.

Filed June 30, 1971, Ser. No. 158,482

Int. Cl. B21f 15/06

U.S. Cl. 140—111

11 Claims

A method of splicing cable encased in a plastic jacket is disclosed in which the jacket is removed for a given distance in-

another aspect of the invention resides in the mold construction in which an inlet is provided centrally of an elongated hollow cylindrical mold with outlets being provided adjacent each end of the mold adjacent the ends of the cable splice so that hot plastic injected into the mold flows outwardly to expel all air in the mold and to consequently provide a more uniform jacket over the splice.

3,721,278

## WIRE WRAPPING TOOL

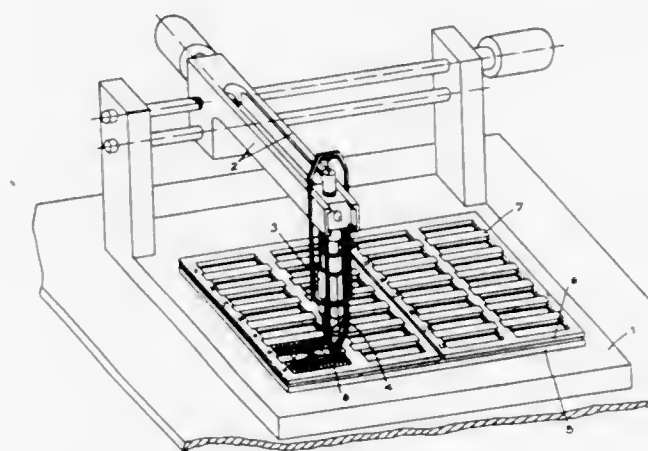
Bruno Stalger, 7121 Erligheim, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 30, 1971, Ser. No. 203,403

Int. Cl. B21f 15/00

U.S. Cl. 140—115

5 Claims



This invention relates to a wire wrapping tool to perform the disorderly arranged wiring of pin contact fields having high wiring density. An arrangement is provided for spreading the wiring adjacent the terminal pin being wrapped. Four spreading fingers generally parallel to the wrap gun bit are spaced outwardly of the bit. These fingers are secured by a ring member. Lever action of the fingers is produced by a second ring adjacent the upper edges of the fingers, the upper ring being movable axially to lever the fingers.



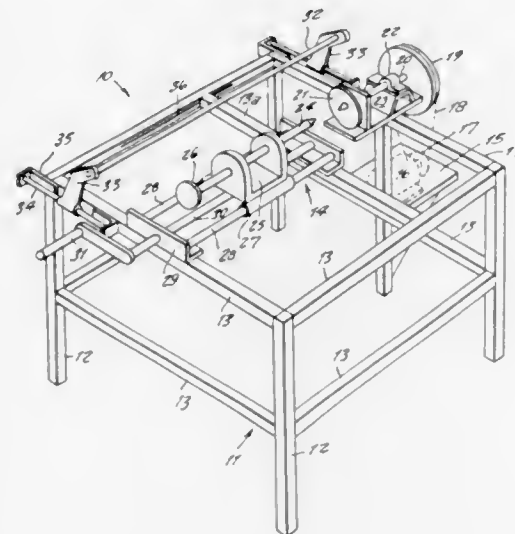
3,721,279

## WOOD LATHE

Charles L. Bowen, 1109 East Tenth Street, Lumberton, N.C.  
 Filed Jan. 21, 1971, Ser. No. 108,514  
 Int. Cl. B27c 7/06, 7/02

U.S. Cl. 142-1

2 Claims



A wood turning lathe for handling objects from 6 to 40 inches round and up to 30 inches in length, the device comprising a frame around a large central space which affords sufficient space or room for a large object to swing, and the frame affording a motor driven chuck and a spindle unit between which the work is rotatably carried.

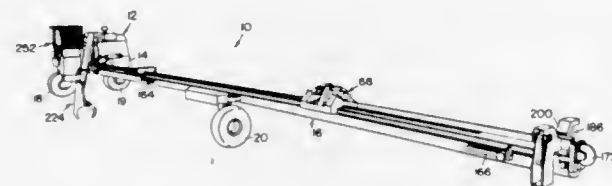
3,721,280

## SELF-PROPELLED TREE DELIMBER

John Lischer French, Moline, Ill.; Kenneth Quentin Kessler, Dubuque, Iowa; Welker W. Funk, Fresno, Calif.; Victor Charles Pierrot, III, and Stanley Robert Hseler, both of Dubuque, Iowa, assignors to Deere & Company, Moline, Ill.  
 Filed March 3, 1971, Ser. No. 120,501  
 Int. Cl. A01g 23/08

U.S. Cl. 144-2 Z

18 Claims



A self-propelled tree delimber includes a horizontal T-shaped frame having a length suitable for supporting full-length trees of medium size. A boom and grapple assembly is mounted on the head portion of the frame and is operable for lifting cut trees from the ground and placing them on the frame. A delimbing assembly is mounted for movement along tracks extending the length of the leg portion of the frame and includes pivoted blades arranged to receive and encircle the stem of a tree, when the tree is placed on the frame. A drive motor is mounted on the head portion of the frame and is drivingly connected to the delimbing assembly for propelling the assembly along the tracks to delimb any tree stem encircled by the blades. The leg portion of the frame is supported on a driven steerable wheel and the head portion of the frame is supported on a pair of driven wheels which are mounted for movement between working and transport positions for respectively moving the delimber perpendicular and parallel

to its length. The leg portion of the frame is constructed in two sections which are disconnectible for shortening the length of the delimber for transport.

3,721,281

## STUMP SPLITTER

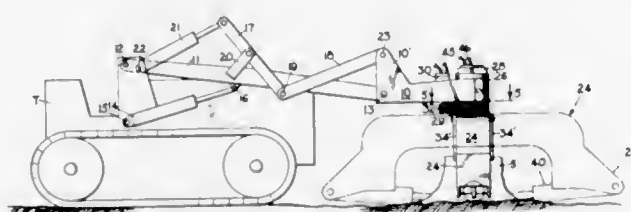
Raymond H. Bartlett, 604 N.W. Overlook Drive, Vancouver, Wash.

Filed Sept. 27, 1971, Ser. No. 184,075

Int. Cl. A01g 23/06

U.S. Cl. 144-2 N

7 Claims



The splitting device is mounted on and operated from a tractor or other ground vehicle and includes an extending frame which can be raised, lowered or tipped. The frame rotatably supports an inverted U-shaped yoke member at its outer end. A pair of arms hingedly supported within the top of the yoke member are formed with opposed slicing blades at their lower ends. A pair of double-acting hydraulic cylinders at the bottom ends of the sides of the yoke member are connected to the bottom ends of the arms respectively. Hydraulic means for moving the arms and therewith the blades toward and away from each other, for rotating the yoke member, and for raising, lowering or tipping the frame supporting the yoke member, are operated from the vehicle.

3,721,282

## HAMMER WITH DETACHABLE STRIKING TIPS

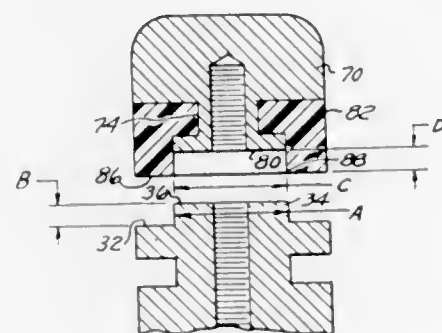
Raymon W. Hayes, 2879 Corinthia, Rochester, Mich., and Raymond J. Hayes, 2562 Patrick Henry Drive, Pontiac, Mich.

Filed Aug. 25, 1970, Ser. No. 66,763

Int. Cl. B25d 1/02

U.S. Cl. 145-29 A

14 Claims



A hammer with specially designed removable striking tips so that a variety of striking surfaces, such as nylon, steel, brass, aluminum or the like, can be provided, each of the striking tips including an annular non-metallic belt disposed around a metallic insert adjacent the end of the tip which is threaded onto the hammer head. The nylon belt is pushed outwardly by an upstanding annular flange formed on the hammer head and is compressed between the striking tip and the hammer head as the end of the metallic insert is tightened down onto the flange, securing the striking tip onto the hammer head.

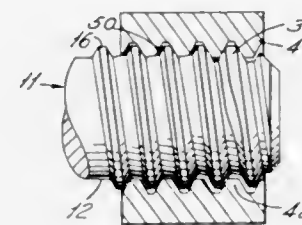
3,721,283

## SELF-LOCKING FASTENER

Robert J. Evans, 1297 Porters Lane, Bloomfield Hills, Mich.  
 Filed Nov. 9, 1970, Ser. No. 88,008  
 Int. Cl. F16b 39/30

U.S. Cl. 151-22

13 Claims



A self-locking screw adapted to have root interference with a mating female thread. The root of the screw, on entry, displaces the crest material of the female thread into the voids between the flanks of the mating members. The screw has a swaging flank which, upon withdrawal, forces the displaced material back toward the crest of the female thread, thus reworking the female thread to approximately its original form.

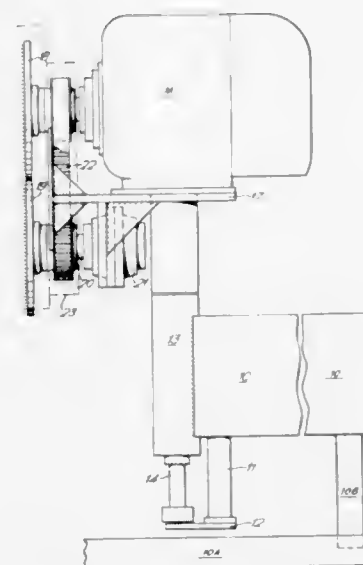
3,721,284

## BUFFING MACHINE

Jan Herbert Farquhaison Kent, Saint Martin, Channel Islands, Great Britain, assignor to Kentvedder Limited, St. Saviour, Jersey, Channel Islands, Great Britain  
 Filed June 25, 1971, Ser. No. 156,613  
 Int. Cl. B29h 21/08

U.S. Cl. 157-13

5 Claims



A buffing machine primarily for tires wherein two discs are mounted to revolve about parallel axes, each disc having teeth which cut in a common plane. The discs revolve in the same direction, the cutting action of their respective teeth being from opposite sides of the tire so as to eliminate thrust.

3,721,285

## METHOD OF MAKING A VENETIAN-BLIND INSTALLATION

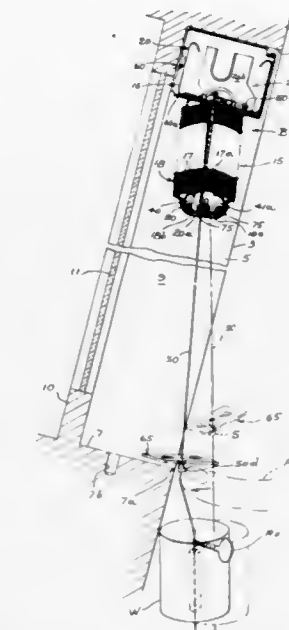
Victor Debs, Staten Island, N.Y., assignor to Levolor Lorentzen, Inc., Hoboken, N.J.  
 Filed May 29, 1969, Ser. No. 829,069  
 Int. Cl. E06b 9/26

U.S. Cl. 160-166

4 Claims

A building wall is inclined to the vertical and has a window opening therein which is provided with a Venetian blind. The general plane of the window opening inclines similarly to the inclination of the wall, and the

plane of the ladder-and-slat assembly of the blind is inclined to correspond with the inclination of the window opening.



plane of the ladder-and-slat assembly of the blind is inclined to correspond with the inclination of the window opening.

3,721,286

## METHOD OF OBTAINING METAL HOLLOW INGOTS BY THE ELASTROSLAG REMELTING

Boris Evgenievich Paton, ulitsa Kotsjubinskogo, 9, kv. 21; Boris Medovar Izrailevich, bulvar Lesi Ukrainki, 2, kv. 8; Jury Vadimovich Latash, Vozdukhoflotsky prospekt, 81, kv. 14; Leonty Vasilievich Chekotilo, ulitsa Scherbakova, 49-a, kv. 10; Vitaly Mikhailovich Baglai, ulitsa semashko, 10, kv. 54/3; Viktor Leonidovich Artamonov, ulitsa Sovetskaya, 9, kv. 4; Rodimir Ivanovich Garkaljuk, ulitsa Bolshaya Kitaevskaya, 142, korpus 14, kv. 33; Viktor Anatolievich Timchenko, ulitsa Vladimirskaia, 98/3, kv. 36; Evgeny Federovich Malichenko, prospekt Entuziastov, 7/2, kv. 161; Leonid Mikhailovich Stopak, Brestlitovskiy prospekt, 39, kv. 9, and Rudolf Solomonovich Dubinsky, Brestlitovskiy prospekt, 4, kv. 15, all of Kiev, U.S.S.R.

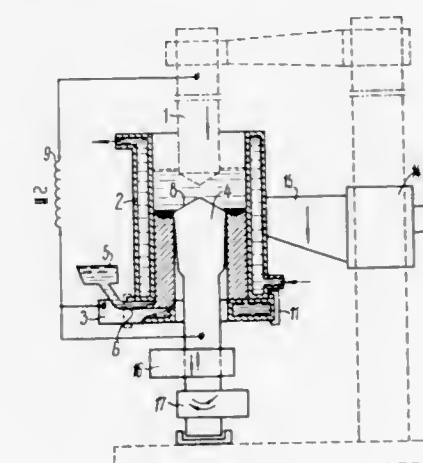
Continuation of Ser. No. 771,165, Oct. 28, 1968, abandoned.

This application March 29, 1971, Ser. No. 129,168

Int. Cl. B22d 27/02

U.S. Cl. 164-52

84 Claims



A method for electrosag remelting of at least one consumable electrode in a cooled mold assembly with a cooled bottom plate in which at least a part of the mold assembly is moved relative to the ingot being formed during forming of the ingot, and a device by which the method can be practiced. Movement of selective parts of the mold assembly relative to the ingot and/or the electrode is provided with or without move-



ment of the electrodes itself. Bottom pouring of molten slag is provided. A specific mold assembly has, as an element, a cooled core device enabling making hollow ingots, in which case the hollow core device can be moved axially, reciprocated axially and reciprocally rotated during forming of the ingot. Electrical power for the electrosag remelting can be connected between the consumable electrode and any or all elements of the mold assembly.

3,721,287

# METHOD OF CONTINUOUSLY CASTING PLATE WITH TEXTURED SURFACE

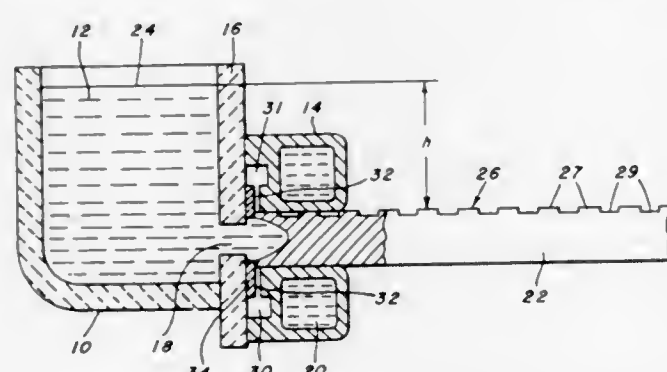
Clement Roger Howle, Murrysville, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.  
Division of Ser. No. 23,205, March 27, 1970. This application

Nov. 19, 1971, Ser. No. 200,632

Int. Cl. B22d 11/00

U.S. Cl. 164—73

6 Claims



Decorative plate or sheet having an attractive textured surface is continuously cast in an open ended chilled mold. The freezing plate ingot has a surface solidified in a varying and cyclic fashion by applying thereto a volatile lubricant at a rate much higher than that normally employed in similar casting arrangements. The resulting plate exhibits a textured surface with accompanying variations in composition and metallurgical structure such that the response to electrolytic anodizing treatments varies and the anodized surface exhibits varying shades and colors.

3,721,288

# METHOD OF CONTINUOUS CASTING OF STEEL USING AN OSCILLATING MOLD

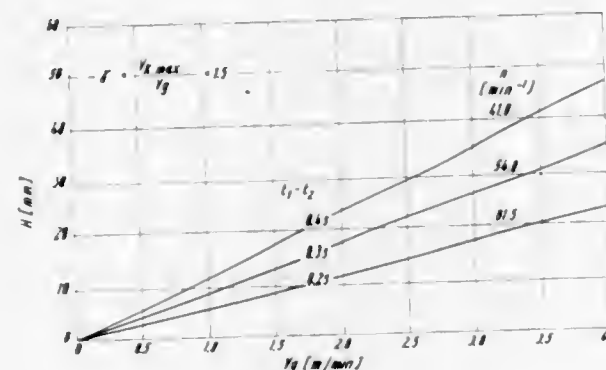
Gerd Vogt, Strump; Klaus Wunnenberg, Duisburg, and Joachim Dubendorff, Krefeld, all of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany  
Filed Jan. 11, 1971, Ser. No. 105,240

Claims priority, application Germany, Jan. 14, 1970, P 20 02 366.9

Int. Cl. B22d 11/02

U.S. Cl. 164—83

1 Claim



A method for continuous casting of steel with oscillating mold is disclosed according to which maximum mold oscillation speed, ingot withdrawal speed, oscillating frequency and

displacement stroke for vertical mold oscillations are interrelated to permit welding of cracks in the ingot skin within periods of less than half a second per down stroke of the mold.

3,721,289

# METHOD AND MEANS OF MAKING DIAMOND HEAT SINKS AND HEAT SINKS OBTAINED BY THIS METHOD

Michael Seal, Amsterdam, Netherlands, assignor to D. Drukker & Z.N.N.V., Amsterdam, Netherlands  
Filed March 11, 1970, Ser. No. 18,620

Claims priority, application Netherlands, March 13, 1969, 6903862

Int. Cl. H01L 1/12

U.S. Cl. 165—80

2 Claims



A method of making diamond heat sinks for mounting small power-dissipating devices, such as semi-conductor devices and solid-state lasers, in which diamonds of the type II A are selected having a level or rising light transmission curve for infrared rays in the wave length range of 7 to 8 micrometer wave length. The selected diamonds are sawn into slices which are polished on both their sawn parallel faces and which are then cut in two directions normal to each other to obtain block-shaped diamond heat sink bodies of a weight in the range of 0.0005 to 0.02 carat. In sawing the diamond slices a saw guide comb is used for guiding the saw blade along straight paths.

3,721,290

# TOWER WITH ROTATED COOLING ASSEMBLY

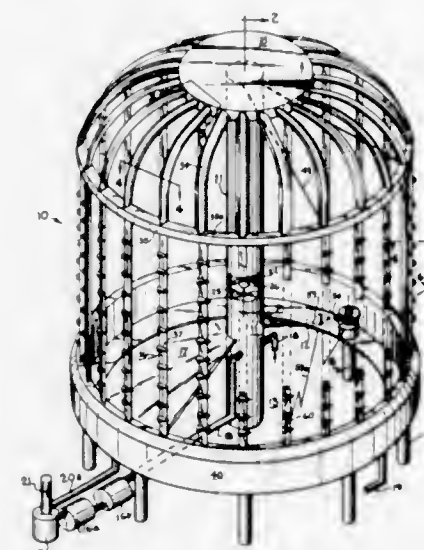
Tony W. Butler, Jr., 242½ Portland, Houston, Tex.

Filed July 30, 1971, Ser. No. 167,624

Int. Cl. F28f 5/00; F28b 1/06

U.S. Cl. 165—85

18 Claims



The invention involves a cooling tower with tower column having a hollow, rotatably mounted turret thereon, from the substantial periphery of which a plurality of equally, angularly spaced apart hollow vanes are suspended. Exhaust steam entered into the column passes upwardly and outwardly in the turret to pass downwardly through the vanes into an annular, rotatably mounted receiver. The receiver discharges the cooled fluid into a fixed reservoir, preferably an annular tank.

Air around the column rises and passes outwardly through the vanes in heat exchange relationship therewith. The vanes, at least in their upper portions, are so constructed and directed, that the passage of air therethrough tends to impart rotation to the assembly of turret, vanes, and receiver.

3,721,291

# END CLOSURE FOR A HEAT EXCHANGER

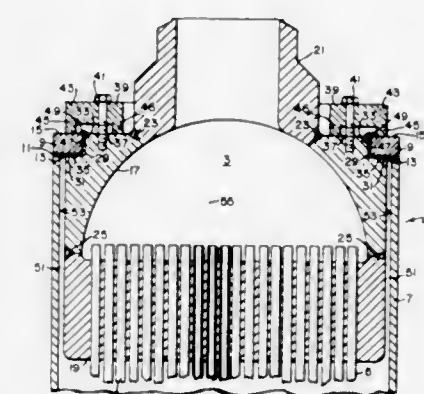
Anthony A. Massaro, Jr., and George Bieberbach, both of Tampa, Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 18, 1971, Ser. No. 172,853

Int. Cl. F28f 9/06

U.S. Cl. 165—158

9 Claims



A shell and tube heat exchanger having a tube bundle, which is removable through the shell, and having a removable channel head, which forms an end closure and a header for the tubes, the channel head having an annular step, which registers with an inwardly directed flange on the shell to form a seal utilizing an O-ring type gasket, the channel head being fastened to the shell by a plurality of clamps, which are bolted to the head in such a manner to provide the proper sealing force on the O-ring gasket, and having a seal weld to insure a leak proof joint.

3,721,292

# MARINE RISER LINER APPARATUS AND METHODS OF INSTALLING SUCH APPARATUS

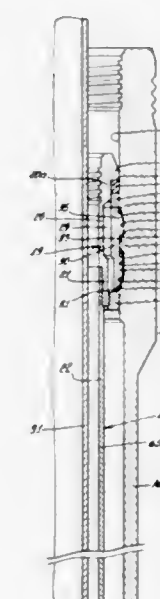
Arthur G. Ahlstone, Ventura, Calif., assignor to Vetco Offshore Industries, Inc., Ventura, Calif.

Filed Aug. 5, 1971, Ser. No. 169,200

Int. Cl. E21b 7/12

U.S. Cl. 166—5

19 Claims



A liner installed in a deep water marine riser extending from a region near the floor of the ocean to a drilling vessel or platform floating in or positioned above the ocean,

the lower portion of the liner being anchored in the lower portion of the marine riser, with the upper portion of the liner hanging or supported in the upper portion of the marine riser, the liner string between the anchoring and hanging portions being tensioned and maintained in tension.

3,721,293

# COMPENSATING AND SENSING APPARATUS FOR WELL BORE DRILLING VESSELS

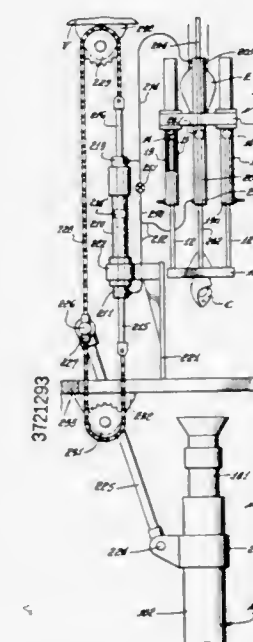
Arthur G. Ahlstone, Ventura, and Edward Larralde, Santa Barbara, both of Calif., assignors to Vetco Offshore Industries, Inc., Ventura, Calif.

Filed Feb. 16, 1971, Ser. No. 115,570

Int. Cl. E21b 19/08

U.S. Cl. 166—5

19 Claims



Apparatus automatically compensating for relative vertical movement between a hoisting or supporting mechanism and a load carried thereby, which load, for example, may be a running string connected to a drill bit used in drilling a subaqueous well bore, the mechanism supporting the running string being mounted on a floating vessel anchored over the well bore. The compensating apparatus includes a cylinder and piston device containing a hydraulic fluid exerting a lifting or tensioning force on the running string, or other load, the pressure on the hydraulic fluid being maintained generally constant despite relative axial movement between the cylinder and piston portions of the device that might result from heaving of the vessel due to wind and wave action, or the lowering of the running or drilling string as the bit drills the hole. To insure that the apparatus will closely follow the movement of the floating vessel, a motion sensing system is employed that exerts a force to move the cylinder and piston of the compensating apparatus with respect to each other a distance equal to the vertical movement of the floating vessel.

3,721,294

# UNDERWATER PIPE CONNECTION APPARATUS

Bobby H. Nelson, Houston, Tex., assignor to Vetco Offshore Industries, Inc., Ventura, Calif.

Filed Jan. 12, 1971, Ser. No. 105,928

Int. Cl. E21b 43/01

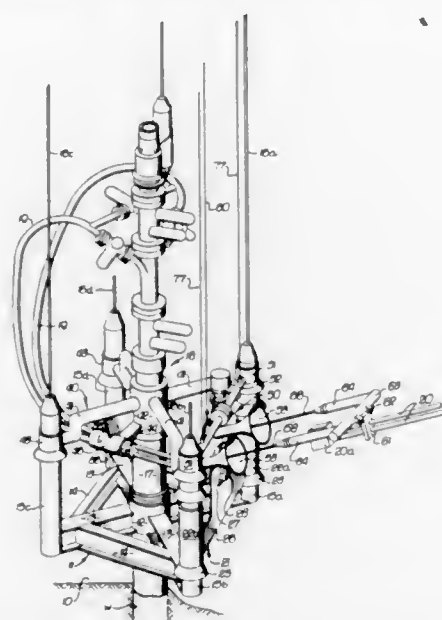
U.S. Cl. 166—6

15 Claims

A flowline guide structure is lowered from a floating vessel along selected guide lines extending upwardly from the guide post of a previously installed standard guide structure suitably mounted at the upper end of a well bore drilled downwardly from the floor of an ocean or other body of water, the selected guide lines determining the direction in which flowlines are to extend, and which are to be secured to the flowline guide



structure and appropriately aligned with flowline loops extending from a Christmas tree lowered along the guide lines



and then connected to the wellhead, the flowlines being secured to the flowline loops in leak-proof relation.

3,721,295

## SECONDARY RECOVERY OF PETROLEUM

Lawrence L. Bott, Oak Park, Ill., assignor to Nakco Chemical Company, Chicago, Ill.

Filed Nov. 23, 1971, Ser. No. 201,489

Int. Cl. E21b 33/138

U.S. Cl. 166—295

8 Claims

This invention relates to the secondary recovery of petroleum, and in particular, involves a process for reducing the amount of water recovered from a producing well in a water flooding process for recovering petroleum from a subterranean oil-bearing formation. This reduction in water is accomplished by introducing a water-in-oil emulsion which contains dispersed therein from 0.01 to 35 percent by weight of a finely-divided water-soluble vinyl addition polymer.

3,721,296

## WELL SYSTEM WITH IMPROVED PITLESS ADAPTER ASSEMBLY

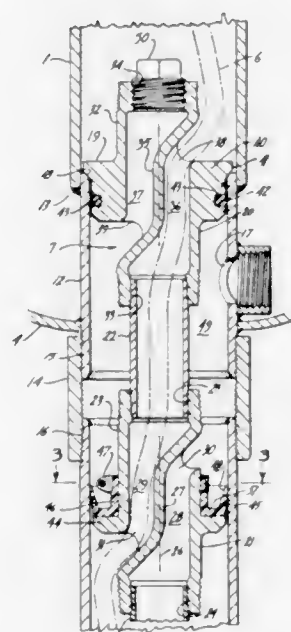
Howard A. Tubbs, 406 S. Elizabeth St., Whitewater, Wis. 53190

Filed Apr. 1, 1971, Ser. No. 130,109

Int. Cl. E21b 33/02

U.S. Cl. 166—88

5 Claims



A well system which includes a water storage tank, a well casing extending through the tank and into the

ground, a pump in the lower casing end and a water supply drop pipe between the pump and tank. The casing is divided into several parts by a coupling. A pair of packer bodies are hung within the casing with the coupling therebetween. The packer bodies include substantially identical cores with each core being divided into complementary adjacent passages by an S-shaped wall. Water and electrical conduit pass through the cores, and the conduit also passes through the tubular connector extending between the bodies. The packer bodies are sealed to the casing wall to form a central chamber so that water within the chamber pressurizes the inside of the coupling. The seal on the lower packer body is a generally cup-shaped ring.

3,721,297

## METHOD FOR CLEANING WELLS

Robert D. Challacombe, 5583 Pebble Beach Lane, Yorba Linda, Calif.

Filed Aug. 10, 1970, Ser. No. 62,379

Int. Cl. E21b 37/00, 43/26

U.S. Cl. 166—299

12 Claims



A combination of repeated mild explosions and a series of pressure pulsations provides both repetitive shock and repetitive sustained fluid pulsations. The shock is required to break up and loosen various formations and materials formed in the well casing perforations and interstices of surrounding formation. The pulsations achieve repeated flow of the well fluid back and forth through the casing perforations and surrounding formation to thereby remove particles of plugging material that are loosened by the shock waves. A series of explosive caps, explosive power of which is enhanced by surrounding layers of plastic sheet explosive, are individually interposed between a number of gas pulsation producing modules. Each module is arranged to effect burning of a combustible in a series of pulses to produce the desired fluctuating pressure pulses and fluid surging. The entire assembly of gas producing modules and explosive caps is interconnected in a string and arranged so that the burning or explosion of one element of the string will, itself, initiate the burning or explosion of the succeeding element, thus eliminating the need for multiple control lines for the desired sequential ignition.

3,721,298

## PERMAFROST OIL-PRODUCTION METHOD

William George Corbett, 104 Handside Lane, Welwyn Garden City, Hertfordshire, England, and Michael Ward Clegg, 3 Saville Gardens, Prior Road, Camberley, Surrey, England

Filed Oct. 6, 1970, Ser. No. 78,395

Claims priority, application Great Britain, Nov. 10, 1969, 54,891/69

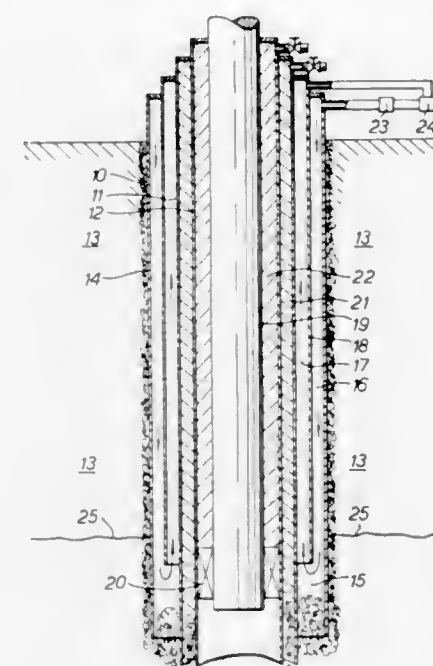
Int. Cl. E21b 43/00

U.S. Cl. 166—302

1 Claim

Hot oil is produced from a well passing through permafrost by circulating a cold fluid down an outer annulus

in contact with the permafrost and returning the fluid to the surface via an inner annulus in contact with the outer



annulus and the production string. Preferably there is an insulation layer between the inner annulus and the production string.

3,721,299

## DUAL DRY CHEMICAL FIRE EXTINGUISHER

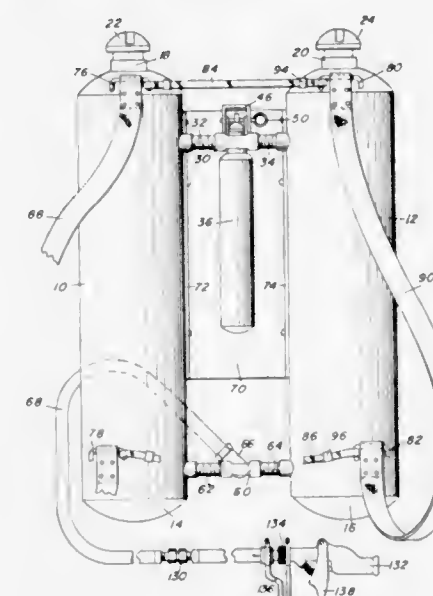
Walter E. Roessler, Rio Piedras, Puerto Rico, assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Filed May 3, 1971, Ser. No. 139,547

Int. Cl. A62c 13/00

U.S. Cl. 169—31 P

4 Claims



A portable chemical fire extinguisher is disclosed which comprises two containers, each carrying a dry chemical fire extinguishing powder, connected together to form a unitary, back-carried, extinguisher. The two containers feed a single discharge manifold so that they may be discharged through a single hose and pistol grip nozzle. A propellant gas cartridge is connected to the two containers through a common pressure manifold to provide equal pressure in the tanks, whereby both discharge at the same time. The pistol grip nozzle has a modified trigger which facilitates operation of the extinguisher.

3,721,300

## AEROSOL FIRE EXTINGUISHER AND METHOD

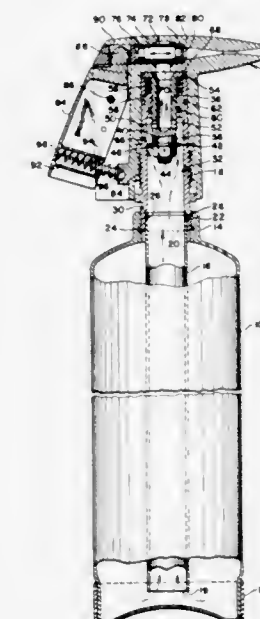
James R. Becker, 2984 Essex Road, Cleveland Heights, Ohio, and Richard H. Furlow, 4701 Jefferson Street, Midland, Mich.

Filed Dec. 27, 1971, Ser. No. 212,439

Int. Cl. A62c 13/24

U.S. Cl. 169—31 R

6 Claims



There is provided an improved aerosol-type fire extinguisher which is characterized by a metallic bottle having a yield point of about 800 psi, a riser pipe, a coupler to which is secured the riser pipe and the bottle, a refilling valve means which are normally closed at the outer extremity of the coupler, a nozzle means including separate valve means therein including an internal shoulder which during attachment of the nozzle to the assembly opens the refilling valve. The fire extinguishing composition contained therein is characterized, first, by its stability in the presence of aluminum metal and, secondly, by being a mixture of a tetrahalo-substituted methane including at least one atom each of chlorine, fluorine, and bromine, and a tetrahalogenated methane including atoms of only chlorine and fluorine, which composition is a solvent for an inert gas, e.g., CO<sub>2</sub>. This composition when homogeneously blended together is then mixed with a sufficient quantity of inert gas under pressure, forming a solution therewith when maintained under super atmospheric pressure within the fire extinguisher, and far less demanding as to the strength of container than CO<sub>2</sub> gas extinguishers.

The novel method contemplates filling and refilling the fire extinguisher container by a process which includes blending the two halomethane components to form a homogeneous blend and then introducing carbon dioxide to the homogeneous blend under pressure or, alternatively, introducing the carbon dioxide into one of the tetrahaloalkanes first and then adding the other tetrahaloalkanes.

3,721,301

## CONTROL SYSTEM FOR A MULTIPLE ROW CROP HARVESTING MACHINE

George E. Weasel, Jr., McClure, and Harold W. Weimer, Toledo, both of Ohio, assignors to Tem-Cole, Inc., McClure, Ohio

Continuation-in-part of Ser. No. 762,176, Sept. 16, 1968, Pat. No. 3,548,951. This application Sept. 21, 1970, Ser. No. 73,728

Int. Cl. A01d 25/04

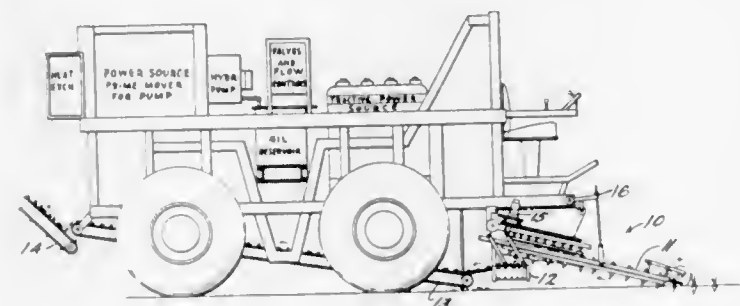
U.S. Cl. 171—61

6 Claims

A control system for a harvesting machine for the simultaneous harvesting of a plurality of plurality spaced-apart rows of crops. The machine includes a plurality of separate harvest-



ing mechanisms mechanically driven by a plurality of hydraulic fluid motors whose output torque is proportional to the pressure of the hydraulic fluid supplied thereto. A source of hydraulic fluid under a predetermined constant pressure is connected to the fluid motors by fluid supply and return lines to provide a closed hydraulic system with a pressure responsive bypass valve positioned in each of the supply lines and effective to bypass hydraulic fluid around the motors supplied by that line when the pressure on said valve exceeds said



predetermined constant pressure. When one of said harvesting mechanism encounters a load, such as an obstruction, which exceeds the output torque of its associated motor, the consequent pressure increase in said fluid supply line will open a bypass valve to effectively stop said motors and their harvesting mechanisms controlled by that valve until said obstruction is removed. The machine may further include an improved remotely operable override means for opening said bypass valve.

3,721,302

## DRAFT LINK SWAY LIMITING DEVICE

Josef Buchmuller, and Otto Hartlieb, both of Mannheim, Germany, assignors to Deere & Company, Moline, Ill.

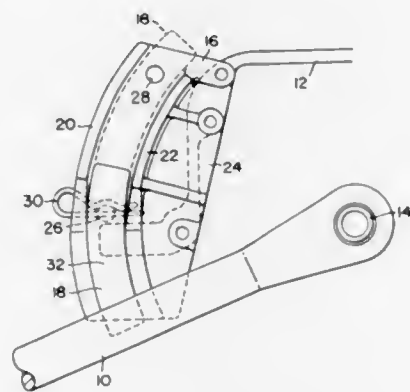
Filed March 13, 1972, Ser. No. 234,115

Claims priority, application Germany, Sept. 16, 1971, G 71 35 201.7

Int. Cl. A01b 59/043

U.S. Cl. 172-450

9 Claims



An arcuate-shaped channel member is secured to the side of the tractor with its legs projecting toward and for engagement with the tractor draft link. The legs of the channel member prevent lateral movement of the draft link when in the upper position and permit limited lateral movement of the draft link when in the lower position. An arcuate-shaped guide member between the legs of the channel member is movable between an upper position in which its outer surface is in alignment with the legs of the channel member and a lower position in which its outer surface projects outwardly beyond the legs of the channel member to engage and prevent lateral movement of the draft link when the draft link is in the lower position.

3,721,303  
POWER TRANSMISSION DEVICE FOR ROTATING A GRADER CIRCLE

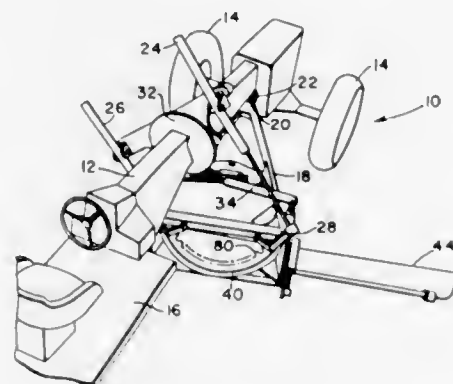
Paul Edmund Hanser, Moline, Ill., assignor to Deere & Company, Moline, Ill.

Division of Ser. No. 20,726, March 18, 1970. This application Aug. 20, 1971, Ser. No. 173,577

Int. Cl. E02f 3/12

U.S. Cl. 172-792

9 Claims



A grader circle has an annular internal gear which is meshed with a gear carried at the bottom of a crank shaft. A pair of double-acting hydraulic actuators have their piston rods connected to the crank pin of the crank shaft and the circle is driven by alternate extensions and retractions of the piston rods. The cylinders of the actuators are swivelly connected to the circle-carrying frame by means of pin structures which are fixed to and swivel with the cylinders as the piston rods are extended and retracted. The pin structures terminate in cams which engage shiftable valve stems of a reversing valve to automatically reverse the flow of fluid to the actuators when the piston rods of the actuators reach the ends of their strokes.

3,721,304

## DIRECTIONAL CONTROL FOR ROCK DRILL FEED SUPPORT

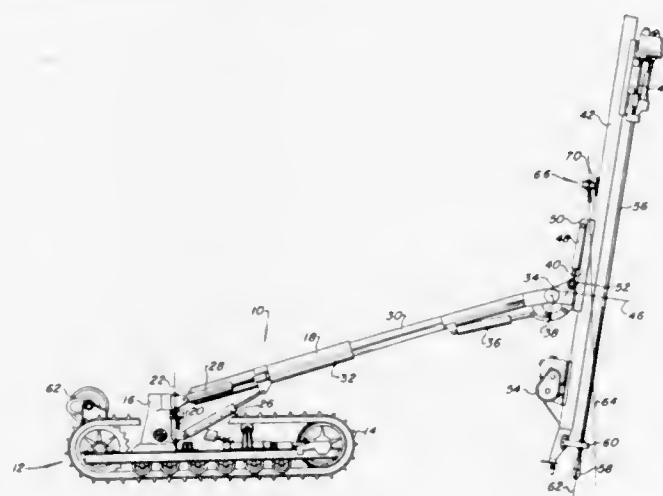
Laurence B. Hanson, Pine, Colo., assignor to Gardner-Denver, Quincy, Ill.

Filed May 4, 1971, Ser. No. 140,142

Int. Cl. E21c 11/02

U.S. Cl. 173-2

9 Claims



A direction sensing unit and control circuit for prepositioning a rock drill feed support to provide for drilling a series of parallel holes. The direction sensing unit is mounted on the feed support and includes a pivotally mounted weight responsive to gravitational force acting thereon to actuate a plurality of pneumatic valves to provide pressure signals. The control circuit includes pneumatically operated control valves which,

in response to receiving pneumatic pressure signals from the sensing unit, are operable to valve hydraulic fluid to and from hydraulic positioning cylinders connected to the feed support.

3,721,305

## SUPPORT MEANS FOR MAST MOUNTED DRILL

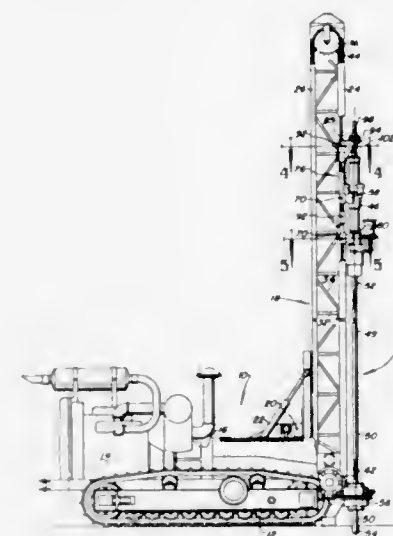
James R. Mayer, Dallas, and Joe D. Tipton, Garland, both of Tex., assignors to Gardner-Denver Company, Quincy, Ill.

Filed Aug. 30, 1971, Ser. No. 176,052

Int. Cl. E21c 5/06

U.S. Cl. 173-20

8 Claims



A mast mounted percussion rock drill having a force transmitting frame which provides for a feed force to be exerted on the drill and drill string in a direction which is coaxial with the longitudinal axis of the drill string. The force transmitting frame is adapted to be slidably retained in a mast structure having spaced inwardly facing channel members. The force transmitting frame is attached to a single feed chain centrally located on the drill mast and includes a hydraulic force sensor for directly sensing the feed force on the drill.

3,721,306

## PRESSURE EQUALIZING SYSTEM FOR ROCK BITS

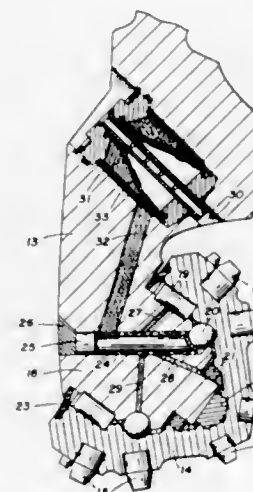
Raymond Watkins Sartor, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Nov. 24, 1971, Ser. No. 201,733

Int. Cl. E21b 9/10

U.S. Cl. 175-228

10 Claims



A cone cutter is rotatably mounted upon a bearing shaft extending from the arm of a sealed bearing rotary rock bit. An open ended conduit extends through the arm of the bit and a

lubricant reservoir is positioned within the arm of the bit encircling the conduit. A flexible diaphragm is positioned between the lubricant reservoir and the conduit to provide pressure equalization of lubricant in the lubricant reservoir and fluid in the well bore. Ports in the wall of the conduit transmit pressure from the fluid in the well bore to the flexible diaphragm. Movement of the flexible diaphragm is limited by the wall of the conduit in one direction and by a perforated cylindrical canister mounted in the lubricant reservoir in the opposite direction. A lubricant passageway extends from the lubricant reservoir to bearings between the cone cutter and the bearing shaft to transmit lubricant from the lubricant reservoir to the bearings.

3,721,307

## DRILL BIT BEARINGS

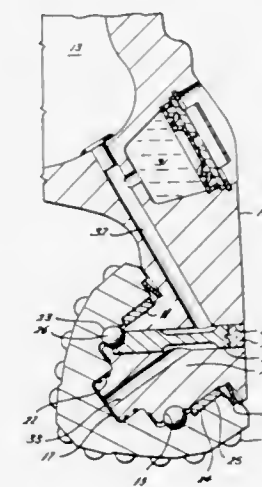
Terry H. Mayo, Houston, Tex., assignor to G. W. Murphy Industries, Inc., Houston, Tex.

Filed April 27, 1971, Ser. No. 137,875

Int. Cl. E21b 9/02

U.S. Cl. 175-372

3 Claims



A drill bit bearing including a floating beryllium copper bushing.

3,721,308

## SNOWMOBILE SUSPENSION SYSTEM

Ronald I. Brandli, and James R. Gjovik, both of Roseau, Minn., assignors to Tectron Inc., Providence, R.I.

Filed Feb. 4, 1971, Ser. No. 112,581

Int. Cl. B62m 27/02

U.S. Cl. 180-5 R

10 Claims



A snowmobile slide rail suspension system is shown in which the suspension frame, having spaced side frame members each formed from a pair of metal stampings, is positioned between the upper and lower runs of the drive track. The snowmobile body is supported on the frame by pivotable front and rear arms. A pair of torsion springs have their central portions and one end portion of each secured to the read arms and have their other end portions carried by spring support members extending rearwardly from the front arms at their pivotal connection with the frame, to thereby bias the front and rear arms away from the frame.



3,721,309

**SPEED CONTROL SYSTEM FOR MOTOR VEHICLES**

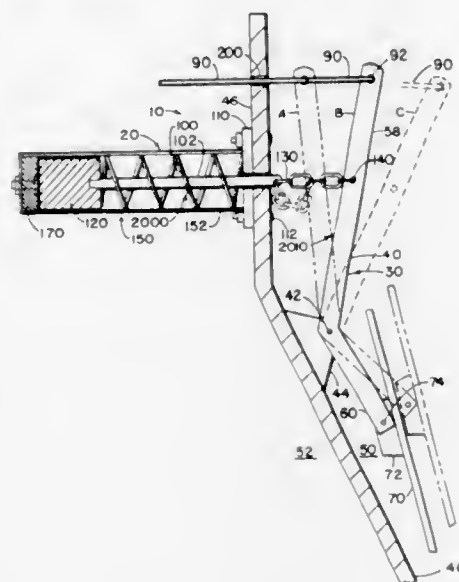
Fred A. Donaldson, 2068 South Street, Blair, Nebr.

Filed July 13, 1970, Ser. No. 54,424

Int. Cl. B60k 31/00

U.S. Cl. 180—105 R

5 Claims



A speed control system for a motor vehicle comprising in combination; a governor system to limit the speed of the vehicle, the governor system being responsive to rotation preferably at the transmission, the governed speed of travel being pre-settable, and an overcomable high speed deterrent assembly comprising a high resistance spring urging the accelerator pedal toward lower speed positions only at times when the vehicle is exceeding the governed speed, and the high speed deterrent assembly being correlated with the governor for safety by permitting speeds free of extra deterrent forces on the accelerator pedal up to a maximum governor controlled vehicle speed which latter can be exceeded temporarily in emergency by further accelerator pedal depression for over-riding the governor.

3,721,310

**SAFETY BRAKE SYSTEM FOR VEHICLES**

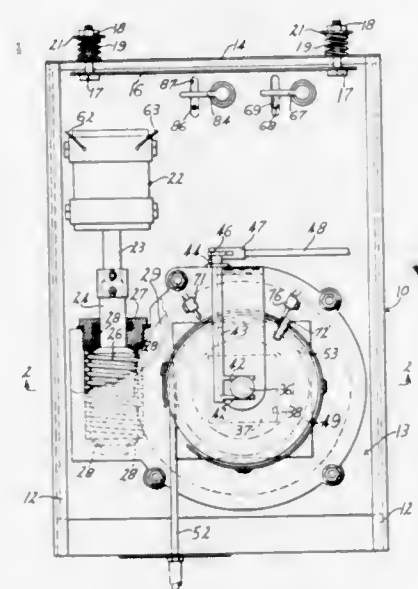
Dalton A. Thomas, Route One, P.O. Box 97, Alpine, Ala.

Filed Dec. 16, 1971, Ser. No. 208,678

Int. Cl. B60t 7/12

U.S. Cl. 180—111

10 Claims



A frame movable to a first position when brakes are applied and a second position when brakes are released with resilient means urging the frame toward said second position. A rever-

sible power unit and winch is carried by the frame and a circuit connects the power unit to a source of power to drive the winch in a direction to apply brakes and release brakes selectively whereupon the frame moves to said first position and said second position, respectively. A door actuated switch is in series with said circuit and a limit switch interrupts said circuit upon movement of said frame to said first position.

3,721,311

**MARINE SEISMIC SOURCE EMPLOYING THE WATER-HAMMER EFFECT**

Lewis Morton Mott-Smith, Houston, Tex., assignor to

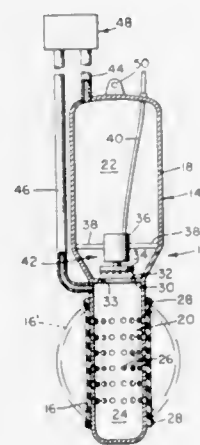
Mandrel Industries, Inc., Houston, Tex.

Filed Mar. 11, 1970, Ser. No. 18,418

Int. Cl. G01v 1/14, 1/38

U.S. Cl. 181—5 H

16 Claims



Apparatus for generating a seismic signal in a fluid medium wherein a member such as a flexible diaphragm, inflatable elastic member, piston, etc., is placed in a first or initial position relatively slowly by a pneumatic, hydraulic, electrical, mechanical etc., system, and upon firing is allowed to move rapidly to a second position, where it is abruptly stopped. That is, the member provides for the slow creation of a selected volume within the fluid medium which volume is then allowed to shrink rapidly whereupon its motion is suddenly arrested. The hydrostatic pressure of the fluid medium causes the medium to follow the movement of the member, whereby abruptly stopping the member likewise suddenly stops the fluid movement to generate, in turn, a single high pressure pulse due to the water-hammer effect. Thus, the invention is concerned with generating a single seismic pulse by the more efficient process of suddenly stopping, rather than by suddenly accelerating, a given quantity of the surrounding fluid medium.

3,721,312

**RADIATION TRANSLATION BY ROTARY TRANSDUCER SCANNING**

Daniel S. St. John, Hockessin, Del., assignor to

Holotron Corporation

Filed May 1, 1969, Ser. No. 820,862

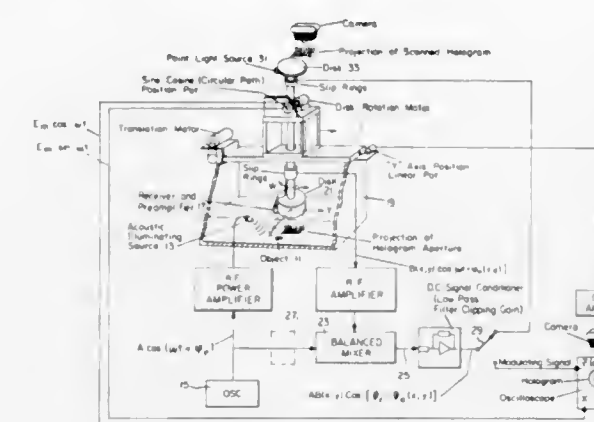
Int. Cl. G01h 9/00

U.S. Cl. 181—5 R

33 Claims

A method and apparatus for scanning a radiation field carrying information of an object with one or more point transducers attached to a circular disk which is rotated for the transducer or transducers to scan out a desired surface of the radiation field. The specific systems disclosed translate acoustic energy into light energy having a corresponding wavefront, thereby to give a visual image of the ultrasonic wavefront scanned. Both holographic

and non-holographic imaging systems utilizing various forms of the rotary point transducer scanner are disclosed.



A technique for holographic imaging of a moving object by scanning a point receiver along a line is also disclosed.

3,721,313

**SELF RETRACTABLE SOUND PLUG**

Joseph Machado, Attleboro, Mass., assignor to Avid Corporation, East Providence, R.I.

Filed April 20, 1972, Ser. No. 245,820

Int. Cl. G10k 13/00; H04r 1/28; A61b 7/02

U.S. Cl. 181—31 R

2 Claims



A self retractable sound plug for use in association with a transducer, generally located in the arm of an airpassenger seat.

3,721,314

**SILENCER OR MUFFLER FOR THE COMPOSITE NOZZLE OF AN AIRCRAFT JET ENGINE**

Rene Gerard Hoch, 77-Dammarie-les-Lys, and Louis Francois Jumelle, 91-Ris-Orangis, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France

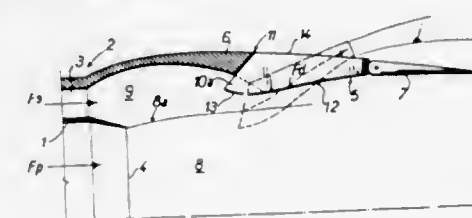
Filed Jan. 19, 1972, Ser. No. 219,108

Claims priority, application France, Jan. 20, 1971, 7101797

Int. Cl. B64d 33/06; F01n 1/14

U.S. Cl. 181—33 HC

10 Claims



A silencer or muffler device for a jet engine nozzle efflux system, of the type which includes a primary nozzle which

emits into the divergent section of a secondary nozzle, formed by the inner wall of an afterbody with a streamlined outer wall, a primary jet of hot gases surrounded by a flow of secondary air; said device comprising a plurality of scoop-like members adapted to be moved between an active position in which they penetrate into the jet, as regards their upstream end, in the manner of scoops so as to bleed off portions of the jet of hot gases and of the flow of secondary air and discharge them in to the ambient atmosphere upstream of the exit of the divergent section by way of openings in the afterbody, so forming fractional jets around the central jet which is formed by the non-bleed portion of the primary jet and of the secondary flow, and an inactive position in which they fit into the said openings and reconstitute the continuity of the wall of the divergent section.

3,721,315

**STEP AND STOOL AND CASTER MOUNTING THEREOF**

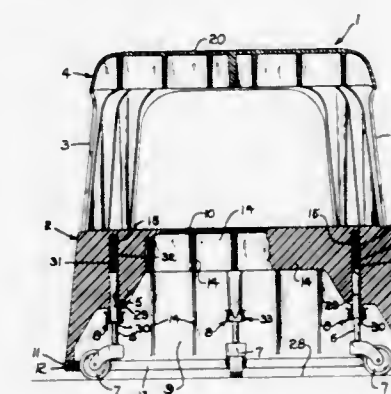
Norvin J. Wehner, Kansas City, Mo., assignor to Cramer Industries, Inc., Kansas City, Kans.

Filed June 30, 1971, Ser. No. 158,394

Int. Cl. A47c 3/18, 9/00

U.S. Cl. 182—15

12 Claims



A step and stool and caster mounting therefor includes a base having portions engageable with legs of a stool portion for supporting and removably securing same thereon and members for movably receiving one end of each of a plurality of respective caster pintles therein and clips engageable with the caster pintles and the pintle receiving members for retaining the casters mounted on the base.

3,721,316

**SAWHORSE**

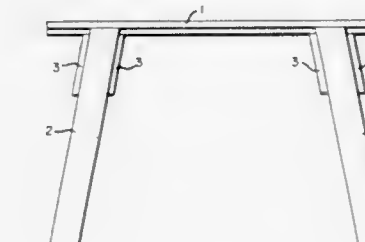
Alvin E. Greenplate, Wilmington, Del., assignor to G-P Industries, Inc., Wilmington, Del.

Filed July 22, 1971, Ser. No. 165,111

Int. Cl. E04g 1/32

U.S. Cl. 182—181

7 Claims



A sawhorse comprising an elongated horizontal wood member being dovetailed along each of its two lower edges and slidably mounted within the two cavities formed by two pairs of convergently related legs.



3,721,317

**RETRACTABLE WINDING MECHANISM FOR ELASTIC MOTORS**

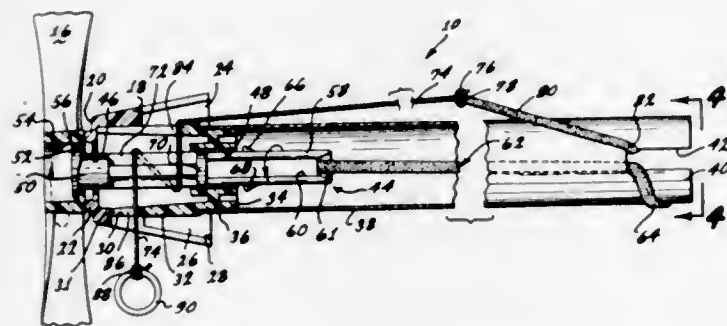
Derek J. Gay, Palos Verdes Peninsula, Calif., and William H. Smedley, Garden Grove, Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed June 3, 1971, Ser. No. 149,427

Int. Cl. F03g 1/08; A63h 27/00

U.S. Cl. 185—39

2 Claims



A winding mechanism for an elastic motor includes a manually actuatable winding element for rotating a rotatable member connectable to the elastic motor, a one-way drive device for transmitting drive in a first direction from the winding element to the rotatable member but not in the reverse direction to the first direction and including means for preventing reverse rotation of the rotatable member and means for automatically returning the winding element into its initial position after it has been moved in the first direction.

3,721,318  
**LIFT TRUCKS**

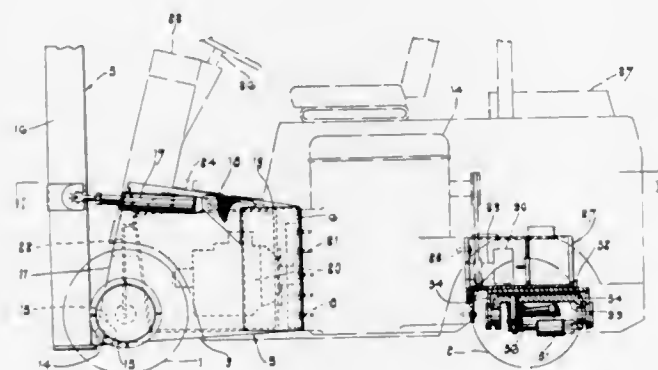
John Warrender, Franklin, Coventry, England, assignor to Total (Power Hydraulics) Limited, Glamorgan, England

Filed March 19, 1971, Ser. No. 126,157

Int. Cl. B66f 9/06

U.S. Cl. 187—9

4 Claims



In an industrial lift truck a first assembly comprising a mast structure and driven wheels is detachably mounted on one end of a prime mover, and a second assembly comprising steerable wheels and a counterweight is detachably mounted on the other end of the prime mover. The prime mover thus acts as part of a chassis of the truck. The first assembly comprises a tank which is attached to the prime mover and on which the mast structure and driven wheels are mounted. The tank thus acts as a further part of a chassis. The driven wheels are coupled with the prime mover by an hydrostatic transmission which includes a pump disposed within the tank, the latter acting as a reservoir for the pump.

3,721,319  
**HOISTS**

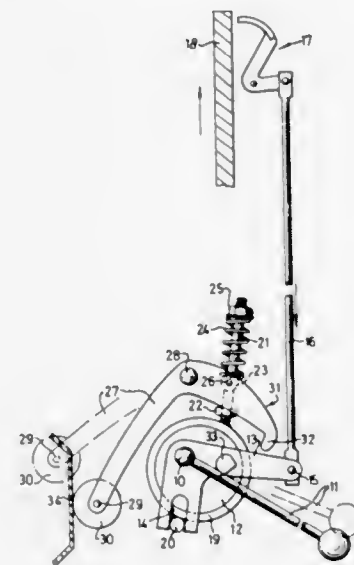
Richard John Hall, Bexley Heath, and Alan John Shalders, Tolworth, both of England, assignors to A.C.E. Machinery Limited, London, England

Filed Nov. 15, 1971, Ser. No. 198,690

Int. Cl. B66b 13/16

U.S. Cl. 187—61

6 Claims



A gate locking mechanism for the cage of a hoist having a plurality of landings, said mechanism comprising a shaft carrying an operating handle and having a lever pivotally mounted thereon, a cam eccentrically mounted on the shaft, a locking catch adapted to engage with a gate for the cage and connected to said lever, and means for preventing operation of the catch except when the cage is opposite one of the landings, said means comprising a spring-loaded follower adapted to cooperate with a locking peg provided provided on the lever, the arrangement being such that operation of the handle is effective to pivot the cam and, when the cage is not opposite a landing, to pivot the follower until it engages with the locking peg preventing further movement and ensuring that the gate is still engaged by the locking catch, and, when the cage is opposite a landing, to force the follower into engagement with a ramp provided on the hoist structure whereby the follower is held clear of the locking peg and further movement of the mechanism is effective to pivot the lever and hence move the locking catch clear of the gate.

3,721,320

**ENERGY ABSORPTION APPARATUS**

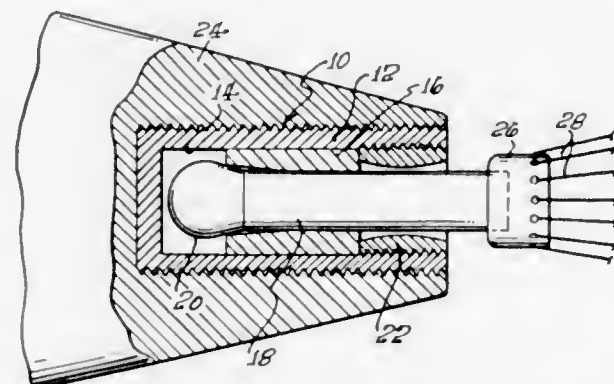
Joseph Hirsch, 12272 Enramada Dr., Santa Ana, Calif.

Filed Aug. 26, 1972, Ser. No. 175,240

Int. Cl. F16f 7/12

U.S. Cl. 188—1 C

7 Claims



An energy absorption apparatus which includes a body having a cylindrical bore; a soft ductile metallic sleeve mounted in the cylindrical bore; a cylindrical shaft mounted in the sleeve and having an enlarged hard metallic mandrel portion which is

3,721,323

**CLAMPING DEVICE**

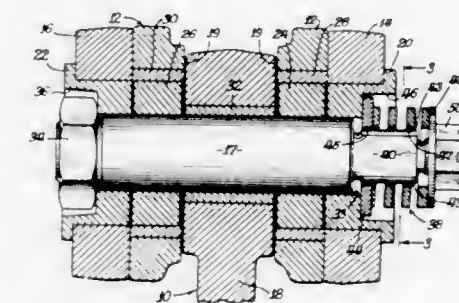
Michael Henry Kraus, Jr., Hammond, Ind., assignor to Amsted Industries Incorporated, Chicago, Ill.

Filed May 19, 1971, Ser. No. 144,768

Int. Cl. F16d 65/06

U.S. Cl. 188—206 R

4 Claims



A clamping device is provided for a brake rigging having spaced brake hangers separated by a brake head. A pin is located in a passage in the brake hangers and brake head and is used as a pivotal point to provide movement between the head and the hangers. A hexagonal shaped nut is threaded on to one end of the pin and is engaged in a hexagonal shaped opening in one of the brake hangers. The shape of the nut and the opening is such that the nut may not be rotated within the opening. The other end of the pin has an asymmetrical portion which projects outwardly from the other brake hanger. A first washer is engaged with the asymmetrical portion and has a hexagonal shape outer surface engaged within a hexagonal shaped opening in the hanger. The washer-pin-opening arrangement is such that the washer may not be rotated relative to the pin or the opening. A compression spring encircles the asymmetrical portion of the pin. A second washer engages the outer portion of the compression spring and is used, in combination with a nut, to force the first washer into the hexagonal shaped opening and hold the pin relative to the brake hangers.

3,721,321

**FRICITION COEFFICIENT COMPENSATING BRAKING APPARATUS**

Gordon W. Yarber, 6070 Canyon Road, Malibu, Calif.

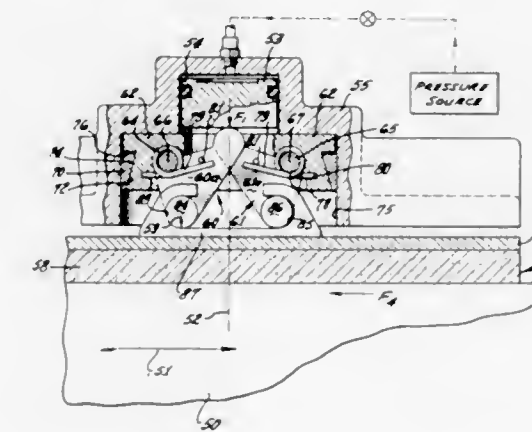
Continuation of Ser. No. 848,307, Aug. 7, 1969, abandoned.

This application June 25, 1971, Ser. No. 156,929

Int. Cl. F16d 55/26

U.S. Cl. 188—72.6

7 Claims



The invention concerns friction braking apparatus incorporating provision for mechanical force feedback proportional to torque, and which results in a near constant relationship or transfer function between the force applied to result in brake lining pressure on the rotor, and the developed braking force which results in deceleration.

3,721,322

**SELF-COMPENSATING DISC BRAKE APPARATUS**

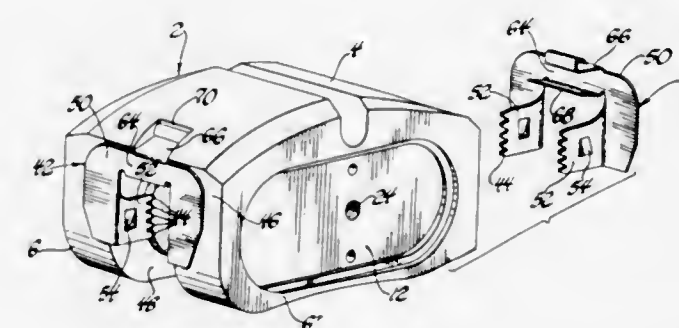
Tom H. Thompson, 2800 North Atlantic Avenue, Daytona Beach, Fla.

Filed May 17, 1971, Ser. No. 144,176

Int. Cl. F16d 65/54

U.S. Cl. 188—196 P

26 Claims



Brake apparatus including a housing, a brake shoe mounted on the housing, the brake shoe being movable from a brake relieved position to a brake applying position for applying braking pressure, and means engageable by the brake shoe upon movement of the brake shoe in the direction of the brake applying position operable to return the brake shoe to a brake relieved position in which the braking surface of the brake shoe has a fixed location with respect to the brake applying position regardless of brake wear and previous elastic distortion of the housing.

3,721,324

**REVERSIBLE CLUTCH MECHANISM**

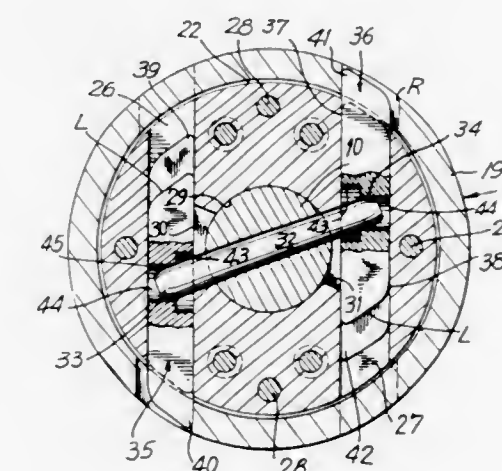
Edward E. Schweizer, New Rochelle, N.Y., assignor to Trans-Coil Corporation, Hasbrouck Heights, N.J.

Filed Dec. 1, 1971, Ser. No. 203,553

Int. Cl. F16d 11/06, 21/02

U.S. Cl. 192—48.91

8 Claims



An improved reversible clutch mechanism of the type in which one or the other of two drive mechanisms is coupled to drive shaft selectively, in accordance with the direction of rotation of the shaft. The clutch includes a pair of annular shells independently rotatably mounted on the drive shaft and at least one pawl disposed in the space provided between the shells.



The pawl includes first and second drive teeth which are off-set in the direction of the axis of the shaft so that one said tooth is in proximity to one shell and the other in proximity to the other shell.

A cross pin mounted on the shaft is pivotally connected to the pawl, to shift the pawl radially in one or another direction, depending upon the direction of rotation of the shaft, thereby to couple one or the other of the teeth of the pawl to one or the other of the shells.

3,721,325

## FREE WHEELING COUPLING

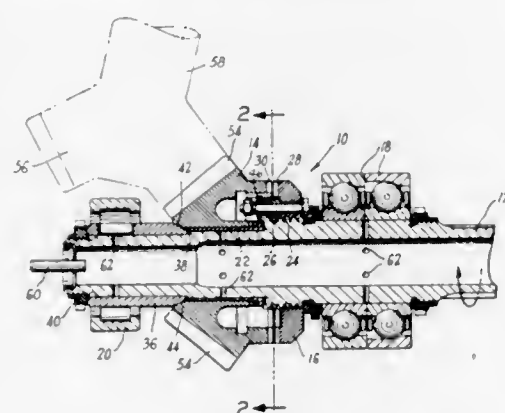
Nelson R. Richmond, Enfield, Conn., assignor to Kaman Aerospace Corporation, Bloomfield, Conn.

Filed Aug. 18, 1971, Ser. No. 172,771

Int. Cl. F16d 23/02, 41/12

U.S. Cl. 192—67 A

10 Claims



A rotary coupling for connecting a driven part to a source of power transmits power in one direction only and permits the driven part to free wheel when the speed of the output member of the coupling is greater than that of the input member. The coupling includes an input member in the form of a shaft, and an output member and a coupling member both mounted on the input shaft and having co-engageable sets of axially facing, radially extending clutch teeth. A helical spline connected between the coupling member and the input shaft and a ratchet mechanism between the coupling member and the output member effects the engagement and disengagement of the teeth by moving the coupling member axially toward and away from the output member. The output member is backed up by a conical seating surface on the input shaft against which it is urged by the coupling member during power transmitting engagement of the two sets of teeth to form the parts into a rigid unit and to locate the output member axially and concentrically with the input shaft.

## ERRATUM

For Class 192—70.19 see:  
Patent No. 3,721,794

3,721,326

DEVICE FOR MOUNTING ROLLERS ON A RUNWAY  
Christian Edmond Bussienne, Louviers, France, assignor to Construction Mills K, Saint Ouen, France

Filed Feb. 1, 1971, Ser. No. 111,299

Claims priority, application France, Feb. 5, 1970, 7004008

Int. Cl. B65g 13/11

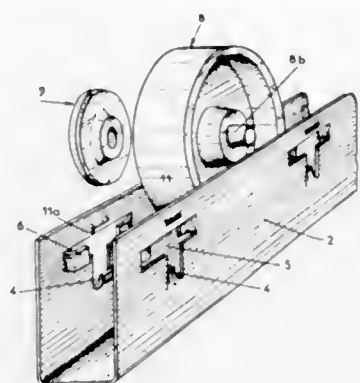
U.S. Cl. 193—35 R

1 Claim

Device for rapidly assembling a multiplicity of rollers with a section member of a runway which also affords an improved running of the rollers.

It comprises on the inner faces of the flanges of a U-section member tabs constituting clips which grip the periphery of a side-member bearing. The bearing has a plane face which lies

flat against the inner face of the flange and a central bore in which the spindle end portion of the roller is mounted.



An application of the device is in conveyors and storage systems in which objects travel along runways.

3,721,327

## STORING AND INTERLOCKING TYPEWRITER INPUT MECHANISM

Chien Van Der Werf, Carolinensiel, and Rolf Theilen, Sande, both of Germany, assignors to Olympia Werke AG, Wilhelmshaven, Germany

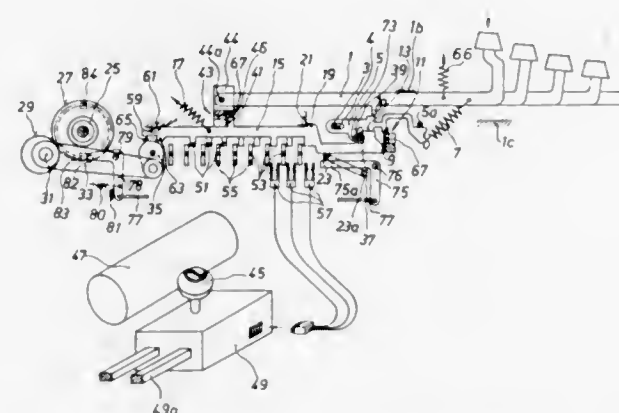
Filed June 18, 1971, Ser. No. 154,404

Claims priority, application Germany, July 11, 1970, P 20 34 583.9

Int. Cl. B41j 5/22

U.S. Cl. 197—107

10 Claims



Keys of a typewriter actuate control levers which cooperate with first locking means so that only one key can be actuated at a time. The control levers actuate control bars which cooperate with second locking means so that only one control bar at a time can move to an operative position for actuating typing means. Another control bar, actuated before completion of the operation of the typing means, is held by the second locking means in an intermediate position in which the corresponding control lever is still in the first locking means, preventing actuation, until the respective control bar can be moved by a spring from the intermediate position to the operative position due to return movement of the first actuated control bar out of the operative position.

3,721,328

## LID UNSCRAMBLER HAVING ROTATIONALLY RECIPROCATING GATE

William G. Drew, Automation Systems, Inc.,

360 Amherst St., Nashua, N.H.

Filed Aug. 21, 1970, Ser. No. 65,870

Int. Cl. B65g 47/22

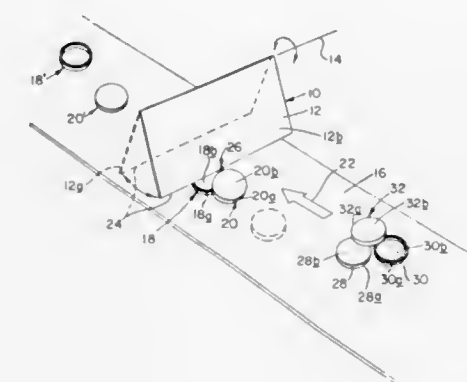
U.S. Cl. 198—29

11 Claims

A lid unscribler has a gate above a lid conveyor and rotationally reciprocating back and forth along the direction of the conveyor path to interfere with the passage of stacked or layered lids, i.e. lids that are resting at least in part on another lid and hence are not lying flat

on the conveyor. The angle through which the gate reciprocates is sufficiently small and the rate of reciprocation sufficiently fast, so that the gate at all times inter-

tion to a processing machine, and operates by the interaction of plural chain conveyors with the articles, first to displace the



feres with the passage of a lid raised above the conveyor. Further, the gate subjects stacked and layered lids to unscrambling forces directed both up and down the conveyor.

3,721,329

## METHOD AND APPARATUS FOR ORIENTING WOOD FLAKES

Harold Dale Turner, and John Karl Fletcher, both of Hot Springs, Ark., assignors to Weyerhaeuser Company, Tacoma, Wash.

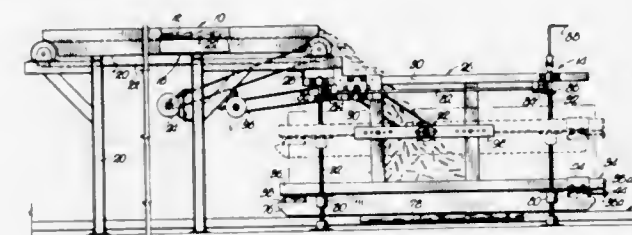
Continuation of Ser. No. 13,993, Feb. 25, 1970, abandoned.

This application Nov. 22, 1971, Ser. No. 201,221

Int. Cl. B65g 47/00

U.S. Cl. 198—33 R

7 Claims



A machine for aligning elongated wood flakes with their longitudinal axes in substantial parallelism to one another has a continuous, serpentine chain arranged at an aligning station to present a plurality of spaced-apart rows movable in alternate directions. Upstanding projections are equally spaced along the length of the chain to present oppositely moving projections in adjacent rows when the machine is in operation. As the oppositely moving projections engage flakes issuing from a feeder either individually or in clusters, the clusters are broken up and the flakes rotated through an arc to orient the same for subsequent gravitation between the rows of the chain.

3,721,330

## ARTICLE TIMING AND FEEDING MECHANISM

Donald C. Crawford, and Michael R. Nack, both of Green Bay, Wis., assignors to FMC Corporation, San Jose, Calif.

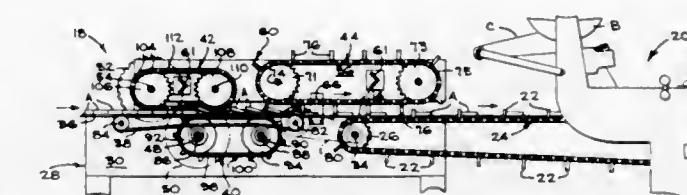
Filed Feb. 8, 1971, Ser. No. 113,417

Int. Cl. B65g 47/26

U.S. Cl. 198—34

9 Claims

The disclosure concerns apparatus for reorienting a file of abutting articles into precisely positioned longitudinally spaced relation and for feeding the articles in exact timed rela-



leading article so that it has an accessible surface, and then to engage said surface and convey the article forwardly away from the succeeding articles.

3,721,331

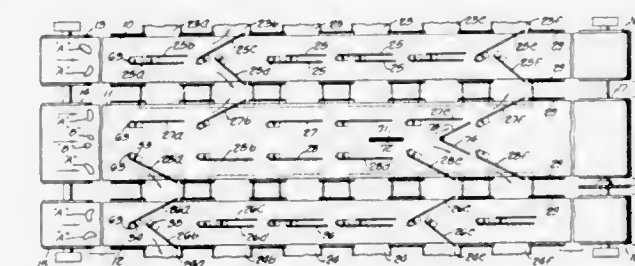
SIDE DISCHARGE BELT CONVEYOR ASSEMBLY  
Franklin K. Holbrook, Whittier, and Donn J. Rickard, Glendora, both of Calif., assignors to Brown International Corporation, Covina, Calif.

Filed Oct. 23, 1970, Ser. No. 83,366

Int. Cl. B65g 15/00, 47/26

U.S. Cl. 198—66

7 Claims



A side discharge belt conveyor assembly for fragile articles such as grapefruit sections employs three flat parallel conveyor belts all moving in the same direction, and having lateral spaces between adjacent side edges. Diverter blades are pivotally supported in close proximity to the upper surfaces of the belts in order to sweep the fragile articles laterally off all the side edges of the belts at predetermined locations, thereby minimizing the extent of required lateral travel of the fragile articles. Two oppositely-movable diverter blades above each side belt are connected to one diverter blade above a side portion of the wide center belt for simultaneous movement in unison between inoperative longitudinal positions and operative slanted positions. A deflector and additional pivoted blades are provided for diverting broken grapefruit sections from the central portion of the wide center belt to transverse discharge chutes at predetermined locations.

3,721,332

## TILTABLE HOPPER ELEVATOR APPARATUS

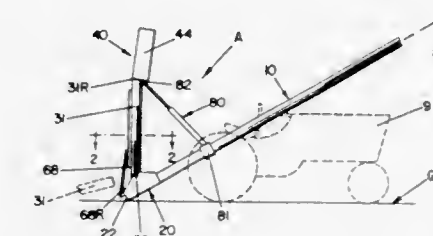
Cecil A. Brink, RFD No. 1, Archer, Nebr.

Filed Feb. 8, 1972, Ser. No. 224,567

Int. Cl. B65g 37/00

U.S. Cl. 198—94

8 Claims



There is provided elevator apparatus of the kind for transferring grain or other flowable solids material commencing from a rearwardly trailing hopper tiltably positionable at



ground level and thence progressively forwardly through: a feeder-auger conveyor, a hollow junction-box enclosing the rearwardly trailing portion of an independently powered main-conveyor, and ultimately to a solids depository. Several noteworthy features of the elevator apparatus herein include: a highly functional fixed angular relationship between the feeder-auger and the entire hopper assembly, the said combination being pivotably tiltably connected to the junction-box along a loftily disposed transversely extending pivot-axis whereby the feeder-auger delivery spout is located directly above the main-conveyor enclosed trailing portion; inter-conveyors power transmission means commencing from the main-conveyor externally of the junction-box and including universal joint means whereby the power transmission is effective through a range of feeder-auger tilted positions; and means for remotely tilting the feeder-auger and hopper to a selectable degree about said pivot-axis.

3,721,333

## COMBINE GRAIN BIN UNLOADER

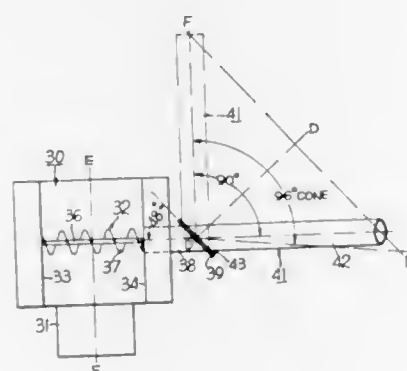
Jerry C. Boone, Independence, Mo., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed June 9, 1971, Ser. No. 151,384

Int. Cl. B65g 41/00

U.S. Cl. 198—119

1 Claim



This disclosure relates to a power operated swingable auger conveyor which can be moved from operative discharge position conveyor at right angles to the vehicle supporting the conveyor to an inoperative discharge wherein the conveyor lies alongside the vehicle.

3,721,334

## ROCKING HEARTH FURNACE

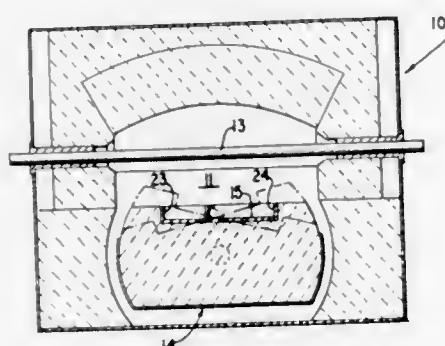
Alexander J. Jarema, River Forest, Ill., assignor to Solar Basic Industries Inc., Milwaukee, Wis.

Filed April 15, 1971, Ser. No. 134,225

Int. Cl. F27b 9/14

U.S. Cl. 198—218

5 Claims



A hearth in a heat processing furnace has a plurality of angularly disposed baffles arranged in alternating overlapping relationship extending longitudinally on the upper surface

thereof. The hearth is mounted for oscillating movement about a longitudinal axis so that periodic rocking of the hearth will advance articles along its upper surface by the sliding or rolling of the articles back and forth between alternate baffles.

3,721,335

## CIGARETTE CARTON WITH PACK SEPARATOR

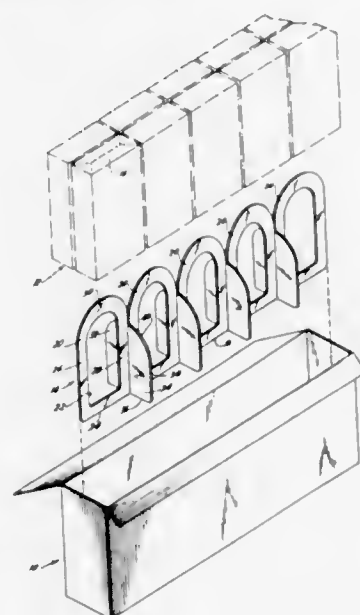
Carl C. Grant, Louisville, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Aug. 24, 1970, Ser. No. 66,320

Int. Cl. B65d 85/10, 25/04

U.S. Cl. 206—48.5

3 Claims



A cigarette pack spacer is provided for spacing and protecting smaller than standard size cigarette packs in a standard carton. The spacer is in the form of a molded plastic insert extending along the center of the carton separating the two adjacent rows of five packs each and also the adjacent packs of each row from one another. Towards this end, the spacer includes a central panel of five contiguous sections each being cored and also rounded at its top to facilitate insertion of the spacer between the packs. At the juncture of adjacent sections is a pair of oppositely extending ribs shorter in height but also rounded at their top for ease of insertion of the spacer.

3,721,336

## EASY OPENING PACKAGES

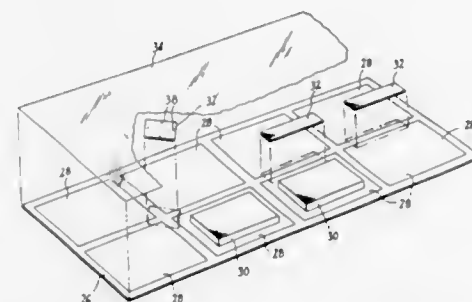
James V. Hannon, New Britain, Conn., assignor to Diversified Packaging Incorporated, Kensington, Conn.

Filed Sept. 4, 1970, Ser. No. 69,671

Int. Cl. B65d 73/00

U.S. Cl. 206—56 AB

8 Claims



A package comprises a base member having an article disposed on one surface thereof with a film of thermoplastic material covering the article and bonded to the surface of the base member thereabout. A tab of material that is nonadherent to the base member and adherent to the film is interposed therebetween at an edge of the package, to provide an

integral package that is readily opened when desired by pulling the tab towards the article to separate the film from the base member.

3,721,337

## QUICK OPENING CONTAINER PACKAGE

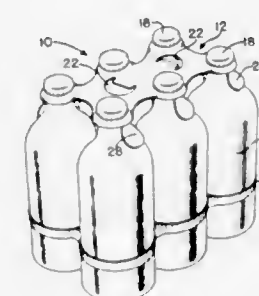
Leonard C. Braun, Elk Grove Village, and M. Julius Klygis, Evergreen Park, Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Feb. 19, 1971, Ser. No. 116,783

Int. Cl. B65d 71/00; B66f 19/00

U.S. Cl. 206—65 E

5 Claims



A container package including a plastic sheet carrier device is provided for retaining and transporting a plurality of similarly configured containers mounted and held within the carrier device, there further being combined with the carrier device a plurality of certain finger engaging tab means which inherently facilitate the separation and removal of containers from the container package.

3,721,338

## BOTTLE CARRIER PACKAGE

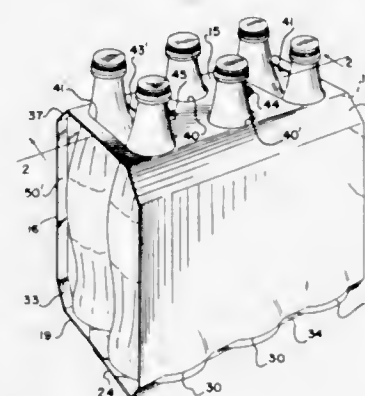
Edwin L. Arneson, Hillsdale, N.J., assignor to Federal Paper Board Company, Inc., Montvale, N.J.

Continuation-in-part of Ser. No. 82,300, Oct. 20, 1970. This application Jan. 11, 1971, Ser. No. 105,186

Int. Cl. B65d 75/00, 85/62

U.S. Cl. 206—65 E

3 Claims



A wraparound or sleeve-type container or carrier for bottled goods which is formed of a single blank and wrapped around a cluster of bottles arranged in double row formation with the ends of the blank adapted to be connected beneath the cluster of bottles and the blank having infolding edge reinforcing panels and finger holes which are reinforced by infolding panels taken from the top portion of the package so as to leave apertures through which the tops of pairs of the bottles project.

3,721,339

## BLISTER CARD PACKAGE

Anthony W. Seyer, New Canaan, Conn., assignor to Warner-Lambert Pharmaceutical Company, Morris Plains, N.J.

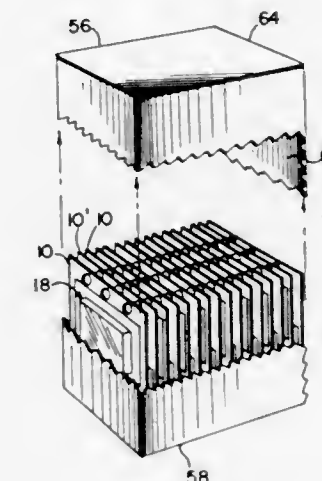
Division of Ser. No. 869,012, Oct. 2, 1969, Pat. No. 3,621,996.

This application July 1, 1971, Ser. No. 158,841

Int. Cl. B65d 5/54, 77/04

U.S. Cl. 206—65 R

3 Claims



A blister-type card package designed for display on a peg rack, which package is characterized by a flat base-forming card member having an aperture in which a product is positioned, the product being enclosed between a pair of tray-like transparent blister-forming members which have peripheral flanges sealed in overlying relation to portions of the base-forming card which extend about the aperture, the one blister member being seated in the aperture so that a portion of the product projects beyond the back face of the card and the other blister member covering a portion of the product which projects beyond the front face of the card. The packages are supplied for mounting on a peg rack with the product accommodating apertures in alternate packages being offset so that the projecting front and back portions of the product in adjacent packages are in non-aligned relation when hung on a peg, enabling a degree of nesting which results in a greater number of packages being accommodated on a peg, and also enabling a plurality of the packages to be packed in nested relation in a shipping container with provision for opening the container so that the packages may be readily placed as a group on the peg rack.

3,721,340

## METHOD AND APPARATUS FOR TRANSPORTING CIGARETTE PACKS OR THE LIKE

Friedel Kruse, Hamburg; Gunter Wahle, Reinbeck; Otto Erdmann, Hamburg, and Willy Rudszinat, Dassendorf, all of Germany, assignors to Hanni-Werk Korber & Co. KG, Hamburg, Germany

Filed Nov. 12, 1970, Ser. No. 88,723

Claims priority, application Germany, Nov. 22, 1969, P 19 58 738.3

Int. Cl. B07c 5/342

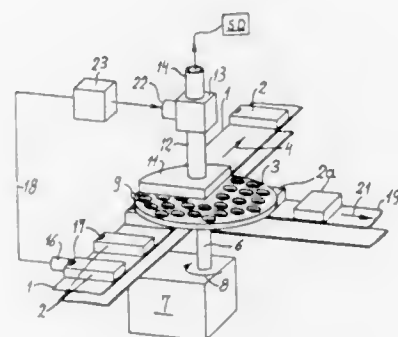
U.S. Cl. 209—74 R

20 Claims

Cigarette packs are transported by the upper stretch of a first belt to move into the range of a pneumatic overhead conveyor which transfers some or all of the packs onto one or more additional belts. The pneumatic conveyor has an apertured disk which is driven at a constant speed and rotates at a level above the first belt so that a portion of the disk overlaps the path of oncoming packs. The disk rotates below one or more suction chambers at least one of which is normally disconnected from and can be connected to a suction generat-



ing device when a selected pack reaches the disk whereby the disk cooperates with the suction chamber to lift the selected pack off the first belt and to transfer it onto another belt. The selection is made by a circuit employing a detector which is adjacent to the first belt and serves to produce signals in



response to detection of defective packs or in response to detection of each pack whereby a timer circuit energizes the solenoid of a valve which controls the evacuation of air from a suction chamber above the revolving disk to effect the transfer of each second or third, etc. pack onto a second belt and the transfer of all other packs onto a third belt.

3,721,341

## SORTING ARRANGEMENT

Karl Thore Lindblom, Alfta, Sweden, assignor to Ostbergs Fabrik AB, Alfta, Sweden

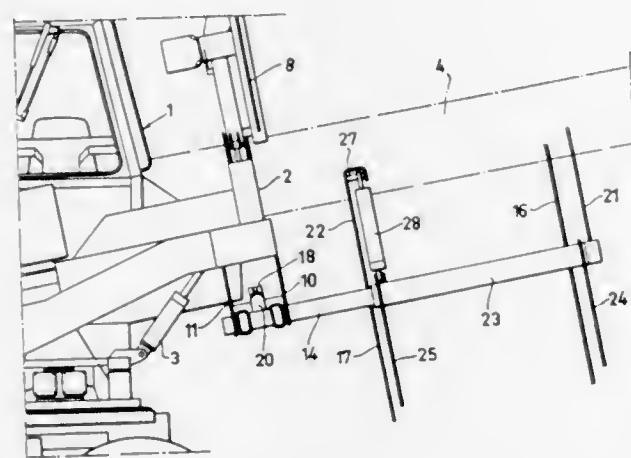
Filed May 28, 1971, Ser. No. 148,076

Claims priority, application Sweden, June 1, 1970, 7526/70

Int. Cl. B07c

U.S. Cl. 209—74 R

9 Claims



At a sorting arrangement according to the invention is provided an underlying drop shaft adapted to receive wood sections of a first dimension dropped down centrally. The shaft is defined on two opposed sides by pivotal guide means located with their horizontal bearing axle below the upper level of the shaft. Each of the guide means has such an extension in the direction perpendicular to the axle that by inclination it can be caused to project into the central area of the drop shaft to deflect centrally dropped objects of a second and, respectively, third dimension to a collecting place on one and, respectively, the other side of the shaft.

3,721,342  
APPARATUS FOR SELECTING AN INDEX CARD  
OF SHEET-LIKE FORM

Gerhardt Sandt and Heinrich Ostermeier, Cologne, Germany, assignors to Datagraph AG, Zug, Switzerland

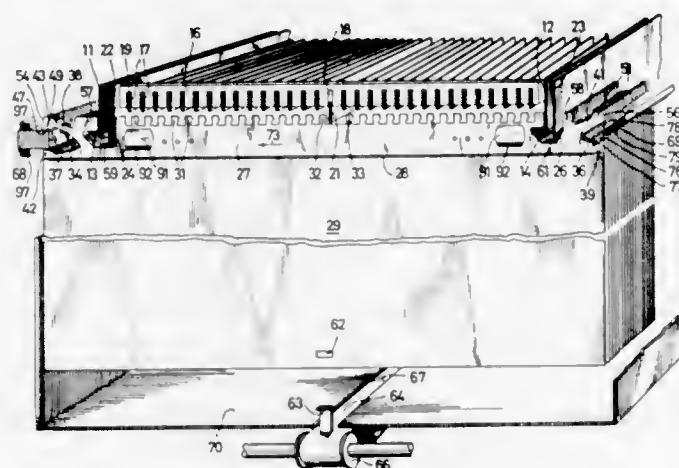
Filed Nov. 9, 1971, Ser. No. 196,952

Claims priority, application Germany, Dec. 23, 1970, P 20 63 414.4

Int. Cl. B67c 9/00

U.S. Cl. 209—80.5

17 Claims



A stack of index cards are retained in hanging fashion by metal strips secured along their top edges. Coding strips along one edge of the cards allow a selected card to be withdrawn from the stack. The metal strips have jaw-like members having narrowed recesses opening in the direction of removal of the card. A rod with faces diverging in the removal direction is moved into the recess for widening the jaw-like member for removing the card, the length of the faces being greater than the path of removal of the index cards.

3,721,343

## METHOD OF CHECKING CARD FILE ACTIVITY

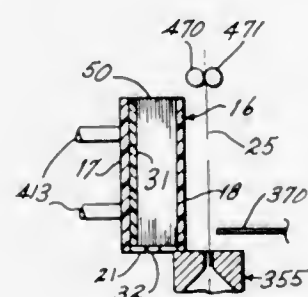
Lewis B. Mustain, Cincinnati, Ohio, assignor to The Mosler Safe Company, Hamilton, Ohio

Filed May 21, 1971, Ser. No. 145,840

Int. Cl. B07c 3/10

U.S. Cl. 209—110.5

4 Claims



The activity of edge coded cards stored in a storage compartment of a file is checked by always returning cards to the file at the same relative position in the storage compartment. A distinctive dummy card inserted into the compartment at the infile position enables cards thereafter selected, used and returned to the file to be isolated on one side of the dummy card from the unselected cards. Therefore, any cards still on the unselected card side of the dummy card after a specified period have never been used and may, if so desired, be purged from the file as obsolete or inactive.

3,721,344

## APPARATUS FOR TREATING WASTE WATER

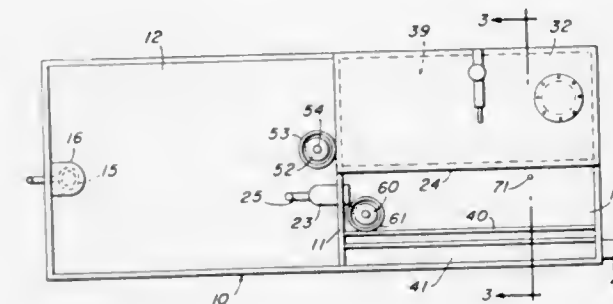
Kai Lennart Rost, Hallowell, Maine, assignor to Pollutrol Industries Inc., Portland, Maine

Continuation of Ser. No. 57,290, July 22, 1970, abandoned, which is a continuation of Ser. No. 794,118, Jan. 22, 1969, abandoned. This application July 22, 1971, Ser. No. 164,996

Int. Cl. B01d 29/24

U.S. Cl. 210—104

24 Claims



Water treating apparatus is disclosed that has a first chamber to receive the waste water, a second chamber having a discharge provided with an overflow inlet and an expansion chamber extending downwardly into it to receive within it part of the second chamber contents, and means to transfer first chamber contents into the second chamber. Aeration may be effected in both chambers and when the transfer means into the second chamber and the second chamber aerating means are not working, the second chamber functions as a settling chamber. Means are provided then to deliver air into the expansion chamber to force water out of it thus to raise the second chamber level to cause an overflow through the discharge, the overflow being relatively clear after a predetermined settling interval.

3,721,345

METHOD AND MACHINE FOR SELECTING POTATOES  
OF GIVEN SIZE FROM MASSED POTATOES OF  
RANDOM SIZE

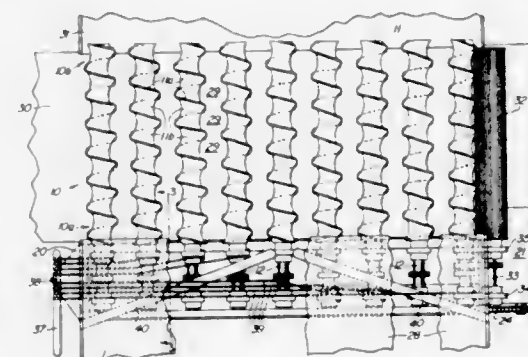
Scott W. Brown, and Owen K. Ward, both of Pocatello, Idaho, assignors to Milestone, Inc., Pocatello, Idaho

Filed May 6, 1971, Ser. No. 140,881

Int. Cl. B07b 13/04

U.S. Cl. 209—107

10 Claims



Potatoes or other items of random sizes are fed, en masse, onto one end of a sizing deck made up of longitudinally extending screw rolls rotatably mounted in mutually spaced, side-by-side relationship, and are conveyed toward the opposite, discharge end of the deck. Oversize items are retained by the deck and travel thereover to discharge, while others

drop through the deck and are collected below. The screw threading of the rolls is of the same hand throughout and of scalloped formation, with uppermost portions of the screw thread and valley substantially aligned, respectively, diagonally across the deck, so as to define longitudinally extending, side-by-side series of sizing openings. The rolls are all rotated in the same direction for conveying the fed items toward the discharge end of the deck, and guide means, preferably a rotating roller, is provided along the side of the deck toward which the items tend to move in their travel from the feed end toward the discharge end of the deck. Provision is preferably made for adjusting the spacing of the rolls relative to each other.

## ERRATUM

For Class 210—104 see:  
Patent No. 3,721,344

3,721,346

## DESTRUCTIVE DISTILLATION OF DOMESTIC SEWAGE

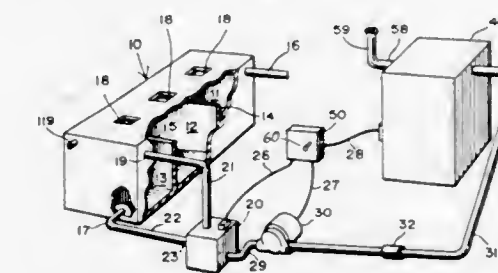
Raymond J. Lore, 1884 N.W. North River Drive, and Carl W. Draudt, Jr., 2525 N.W. 18th Terrace, both of Miami, Fla.

Filed June 1, 1971, Ser. No. 148,641

Int. Cl. C02c 1/00

U.S. Cl. 210—121

2 Claims



Disclosed is a system and method for the destructive distillation of domestic wastes by the flash evaporation of a liquid resulting from domestic waste materials from which sediment has been removed and biological reduction and liquefaction effected through a plurality of stages incorporated in a septic tank. When a designated quantity of effluent has been provided thereby, a level sensing device actuates the heating elements of a reactor type furnace which on reaching a certain temperature actuates a pump that directs the flow of accumulated effluent to the furnace wherein the effluent is first preheated, then discharged into a reactor to effect the flash evaporation of the effluent and its discharge as a vapor from the furnace.

3,721,347

PURIFICATION DEVICE FOR REMOVING HEAVY  
COMPONENTS FROM A SUSPENSION

Jacob Pielkenrood; Willem L. B. Ambrosius, and Willem Koolstra, all of Krommenie, Netherlands, assignors to Pielkenrood-Vinitex N.V., Assendelft, Netherlands

Filed June 26, 1970, Ser. No. 50,283

Int. Cl. B01d 21/02

U.S. Cl. 210—519

16 Claims

A device for purifying a liquid, comprising a separator with corrugated plates or troughs, the longitudinal axis of which includes, in the operational position, an angle with the horizontal plane, the lower end of which separator is immersed completely but only at a small depth in the liquid in a supply basin, the upper end of the separator being closed in an airtight manner and being connected to a suction means, which may maintain a liquid flow in the separator, the liquid being taken from the surface of the liquid in the basin where the



sediment concentration is low, and the sediment precipitated in the separator is turned to the basin separated from the liquid entering this separator.

3,721,348

## MEANS FOR SUPPORTING TOOLS

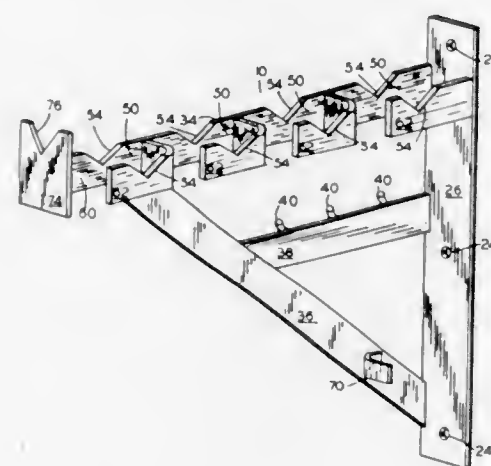
Robert L. Cook, 2210 East Washington, Escondido, Calif.

Filed July 8, 1971, Ser. No. 160,824

Int. Cl. B25h 3/04; A47b 81/02; A47f 7/00

U.S. Cl. 211—60 T

4 Claims



House and garden tools or the like are hung from bracket-like means forming a series of tool receiving rests spaced apart from each other and from the supporting wall or the like.

3,721,349

## PORTABLE TRAY CART

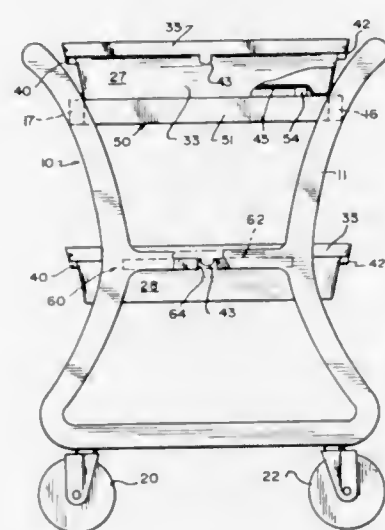
Robert D. Jaffee, Skokie, and Ralph B. Olson, Lombard, both of Ill., assignors to Amco Wire Products Corp., Chicago, Ill.

Filed June 18, 1971, Ser. No. 154,405

Int. Cl. A47f 3/14

U.S. Cl. 211—126

9 Claims



A portable tray cart has a first set of rails for supporting a first tray and a second set of rails positioned in a spaced relation below the first set of rails for supporting a second tray. The first set of tray support rails has upwardly extending supports which fit into a recessed bottom in the tray to hold the same in a fixed position on the cart. A flange portion about the top of the tray has projections which fit into apertures in the second set of rails for supporting the second tray in a fixed position below the first tray. Each of the trays has the projections and recessed bottoms so they can be used interchangeably with the first and second set of rails.

3,721,350

## BOOM EXTENSION CONTROL SYSTEM

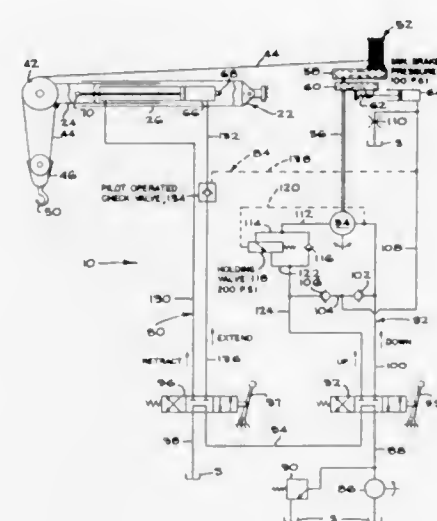
Oliver T. Nephew, Cedar Rapids, Iowa, assignor to FMC Corporation, San Jose, Calif.

Filed Feb. 12, 1970, Ser. No. 10,961

Int. Cl. B66c 23/06

U.S. Cl. 212—55

5 Claims



A boom extension control system for employment with hydraulically extensible booms having hydraulic load lifting cable winches effective to provide an interlock between the boom and winch controls whereby extension of the boom is prevented until the winch is operated.

3,721,351

## HYDRAULIC AND RESILIENT CUSHIONED RAILWAY CAR DRAFT APPLIANCE

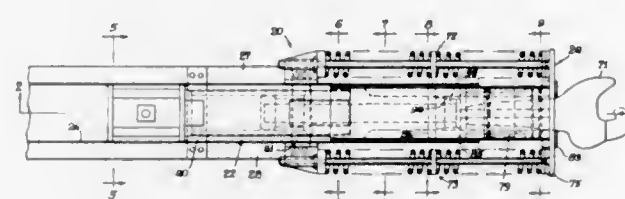
Osvaldo Frank Chierici, Elmhurst, and James Thomas Smith, Wilmette, both of Ill., assignors to Holland Company, Lombard, Ill.

Filed Sept. 14, 1970, Ser. No. 71,858

Int. Cl. B61g 9/12

U.S. Cl. 213—8

1 Claim



A combined hydraulic and resiliently cushioned railway car draft appliance employing a fluid cylinder, a piston disposed within the cylinder, a piston rod attached to the piston and connected to be moved by buff or draft forces applied to the draft appliance, and having a urethane collar disposed within the cylinder surrounding the piston rod. The urethane collar is effective to improve train action by providing a variable cushioned resistance in draft and does not bottom out as a spring might to allow metal to metal contact. The hydraulic section and coupling yoke section are separably connected thereby facilitating installation and removal. No flow control, or pressure relief valves or bellows are employed to accomplish the fluid cushioning thereby eliminating many potential repair problems.

3,721,352

## DRIVE MECHANISM EMPLOYING SUCTION CUP COUPLING

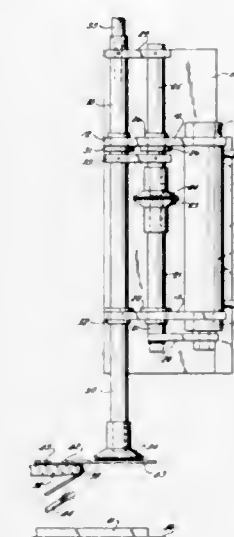
Edwin E. Messmer, 203 Leonard Young Street, Oradell, N.J.

Filed Aug. 6, 1971, Ser. No. 169,666

Int. Cl. B66c 1/02

U.S. Cl. 214—1 BT

11 Claims



A drive mechanism including a drive member, such as a piston movable within a pneumatic cylinder, a working member, such as a label applicator for transferring labels from a supply strip to merchandise packages, and a coupling for transmitting motion from the drive member to the working member. The coupling includes at least one, and preferably a pair of opposed suction cups which adhere to each other, but which separate to break the driving connection when the working member meets more than a predetermined resistance. When one suction cup is employed, it cooperates with a member having a flat surface.

3,721,353

## COMBINED BATTERY CASE, COUNTERWEIGHT AND OVERHEAD GUARD

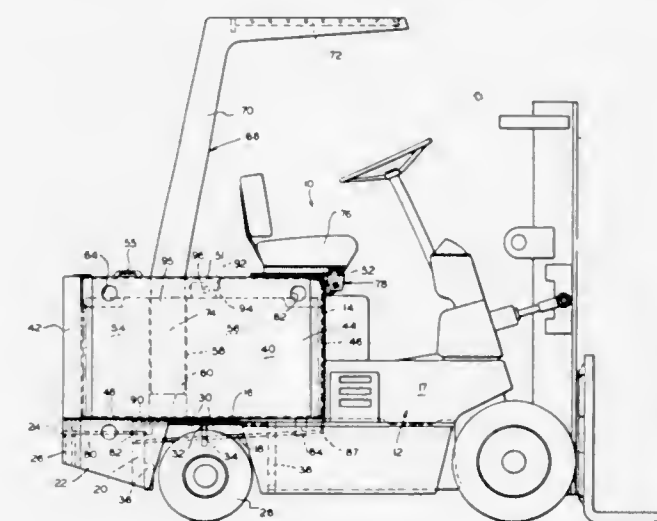
Dennis E. Erickson, Battle Creek, Mich., assignor to Clark Equipment Company

Filed Dec. 14, 1970, Ser. No. 97,830

Int. Cl. B26d 25/00

U.S. Cl. 214—38 CA

11 Claims



A battery case, counterweight and overhead guard assembly for battery driven lift trucks in which the truck chassis provides a main central upward projection registrable with an opening in a fork receiving member which depends from the bottom of the assembly and which is in turn registrable with an opening in the chassis. Vertical open pockets are provided at opposite sides of

the assembly for receiving the vertical legs of an overhead guard which is otherwise unsecured to the assembly. The assembly, plus a battery receivable in the battery case, is removable from the truck, as by a second lift truck or an overhead crane, either in parts or as a complete assembly.

3,721,354

## MATERIALS HANDLING SYSTEM

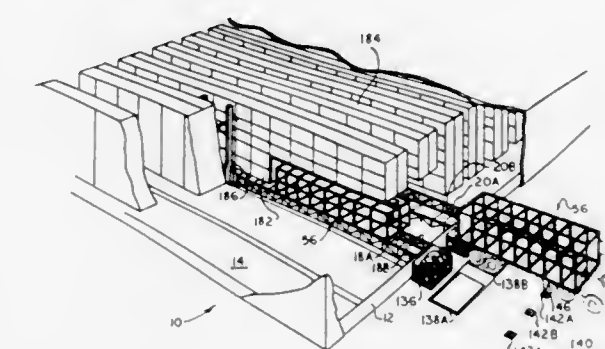
Burt F. Raynes, Chula Vista, Necati Kanatsiz, Spring Valley, and Robert E. Otte, San Diego, Calif., assignors to Rohr Industries Inc.

Filed July 27, 1970, Ser. No. 58,345

Int. Cl. B65g 67/24

U.S. Cl. 214—38 D

7 Claims



A storage unit having wheels at the lower side edges thereof is transferred between rails on a carrier and rails on a platform by means of a drive mechanism comprising a carriage slidably mounted on a track disposed between the rails on the platform. The carriage is releasably engageable with one end of the storage unit, and a cable is connected to the carriage and to a winch which can be operated to move the carriage along the track to thereby transfer the storage unit from the carrier to the platform and vice versa.

3,721,355

## VEHICLE MOUNTED LOADER AND UNLOADER

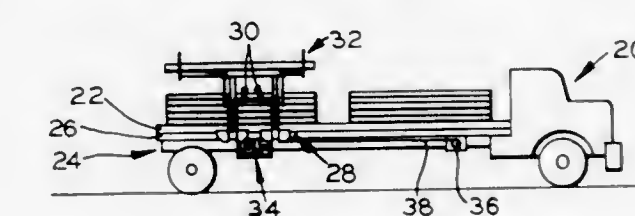
Joseph F. Irving, 316 Fulton St., Swanton, Ohio 43558

Filed Sept. 27, 1971, Ser. No. 183,870

Int. Cl. B60p 1/48

U.S. Cl. 214—80

19 Claims



A vehicle mounted mechanism for manipulating long load units such as pipe lengths which extend over a substantial portion of the load carrying lengths of the vehicle. The mechanism includes an articulate linkage attached to move along the side of the vehicle bed. The linkage is operable between the ground and an elevation substantially above the bed and over a substantial range transverse of the bed to engage elongate objects for transfer between ground elevation and the bed. The linkage includes an inner and outer boom together with a cradle, all of which are automatically collapsible and retractable, stored beneath and within the width limits of the bed of the vehicle to provide adequate road clearance and form a compactly stored unit when the vehicle is in transit. In one embodiment the linkage is capable of operating in a position adjacent the wheels of a semi-trailer and of being stored between the wheels on the trailer and the wheels on the truck.



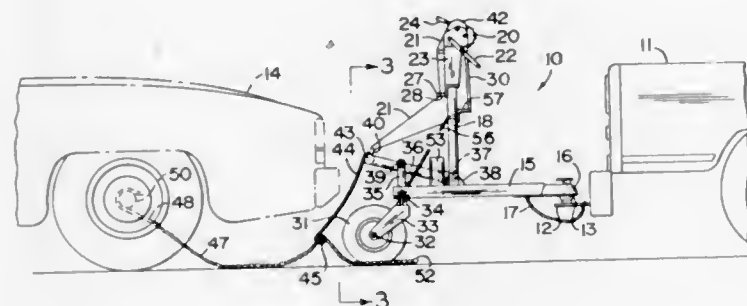
### 3,721,356 VEHICLE TOWING DEVICE

John M. McNeill, 609 Lavon Court, P.O. Box 636, Kissimmee, Fla.

Filed April 28, 1971, Ser. No. 138,097  
Int. Cl. B60p 3/12

U.S. Cl. 214—86 A

9 Claims



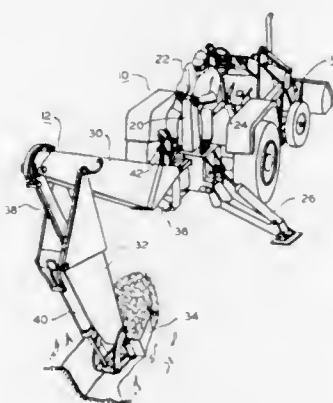
A vehicle towing device having a wheeled frame adapted for coupling to one vehicle for towing a second vehicle. The frame is wheeled and has a winch attached to it for lifting a swinging arm pinned at one end to the frame and coupled by means of a cable from the winch to the other end of a swinging arm which also is attached to one or more flexible belts which are adapted to swing under the bumper of a disabled vehicle, with the other end of the belt adapted for connection to the axle in a manner that can be adjusted to place a belt directly under the bumper so that when the winch reels in the cable, it lifts the swing arm to lift the belt on the bumper for lifting one end of the disabled vehicle for towing.

### 3,721,357 MULTIFUNCTION INTEGRATED CONTROL MECHANISM

William A. Williamson, Niles, Mich., assignor to Clark Equipment Company  
Filed July 15, 1970, Ser. No. 54,890  
Int. Cl. E02f 3/00

U.S. Cl. 214—138 R

18 Claims



A control mechanism designed principally for use with a backhoe having a boom, a dipstick connected to the boom, a bucket pivotally mounted on the outer end of the dipstick and an actuating means for raising and lowering and slewing the boom, moving the dipstick forwardly and rearwardly, and curling the bucket, in which a single handle is used to control the multifunctions for simultaneously moving any one or more of the elements in varying degrees. A differential transformer is preferably used as a control producing signal for each of the elements, the transformers having a probe connected to and

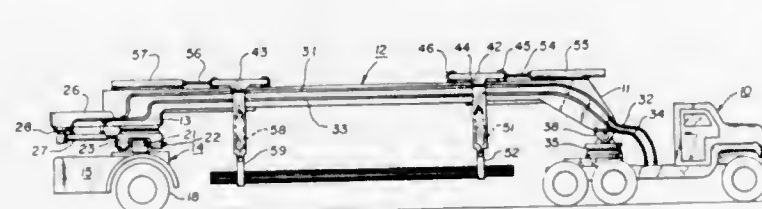
operated by the single handle or two handles in unison. The control mechanism may be used for other types of equipment and a different combination of functions.

### 3,721,358 SELF-LOADING CARRIER

Gibson E. Brock, R.D. No. 5, Persimmon Road, Sewickley, Pa.  
Filed Nov. 12, 1970, Ser. No. 88,530  
Int. Cl. B60p 3/40

U.S. Cl. 214—394

1 Claim



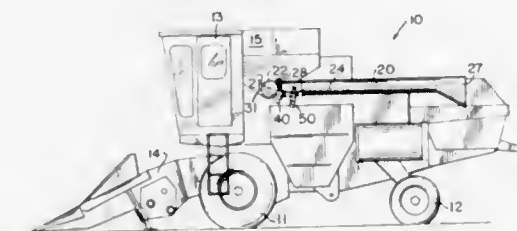
An over-the-road carrier adapted to straddle and pick up elongated loads such as billets, pipe, etc., stocked in parallel piles on the ground between aisles is pivotally mounted at its front end on a tractor unit and at its rear end on a remote control powered trailing end unit. The latter unit is rotatable from a position in which its wheels travel in the direction of the long axis of the carrier to a position at right angles thereto. The carrier is maneuverable from its traveling position to its loading position by steering its tractor unit into one aisle, rotating its trailing end unit 90° and then driving the trailing end unit into the other aisle so that the carrier pivots about its tractor unit into a position parallel to the long axis of the load. Both tractor and trailing end units are then driven along their respective aisles to position the carrier over the desired load.

### 3,721,359 UNLOADER TUBE LATCHING MECHANISM

Elvin L. Howell, and James Corwith, both of Bettendorf, Iowa, assignor to International Harvester Company, Chicago, Ill.  
Filed June 18, 1971, Ser. No. 154,541  
Int. Cl. B60p 1/40

U.S. Cl. 214—522

9 Claims



An unloader tube latching mechanism that automatically hooks when the unloader tube is swung into the discharge position. The latching mechanism includes an overcenter locking device for positively securing the unloader tube in the discharge position.

### 3,721,360 READILY OPENABLE FOAMED POLYMER CONTAINER

Stafford D. Collie, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.  
Filed March 2, 1970, Ser. No. 15,346  
Int. Cl. B65d 17/24, 1/00

U.S. Cl. 215—32

3 Claims

A container is constructed from a foamed polymer and closed by heat sealing. It is provided with a score line, cut, or notch, as by the sealing apparatus at the plate at which it is to be rendered openable by tearing, cutting, etc. In one embodiment

ment a high density polyolefin, e.g., polyethylene, is foamed and formed into a container or bottle and, when filled, is heat



sealed as by bringing together in a sealing head the walls of the container and simultaneously providing the score or tear line.

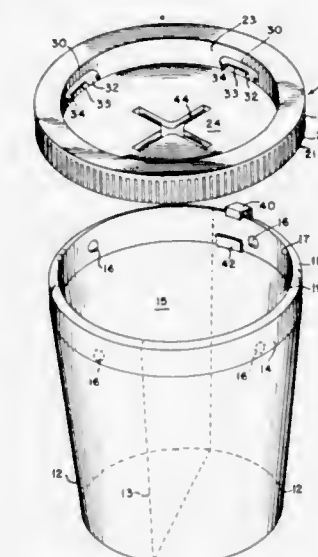
### 3,721,361 PRESSURIZED BEVERAGE CONTAINER WITH TWIST REMOVABLE COVER

Arthur J. Barry, and Lawrence J. Barry, both of 176 Cross Street, Lowell, Mass.

Filed Nov. 29, 1971, Ser. No. 202,945  
Int. Cl. B65d 39/08

U.S. Cl. 215—50

11 Claims



A reusable container for pressurized beverages includes a receptacle having spaced, inward projecting protuberances, inside the upper portion of a wide mouth, which do not interfere with drinking therefrom. A twist-off cover closure fits within the wide mouth and extends up, over and around the receptacle rim for sanitary reasons. The cover has spaced grooves, or cam tracks, for locking on the protuberances when turned and a concave-convex central portion. A resilient gasket on the rim of the receptacle compresses to affix the cover, and a similar gasket, engaged by the concave cover portion, compresses for increased sealing under beverage pressure.

### 3,721,362 DOUBLE WALL CORRUGATED LNG TANK

Thomas F. Bridges; George R. Knight, Jr., both of Port Washington, N.Y., and Ivan Mertl, Greenwich, Conn., assignors to John J. McMullen Associates, Inc., New York, N.Y.

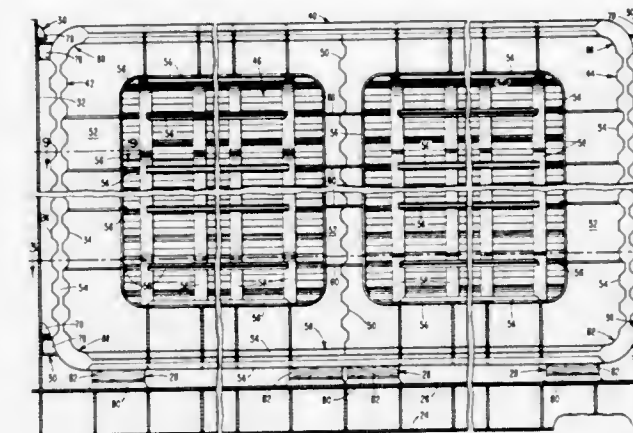
Filed Sept. 9, 1970, Ser. No. 70,869  
Int. Cl. B65d 25/18

U.S. Cl. 220—9 LG

23 Claims

A double wall tank for the marine transportation of liquefied natural gases at atmospheric pressure and cryogenic temperature, the tank having its primary and secondary bar-

riers supported in such a way that the respective barrier supports are in alignment. The walls of the inventive tank, in its preferred embodiment, are corrugated in a horizontal direction. All liquid-tight welds are either butt or seam welds, and all transitions between the walls of the tank are smooth, without intermediate box girders. A plurality of vertical webs support the primary barrier of the tank; and a plurality of



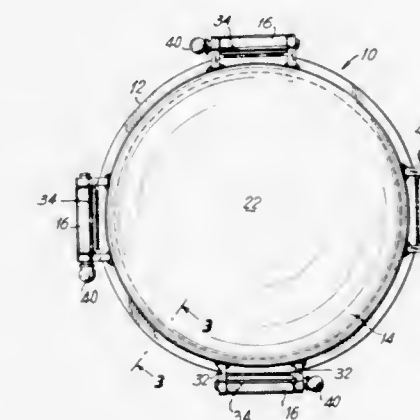
diaphragms, intermediate the primary and secondary barriers, are positioned in alignment with the vertical webs and support the secondary barrier. The vertical webs are stabilized by lightweight channel-shaped struts; corner plates support the corners of the tank and serve as base members for the struts. The tank is supported and keyed at the bottom only, thereby reducing the load transmitted to the structure of the ship near the top of the tank.

### 3,721,363 QUICK-OPENING MANWAY CLOSURE

Marcus N. Bressler, Wilmington, Del., and Norman C. Sebelish, Boothwyn, Pa., assignors to Gulf & Western Industries, Inc., New York, N.Y.  
Filed Sept. 16, 1970, Ser. No. 72,683  
Int. Cl. B65d 43/16

U.S. Cl. 220—32

15 Claims



A manway closure which provides a quick-opening entrance to a pressure vessel. The closure includes a domed cover which swings between open and closed positions with respect to a ring fixed to the vessel. The cover at its rim seats against an interior face of the ring and a sealing gasket is located between the cover rim and the interior face of the ring. The cover is constructed with respect to the ring so that when fluid pressure is applied internally of the assembly, the cover rim expands against the ring, compressing the gasket and thus forming a rupture-resistant seal.



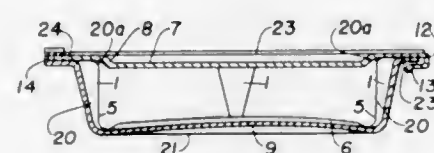
3,721,364

**PLASTIC MAGAZINE FOR PHOTOSENSITIVE SHEET MATERIALS**

Heinz Kurt Lukaschewitz, Woffen; Johannes Walter Buchmann, Bobbau, and Bernard Lpu Walther, Dessau, all of Germany, assignors to Veb Filmfabrik Woffen Fotochemisches Kombind, Woffen, Germany  
Filed Nov. 17, 1970, Ser. No. 90,236  
Int. Cl. B65d 43/12

U.S. Cl. 220—41

7 Claims



A plastic magazine for photosensitive sheet materials, comprising a bottom, four side walls inclined inwardly toward the bottom and on the interior of each of the side walls a rib having an interior edge substantially normal to the bottom.

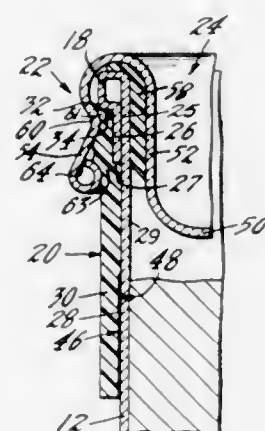
3,721,365

**FULL EASY OPEN AND RECLOSABLE METAL CONTAINER**

William Thomas Saunders, Weirton, W. Va., assignor to American Can Company, Greenwich, Conn.  
Filed June 30, 1971, Ser. No. 158,402  
Int. Cl. B65d 43/04, 17/16

U.S. Cl. 220—47

7 Claims



A plastic release strip is included in a seam formed between a metal end closure and a metal container body to serve as a seam holding and release element, the plastic strip being manually removable without destruction or mutilation of either the container body or the end closure. The seam release strip, at its top edge, abuts a projection or bead formed by an inner marginal portion of a doubled-back longitudinal end section of the body side wall, exteriorly to the side wall, to preclude displacement of the seam release strip and thereby ensure seam integrity particularly for products contained under pressure. The end closure has a skirt extending longitudinally from the open end of the container body and having an inwardly indented annular portion which compresses the portion of the strip that abuts the bead to thereby facilitate sealing of the open end of the container body by the end closure and further enhance the integrity of the seam. The skirt of the end closure also has a peripheral, annular, inwardly-directed curled hem which compresses the portion of the strip that engages an exterior annular surface of the body side to thereby cause that portion to further frictionally engage the sharp raw metal edge on an outer marginal portion of the double-back end section of the container side wall which further facilitates sealing of the open end of the container body by the end closure and still further enhance the integrity of the seam.

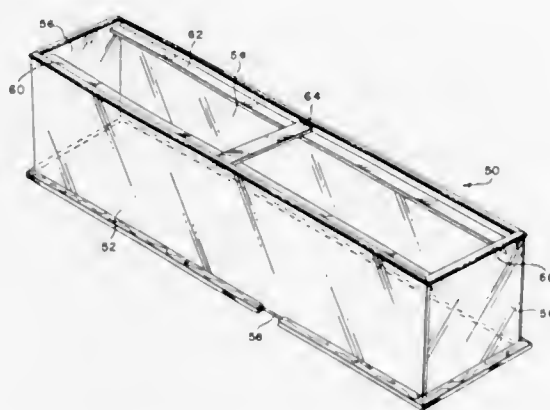
3,721,366

**GLASS TANK CONSTRUCTION**

Barry W. Battershall, 2626 Natalie Drive, and William F. Hoffman, 2904 Natalie Drive, both of Plano, Tex.  
Filed Dec. 21, 1970, Ser. No. 99,779  
Int. Cl. B65d 25/54

U.S. Cl. 220—82 R

10 Claims



A frameless aquarium assembled from non-corrosive material by utilizing an adhesive to attach and seal between the adjacent parts. The longer sides having brace members attached adjacent their upper edge. These brace members extend perpendicularly from the surface of the longer sides and can be attached together by a cross brace.

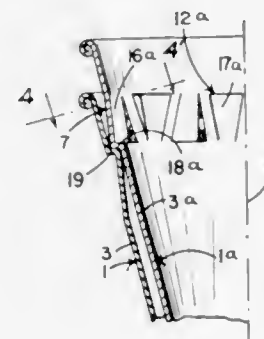
3,721,367

**STACKABLE CONTAINERS**

Robert W. Fletcher, Elk Grove Village, Ill., assignor to Standard Oil Company, Chicago, Ill.  
Filed Aug. 3, 1970, Ser. No. 60,689  
Int. Cl. B65d 21/02

U.S. Cl. 220—97 C

11 Claims



A stackable container comprising a bottom; a sidewall integral with said bottom tapering upwardly and outwardly from said bottom and terminating in an open upper end; a first circumferential intermittent shoulder in the container sidewall; and a second circumferential intermittent shoulder in the container sidewall, at least one of said shoulders being formed by spaced projections no part of which slope inwardly toward the central axis of the container, the other shoulder may be comprised of spaced portions no part of which slope inwardly toward the central axis of the container, the effective width of each projection forming one shoulder being greater than the spacing between the spaced projections or portions of the other shoulder, thereby positively limiting the nesting of like telescopically associated containers.

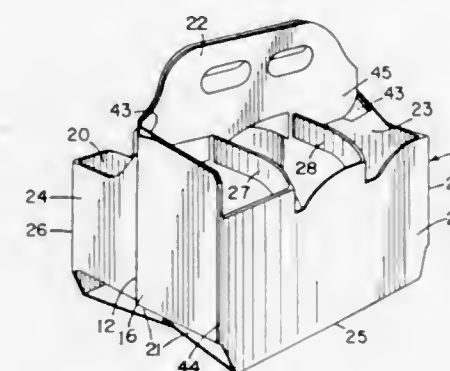
3,721,368

**BOTTLE CARRIERS AND METHOD OF FABRICATING SAME**

Edwin L. Arneson, Hillsdale, N.J., assignor to Federal Paper Board Company, Inc., Montvale, N.J.  
Filed Aug. 10, 1970, Ser. No. 62,360  
Int. Cl. B65d 75/00

U.S. Cl. 220—115

2 Claims



A strap style cellular carrier for bottled beverages, or like articles, which is formed from an elongate paperboard blank and a method of fabricating the same in collapsed condition which is characterized by cutting the blanks from a continuous web of stock material, which may be printed on the outside face, with the blanks extending lengthwise in the long direction of the web and nested laterally so that continuous lines of heat activatable adhesive may be applied to the inside faces of the blanks which adhesive lines will traverse nested handle and center partition forming panels extending from the top forming side wall margin at one side of adjoining blanks and nested bottom forming panels extending from the bottom forming side wall margins at the opposite sides of the blanks, thereafter activating the adhesive only on the areas of the handle and partition forming panels which are to be adhered to each other and finally folding the blanks while they are advanced in a continuous stream without the need for timing or indexing the individual blanks thereby enabling continuous high speed travel of the carriers during fabrication and high volume production with minimum material.

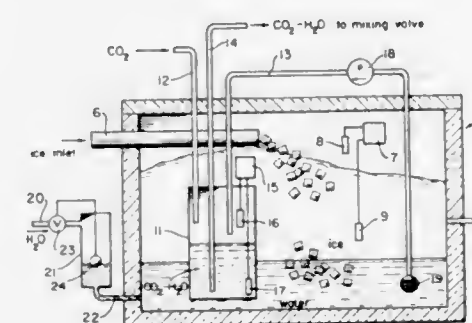
3,721,369

**ICE STORAGE AND WATER CARBONATING SYSTEM**

Robert F. Conti and Don S. Follett, Easton, Pa., assignors to Follett Corporation  
Filed Dec. 28, 1970, Ser. No. 101,553  
Int. Cl. B67d 5/08

U.S. Cl. 222—67

6 Claims



This invention is directed to an ice storage and water carbonating system that includes a water carbonating vessel located within an ice storage chest. Carbon dioxide under pressure and make-up water are supplied to the carbonating vessel. The make-up water is drawn from the bottom of the storage chest and includes melt water from the ice therein plus any amount of externally sup-

plied water that may be required beyond that solely available from the melt water. Suitable controls are provided to maintain the ice, water and carbonated water levels within predetermined ranges.

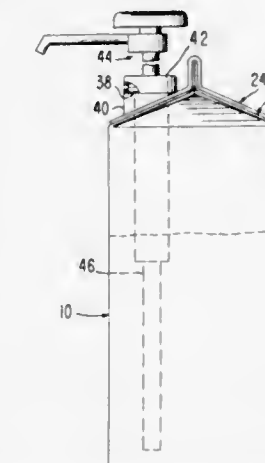
3,721,370

**DISPENSER APPARATUS FOR DISPOSABLE CARTON**

Marshall R. Blum, 1224 Maripasa, San Francisco, Calif.  
Filed May 15, 1970, Ser. No. 37,606  
Int. Cl. B65d 5/72

U.S. Cl. 222—385

8 Claims



Apparatus for dispensing materials from disposable cartons of the type having a sloping top provided with a central up-standing seal closing the top. The apparatus includes a pair of sloping sides which conform to the top of the carton and means interconnecting the sides for attaching the same to the seal. One of the sides has a hole therethrough for receiving a pump which is adapted to extend into the carton and operable to remove the contents thereof. The other side of the device can be provided with a second hole defining a template for use in cutting a hole in the carton.

3,721,371

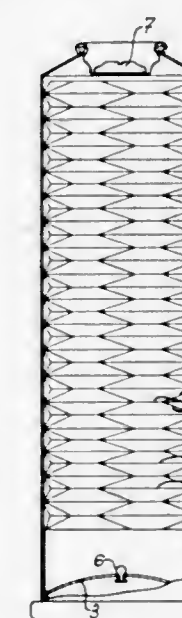
**DISPENSING CONTAINER**

Gilbert Dolveck, Barthelemy de Beaurepaire, France, assignor to Aluminium Suisse S.A., Chippis, Switzerland  
Filed Oct. 27, 1970, Ser. No. 84,445  
Claims priority, application Switzerland, Oct. 29, 1969, 16082/69

Int. Cl. B65d 23/00

U.S. Cl. 222—386.5

5 Claims



A dispensing container includes a cylindrical hollow body containing therein a deformable member separating a product



to be dispensed from a propellant gas. When an outlet in the hollow body is opened, the deformable member is deformed by the gas and forces the product to be discharged through the outlet. A tubular side wall of the deformable member has a plurality of fold lines forming an array of alternately disposed trapeziums which define cavities in staggered formation whereby deformable member is expansible or contractable in a concertina fashion.

3,721,372

# METHOD AND APPARATUS FOR FABRICATING PILE GOODS

Paul Reinhard, Melchnau, Switzerland, assignor to Teppichfabrik Melchnau AG., Melchnau, Switzerland

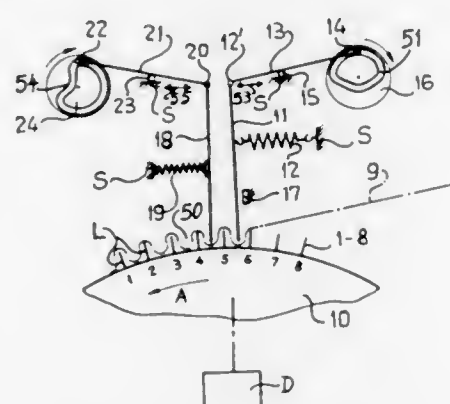
Filed Sept. 8, 1971, Ser. No. 178,751

Claims priority, application Switzerland, Sept. 17, 1970, 13777/70

Int. Cl. A41h 43/00; D06j 1/00

U.S. Cl. 223-30

21 Claims



A method of, and apparatus for, the fabrication of pile goods in which the pile material is introduced through the intermediary of an infeed sword member into the spaces formed between radially extending lamellae located about the periphery of a revolving drum. During introduction of the pile material into these spaces, this material is fixedly retained relative to the drum by holding means in the form of a holding sword member. The infeed sword member and the holding sword member are moved towards and away from the drum and during their work position at the drum while in the neighborhood thereof such are moved in the direction of drum rotation and during their rest position when remote from the drum they are moved back opposite to the direction of drum rotation. The holding sword member is introduced into a space at the peripheral surface of the drum before or directly after the infeed sword member has been withdrawn from such space, and then the holding sword member is retained in this space for such length of time until the infeed sword member has been introduced into the next space, whereupon these operations repeat. The invention is also directed to pile goods produced in accordance with the inventive method.

3,721,373

# SKI BOOT CARRIER

Robert Penniman, Burlington, Vt., assignor to Barrec Products Co., Shelburne, Vt.

Filed Nov. 20, 1970, Ser. No. 91,350

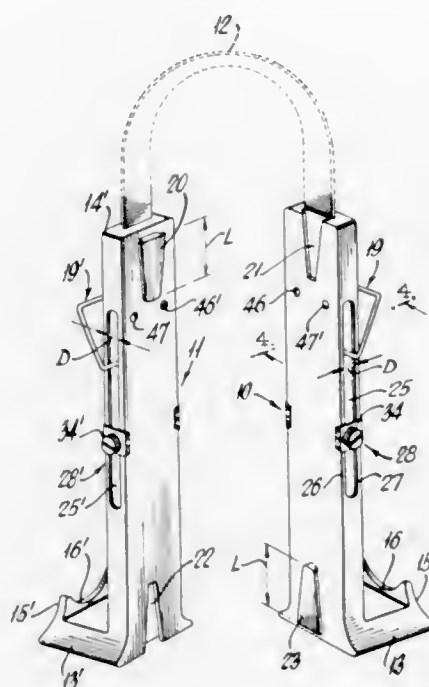
Int. Cl. A45f 5/00

U.S. Cl. 224-5 Z

16 Claims

The invention contemplates a boot carrier suitable for ski boots, wherein each boot has its own separate bracket to which it is mounted and adjustably clamped. The brackets are

interconnected by a flexible strap to permit the option of shoulder-slung portage. The brackets are also separately inter-



connectable to provide the further option of mutually braced standing support, for neat storage off the floor.

3,721,374

# LAMP MOUNT FOR AUTOMOTIVE VEHICLES

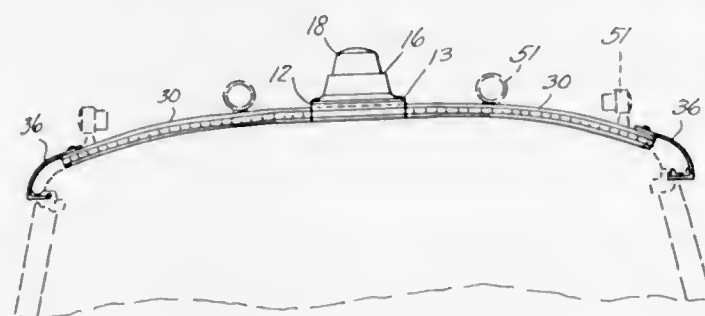
George W. Eby, 1015 Molalla Avenue, Oregon City, Oreg.

Filed Aug. 10, 1971, Ser. No. 170,471

Int. Cl. B60r 11/00

U.S. Cl. 224-42.1 B

7 Claims



A mounting bracket assembly for supporting an emergency light on the roof of an automobile. The bracket assembly is composed of a pair of aligned downwardly facing channel bars to the inner ends of which is adjustably connected an emergency lamp mounting plate. The flanges of the channel bars are notched at their bottom edges to make them sufficiently flexible to conform to the curvature of the automobile roof. The outer ends of the channel bars have anchoring hooks engageable around the outer top rim portions of the opposite doorways of the automobile.

3,721,375

# WEB FEED MECHANISM FOR WRAPPING MACHINES

Franklin B. Roberts, Springfield, and James S. Groom, Hampden, both of Mass., assignors to Package Machinery Company, East Longmeadow, Mass.

Filed Feb. 1, 1971, Ser. No. 111,281

Int. Cl. B26f 3/02

U.S. Cl. 225-96

4 Claims

An apparatus for feeding a web of material, such as a plastic film or paper, from a supply roll and for cutting it into sheets of desired length to be used in a package wrapping machine or the like. The apparatus utilizes driven opposed rolls to

withdraw the web from the supply roll and to advance the leading section of the web onto the end of a driven conveyor which retains the section by vacuum. A cutter mechanism is driven in timed relationship to the web movement to slash the web transversely as it passes from the rolls onto the conveyor.

cal signal is then used to regulate the speed of the traveling strip so as to maintain the substantially tensionless conditions.

3,721,377

# WEB FEEDING APPARATUS

Cyril John Atkinson, Royston, England, assignor to International Computers Limited, London, England

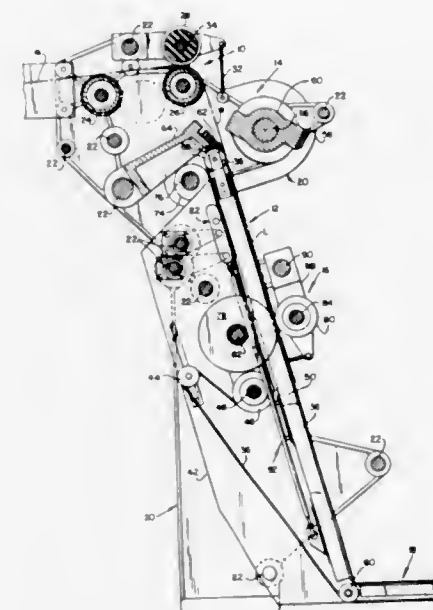
Filed Nov. 23, 1971, Ser. No. 201,304

Claims priority, application Great Britain, March 26, 1971, 08,235/71

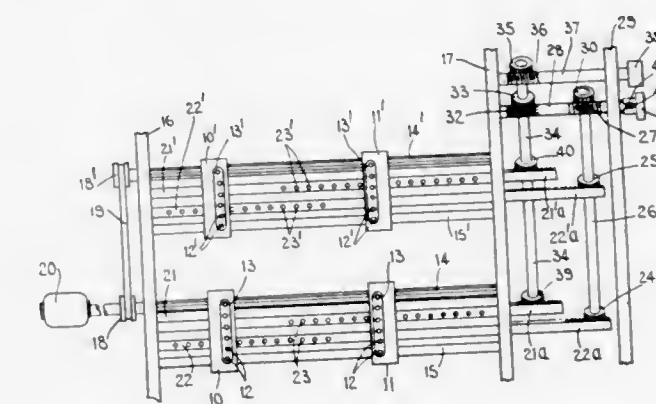
Int. Cl. B65h 17/38

U.S. Cl. 226-74

5 Claims



The transverse slashing provides a serrated cut, leaving tabs which connect the leading section on the conveyor with the remainder of the web. Then, in further travel, opposed high speed rollers engage the leading section on the conveyor to tear the tabs and thus separate the leading section as a wrapper sheet of required length.



For variation of the lateral positions of pairs of paper tractors, each tractor is slidable on a separate rack which is itself axially slidable. Coarse adjustment is according to preset positions of the tractors on the racks. Fine adjustment is by driving both racks of a pair of tractors together or driving only one of those racks.

3,721,378

# APPARATUS FOR HANDLING FLEXIBLE SUPPLY LINES

David Emrys Hughes, Bridgend, and Donald Davies, Maesteg, Wales, assignors to Coal Industry (Patents) Limited, London, England

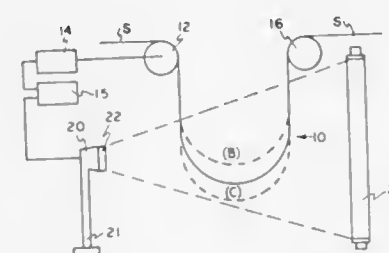
Filed Jan. 31, 1972, Ser. No. 222,052

Claims priority, application Great Britain, Feb. 23, 1971, 5,226/71

Int. Cl. B65h 23/00

U.S. Cl. 226-119

11 Claims



# TENSIONLESS VARIABLE FEED SYSTEM FOR A TRAVELING STRIP

Donald K. Christian, Spartanburg, and Jerry M. Minchey, Mauldin, both of S.C., assignors to Piedmont Engineering and Machine Company, Inc., Spartanburg, S.C.

Filed May 3, 1971, Ser. No. 139,695

Int. Cl. B65h 25/10

U.S. Cl. 226-42

9 Claims



Supply line handling apparatus for a mining machine consists of a trough securable to a guide for the machine. A bracket is attached to the machine and carries a feed arm through which the supply line passes to the machine, the arm extending into the trough to feed the line thereinto. The trough is provided with a number of displaceable resilient members, for example loops of resilient flexible material, which provide a gate across the trough. Upon movement of the machine the members are displaced by the arm which feeds the line into the trough below the members which, after the machine has passed, return to their entrapping position and retain the line within the trough.

An improved system is disclosed for feeding a strip of material at variable speeds under substantially tensionless conditions. The strip is fed into a loop forming area where a light source is disposed along one side thereof and extends therealong. A single photosensitive device is disposed along an opposite side of the loop forming area and is provided with a lens system, such as a wide angle lens, to enable the photosensitive device to receive light from substantially the entire length of the light source. The photosensitive device is operatively associated with a control circuit which generates an electrical signal proportional to the size of the input to the circuit from the photosensitive device. The proportional electrical

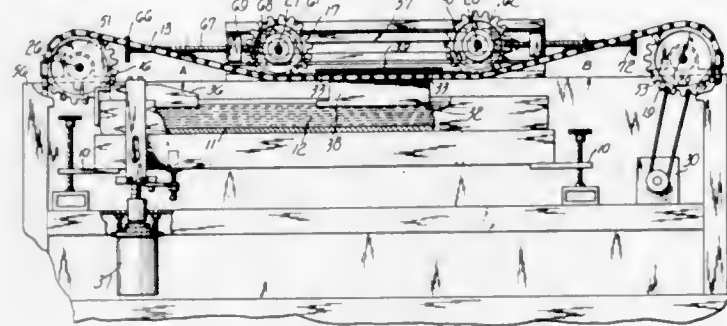


### 3,721,379 APPARATUS FOR TREATING ARTICLES WITH A LIQUID

Vincent A. Corsaro, Haverhill, Mass., assignor to Western Electric Company, Incorporated, New York, N.Y.  
Division of Ser. No. 745,253, July 16, 1968, abandoned. This application Aug. 21, 1970, Ser. No. 66,049  
Int. Cl. B23k 1/08

U.S. Cl. 228—39

10 Claims



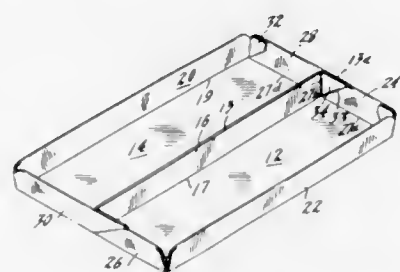
A drag line soldering apparatus includes two chains moving over sprocket wheels and mounting a succession of masked circuit boards in article carriers for floatation upon the top surface of molten solder in a tank. Adjustment of the position of certain of the sprocket wheels selects a critical angle of withdrawal of the boards from contact with the molten solder, eliminating substantially all formation of "icicles" of solidified solder. Adjustment of the position of others of the sprocket wheels selects a desired angle of contact and a desired length of contact path between the boards and the top surface of the molten solder.

### 3,721,380 PARTITIONED TRAY

George Leroy Meyers, Menasha, Wis., assignor to American Can Company, Greenwich, Conn.  
Filed Aug. 9, 1971, Ser. No. 170,040  
Int. Cl. B65d 85/36

U.S. Cl. 229—15

8 Claims



A one-piece tapered food packaging tray having a centrally located, integral partition member hingedly movable between a collapsed position in which a plurality of trays may be shipped in nested condition and an erected position in which the partition positively divides the tray into two separate compartments. The tray has double thickness side walls and, in the preferred embodiment, is foil coated on all inner surfaces and on the outer side wall surfaces.

### 3,721,381 TWO PART CONTAINER

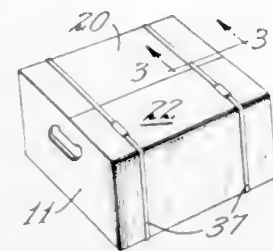
Frank W. Locke, Minneapolis, Minn., assignor to Hoerner Waldorf Corporation, Ramsey County, Minn.  
Filed Sept. 8, 1970, Ser. No. 70,386  
Int. Cl. B65d 5/32

U.S. Cl. 229—23 R

2 Claims

The container includes a top section including rectangularly arranged side and end walls, and top closure flaps hingedly

connected thereto. A bottom section includes a bottom panel, and side and end walls hingedly connected to the edges thereof. Corner flaps are hinged to one pair of opposed walls to overlap the other opposed walls. The bottom section is



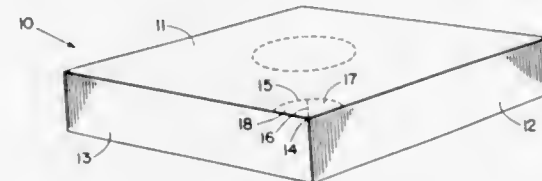
telescoped into the top section while the top closure flaps are open, the top section holding the bottom section in tray-shaped form. After filling the top closure flaps are closed to complete the container.

### 3,721,382 DISPENSING PACKAGES

Ronald Patrick Cavanagh, Ste. Genevieve, and Allan Richard Wright, Montreal, both of Quebec, Canada, assignors to Northern Electric Company Limited, Montreal, Quebec, Canada  
Filed July 13, 1971, Ser. No. 162,232  
Int. Cl. B65d 5/46, 25/30

U.S. Cl. 229—52 B

2 Claims



In a carton for dispensing strand material of substantial weight, inexpensive and relatively durable means for supporting the carton in the form of a corner knock-out is provided, whereby the weight is exerted on the two-sides of the carton, although supported by one hand.

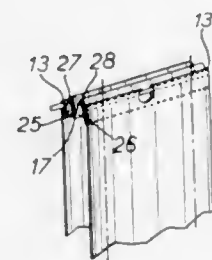
### 3,721,383 PACKAGING ASSEMBLY OF HEAT-SEALABLE FILM MATERIAL

Bernard Dufes, Chilly-Mazarin, France, assignor to Altec-Sopitec S.A., Ivry Sur Seine (Val de Marne), France  
Filed Feb. 18, 1971, Ser. No. 116,341  
Claims priority, application France, March 3, 1970, 7007489

U.S. Cl. 229—63

Int. Cl. B65d 33/28

8 Claims



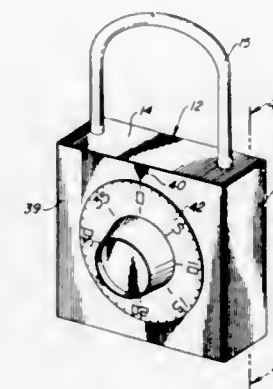
A packaging assembly of heat sealable plastics film material comprises an envelope with a closed end and an open end. The closed end is encircled by two lengths of ribbon formed from a film of similar heat sealable material. The two ribbons are contained in a guiding passage around the packaging assembly and are accessible through openings formed in the guiding passage.

### 3,721,384 COMBINATION LOCK BANK

Don C. Pierce, Jr., Bellevue, Ohio, assignor to Huron Products Company, Bellevue, Ohio  
Filed July 14, 1971, Ser. No. 162,483  
Int. Cl. A47g 29/00

U.S. Cl. 232—4 R

1 Claim



A savings bank having a combination operated lock. A frame is received within a casing and defines therewith compartments for coins and for currency. A combination dial on the casing rotates one or both of a pair of spaced, parallel discs in the casing, each disc having a peripheral notch therein. In the locked condition of the combination lock mechanism a leaf spring is biased by one or both of the discs into the path of a peg on the frame and prevents withdrawal of the frame from the casing. In the unlocked condition the notches in the discs are aligned with each other and with the head of the spring to permit the spring to retract out of the path of the peg on the frame.

### 3,721,385 SAVINGS BANK WITH AN INSERTION SLOT SAFETY MECHANISM AND A KEY OPERATED LOCK

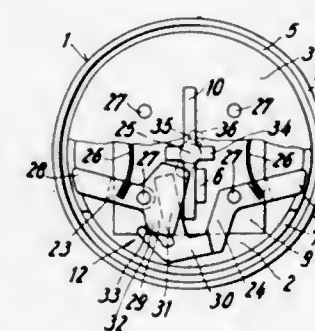
Heinz Krone, Asperg, and Wilhelm Hoffmann, Ludwigsburg, Germany, assignors to Krone G.m.b.H., Ludwigsburg, Wurttemberg, Germany  
Filed Dec. 4, 1970, Ser. No. 95,071

Claims priority, application Germany, Dec. 4, 1969, P 19 60 989.3

Int. Cl. A47g 29/00

U.S. Cl. 232—4 R

4 Claims



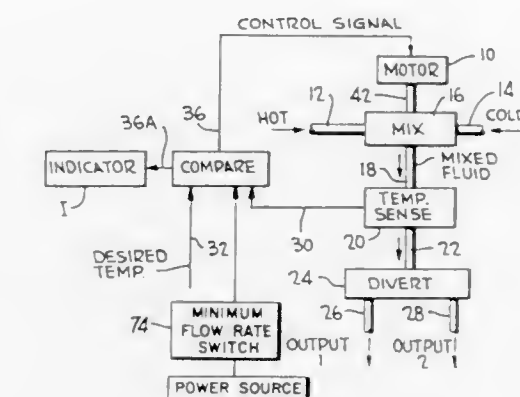
A savings bank with an insertion slot safety mechanism and a bolt lock operated by a key, in which the bolt lock is situated below the insertion slot safety mechanism and can be operated by a key which can be introduced into the insertion slot.

### 3,721,386 TEMPERATURE-VOLUME CONTROLLED MIXING VALVE

Julius H. Brick, 3 Bucknell Lane, Stony Brook, N.Y., and Wilfred Olschewski, 470 American Blvd., Brentwood, N.Y.  
Filed Oct. 23, 1970, Ser. No. 83,289  
Int. Cl. G05d 23/13

U.S. Cl. 236—12 A

14 Claims



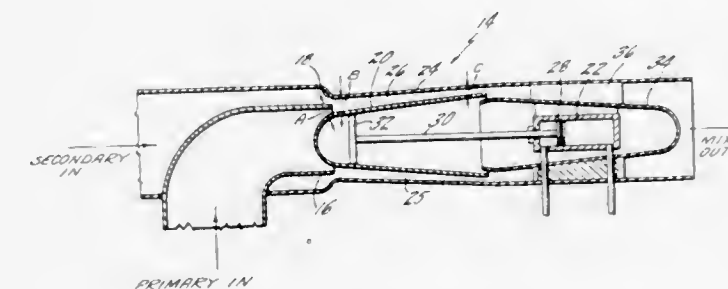
Means are disclosed for producing a fluid output having a desired temperature comprising a mixing unit, means for introducing a first fluid having a first temperature into said mixing unit, means for introducing a second fluid having a second temperature into said mixing unit, said mixing unit including means to mix said first and second fluids to yield a third fluid having a third temperature, means to sense said third temperature, means to generate a signal representative of said third temperature, means to generate a signal representative of said third temperature, means to compare said desired temperature signal and said third temperature signal, said comparing means including means to generate a control signal representative of said comparison, and means to couple said control signal to said mixing unit to control the operation of said mixing unit to bring the temperature of said third fluid to said desired temperature.

### 3,721,387 EJECTOR WITH VARIABLE MIXING SECTION AND PRIMARY NOZZLE AREAS

George E. Wilmot, Jr., Warehouse Point, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.  
Filed June 2, 1971, Ser. No. 149,134  
Int. Cl. B05b 7/12

U.S. Cl. 239—416.4

4 Claims



The effectiveness of a jet pump is increased over a wide range of operating pressures by varying the areas of the primary nozzle and mixing chamber so that the ratio of the two is held at a substantially constant value by a plug designed such that the ratio of any cross-sectional areas of two spaced stations of the mixing chamber along the longitudinal axis of the plug is also substantially constant for each position of the primary nozzle.



3,721,388

**ROTARY WATER SPRINKLER**

Alfred James Green, Poole, England, assignor to Westbourne Engineering (Bournemouth) Limited, Bournemouth, Hampshire, England

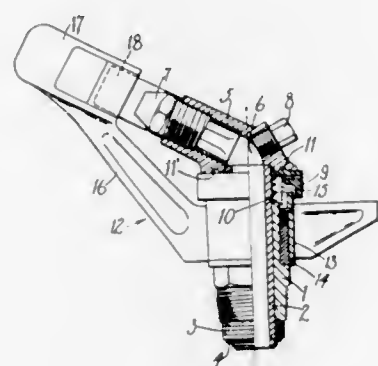
Filed May 7, 1971, Ser. No. 141,250

Claims priority, application Great Britain, May 7, 1970, 22,106/70

Int. Cl. B05b 3/02

U.S. Cl. 239—230

9 Claims



A rotary water sprinkler has a tubular body adapted to be connected to a supply of water under pressure, a nozzle assembly supported by and rotatable about the tubular body, the assembly including an upwardly directed nozzle, a swing arm having a hub portion surrounding and mounted for rotation on the tubular body, an arm extending outwardly from the hub-portion and a spoon-like portion on the arm which is impinged by a jet issuing from the nozzle to rotate the arm and biasing means which rotates the arm in the opposite direction to engage the nozzle assembly and to rotate the assembly through a small angle.

3,721,389

**EXIT NOZZLE ASSEMBLIES FOR GAS TURBINE POWER PLANTS**

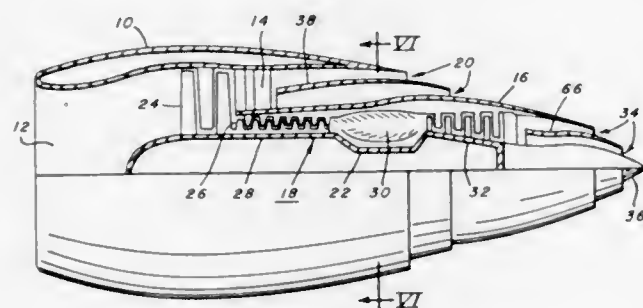
Malcolm Iain K. MacKinnon, Seattle, and Bjarne E. Syltebo, Bellevue, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed June 10, 1971, Ser. No. 151,816

Int. Cl. B64d 33/04

U.S. Cl. 239—265.19

8 Claims



A nozzle assembly for gas turbine power plants, particularly aircraft jet engines, which incorporates a generally annular splitter dividing the nozzle into two parts and provided on its surface with suitable sound-absorbing material. Incorporated into the splitter and forming a part thereof is apparatus for varying the cross-sectional area of the nozzle exit and, hence, the operating characteristics of the power plant. This latter means preferably comprises a plurality of arcuate segments hinged to the splitter and actuatable from a position where they are flush with the remainder of the splitter surface to extended positions where they effectively reduce the nozzle cross-sectional area. The assembly, therefore, performs two functions. First, it provides additional sound-absorbing area; and, secondly, it acts as a nozzle area control device.

3,721,390

**FUEL INJECTION NOZZLES**

Harold Ernest Jackson, Plymouth, England, assignor to Petrol Injection Limited, Plymouth, Devon, England

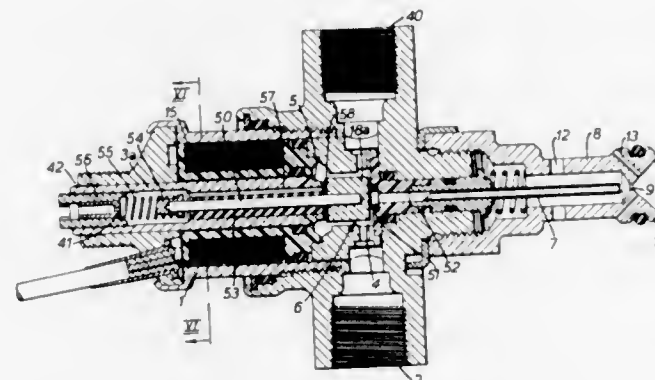
Filed Sept. 13, 1971, Ser. No. 179,961

Claims priority, application Great Britain, Sept. 25, 1970, 45823/70

Int. Cl. B05b 1/30

U.S. Cl. 239—585

18 Claims



Fuel injector nozzles are described including electromagnetically-operable interrupter valves whereby the nozzles can be operated to discharge fuel intermittently. In one form, the movable valve member of the interrupter valve is spherical. In another form, a through-flow fuel path is provided to permit the continuous circulation of fuel through the nozzle even when the interrupter valve is closed, and a vapor separating path is provided to remove fuel vapor. In yet another form, a non-magnetizable element is provided to reduce operating delays in the interrupter valve as a result of residual magnetism.

3,721,391

**ARRANGEMENT FOR FIXING THE GRINDING STONE IN A PUMP GRINDER**

Aimo Emil Lepola, Kaipola, Finland, assignor to Yhtyneet Paperitehtaat Osakeyhtio, Kaipola, Finland

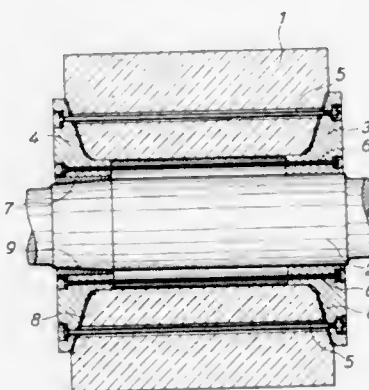
Filed Sept. 4, 1970, Ser. No. 69,712

Claims priority, application Finland, Aug. 12, 1970, 2,211/70

Int. Cl. B02c 13/26; B24d 5/16

U.S. Cl. 241—293

2 Claims



This invention relates to an improvement in an arrangement for fixing a wood-grinding stone on a shaft with the aid of two flanges pressing against it. According to the invention one of the two flanges is mounted on the shaft with shrink fit and the other flange, with force fit accomplished by driving the flange, provided with a tapering bore, upon the tapering shaft.

3,721,392

**TIRE GRINDING FEED DEVICE**

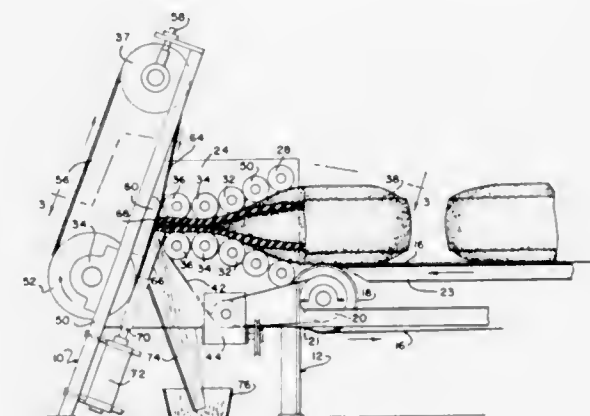
Stanley J. Burwell, Glen Arm, Md., assignor to Lyons Industries, Inc., Pikesville, Md.

Filed March 1, 1971, Ser. No. 119,516

Int. Cl. B02c 19/00

U.S. Cl. 241—301

5 Claims



A tire grinding device comprising conveyor means for feeding a row of tires along a path of travel with converging feed roll means disposed adjacent one end of the conveyor means for squeezing a tire therebetween in a relatively flat configuration, and grinding means disposed adjacent one side of said feed roll means for pulverizing and grinding the tire as it is continuously fed between said feed roll means. The apparatus is provided with support means adjacent the lower portion of the feed roll means to support the edge of the tire as it is being pulverized by the grinding means.

3,721,393

**METHOD AND APPARATUS FOR STRAND WINDING AND REELING**

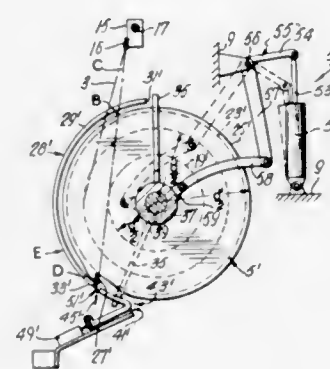
Joseph R. Marcel Croissette, Fabreville, Laval, Quebec, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Oct. 22, 1970, Ser. No. 82,943

Int. Cl. B65h 54/02

U.S. Cl. 242—25 A

10 Claims



A method and apparatus for continuously winding strand material on alternate ones of a pair of side-by-side take-up reels. The reels are selectively rotated, and each has a strand snagger plate. When one reel is full, the strand is moved by suitable means toward the other reel for winding thereon without interrupting the feeding of the strand. The strand is caught by the snagger plate on the empty reel during changeover. A finger member is provided for preventing the strand from being caught by the snagger plate on the full reel.

3,721,394

**APPARATUS FOR UNCOILING WIRE FROM A SPOOL**

Hans Joachim Reiser, Hannover, Germany, assignor to Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany

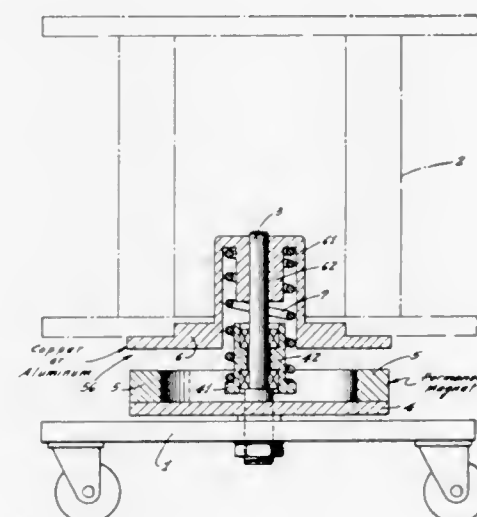
Filed June 23, 1971, Ser. No. 155,938

Claims priority, application Germany, July 3, 1970, P 20 32 935.5

Int. Cl. B65h 59/16, 49/18

U.S. Cl. 242—54 R

4 Claims



In an apparatus for uncoiling wire from a spool at constant speed and tension using an eddy current brake having a magnet and an electrically conductive disk for rotating in the magnetic field as provided by the magnet; for example, the magnet is mounted on a base, and the disk is or is part of the turntable supporting a spool from which wire is to be uncoiled. The turntable is axially spring biased and journaled for rotation about a vertical axis, whereby the effective air gap between the magnet and the disk is determined by resilient reaction of the spring to the weight of the spool. As wire is uncoiled, that weight decreases while the rotational speed of turntable and spool increase so that tension and withdrawal speed of the wire remain constant.

3,721,395

**TOWEL RACK FOR VEHICLES**

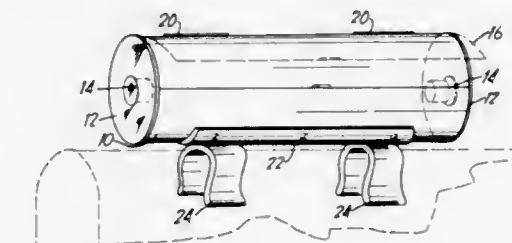
Rufus Snipes, 318 W. Pine St., Arcadia, Fla. 33821

Filed June 30, 1971, Ser. No. 155,676

Int. Cl. B65h 19/00

U.S. Cl. 242—55.53

4 Claims



A rack for detachably holding a roll of paper towels and adapted to be detachably secured to the interior of a vehicle, the rack being provided with roll shielding means having hinged front and rear access doors through which towels can be removed individually.



3,721,396

**SHEAR CUTTING BATCHER APPARATUS**

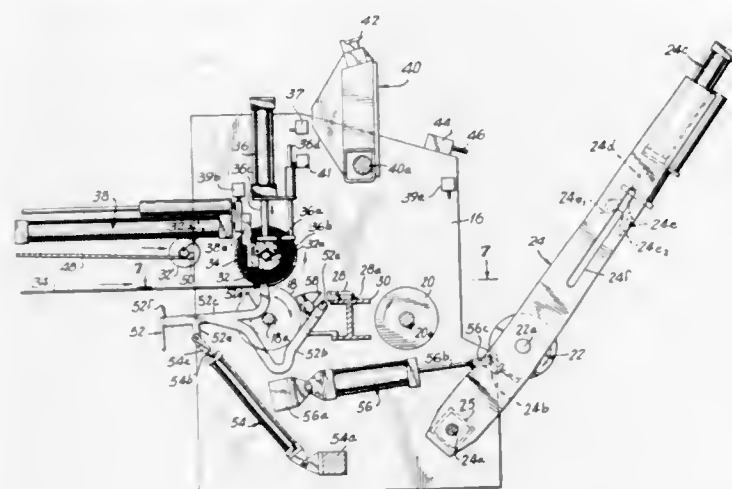
Nicholas L. Morizzo, Cornwall, N.Y., assignor to Silk City Textile Machinery Co., Paterson, N.J.

Filed May 26, 1971, Ser. No. 147,064

Int. Cl. B65h 19/20

U.S. Cl. 242—56 R

28 Claims



A system for controlling the sequential loading, build-up, severing and unloading of sheet material rolls is disclosed. The apparatus of the invention continuously receives sheet material, which is wound up on an initially blank core held between pressure cylinders and a drive roller. After a predetermined diameter of material has been built up on the core, it is transferred to a forward position where it is held between a pair of pivotable arms while material build-up continues. Following the transfer, the arms incline forward to prepare for unloading, and a new blank core slides into a ready position to subsequently receive a free end of the material. The material is precisely severed by an overhead blade carriage which rotates downward to shear the material between movable and stationary blade members. The forward free end of the material is wound up on the full core, which is now unloaded; the rear free end, now the leading edge of the continuously generated sheet material, is forced over and around the blank core, to which it adheres as a new build-up cycle commences.

3,721,397

**AUTOMATIC REEL MOUNTING DEVICE FOR A CONTINUOUS WINDING MACHINE**

Hiroshi Hori and Shoji Kosuge, Yokohama, Toshio Matsunaga, Yokosuka, and Elshichi Someya, Yokohama, Japan, assignors to Japan Steel Works Ltd., Tokyo, Japan

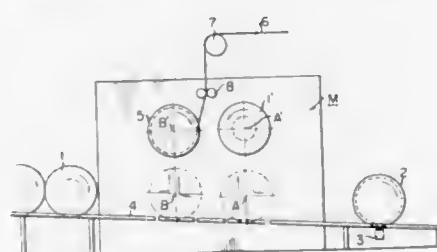
Filed Nov. 16, 1970, Ser. No. 89,944

Claims priority, application Japan, Nov. 25, 1969, 44/94,523

Int. Cl. B65h 17/02

U.S. Cl. 242—67.1 R

4 Claims



Empty reels rested on the inclined rails are automatically rolled down one by one upon receipt of a starting signal. In the course of such rolling the reel is stopped to rest on a reel-lift, which raises the reel to the position where it is held between drive and driven discs of a continuous winding machine to be rotated for taking up wire on it, while a fully taken up reel held between another set of

discs of the machine is lowered by another reel-lift from the winding position of the machine onto the inclined rails and hence rolled down to a reel stacking area near the end of the rails.

3,721,398

**DEVICE FOR REWINDING THE PAPER TAPE USED FOR WRITING IN CALCULATING MACHINES**

Bruno Azzalin, Ivrea, and Francesco Bettini, Vicenza, both of Italy, assignors to Ing. C. Olivetti &amp; C., S.p.A., Italy

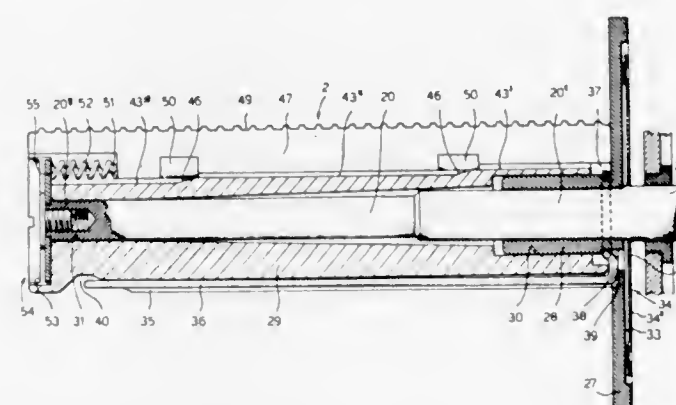
Filed April 17, 1970, Ser. No. 29,419

Claims priority, application Italy, April 23, 1969, 51546 A/69

Int. Cl. B65h 17/02

U.S. Cl. 242—67.3

9 Claims



A device for winding up in a roll the print-out paper issuing from a calculating machine comprising a rotatable take-up roller having a cantilevered take-up spool. The spool includes an axially aligned slider mounted in a groove in the spool which engages the inside of the core of the tape being collected. The floor of the groove is inwardly inclined and the slider is movable laterally in the groove and radially inwardly along the inclined floor, whereby upon such movement the slider disengages from the tape and allows the tape to be removed from the spool.

3,721,399

**BACKLASH-PROOF FISHING REEL**

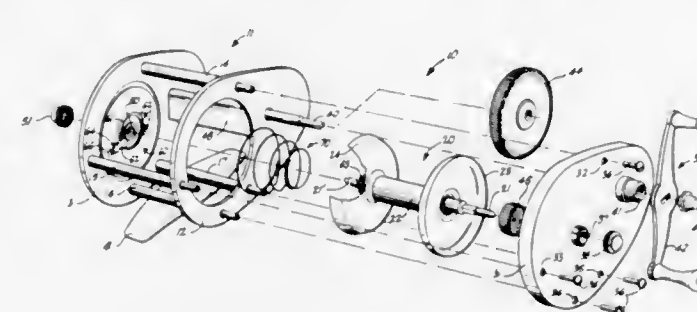
Walter Mroz, 8841 Winston Rd., Anaheim, Calif.

Filed Jan. 19, 1971, Ser. No. 107,620

Int. Cl. A01k 89/02

U.S. Cl. 242—84.51 R

4 Claims



In a fishing reel of the type comprising a housing having spaced, parallel front and back plates, and a spool having a shaft connected between first and second spaced, parallel end plates, the spool being supported for rotation within the housing, the improvement wherein a spring, consisting of a plurality of coils of wire, each successive coil having a smaller diameter than the preceding coil, is positioned between the back plate of the housing and the adjacent end plate of the spool, the spring applying a force to the spool to prevent unlimited rotation thereof.

3,721,400

**MAGNETIC CORE ASSEMBLIES**

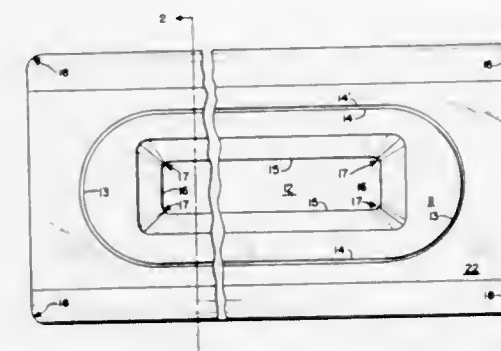
Harold M. Weissman, Lexington, Mass., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed July 21, 1967, Ser. No. 655,124

Int. Cl. B65h 75/12

U.S. Cl. 242—118

4 Claims



A magnetic core assembly and a method for its manufacture for use in a magnetometer. The core assembly is constructed from a two-piece bobbin. A method is provided for leaving spaces between the ferromagnetic winding and the bobbin to compensate for differences in the thermal coefficient of expansion of the bobbin and the ferromagnetic winding.

3,721,401

**FILM TAKE-UP WITH RATCHET**

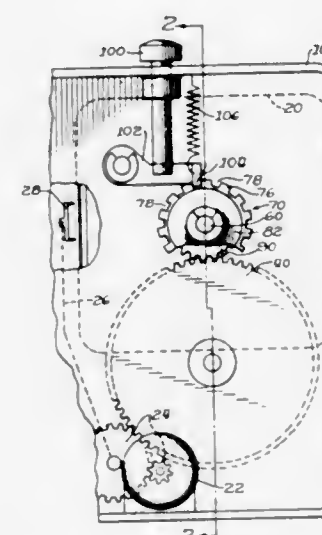
Henry J. Koeber, Deerfield, Ill., assignor to Bell &amp; Howell Company, Chicago, Ill.

Filed Aug. 6, 1970, Ser. No. 61,572

Int. Cl. B11b 15/32; G03b 1/04

U.S. Cl. 242—207

9 Claims



A unidirectional take-up drive mechanism of a camera of the type which accepts a film-loaded cartridge is provided with a dual path selective operable transmission whereby the take-up can be driven at a rate corresponding to film transport and at a rate slower than film transport. The dual transmission path connects the take-up with the mechanism drive to enable selection by a control of the ratio of the take-up drive to film transport rate or to slow down the rotation of the take-up so that it does not take up film as fast as the film is fed from the cartridge supply, thereby creating an excess of loosely wound film in the cartridge. The excess film may be rewound onto the

supply, which film may be intentionally exposed a second time.

3,721,402

**MISSILE ROLL CONTROL MECHANISM**

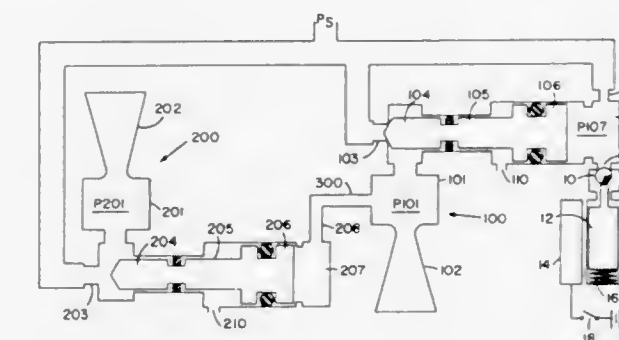
Thomas M. Holland, Orlando, Fla., assignor to The United States of America as represented by the Secretary of the Army

Filed June 25, 1971, Ser. No. 156,627

Int. Cl. F41g 7/00; G05d 11/00

U.S. Cl. 244—3.22

4 Claims



A mechanism for controlling the roll of a missile in flight by selective operation of a pair of missile thrusters. Each thruster has a valve to control the flow of gas thereto. The operation of one of the valves is controlled by a pilot valve and operation of the other valve is controlled by pressure feedback from operation of the first thruster.

3,721,403

**ROTOGYRO**

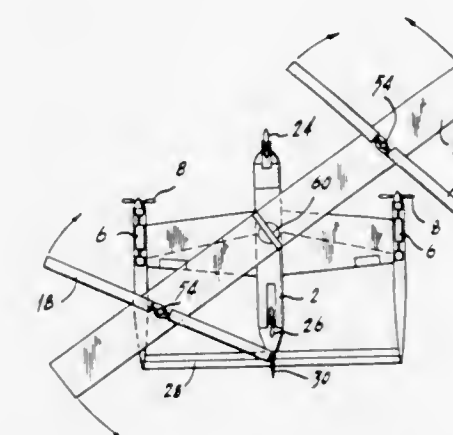
R. Flanagan Gray, RD No. 1, Washington Crossing, Pa.; John Caswell, 125 South Chancellor Street, Newtown, Pa., and William G. Muller, 131 N. Delaware Avenue, Yardley, Pa.

Filed Oct. 8, 1970, Ser. No. 79,247

Int. Cl. B64c 27/22

U.S. Cl. 244—7 A

11 Claims



An improved type of aircraft is provided with a rotatable wing having autogyro blades mounted near the ends thereof while having a stationary wing and propeller for horizontal flight. The rotatable wing also serves as an airfoil during horizontal flight but is operable with its autogyro blades during take off and landing to provide greatly increased lift for a given horsepower. The power plant used for driving the rotatable wing and propeller is variably coupled thereto in a manner to attain the most efficient utilization of power under all conditions of flight.



3,721,404

**HELICOPTER FLOATING STABILATOR CONTROL SYSTEM**

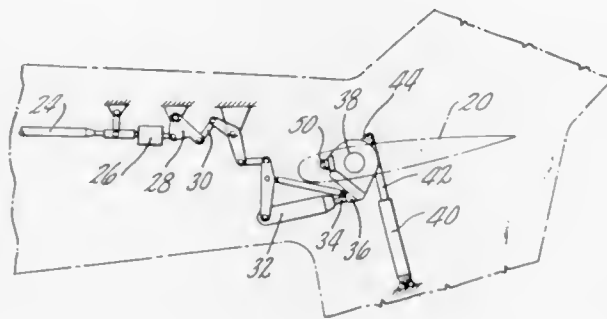
Aristide A. Albert, Stratford, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Nov. 10, 1971, Ser. No. 197,253

Int. Cl. B64c 27/04

U.S. Cl. 244—17.19

8 Claims



Control system for a free floating stabilator for a helicopter having a control coupling to the longitudinal cyclic control linkage with provision for freeing the stabilator from controlled movement during flight operation such as hover so that the stabilator can assume a position providing minimum vertical drag.

3,721,405

**AZIMUTHAL PROPULSION-CONTROL SYSTEM**

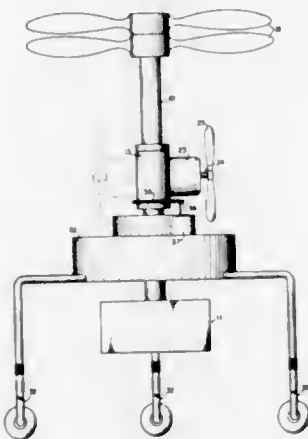
Janko Jackson, 200 Panorama Drive, Oxon Hill, Md.

Filed May 13, 1970, Ser. No. 36,831

Int. Cl. B64c 27/82

U.S. Cl. 244—17.21

2 Claims



This invention is directed to a variable lateral-attitude propulsion system principally for heavier-than-air craft such as powered autogyro vehicles, and for lighter-than-air craft as well as for ground effects lifting means. This propulsion system provides horizontal movement to the vehicle as well as azimuthal control and directional movement along the horizontal, all without the use of a conventional rudder.

3,721,406

**AIRCRAFT WING AIRFLOW CONTROL SYSTEM**

Clifford F. Hurlbert, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 14, 1970, Ser. No. 97,632

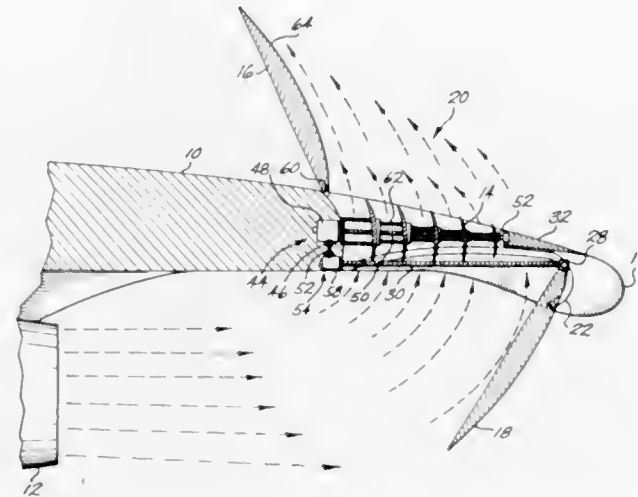
Int. Cl. B64c 9/18

U.S. Cl. 244—42 D

10 Claims

A system for controlling flow through a passageway located in the aft 30 percent chord region of an aircraft wing airfoil to

change the aerodynamic flow pattern during ground roll conditions, and thereby spoil lift, generate a downward acting force to increase the effective aircraft weight on the wheels, increase drag, and create thrust reversal by redirection of engine exhaust gases. The preferred embodiments involve unique flap means which may be actuated into position to in-



tercept flow beneath the wing and turn the flow upwardly through the passageway. Disclosed flap members include a modified Fowler flap with provision for increased rotation forwardly to an acute angle with respect to the wing, and several optional cascade vane flap devices. An improved spoiler member incorporating an aft facing convex surface is also presented.

3,721,407

**AIRCRAFT CANOPY SEPARATION SYSTEM**

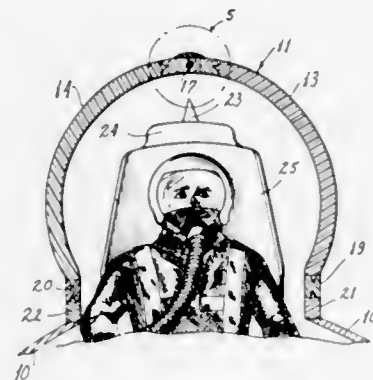
James A. Clarke, Plainview, N.Y., assignor to Fairchild Industries, Inc., Montgomery County, Md.

Filed Feb. 12, 1970, Ser. No. 10,861

Int. Cl. B64c 1/14

U.S. Cl. 244—121

10 Claims



An aircraft canopy separation system including a frangible member that can comprise tempered glass or a glass ceramic that is connected to the aircraft canopy at a location that will permit the opening or removal of the canopy after the frangible member has disintegrated as a result of being struck by a sharp instrument. The frangible member comprises a rod that is located within a hinge that is attached to the canopy. A sharp-pointed instrument is also provided for striking the frangible member that may be located on an aircraft ejection seat at a point where it will strike the frangible member as the ejection seat is being ejected from the cockpit of the aircraft.

3,721,408

**VARIABLE MODE SLING FOR HELICOPTER RECOVERY SYSTEMS**

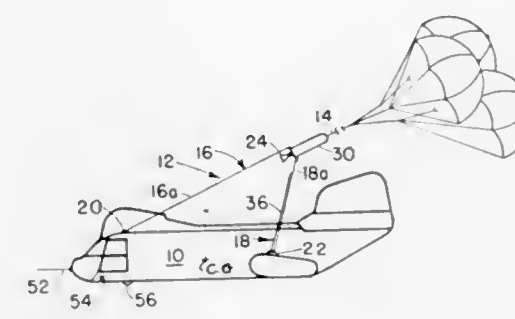
Gene R. Drew, El Centro, Calif., and Bobby C. Layman, Dahlgren, Va., assignors to The United States of America as represented by the Secretary of the Navy

Filed Nov. 19, 1971, Ser. No. 200,387

Int. Cl. B64d 17/38

U.S. Cl. 244—139

7 Claims



A sling design for recovery of airborne loads, such as helicopters disabled in flight, having a variably geometry automatically programmed so that if recovery is necessary when the aircraft is disabled at high speed the sling geometry is selected to reduce the trim angle and avoid excessive pitching, and when the helicopter speed is sufficiently retarded the sling geometry is changed to a low speed configuration. In a final mode, as soon as the recovered helicopter makes contact with the ground the entire sling apparatus is automatically jet-tisoned.

3,721,409

**CONTROLLED MULTI-STAGE DECREASING DRAG PARACHUTE**

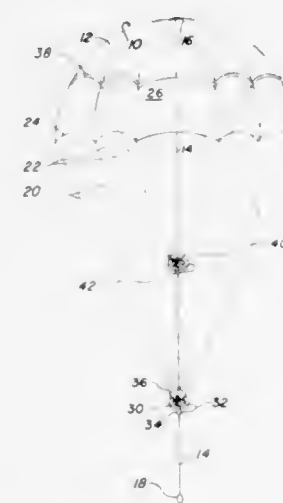
Jon T. Matsuo, and Lawrence E. Neipling, both of El Centro, Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed June 25, 1971, Ser. No. 156,750

Int. Cl. B64d 17/08

U.S. Cl. 244—152

8 Claims



A controlled multi-stage decreasing drag parachute wherein the cloth portion of the canopy is provided with a centerline connecting the apex thereof to the load and one or more sets of suspension lines being connected at their upper ends to respective spaced points about the periphery and their lower ends slidably restrained around the centerline, the restraining means being releasable upon the application of a predetermined force to reduce the parachute drag area.

3,721,410

**ROTATING SURVEILLANCE VEHICLE**

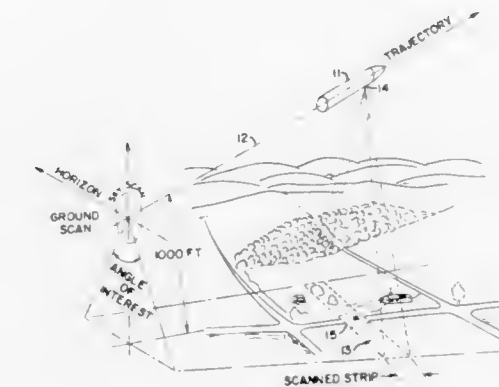
William B. Anspacher, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Aug. 29, 1962, Ser. No. 220,948

Int. Cl. F41g 7/00; F42b 13/30; F41g 9/00

U.S. Cl. 244—3.14

1 Claim



1. A reconnaissance system capable of scanning an inaccessible target area and relaying the information to an observation point where it is displayed for visual observation comprising an infrared transducer means for converting detected infrared radiations into electrical signals proportional to the detected infrared radiations, transmitting means connected to said transducer means for transmitting electrical signals, rotating projectile means rotating at a predetermined rate enclosing said transmitting means and having said transducer means fixedly attached to the outer periphery of the projectile for scanning in a helical path the target area in a fixed rotating relationship with the projectile, at a rate equal to the rotating rate of said projectile receiving means for receiving and demodulating said electrical signals, and visual display means connected to said receiving means for converting electrical signals into a visual representation of the target area.

**ERRATUM**

For Class 244—3.11 see:  
Patent No. 3,721,420

3,721,411

**RESILIENT MOTOR MOUNTING ARRANGEMENT**

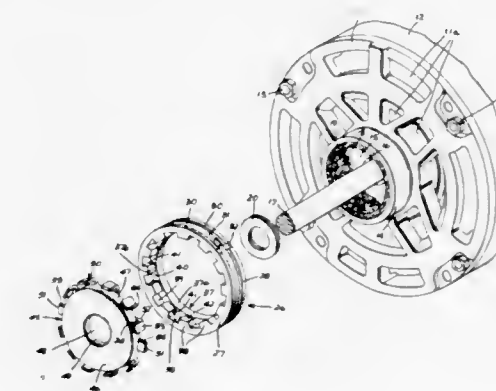
Eldon R. Cunningham, Fort Wayne, Ind., assignor to General Electric Company

Filed March 30, 1971, Ser. No. 129,444

Int. Cl. F16m 13/00

U.S. Cl. 248—26

3 Claims



A resilient mounting arrangement for a rotating machine, such as a motor, includes an annulus of resilient material having an inner region forming a bore with a number of recesses extending outwardly from the bore. A rigid member is pro-

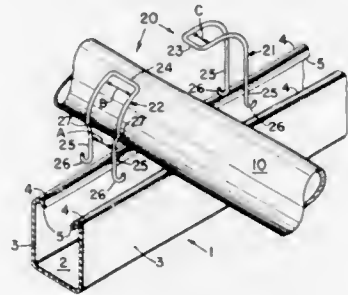


vided to be positioned within the bore and to be in engagement with the rotating machine. The rigid member includes a number of spaced apart tabs which are received in corresponding recesses and have opposed lateral surfaces for engaging the resilient material forming the recesses. At least some of the tabs are nonplanar to increase the effective length of their lateral surfaces within the recesses.

**3,721,412**  
**LOCKING WIRE CINCH STRAP**  
Harry L. Kindorf, 385 Fairmont Ave.,  
Oakland, Calif. 94611  
Filed Apr. 9, 1971, Ser. No. 132,774  
Int. Cl. F161 3/04

U.S. Cl. 248—73

8 Claims

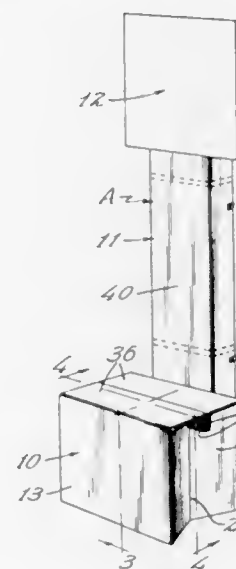


A pair of curved U-shaped wire members with hooks on their distal ends cooperate to form a wire strap that has its members secured to a cooperating support through their hooks and interengaged around a conduit contiguous to the support by threading the loop end of the male U-shaped member through the wider loop end of the female U-shaped member of the pair, thereafter tightening the lapped ends of the U-shaped members about the conduit by applying pressure between these ends and subsequently locking the members by bending the loop end of the male member away from the conduit so it wraps about the loop end of the female U-shaped member, thereby cinching the conduit to the support with the two piece wire strap.

**3,721,413**  
**DISPLAY STAND**  
William J. Robinson, Saint Paul, Minn., assignor to Reynolds Guyer Agency of Design, Ramsey County, Minn.  
Continuation of Ser. No. 761,934, Sept. 24, 1968, abandoned.  
This application Jan. 18, 1971, Ser. No. 143,590  
Int. Cl. A471 5/11

U.S. Cl. 248—174

3 Claims



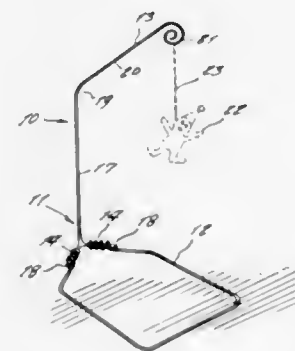
A display is provided which may be folded into a generally flat form and which will automatically fold into erected form

when means holding the display folded is released. The display includes a display body, a standard, and a display card. The display body is expandable and contractable. The standard is secured to extend upwardly from the display body, and is channel-shaped when erected. The display card is secured to the upper end of the standard. The standard is vertically elongated and is creased to provide an intermediate panel and two side panels. The standard is transversely foldable to enclose the display body in collapsed form. Resilient means are provided for expanding the display body and for folding the side panels in right angular relation to said intermediate panel when means holding the display collapsed and folded is released.

**3,721,414**  
**BABY TENDER**  
Reuben D. Yoder, Rte. 2, Box 118-A,  
Sullivan, Ill. 61951  
Filed Mar. 11, 1971, Ser. No. 123,263  
Int. Cl. F16m 11/00

U.S. Cl. 248—175

1 Claim

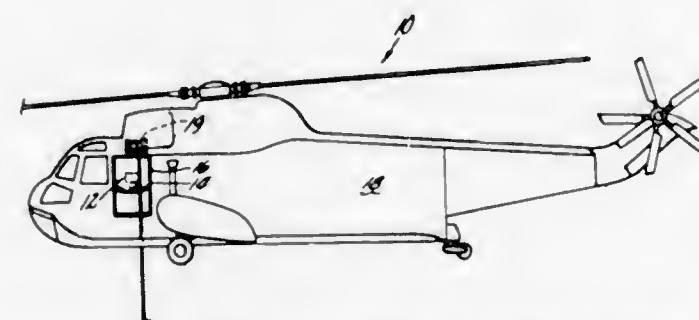


A depending toy for amusing an infant while lying on his back, the frame being made of wire material and including a flat base positioned below the infant, the base supporting a removable upright member which at its upper end includes a hook to which the toy can be attached.

**3,721,415**  
**UNIVERSALLY MOVABLE MOUNTING MECHANISM WITH LOCKING AND UNLOCKING PROVISIONS AND WHEREIN THE UNLOCKING PROVISIONS ARE OPERABLE IN ACCORDANCE WITH OPERATOR FEEL**  
John Steven Chapkovich, Jr., Milford, and David Ernest Lee, West Haven, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.  
Filed June 1, 1970, Ser. No. 42,422  
Int. Cl. F16m 13/00

U.S. Cl. 248—214

6 Claims



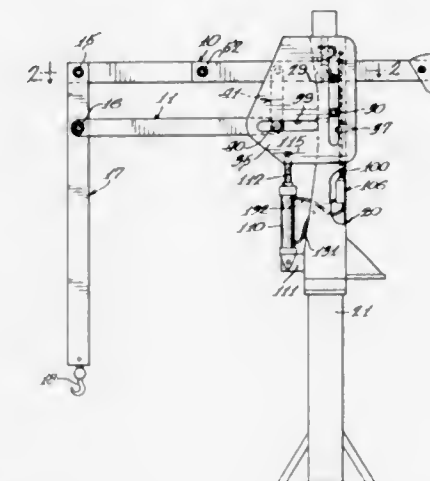
A universally movable mounting mechanism in which the mounting mechanism is connected to a fixed ball by spherically shaped friction cups which are spring biased toward one another to lock the mounting mechanism in fixed position on the ball and which can be selectively moved away from one another to either totally eliminate the friction between the friction cups and the ball to thereby free the mounting mechanism for universal motion in response to actuation by a

pilot operated handle or in which the friction between the friction cups and the fixed ball is selectively reduced so as to maintain a desired mount positioning force in accordance with operator feel as he moves the mounting mechanism through handle motion.

**3,721,416**  
**LOADING BALANCER**  
Noel G. Goudreau, Mendota, Ill., assignor to Conco Inc.  
Filed Dec. 4, 1970, Ser. No. 95,045  
Int. Cl. A47f 5/00

U.S. Cl. 248—325

13 Claims

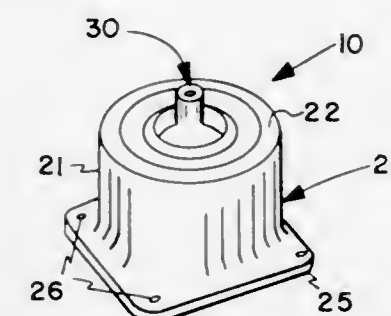


A loading balancer having a two-stage balancing control for the multi-arm balancing system wherein a first stage is sensitive to a force applied to a load on the load support arm to control a second stage control having sufficient power to adjust the position of the load and the balancer mechanism in the same direction as the applied force.

**3,721,417**  
**ELASTOMERIC COMBINATION SHOCK AND VIBRATION ISOLATOR**  
Dennis P. Skala, and Richard P. Thorn, both of Erie County, Pa., assignors to Lord Corporation, Erie, Pa.  
Filed April 9, 1971, Ser. No. 132,863  
Int. Cl. F161 15/00

U.S. Cl. 248—358 R

13 Claims



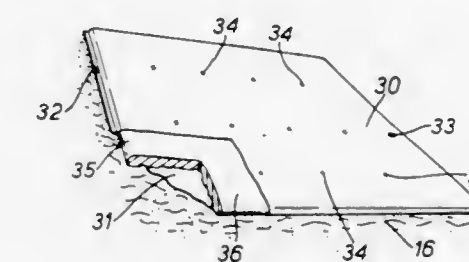
An elastomeric mounting capable of both shock and vibration isolation is provided. An elongate elastomeric tubular buckling column, preferably right cylindrical, has one end adapted to be connected to a supporting structure. Means is disposed axially of the buckling column capable of movement axially therewithin for connection to the supporting structure. An elastomeric member is secured between the buckling column and connection means mounting the connection means for resilient movement axially and radially of and within the buckling column with the connection means normally extending axially outwardly of or beyond the other end of the buckling column for normally supporting the supported

structure in axially spaced relation to the buckling column. The elastomeric member has a spring rate axially of the buckling column less than the initial axial spring rate of the buckling column.

**3,721,418**  
**NATURAL ICE RINK MOULD**  
Eric F. Vincent, 641 Geneva Park Drive, Burlington, Ontario, Canada  
Filed Feb. 25, 1970, Ser. No. 14,061  
Claims priority, application Canada, March 25, 1969, 46,709  
Int. Cl. B28b 7/34

U.S. Cl. 249—1

4 Claims

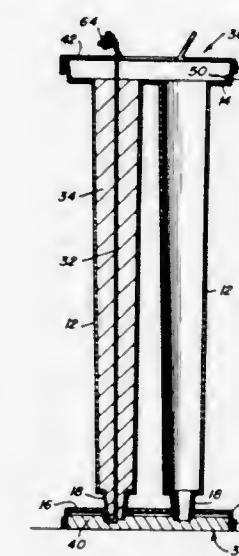


A "one-shot" mould for forming natural ice rinks is provided. It includes a pair of sheets of synthetic thermoplastic material, e.g. polyethylene, whose peripheral edges are sealed together. The bottom of the two sheets is water-tight and can conform to the shape of an irregular surface. The top has a water inlet aperture, and preferably also more holes to permit the escape of entrapped air as water fills the enclosure.

**3,721,419**  
**WICK HOLDING ATTACHMENT FOR CANDLE MOLDS**  
Donald B. Bollinger, R.R. No. 2, Bloomington, Ill.  
Filed March 13, 1970, Ser. No. 19,428  
Int. Cl. C11c 5/00

U.S. Cl. 249—93

2 Claims



An assemblage for use in conjunction with a candle mold of the type including a plurality of upstanding downwardly tapering mold tubes having their lower ends secured through a lower plate provided with peripheral downturned flanges and their upper ends secured through an upper plate. The attachment includes a fluid sealing resilient pad receivable within the confines of the downturned flanges carried by the lower plate of the mold and against which the lower ends of the mold tubes are end edge engaged for sealing the lower ends of the tubes against the flow of molten wax therefrom and for clamping the lower ends of wick strings projecting out of the lower ends of the mold tubes, the lower ends of the wick strings being clamped between the end edges of the mold



tubes and the resilient pad. The attachment further includes structure supported from the upper plate and removably positionable in registry with the centerlines of the tubes and above the latter and to which the upper ends of wick strings extending through the tube may be secured so as to ensure that the upper and lower ends of the wick strings will be suitably anchored as well as centered relative to the tubes.

3,721,420

## SIGHTING MEANS FOR MISSILES

Brian Ford and Malcolm Clapp, Heston, England, assignors to British Aircraft Corporation (A.T.) Limited, Bristol, England

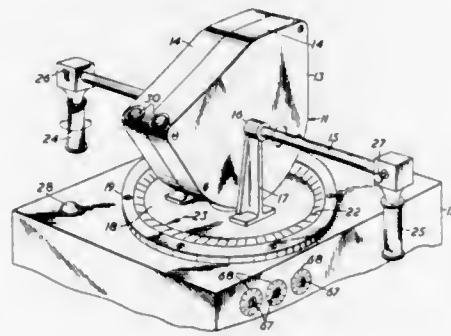
Filed Aug. 1, 1962, Ser. No. 214,468

Claims priority, application Great Britain, Aug. 1, 1961, 27,876/61

Int. Cl. F41g 11/00, 7/14, 9/00

U.S. Cl. 244—3.11

4 Claims



1. A sighting device for use in combination with a computer for programming the flights of a battery of guided missiles with a plurality of launching points displaced from the position of the sighting device, comprising in combination a visual sight mounted on a vertical sighting shaft journaled in a fixed support for rotation of the sight about the vertical shaft axis, a plurality of ganged rotary electrical potentiometers respectively associated with the launching points and mounted one above the other coaxially with the vertical sighting shaft, having rotors of all the potentiometers connected to the sighting shaft for rotation therewith in unison, and having the bodies of the potentiometers mounted one above another coaxially with the sighting shaft to rotate therewith by frictional engagement of the rotors with the bodies, independently actuatable frictional clamping means to clamp the body of each potentiometer selectively in a pre-set angular position while its rotor rotates with the sighting shaft, said independently actuatable frictional clamping means comprising a releasable friction brake acting between each potentiometer body and the fixed support, the brake when engaged holding the body in a given angular position against rotation relative to the support, and a separate and independently-operable motor means associated with each friction brake and operable to engage and release said brake, a separate friction brake in permanent but slippable engagement between each potentiometer body and the said sighting shaft to augment the frictional torque transmissible between the shaft and the body of the potentiometer via its rotor, each said separate friction brake causing its associated potentiometer body to rotate with the shaft when the associated releasable friction brake is disengaged, a stop member on each potentiometer body and a co-operating abutment on the fixed support arranged to be engaged by the stop member to limit the angular rotation of each potentiometer at an extreme datum position, and electric circuit means connected with said potentiometers to supply programming

information to the computer for effecting automatic parallax corrections for respective launching points responsive to the position of the sighting shaft.

3,721,421

## THERMAL ACTUATORS

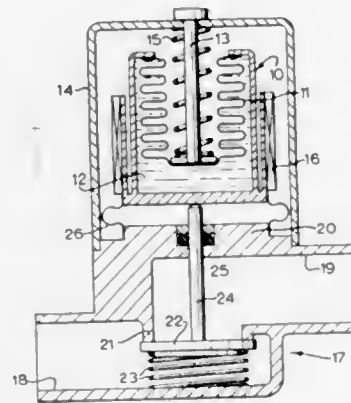
Thomas Charles Cliff, Sunbury-on-Thames, England, assignor to United Gas Industries Limited, London, England

Filed Nov. 12, 1970, Ser. No. 88,706

Int. Cl. F03g 7/06; F16k 31/04

U.S. Cl. 251—11

9 Claims



A thermal actuator comprising a sealed container of thermally-conducting material containing a liquid and including a thermally responsive element and an actuating member; a heater in heat exchange relationship with the container; and a heat sink.

3,721,422

## PNEUMATIC PRESSURE POSITION ADJUSTING CONTROLLER

Horst Bader, 7000 Stuttgart 80, Germany, assignor to J. C. Eckardt AG, Stuttgart, Germany

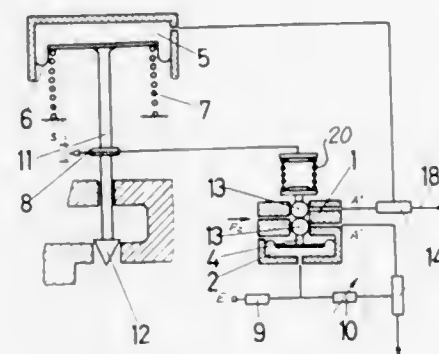
Filed March 25, 1971, Ser. No. 128,042

Claims priority, application Germany, March 25, 1970, P 20 14 308.2

Int. Cl. F16k 31/145; G05d 16/00; F15b 5/00

U.S. Cl. 251—28

1 Claim



A pneumatic pressure position adjusting controller which includes a differential pressure amplifier providing first and second output pressures from a comparison unit responsive to pressures provided by the first and second pressure chambers, the second output pressure from the differential pressure amplifier being compared to an input pressure by a pressure distributor which applies a control pressure to the second pressure chamber, the first output pressure of the differential pressure amplifier being applied to the first pressure chamber.

3,721,423

## CHILDPROOF ACTUATOR FOR AEROSOL VALVE

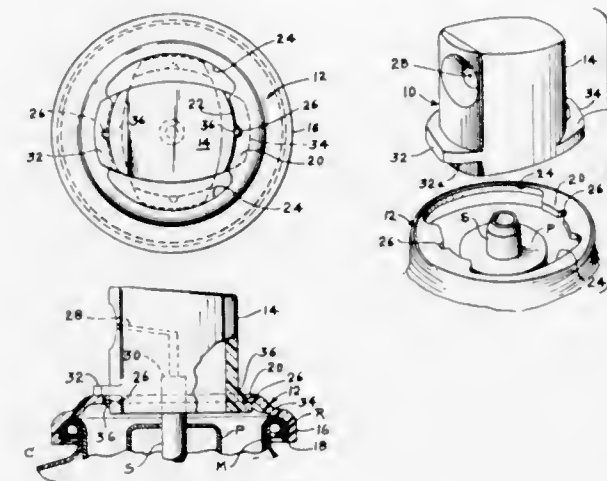
Joseph John Shay, Manchester, N.H., assignor to Scovill Manufacturing Company, Waterbury, Conn.

Filed Dec. 17, 1971, Ser. No. 209,125

Int. Cl. F16k 35/04

U.S. Cl. 251—100

4 Claims



Childproof actuator for aerosol valve has collar easily rotatable on the annular structure of the can surrounding the valve stem. An actuator button is forceably turnable within collar. In a preferred version, two hands and mature strength are necessary to turn the button and collar relatively. To prepare valve for operation, button must have its blocking surfaces non-aligned with interfering portions of top wall of collar.

3,721,424

## CRANK OPERATED TANK BOTTOM PLUG VALVE

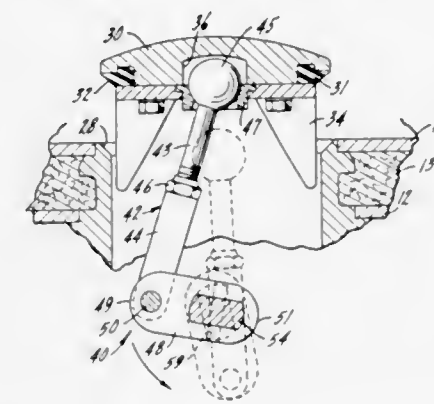
Richard J. Vanderlinden, Glenwood, Ill., assignor to Union Tank Car Company, Chicago, Ill.

Filed June 14, 1971, Ser. No. 152,933

Int. Cl. F16k 1/00, 31/52

U.S. Cl. 251—144

8 Claims



The outlet valve of the present invention includes a valve body member having a first and second opening associated therewith. A plug type valve member is positioned above the first opening and is vertically moveable between a closed position, wherein the valve member is in contact with a valve seat associated with the first opening, and an opened position, wherein the valve member is spaced from the valve seat. An operator means is provided for moving the valve member between its opened and closed positions which includes a unique linkage arrangement having a first position wherein the valve member is in its open position and a third position wherein the valve member is in its closed position and the linkage members are in a locked position.

One of the linkage members includes means to adjust the length thereof to compensate for manufacturing tolerances and component wear. Guide wings are provided to ensure that

the valve member accurately contacts the valve seat when the valve member is in its closed position. The operator means is secured to the valve member by a ball and socket arrangement to permit the valve member to rotate about a substantially vertical axis so as to prevent uneven wear of the valve seat and valve gasket.

3,721,425

## SEAT ASSEMBLY FOR BALL VALVES

Gerald Cedric Jones, and Herbert Bentley Leek, both of Hereford, England, assignors to Saunders Valve Company Limited, Cwmbran, Monmouthshire, England

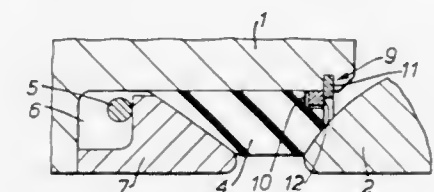
Filed Aug. 16, 1971, Ser. No. 171,897

Claims priority, application Great Britain, Aug. 26, 1970, 41,011/70

Int. Cl. F16k 11/04

U.S. Cl. 251—174

3 Claims



A ball valve of the type having a ball with a flow passage therethrough rotatably mounted in a bore in a valve casing in engagement with seating rings of extrudable material disposed on opposite sides of the ball and urged into sealing contact with the ball by spring-urged backing rings having conical surfaces confronting similar conical surfaces of the seating rings wherein at least one of the seating rings is limited in its movement in a direction towards the ball by abutment with a circlip received partially in a recess in the wall of the bore and projecting into said bore.

3,721,426

## CABLE WINCH

Carl Kaufer, D5291 Kupferberg, near Wipperfurth, Germany

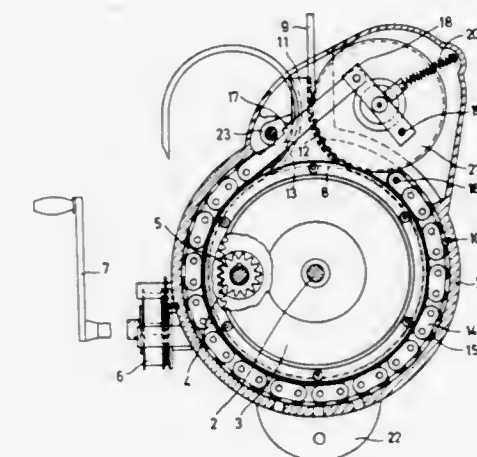
Filed July 8, 1971, Ser. No. 160,621

Claims priority, application Germany, Aug. 25, 1970, P 20 41 993.6

Int. Cl. B66d 1/00

U.S. Cl. 254—167

6 Claims



A cable winch, particularly for scaffolds, comprising a housing and a driving pulley mounted for rotation within the housing and around which pulley the cable passes. A flexible contact-pressure element attached by one end to the housing presses the cable against the driving pulley over a contact angle of more than 180°. The contact-pressure element is responsive to the load applied to the cable whereby an increase in load increases the contact-pressure applied by the element to the cable, and vice-versa.



tubes and the resilient pad. The attachment further includes structure supported from the upper plate and removably positionable in registry with the centerlines of the tubes and above the latter and to which the upper ends of wick strings extending through the tube may be secured so as to ensure that the upper and lower ends of the wick strings will be suitably anchored as well as centered relative to the tubes.

3,721,420

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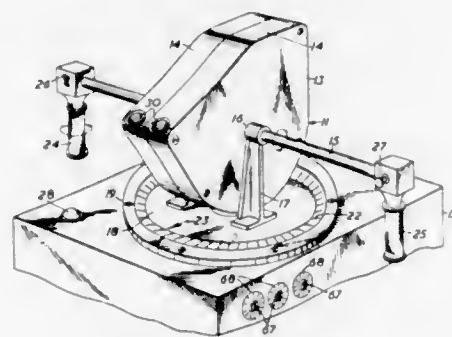
Filed Aug. 1, 1962, Ser. No. 214,468

Claims priority, application Great Britain, Aug. 1, 1961, 27,876/61

Int. Cl. F41g 11/00, 7/14, 9/00

U.S. Cl. 244—3.11

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3,721,421

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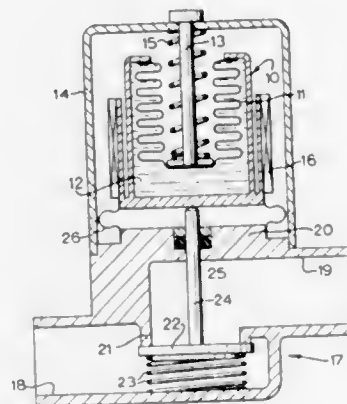
Thomas Charles Cliff, Sunbury-on-Thames, England, assignor to United Gas Industries Limited, London, England

Filed Nov. 12, 1970, Ser. No. 88,706

Int. Cl. F03g 7/06; F16k 31/04

U.S. Cl. 251—11

9 Claims



A thermal actuator comprising a sealed container of thermally-conducting material containing a liquid and including a thermally responsive element and an actuating member; a heater in heat exchange relationship with the container; and a heat sink.

3,721,422

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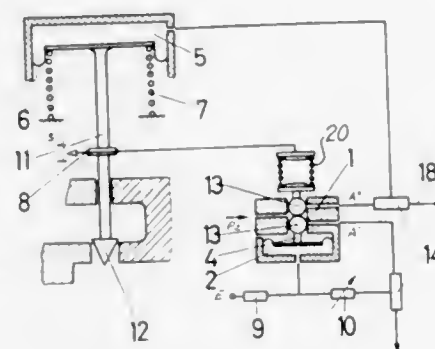
Filed March 25, 1971, Ser. No. 128,042

Claims priority, application Germany, March 25, 1970, P 20 14 308.2

Int. Cl. F16k 31/145; G05d 16/00; F15b 5/00

U.S. Cl. 251—28

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3,721,423

## CHILDPROOF ACTUATOR FOR AEROSOL VALVE

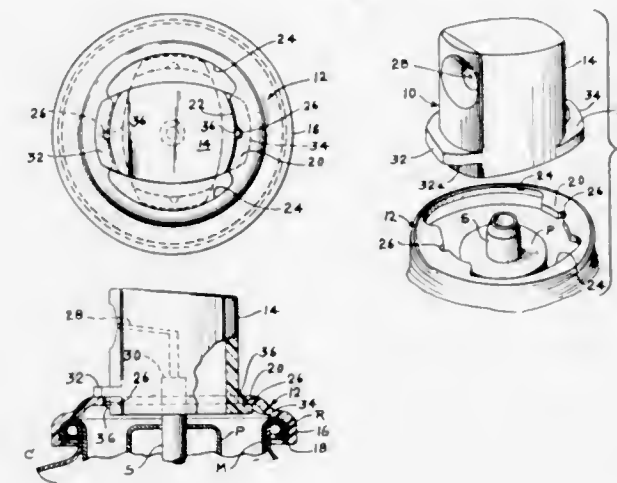
Joseph John Shay, Manchester, N.H., assignor to Scovill Manufacturing Company, Waterbury, Conn.

Filed Dec. 17, 1971, Ser. No. 209,125

Int. Cl. F16k 35/04

U.S. Cl. 251—100

4 Claims



Childproof actuator for aerosol valve has collar easily rotatable on the annular structure of the can surrounding the valve stem. An actuator button is forceably turnable within the collar. In a preferred version, two hands and mature strength are necessary to turn the button and collar relatively. To prepare valve for operation, button must have its blocking surfaces non-aligned with interfering portions of top wall of collar.

3,721,424

## CRANK OPERATED TANK BOTTOM PLUG VALVE

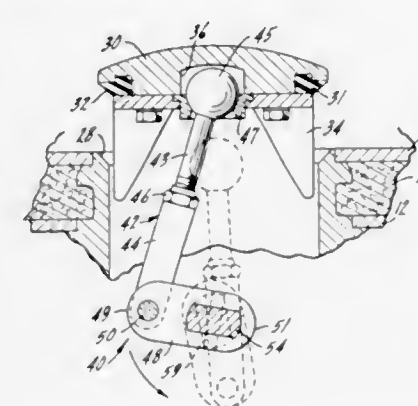
Richard J. Vanderlinden, Glenwood, Ill., assignor to Union Tank Car Company, Chicago, Ill.

Filed June 14, 1971, Ser. No. 152,933

Int. Cl. F16k 1/00, 31/52

U.S. Cl. 251—144

8 Claims



The outlet valve of the present invention includes a valve body member having a first and second opening associated therewith. A plug type valve member is positioned above the first opening and is vertically moveable between a closed position, wherein the valve member is in contact with a valve seat associated with the first opening, and an opened position, wherein the valve member is spaced from the valve seat. An operator means is provided for moving the valve member between its opened and closed positions which includes a unique linkage arrangement having a first position wherein the valve member is in its open position and a third position wherein the valve member is in its closed position and the linkage members are in a locked position.

One of the linkage members includes means to adjust the length thereof to compensate for manufacturing tolerances and component wear. Guide wings are provided to ensure that

the valve member accurately contacts the valve seat when the valve member is in its closed position. The operator means is secured to the valve member by a ball and socket arrangement to permit the valve member to rotate about a substantially vertical axis so as to prevent uneven wear of the valve seat and valve gasket.

3,721,425

## SEAT ASSEMBLY FOR BALL VALVES

Gerald Cedric Jones, and Herbert Bentley Leek, both of Hereford, England, assignors to Saunders Valve Company Limited, Cwmbran, Monmouthshire, England

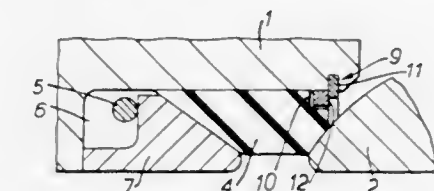
Filed Aug. 16, 1971, Ser. No. 171,897

Claims priority, application Great Britain, Aug. 26, 1970, 41,011/70

Int. Cl. F16k 11/04

U.S. Cl. 251—174

3 Claims



A ball valve of the type having a ball with a flow passage therethrough rotatably mounted in a bore in a valve casing in engagement with seating rings of extrudable material disposed on opposite sides of the ball and urged into sealing contact with the ball by spring-urged backing rings having conical surfaces confronting similar conical surfaces of the seating rings wherein at least one of the seating rings is limited in its movement in a direction towards the ball by abutment with a circlip received partially in a recess in the wall of the bore and projecting into said bore.

3,721,426

## CABLE WINCH

Carl Kaufer, D5291 Kupferberg, near Wipperfurth, Germany

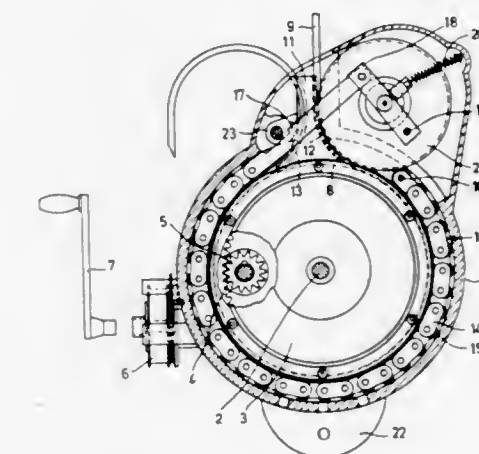
Filed July 8, 1971, Ser. No. 160,621

Claims priority, application Germany, Aug. 25, 1970, P 20 41 993.6

Int. Cl. B66d 1/00

U.S. Cl. 254—167

6 Claims



A cable winch, particularly for scaffolds, comprising a housing and a driving pulley mounted for rotation within the housing and around which pulley the cable passes. A flexible contact-pressure element attached by one end to the housing presses the cable against the driving pulley over a contact angle of more than 180°. The contact-pressure element is responsive to the load applied to the cable whereby an increase in load increases the contact-pressure applied by the element to the cable, and vice-versa.



3,721,427

**EXTRUDER FOR WORKING ON THERMOPLASTIC MATERIALS AND NON-CROSS-LINKED ELASTOMERIC MATERIALS**

Hartmut Upmeyer, Tecklenburg, Germany, assignor to Windmoller &amp; Holscher, Lengerich, Westphalia, Germany

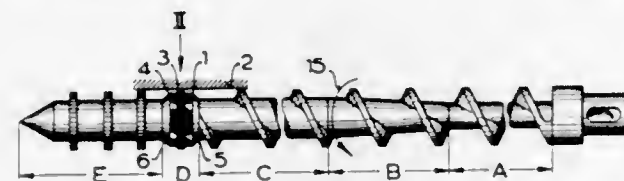
Filed Apr. 20, 1971, Ser. No. 135,604

Claims priority, application Germany, Apr. 22, 1970, P 20 19 522.6

Int. Cl. B01f 7/08

U.S. Cl. 259—191

8 Claims



Thermoplastics and elastomers are extrudable more rapidly from a screw extruder if the zones of the screw where the material is melted and mixed have interposed therebetween a shear zone provided with at least two spaced circumferential beads each of which defines a narrow flow gap with the cylinder in which the screw is rotatable, a further bead which is a sealing fit in the cylinder being provided between the gap-defining beads. A circumferentially extending flow passage is provided between the further bead and each gap-defining bead, the first flow passage (as viewed length-wise of the screw) communicating with the mixing zone through at least one discharge passage and the second flow passage communicating with the melting zone through at least one supply passage.

3,721,428

**CONSTANT NEGATIVE-PRESSURE CARBURETTORS**

Pierre Gele, Route de Lourdes 65, Odos Tarbes; Bernard Laprade, and Xavier Laprade, both of 64 Arudy, all of France

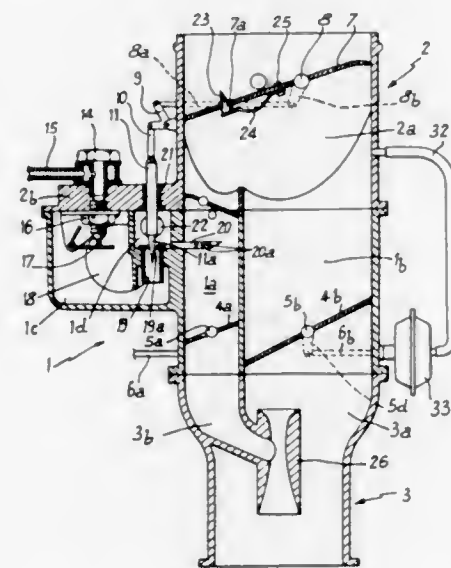
Filed Nov. 22, 1971, Ser. No. 199,247

Claims priority, application France, Nov. 20, 1970, 7041730

Int. Cl. F02m 11/02

U.S. Cl. 261—23 A

6 Claims



Constant negative-pressure carburetor to minimize exhaust pollution of internal combustion engines comprising a main conduit having a main valve and an auxiliary conduit having a main valve actuated from the exterior and an additional valve, the proportional fuel flowing between the two valves, an additional complementary valve being provided so as to cap the main conduit and the auxiliary conduit, the valve being connected to the fuel-proportioning needle.

3,721,429

**EXHAUST SYSTEM FOR FURNACE RETORT**

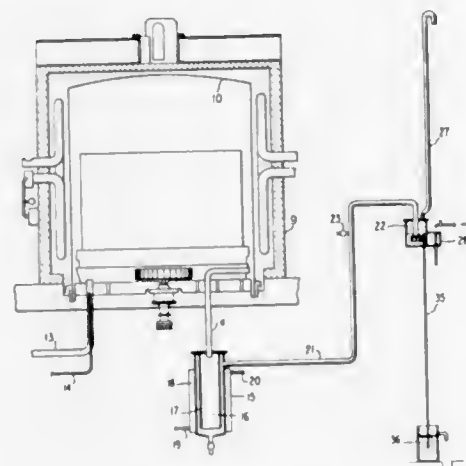
Harold K. Young and Herbert Wald, Baltimore, Md., assignors to Bethlehem Steel Corporation

Filed Oct. 30, 1967, Ser. No. 678,829

Int. Cl. B01d 47/02

U.S. Cl. 261—123

4 Claims



A system for scrubbing waste gas from a metal treating retort and regulating the pressure in the retort includes apparatus for withdrawing the gas from the retort and cooling the gas. The cooled gas is transferred to a liquid sealing vessel containing a gas diffusing structure, gas exhaust tube, liquid discharge tube leading to a secondary seal or drain, and a communicating liquid leveling vessel. The leveling vessel is equipped with an adjustable drain and an inlet for introducing fresh liquid.

3,721,430

**FUEL PREPARATION SYSTEM FOR CARBURETOR**

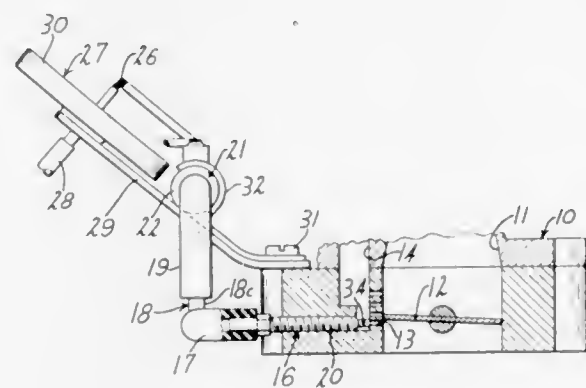
Porter Landrum, Birmingham, Ala., assignor to Porter Landrum; Edward Y. McMorris; Porter Landrum, Jr., all of Birmingham, Ala.; Mrs. William Null, Salina, Kans.; Mrs. Marshall Timberlake and Mrs. Willie Mae McMorris, both of Birmingham, Ala., part interest to each

Filed Oct. 26, 1970, Ser. No. 83,718

Int. Cl. F02m 23/14

U.S. Cl. 261—142

9 Claims



Air supply conduit of predetermined dimensions communicates with each idle port of carburetor with means heating air which passes through conduit to a predetermined temperature. Lateral openings in air supply conduit adjacent idle port receives fuel from fuel supply passageway to supply heated mixture of fuel and air to idle port.

3,721,431

**APPARATUS FOR ANNEALING EXTREMELY FINE WIRES WITH STEAM**

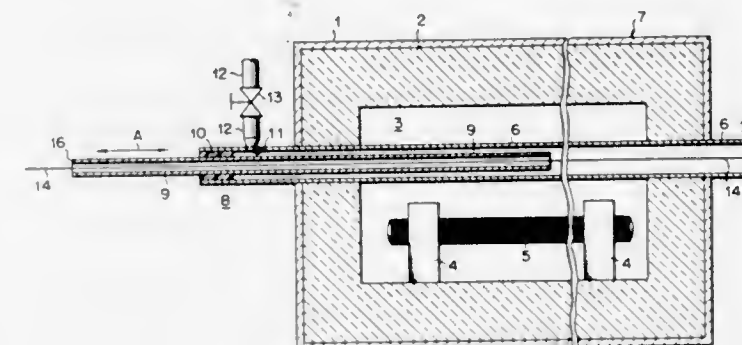
Tokutaro Nishida, Ashikaga-shi, Tochigi-ken, Japan, assignor to Nippon Seisen Cable, Ltd., Tokyo, Japan

Filed Sept. 22, 1971, Ser. No. 182,617

Int. Cl. C21d 9/56

U.S. Cl. 266—3 R

1 Claim



An apparatus for annealing extremely fine wires with steam wherein there is provided an annealing tube penetrating the heating chamber of an annealing furnace provided with an electrical heater; into the outlet side of the annealing tube is slidably inserted a cooling tube so as to have the length of its outward extending portion varied; the interspace between both tubes is sealed at said outlet end; the interspace between both tubes and the cooling tube are filled with steam introduced from the outlet side of the annealing tube; under this condition, an extremely fine copper wire is made to travel from the inlet of the annealing tube to the outlet of the cooling tube, thereby providing a very fine bright annealed wire with a clean surface which is sufficiently soft to afford good workability.

3,721,432

**APPARATUS FOR RECEPTION AND DISCHARGE OF LIQUID METAL**

Erwin Buhner, Schaffhausen, Switzerland, and Anton Alt, Metzhausen, Germany, assignors to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland

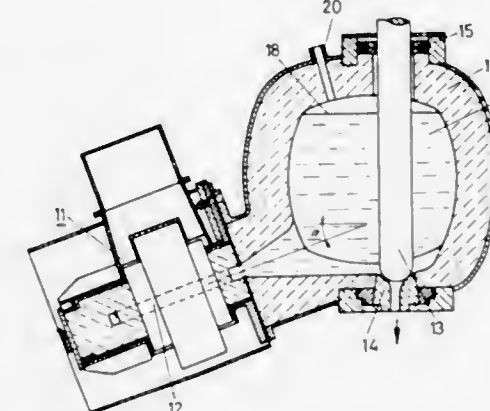
Filed Nov. 16, 1970, Ser. No. 89,778

Claims priority, application Switzerland, Nov. 18, 1969, 17131/69

Int. Cl. C21b 7/14

U.S. Cl. 266—38

13 Claims



A heating means and a feed container having a feed cavity therein are both coupled to a container which is adapted to receive and discharge liquid metal. The reception and discharge container includes a valve operated opening for

selectively pouring out the liquid metal. A feed channel is provided between the lower end portions of the feed cavity and the container cavity such that liquid metal poured into the feed cavity flows into the container cavity through the feed channel. The feed container has a wall the height of which is equal to the maximum level of liquid metal in the container cavity such that when the liquid metal reaches the desired maximum level, the excess liquid metal is poured off over the wall.

3,721,433

**DEFORMABLE SHOCK-ABSORBING GUARD**

Leonard H. Sobel, Rockaway Park, N.Y., assignor to Collision Devices, Inc.

Continuation-in-part of application Ser. No. 792,737,

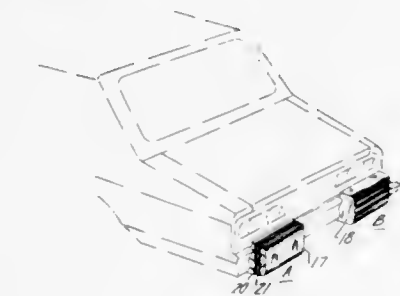
Jan. 21, 1969. This application Nov. 21, 1969, Ser.

No. 878,657

Int. Cl. F60r 9/00; F16d 63/00; F16f 13/00

U.S. Cl. 267—140

7 Claims



Energy-absorbing crash or collision devices for vehicles or the like to reduce shock of collision by utilizing energy-absorbing components which are flexible and compressible and/or rigid, frangible and crushable, which components may be used singly or in combination, to effect gradual deceleration upon collision. A resilient or rigid but yieldable housing encases the energy-absorbing components.

3,721,434

**INFANT CHANGING BOARD**

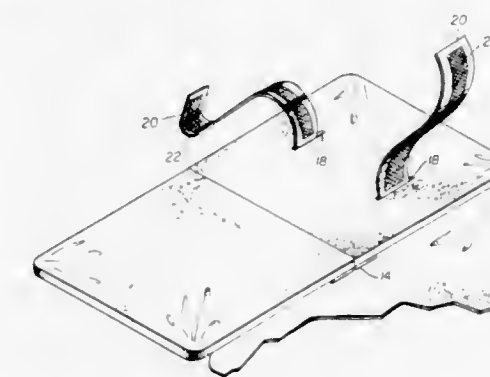
Lillian S. Spies, Los Angeles, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Jan. 8, 1971, Ser. No. 105,496

Int. Cl. A61g 13/00

U.S. Cl. 269—328

2 Claims



A convenient, foldable device on which an infant may be placed and held while changing the diaper or clothing of the infant which is relatively compact, small and easily carried when folded and which in the operative position provides a surface large enough to place the infant and means for securing the infant onto such surface during the changing and also includes at least one plastic or soil-proof integrally attached apron on which the soiled diaper may be placed during the process of changing and on which other accessories normally used in changing the diaper may be placed.



3,721,435

## APPARATUS FOR COLLATING SHEETS

Jan H. P. A. Zanders, Venlo, Netherlands, assignor to Océ-van der Grinten N.V., Venlo, Netherlands

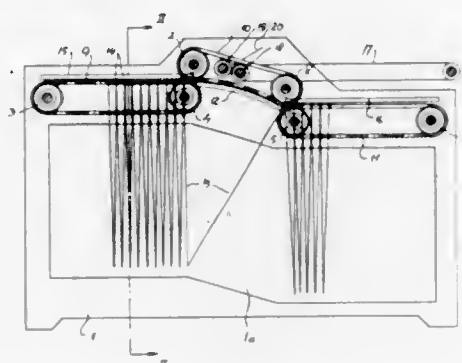
Filed Aug. 16, 1971, Ser. No. 171,954

Claims priority, application Netherlands, Aug. 14, 1970, 7012051

Int. Cl. B65h 29/58

U.S. Cl. 271—64

12 Claims



A simple apparatus for collating sheets such as copies being fed from an office copying machine makes use of a series of compartments having the form of suspended file folders mutually joined together, as provided for example by a cardboard band folded in zig-tag form. The folders are suspended by elements secured to upper edges or upper folds thereof and supported on a conveyor extending from either side of the sheet feed path, and are opened successively across that path by means which transfer the suspending elements successively to a conveyor supporting them at the other side of the feed path. The support conveyors and the transfer means may each comprise a flight of a system of notched belts. One of the support conveyors is disposed at a lower level than the other so that a certain panel of each opened folder will lie oblique to the other panel thereof, causing all sheets in the folder to rest against the oblique panel.

3,721,436

## EXERCISER AND WALKER APPARATUS

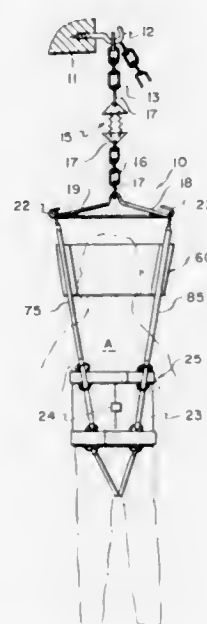
Curtis Wallace Barthel, Jr., 114 South Humphrey, Oak Park, Ill.

Filed Dec. 4, 1970, Ser. No. 95,234

Int. Cl. A61h 3/00

U.S. Cl. 272—70

14 Claims



An exerciser and walker apparatus including a guide track for guiding the movement of the apparatus, a movable dolly assembly carried by the guide track to provide movement

along the guide track, a mounting bar supported by and spaced from the movable dolly assembly, a harness assembly mounted on the mounting bar for accommodating the torso of the user disposed therein, and tension means interposed between the movable dolly assembly and the mounting bar for counterbalancing the weight of the user carried by the harness assembly.

3,721,437

## WALKING TRAINER

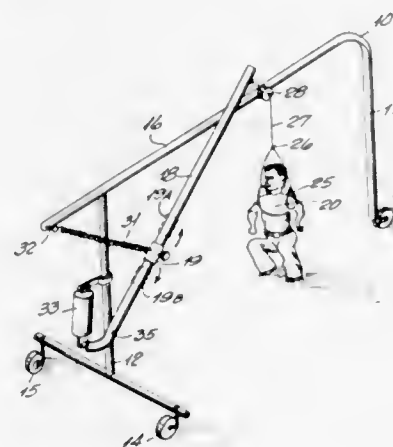
Krunoslav Skaricic, Toronto, Ontario, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed March 3, 1972, Ser. No. 231,629

Int. Cl. A61h 3/00; A47d 13/04

U.S. Cl. 272—70.3

4 Claims



A training device for a young child, accident victim or such other person who requires assistance in learning to walk. The device, mounted on wheels, suspends the trainee in a harness, with a shock absorber and tension spring acting to counterbalance the suspended harness. The shock absorber action is adjustable to vary the rate of falling so as to correspond to the weight of the trainee, and his degree of attained walking skill.

3,721,438

## SWIMMING EXERCISERS

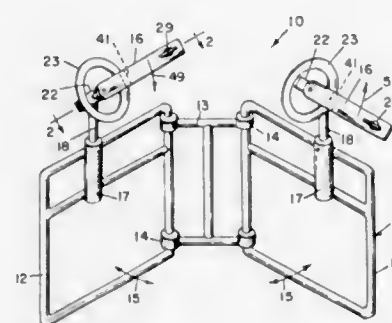
Kasimir C. Kusmer, Aurora, Ill., assignor of a fractional part interest to Paul L. Romack, Aurora, Ill.

Filed July 21, 1970, Ser. No. 56,876

Int. Cl. A63b 69/10

U.S. Cl. 272—71

10 Claims



A pair of rotatable arms, equipped with universally mounted hand grips, are mounted on transversely spaced side members of a frame so that a user standing between the frame side members and facing toward the front of the frame may revolve the arms in a manner simulating arm movement when swimming. The arms revolve in oblique planes which are forwardly convergent and upwardly divergent relative to the frame, the forward convergence and upward divergence of such planes being

3,721,441

## BALL BATTING PADDLE

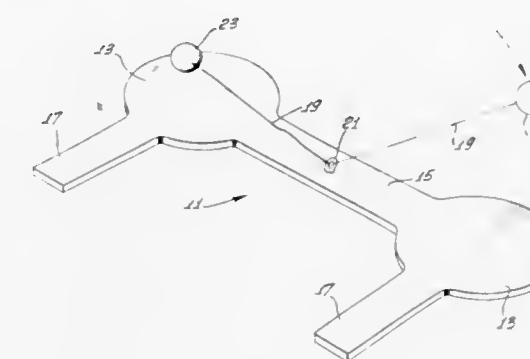
Charles W. Wininger, 1691 N. Garden Drive, Apt. 13, San Bernardino, Calif.

Filed Aug. 2, 1971, Ser. No. 168,059

Int. Cl. A63b 67/10

U.S. Cl. 273—97

7 Claims



Apparatus including a ball attached by a cord midway between a pair of interconnected ball batting surfaces is disclosed. Handles are provided on the apparatus for maneuvering it so that the ball may be batted from one ball batting surface to the other.

3,721,442

## TARGET AND MAGNETICALLY RELEASABLE PROJECTILE

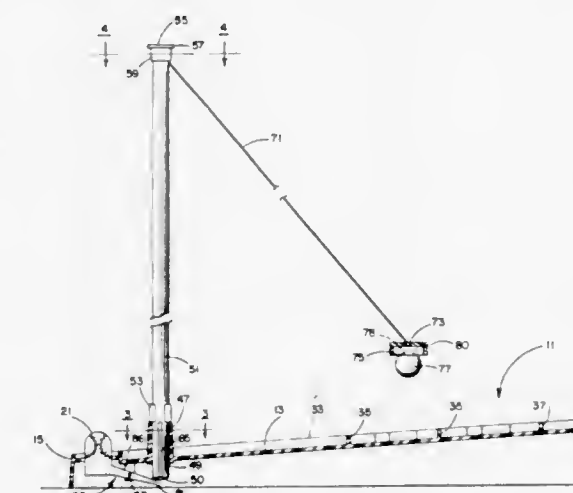
Adolph E. Goldfarb, 4614 Monarca Drive, Tarzana, Calif. 91356, and George C. Strader, San Dimas, Calif.; said Strader assignor to said Goldfarb

Filed Feb. 24, 1971, Ser. No. 118,389

Int. Cl. A63b 71/02

U.S. Cl. 273—101

3 Claims



A game comprising a playing board having receptacles thereon. A playing element is releasably magnetically held suspended above the board by a vertical rod and tether which allows the playing element to be freely swung over the playing surface. The vertical rod may be rapidly moved upwardly for selectively releasing the playing element as it swings over the board so as to drop it onto the playing surface in an attempt to place it in one of the receptacles.

3,721,443

## BOARD GAME APPARATUS

Ruby Napoli, 702 Hamilton Ave., Duquesne, Pa.

Filed July 15, 1971, Ser. No. 162,775

Int. Cl. A63m 3/00

U.S. Cl. 273—135 AA

1 Claim

An activity game for being played both by children and adults, the device consisting of a circular game board upon the

angularly adjustable. The transverse spacing of the frame side members is also adjustable, as is the distance of the hand grips from the axes of rotation of the arms. Free revolving movement of the arms is restricted by frictional brake means.

3,721,439

## JAW EXERCISING DEVICE

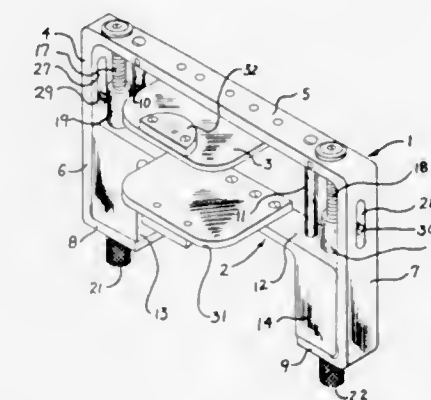
Hans Rudolph, Kansas City, Mo., and Richard C. Ye, Shawnee Mission, Kans., assignors to Hans Rudolph, Inc., Kansas City, Mo.

Filed Nov. 27, 1970, Ser. No. 93,246

Int. Cl. A63b 21/00

U.S. Cl. 272—83 R

5 Claims



A jaw exercising device for use in exercising facial muscles has a gripping member mounted on and extending from a frame and a gripping member extending from a member movable within the frame in response to movement of a jaw of a person biting the gripping members, the movement being controlled by a resilient member urging the movable member away from an abutment portion of the frame member.

3,721,440

## MANUAL DEXTERITY GAME

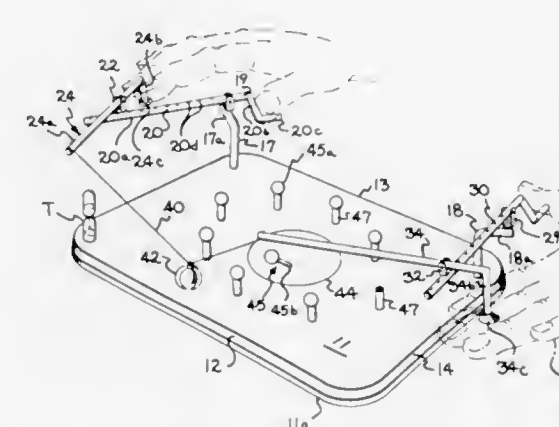
Howard M. Burns, 344 E. Hardin St., Findlay, Ohio

Filed Oct. 18, 1971, Ser. No. 189,815

Int. Cl. A61b 5/16

U.S. Cl. 273—1 R

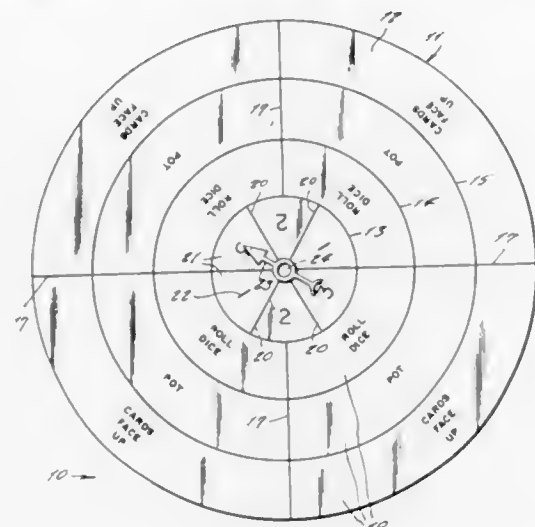
6 Claims



A manual dexterity game device in which randomly positioned target pieces are picked up by a pickup member slidably suspended on a slack length of string connecting the end extremities of a pair of wands which are intricately, pivotably and rotatably mounted on a game board in position for controlled manipulation of the player. In a preferred embodiment, the player controls two interdependent pivotably rotating wands mounted one on the other with each hand and, by so doing, moves the game pickup member on the string into pickup contact with the randomly positioned game piece and locates it in a preselected target receptacle.

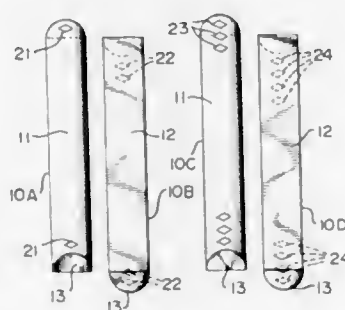


center of which there may be placed a spinner, the game board being divided into spaces each of which are identified by text, a pair of dice and four sets of numbered cards, each



set being of a different color. The cards are of a size to be placed on one of said board spaces, and the cards of each set are numbered from 2 through 12.

**3,721,444**  
**CHANCE SCORING APPARATUS AND METHOD OF USING SAME**  
Stavros Baltas, 279 Fullerton Ave., and Peter C Patsalos, 69 Valley Ave., both of Newburgh, N.Y.  
Filed May 25, 1970, Ser. No. 40,122  
Int. Cl. A63f 9/04  
U.S. Cl. 273—138 R  
8 Claims

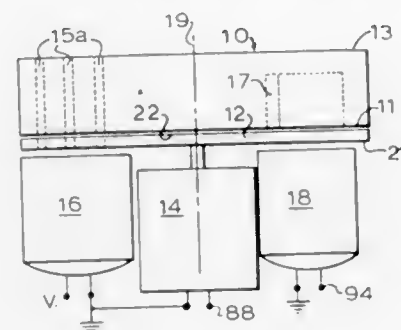


An amusement or game device and game adapted to be played therewith which can be played on any reasonably flat surface by any number of persons. The device comprises a bar adapted to be held in the hand and composed of a plurality of separate longitudinal sections, each section preferably bearing scoring indicia or markings on at least one surface thereof. In a preferred embodiment, the device is a cylindrical bar composed of a pair of mated half-cylinders. In a preferred method of play, a pair of mated half-cylinders is held in one hand and preferably similar pair of mated half-cylinders is held in the other hand. The two cylinders are struck together and dropped on a flat surface and the score marks visible on such surfaces of the fallen half-cylinders as are in a pre-agreed scoring position are counted.

**3,721,445**  
**GAME OF CHANCE APPARATUS**  
Joseph T. McNaney, 8548 Boulder Drive, La Mesa, Calif. 92041  
Filed Mar. 8, 1972, Ser. No. 232,818  
Int. Cl. A63f 5/04  
U.S. Cl. 273—142 A  
5 Claims

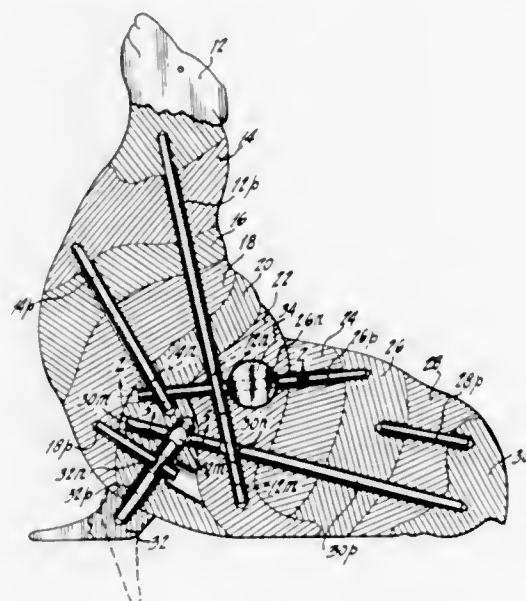
The game of chance apparatus displays a player's score in the form of arrays of spots similar to the showing of the upturned face of a die. In the present invention an

array of spots indicating a player's score is made visible by emissions of light therefrom and the number of spots in a given array will be a function of an angular relationship between a pair of light masks. Associated therewith



is an array of light responsive elements which detect and transmit a score to a data handling unit wherein a display of spots is compared with a player's predicted display and whether or not such prediction has materialized.

**3,721,446**  
**INTERLOCKING PUZZLE**  
Charles J. Young, 78 Stockton St., Princeton, N.J. 08540  
Filed Mar. 24, 1971, Ser. No. 127,554  
Int. Cl. A63f 9/12  
U.S. Cl. 273—157 R  
3 Claims

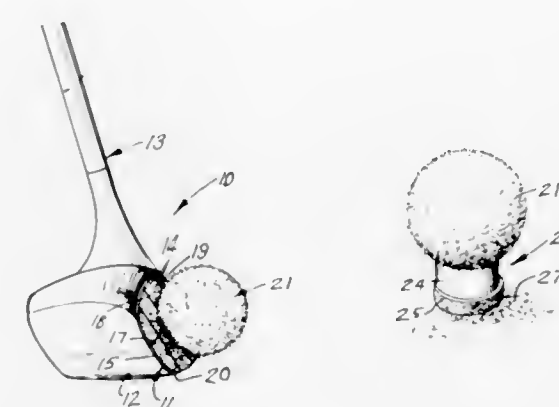


A puzzle formed of a plurality of interfitting pieces which are interlocked with pins. The pins are attached to corresponding puzzle pieces. Each of the pins have portions formed with a notch. The pins extend through holes in one or more of the adjacent interfitting pieces and locking means, such as other pins extend through the notches to lock together the pins and the pieces to which they are attached. The puzzle can be unlocked by the removal of the pieces in a definite sequence.

**3,721,447**  
**GOLF PRACTICE DEVICE**  
Charles R. Louderback, 8112 W. Morgan Avenue, Milwaukee, Wis.  
Filed April 12, 1971, Ser. No. 133,290  
Int. Cl. A63b 69/36, 57/00  
U.S. Cl. 273—186 E  
1 Claim

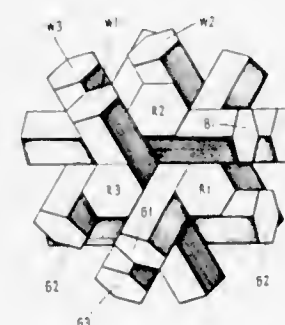
A device for practicing golf, including a contact engaging textile material surfaced pad adhered to the face of the head of a golf club, the strip or pad being marked with red lines so that the user can tell whether he hit the ball correctly. The

device also includes a contact engaging textile material covered ball which will cling to the adhesive pad on the head of the golf club when contact is made with the covered ball. Also included is a tee formed from a strip having a contact en-



gaging textile material on one surface thereof. When the strip is formed into a cylinder and a longitudinal edge of the strip is folded back up itself, the contact engaging textile material defines an end of a cylindrical tee and the tee is adapted to grip the ball or cling to a rug or carpet.

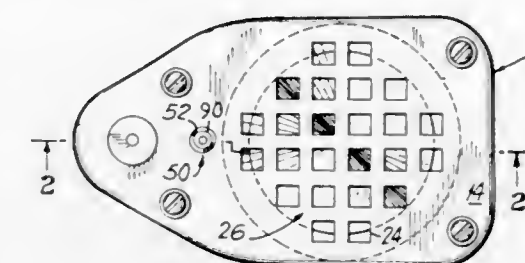
**3,721,448**  
**ASSEMBLY PUZZLE**  
Stewart T. Coffin, Old Sudbury Road, R.F.D. 1, Lincoln, Mass.  
Filed May 4, 1970, Ser. No. 34,103  
Int. Cl. A63f 9/12  
U.S. Cl. 273—160  
19 Claims



A symmetrical assembly puzzle including a total of 12 elongate pieces having notches formed therein to receive other pieces of the puzzle. Nine of the pieces have two notches and the remaining three pieces have an extra, third notch. The pieces may be arranged in three solutions. In each solution, the assembled puzzle includes four groups of pieces, each group including three of the pieces. The pieces in any assembled group are oriented in parallel to each other but at an angle to the pieces in each of the other assembled groups.

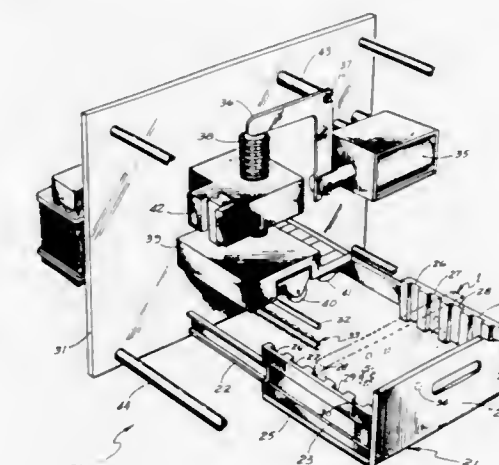
**3,721,449**  
**SOUND REPRODUCING DEVICE**  
Richard Sirinek, Cambria Heights, N.Y., assignor to Brumberger Co., Inc., New York, N.Y.  
Filed April 28, 1970, Ser. No. 32,575  
Int. Cl. G11b 25/04; A63l 3/28  
U.S. Cl. 274—1 A  
8 Claims

A turntable mounted for rotation about a perpendicular axis and for reciprocation along the axis and carrying a record, a pickup arm pivotally mounted for movement parallel the record surface having a stylus engaging the record; a sound reproducing speaker engaged with the pickup opposite the record; biasing means for urging the stylus towards the rim of



therewith; motor means for rotating the record and switch means for stopping the turntable when the stylus and pickup arm approach the center of the record.

**3,721,450**  
**MULTIPLE CASSETTE TAPE DUPLICATOR WITH SINGLE TAPE TRANSPORT**  
Joseph C. Medeiros, Chicago, Ill., assignor to Gardberg-Medeiros Co., d/b/a Magnetics Research Co., Chicago, Ill.  
Filed April 10, 1970, Ser. No. 27,227  
Int. Cl. G11b 5/86  
U.S. Cl. 274—3  
6 Claims



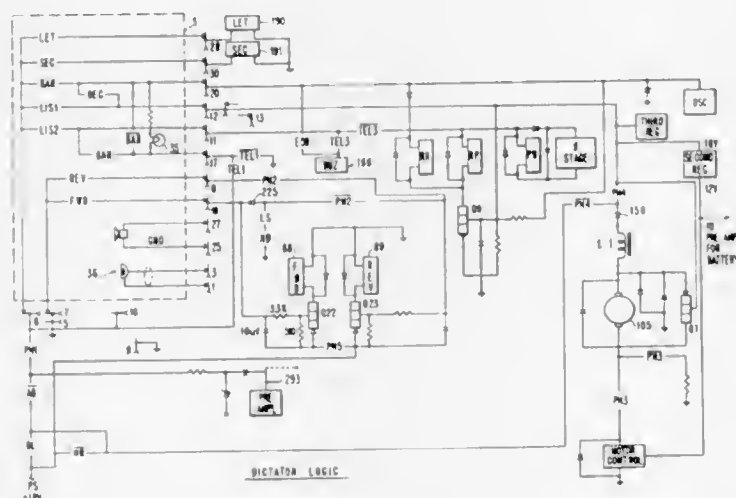
A cassette tape duplicator wherein a plurality of tape cassettes for duplication and a master cassette are loaded in the form of a single deck into a slidable drawer wherein the cassettes are positioned for engagement with a single tape transport when the drawer is closed for recording and in which synchronization of speed and torque between master cassette and duplicates is maintained by a common capstan shaft. Any variations of speed affect both master and duplicates so that the recordings follow faithfully the magnetic impressions of the master. The need for sophisticated synchronization techniques to abate distortion between tapes are thus effectively reduced resulting in a less expensive device.

**3,721,451**  
**RECORD MEDIUM DRIVING ARRANGEMENTS FOR SOUND TRANSDUCING APPARATUS**  
Chester M. Fackler, Austin, Tex., and David H. Lenderking, Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.  
Division of Ser. No. 767,760, Oct. 15, 1968, Pat. No. 3,599,065. This application Dec. 23, 1970, Ser. No. 100,999  
Int. Cl. G11b 5/00  
U.S. Cl. 274—4 J  
7 Claims

The invention concerns record medium driving arrangements for sound transducing apparatus, particularly set in a dictating and transcribing environment, and including mode control means for establishing a high-speed unregulated drive of the medium or regulated drive of the medium, as required during various operations. The apparatus incorporates a driv-



ing motor and circuits that insure a fast start-up time for the motor whether the conventional AC power source or battery is used. During start-up time, the full potential is applied across the motor and at a predetermined speed, the regulating circuit becomes effective to maintain the speed. This action applies during recording and playback operations. During other operations, such as a record medium loading and phasing operation and an automatic erase operation, the full power supply is applied across the motor as long as necessary to complete the operation and the regulating circuit remains in-



effective. During an automatic recall operation enabling a transcriber to listen to a few previous words of dictated material, connections are made to apply the available potential in an opposite manner across the motor to reverse its direction of rotation and the regulating circuit also remains ineffective. Provision is also made for establishing a relatively high and low speed of operation of the motor to achieve 10 and 20 minute recording times, respectively. The rapid starting-up time permits a direct coupling of the motor to the driving mechanisms and elimination of an intermediate clutch assembly.

3,721,452

## GASKET ASSEMBLY FOR PIPE FLANGES

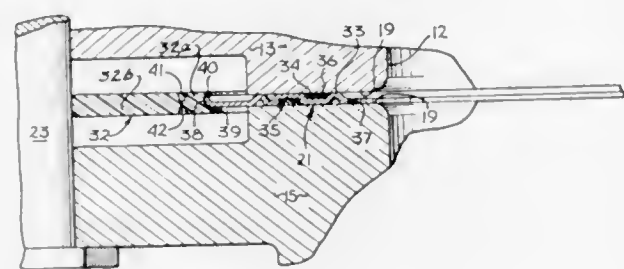
Bobby E. Black, Chatsworth, Calif., assignor to PSI Products, Inc., Burbank, Calif.

Filed Feb. 22, 1971, Ser. No. 117,376

Int. Cl. F16j 9/04; F16l 55/00, 21/02

U.S. Cl. 277-9

8 Claims



This invention is a gasket assembly for positioning and sealing between pipe flanges and includes an annular seal portion together with a positioning member affixed to the periphery of the sealing portion. The positioning member includes a plurality of concentric separable annuli, the outer periphery of each annulus being adapted to mate with and be positioned by a bolt circle of a different diameter appropriate to pressure at which the gasket assembly and flanges are to be employed.

3,721,453

## SEAL CONSTRUCTION

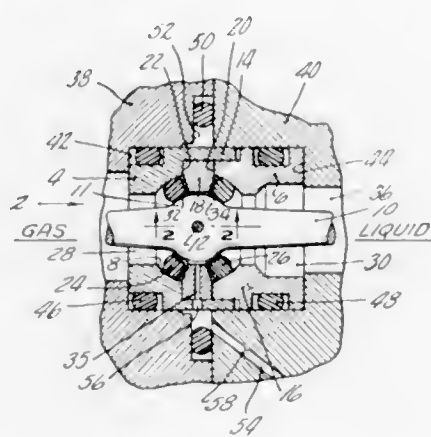
Paul F. Likavec, Detroit, Mich., assignor to Chandler Evans Inc., West Hartford, Conn.

Filed Feb. 1, 1971, Ser. No. 111,458

Int. Cl. F16j 15/38

U.S. Cl. 277-30

7 Claims



A seal construction for a pivotally mounted lever includes a housing which surrounds a rounded intermediate portion of the lever. A pair of spaced seals are interposed between the housing and the rounded portion.

3,721,454

## TOBOGGAN TOW-BAR

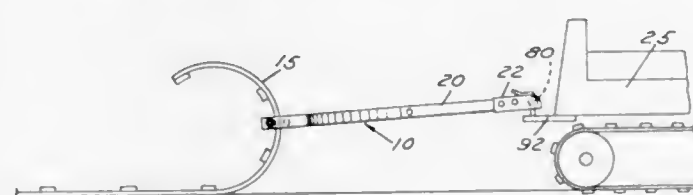
Charles E. Anderson, 31355 Rosenbusch Dr., Warren, Mich.

Filed Feb. 11, 1971, Ser. No. 114,609

Int. Cl. B62b 13/00

U.S. Cl. 280-24

7 Claims



A tow-bar for trailing a toboggan with pulling and braking characteristics behind a towing vehicle having parallel cross-members which engage the toboggan in confined condition at the back and front surfaces of the front curved portion of the toboggan and side members which engage the side edges of the front curved portion of the toboggan. The arrangement prevents sidewise pivotal movement while allowing up and down pivotal movement therebetween. A tongue extends from the cross and/or side members for mounting a hitch thereon for connection to a towing vehicle. While the tow-bar allows up and down hinging movement it constitutes an axial extension of the toboggan devoid of conventional mechanical attaching means and devoid of lateral pivotal movement at the tow-bar which substantially reduces fish-tailing and eliminates jack-knifing between the tow-bar and the toboggan and reduces jack-knifing between the toboggan and the towing vehicle.

3,721,455

## WHEEL STABILIZER

Grover Blanton, Deming, N. Mex., assignor to Steer Safe, Inc., Deming, N. Mex.

Filed Feb. 24, 1971, Ser. No. 118,338

Int. Cl. B60g 3/00

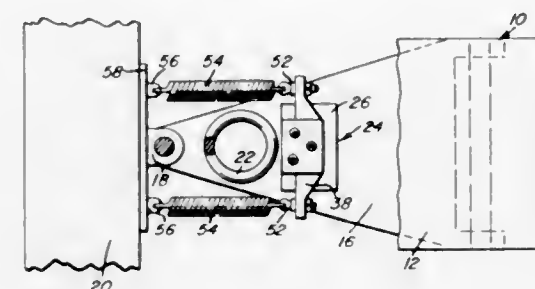
U.S. Cl. 280-94

10 Claims

A spring structure for connection between the oscillatable wheel support of a vehicle and a vehicle chassis relative to which the wheel support is oscillatable about an upstanding

axis. The spring structure is operable to yieldingly resist angular displacement of the wheel support structure from a first predetermined position in either direction and includes structure operable to yieldingly resist angular displacement of the

flows at a lesser rate back through the openings in the primary inflation tube and to the cushion to continue inflation thereof. The reed valve permits one-way flow only so that the increased pressure fluid flows at a lesser rate than the resultant fluid to the cushion.



3,721,457

## ROLL AND SWAY CONTROL ASSEMBLY

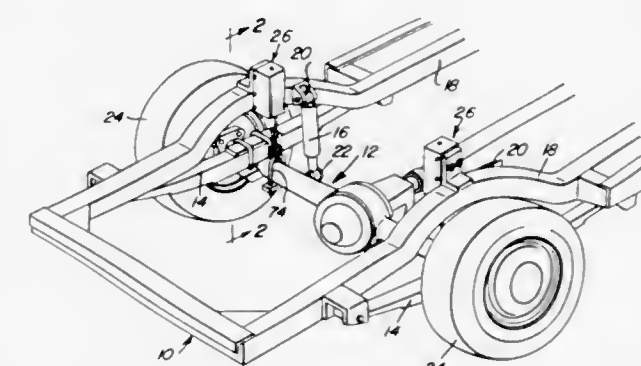
Richard A. Tracy, 2455 4th Street, Sparks, Nev., and Julian C. Garate, 815 N. Maddux Street, Reno, Nev.

Filed Aug. 18, 1971, Ser. No. 172,731

Int. Cl. B60g 11/36

U.S. Cl. 280-112 A

9 Claims



3,721,456

## MULTIPLE STAGE INFLATER

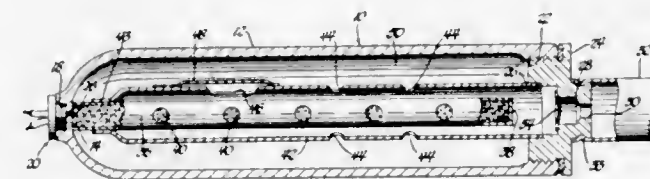
Patrick G. McDonald, Pontiac, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 23, 1971, Ser. No. 136,869

Int. Cl. B60r 21/00

U.S. Cl. 280-150 AB

4 Claims



A multiple stage inflater includes a cylindrical pressure vessel having an opening at one end receiving an igniter assembly electrically connected with an inertial switch or other type of indicating means providing a signal indicative of deformation or the onset of deformation of a vehicle body. The other end of the vessel includes an outlet sealed by a fluid pressure rupturable diaphragm. The outlet communicates by a manifold and diffuser assembly with a conventional inflatable occupant restraint cushion. A propellant tube extends partially through the vessel from the igniter assembly and is filled with suitable pyrotechnic material, such as black powder. The tube includes a number of circular openings in the wall thereof. A primary inflation tube surrounds the propellant tube and defines a first chamber communicating with the diaphragm. The primary inflation tube is provided with a number of circular openings and a reed valve which permits flow from the first chamber to a second chamber defined by the primary inflation tube and the interior wall of the vessel. The second chamber and the space within the first chamber between the propellant and primary inflation tubes is filled with air at a pressure less than that required to rupture the diaphragm. Upon ignition of the pyrotechnic material, the resultant fluid or gas flows from the propellant tube to the first chamber to rupture the diaphragm and initiate inflation of the cushion. The resultant fluid also flows outwardly through the primary inflation tube openings and reed valve to the second chamber to mix with the air therein and provide increased pressure fluid. The increased pressure fluid then

A compression spring controlled assembly for connection between the body or frame portion of a vehicle and an unsprung wheel of the vehicle relative to which the body or frame portion is vertically shiftable. The assembly is operative to increasingly yieldingly resist downward movement of the vehicle wheel relative to the frame or body portion or upward movement of the body or frame portion relative to the wheel past the relative static positions thereof. The spring controlled assembly includes a connection between the vehicle wheel and associated frame or body portion operative during upward motion of the body or frame portion and downward movement of the wheel relative to the associated frame or body portion past the relative static portions thereof. The spring controlled assembly does not in any way increase the load carrying capacity of the associated vehicle, but does function to decrease the adverse effects of a high center of gravity of laden weight and also functions to minimize the tendency of the frame and body portion of an unladen vehicle to roll while cornering.

3,721,458

## STABILIZING SUPPORT FOR BACK HOE

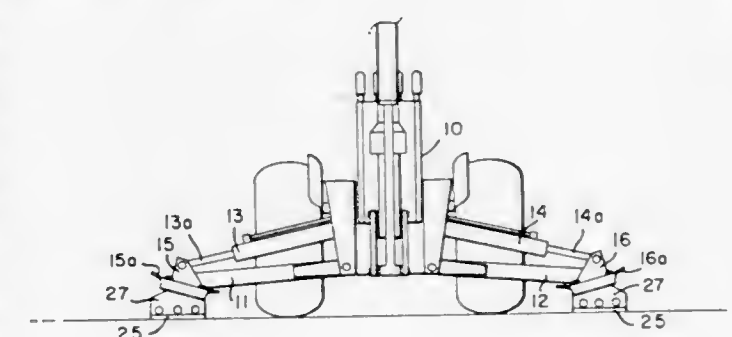
Thomas Mitchell, 982 Connie Drive, Campbell, Calif.

Filed Nov. 27, 1970, Ser. No. 93,075

Int. Cl. B60s 9/02

U.S. Cl. 280-150.5

4 Claims

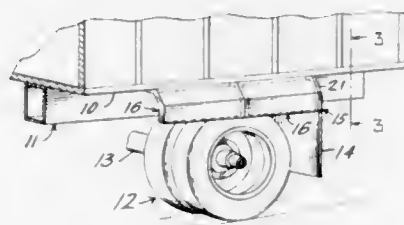


Foot pads for the stabilizer arms of a back hoe provided with resilient pads of tough wear-resisting material engaging



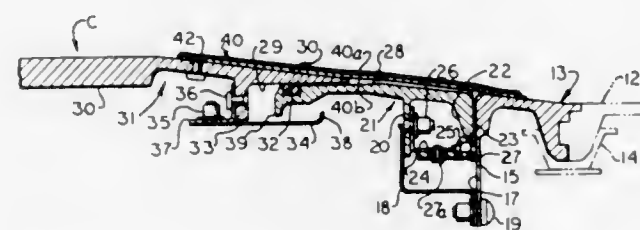
the asphalt or concrete surface of the pavement during use of the back hoe. The tough wear-resistant pads provide support for the stabilizer arms without digging into the pavement surface. The foot pads are pivotally attached to the ends of the stabilizer arms so that the tough resilient pad portions thereof adjust automatically to the contour of the pavement and provide firm footing for the stabilizer arms.

**3,721,459**  
**SPRAY SHIELD FOR HIGHWAY VEHICLE WHEELS**  
Harlan L. Lea, Wapakoneta, Ohio, assignor to Koneta Rubber Company, Inc., Wapakoneta, Ohio  
Filed Mar. 4, 1971, Ser. No. 120,863  
Int. Cl. B62d 25/16  
U.S. Cl. 280—154.5 R 3 Claims



A spray shield for the rear wheels or drive wheels of a highway vehicle. The shield consists of one or more units. Each unit has a mounting flange, an outwardly and downwardly extending shoulder and a vertical skirt at the outer edge of the shoulder. Each unit has assembly means at each end. The shield is to be mounted on the vehicle chassis or underside of the body. The shield extends longitudinally of and overlies the upper outer side of the vehicle wheel, to intercept and divert spray thrown off of the top of the wheel or the vehicle body. Two or more units may be assembled in end-to-end relationship. An end plate is adapted to be mounted by the assembly means at an end of the shield. The splash shield is preferably constructed from a flexible or semi-flexible material such as rubber, flexible plastic, fabrics or fibre.

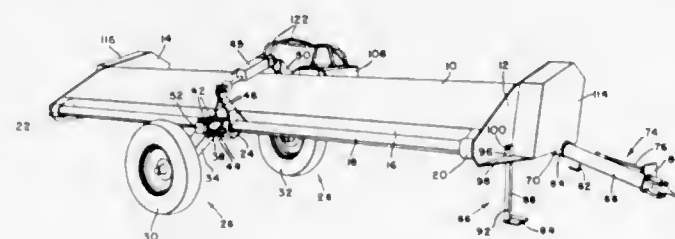
**3,721,460**  
**JET ENGINE TO AIR INLET DUCT FLEXIBLE JOINT AIRCRAFT**  
Leonard Holman, Imperial Beach, and Richard H. Timms, San Diego, Calif., assignors to Rohr Corporation, Chula Vista, Calif.  
Filed Dec. 17, 1970, Ser. No. 99,062  
Int. Cl. F16I 55/00  
U.S. Cl. 285—175 6 Claims



A flexible, sealed joint for connecting an air inlet duct to a jet engine of a high performance aircraft comprises an adapter ring having a flat forward face secured coaxially, and in conforming relation, onto the forward end of the engine casing. Spring clips urge the flat face of the adapted ring into conforming engagement with the flat rear face of a seal ring mounted in sealed relation, and for limited adjustment, on the aft end of the engine air inlet duct. An external flange near the aft end of the air inlet duct limits forward displacement of the seal rings,

and thereby the engine, in the event of engine mount failure, while spring fingers limit axial separation of the seal ring and air inlet duct. A double thickness sleeve of flexible, springy, sheet metal is slitted transversely in its aft portion into relatively overlapping spring fingers, and is fitted into, and fastened at its forward end to the air inlet duct. The spring fingers are biased outwardly at their rear ends and extend past the seal ring and fit flush into the adapter ring to maintain a smooth air flow surface from the inlet duct into the engine casing, even when the latter two are displaced from their normal, designed coaxial condition, and resiliently urge the inlet duct and engine casing toward axially aligned condition.

**3,721,461**  
**APPARATUS AND METHOD FOR CONVERTING AN IMPLEMENT BETWEEN OPERATING AND TRANSPORT POSITIONS**  
Arlyn Ray Nelsen, and Gerald Franklyn Meiers, both of Ottumwa, Iowa, assignors to Deere & Company, Moline, Ill.  
Filed Aug. 27, 1971, Ser. No. 175,517  
Int. Cl. B60d 7/00  
U.S. Cl. 280—415 R 6 Claims



Apparatus and method for converting an elongated implement between a wide operating position and a narrow, end-wise transport position, the apparatus comprising a hitch structure alternately securable in either an operating position on the front side of the implement or a transport position on one end thereof, a pair of wheels alternately securable in either an operating position on a rockshaft extending along the rear side of the implement or a transport position on a pair of front and rear wheel supports, an adjustable jack connected to the hitch structure, and a stand on one end of the implement, the stand being movable between raised and lowered positions. The method of converting the implement from its operating to its transport position comprises the steps of raising the implement by rotating the rockshaft, securing the stand in its lowered position, lowering the implement until the wheel nearest the stand clears the ground, removing that wheel from the rockshaft and securing it to the rear wheel support, lowering the implement further until the other wheel clears the ground, removing the other wheel from the rockshaft and securing it to the support on the front side of the implement, and finally, removing the hitch from the front side of the implement and securing it to one end thereof.

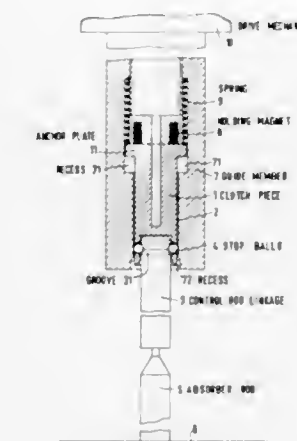
#### ERRATUM

For Class 285—175 see:  
Patent No. 3,721,460

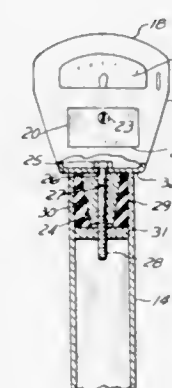
**3,721,462**  
**RAPID DISCONNECTION CLUTCH FOR NUCLEAR REACTOR CONTROL RODS**  
Rainer Pawlitzki, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany  
Filed June 9, 1970, Ser. No. 44,721  
Claims priority, application Germany, June 19, 1969, P 19 31 108.1  
Int. Cl. F16b 7/00 1 Claim

U.S. Cl. 287—119  
Stop balls removably couple a control rod linkage to a clutch piece. The clutch piece is movably mounted in a guide

member. The guide member includes releasing means for releasing the stop balls and thereby decoupling the control rod

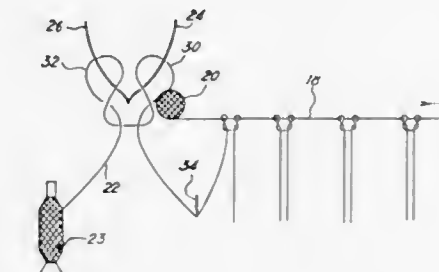


**3,721,463**  
**POST ADAPTER**  
Warren R. Attwood, Wayne; Herbert J. Henry, Plymouth, and Hugo E. Rebertsch, Jr., Garden City, all of Mich., assignors to Unistrut Corporation, Wayne, Mich.  
Filed Nov. 23, 1970, Ser. No. 91,948  
Int. Cl. F16b 9/00  
U.S. Cl. 287—20.3 11 Claims



An adapter for releasably securing an assembly, such as a parking meter, to the top of a hollow post and including a resilient member having a tapered bore formed therein. The resilient member is inserted over a complementary tapered base member extending from the lower surface of the assembly. A nut is threaded onto the lower end of a bolt which extends through the base member for retaining the resilient member thereon. The periphery of the nut is shaped so as to non-rotatably engage with the inner surface of the hollow post upon which the assembly is to be mounted. The nut, the resilient member, the tapered member, and the bolt extending from the lower surface of the assembly are inserted into the post and the bolt rotated so as to screw the nut onto the bolt, compressing the resilient member to wedge it onto the tapered base member, causing the resilient member to expand between the base member and the inner surface of the post so as to fixedly secure the assembly onto the post. The base member and the bore in the resilient member are frusto-conical in one modification and substantially pyramidal in another.

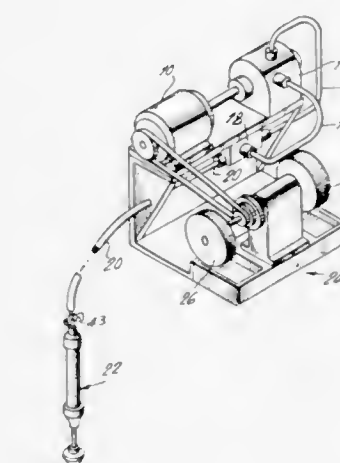
**3,721,464**  
**CONTINUOUS FRINGE FOR MAKING HAIRPIECES OR THE LIKE**  
Michel d'Atabekian, 28, rue des Tanneries, Paris, France  
Filed May 10, 1971, Ser. No. 141,590  
Claims priority, application France, May 21, 1971, 7018483  
Int. Cl. B65h 69/04  
U.S. Cl. 289—1.5 3 Claims



linkage from the clutch piece when the clutch piece moves to a determined position.

In a process for making continuous fringes for the manufacture of wigs or hairpieces, lengths of a fed filament are secured to a support filament by repeatedly performing a cycle in which the fed filament is formed into a slip knot providing two eyelets, through which the support filament is passed. The filament strands are pulled and cut to length after the slip knot has been tightened. The slip knots are formed by passing a length of the fed filament over two spaced apart fingers which are rotated in their center plane to form loops around the fingers, the fingers then being brought together to form two adjacent eyelets of the slip knot.

**3,721,465**  
**METHOD AND APPARATUS FOR HOLDING GEMS**  
Frederick Kraissl, Jr., 244 Kinderkamack Rd., North Hackensack, N.J.  
Filed Feb. 4, 1971, Ser. No. 112,535  
Int. Cl. B66c 1/02  
U.S. Cl. 294—64 R 7 Claims



A method and apparatus for holding cabochons in which a hollow conduit having an opening at one end for receiving the cabochon is connected to a pump having a vacuum side and a pressure side. The end of the hollow conduit for holding the cabochon is provided with a seal made of flexible material so that when vacuum is applied, the cabochon seals the end of the hollow conduit so that the vacuum force will securely hold the cabochon in place. In this manner, such work as polishing and grinding may be carried out on the cabochon. On release of the vacuum, the cabochon is easily removed.



3,721,466

## VEHICLE WIND TUNNEL

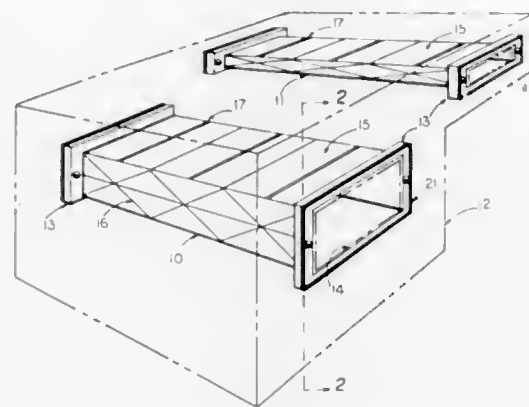
Arthur B. Abrams, 5221 Sierra Villa Drive, Los Angeles, Calif.

Filed Jan. 27, 1971, Ser. No. 110,158

Int. Cl. B62d 37/02

U.S. Cl. 296—1 S

1 Claim



A rectangular or square shaped duct or wind tunnel to be attached within interior of a vehicle, connecting opposing window or vent areas to provide a guided free flow of air to pass completely through vehicle without damage to interior or entrapment of foreign matter, within the vehicle.

3,721,467

## MOLDED PLASTIC COVER TO ENCLOSE A SNOWMOBILE ON A TRAILER

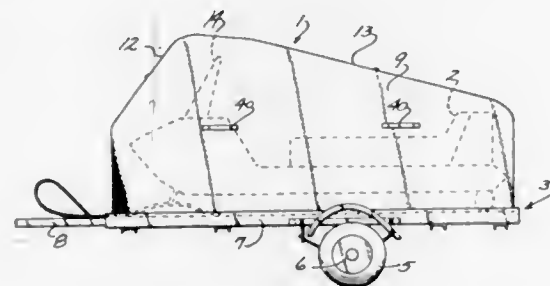
Donald D. Kerr, Box 338, Hartland, Wis.

Filed Feb. 3, 1971, Ser. No. 112,255

Int. Cl. B60p 7/02

U.S. Cl. 296—28 M

9 Claims



A molded reinforced plastic cover to enclose a snowmobile on a trailer. The cover is preferably formed of two longitudinally-split halves which are joined together by spring loaded clamps. The lower edge of the cover carries a resilient sealing member which rests on the bed of the trailer, and straps extend downwardly from the cover through openings in the bed and locking members can be attached to the straps. The lower edge of the forward end of the cover is provided with slots to receive the projecting ends of the skis of the snowmobile. The cover serves to protect the snowmobile from the elements, as well as preventing theft of the snowmobile.

3,721,468

## AUTO PADDED WINDSHIELD

Stanley E. Burgess, P.O. Box 220, Route 16, Somersworth, N.H.

Filed June 22, 1971, Ser. No. 155,439

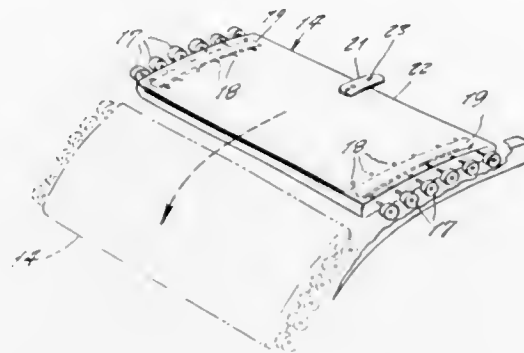
Int. Cl. B60r 21/08

U.S. Cl. 296—84 K

1 Claim

A device to protect automobile passengers from impact against the glass windshield in case of a collision, the device

consisting of a foam filled pad which in an inoperative position rest adjacent the underside of the vehicle roof, and which in case of a collision due to momentum force instantly slides



down adjacent the interior side of the windshield so to provide a soft and harmless cushion against which the passengers are thrown.

3,721,469

## TAIL GATE APPARATUS

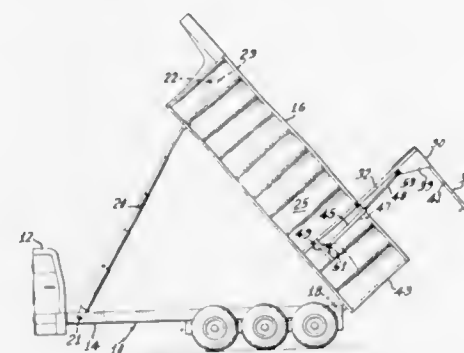
Real G. Senesac, 961 Carlotta Road W. 32211, and Guy M. Senesac, 2235 St. John's Bluff Road S. 32216, both of Jacksonville, Fla.

Filed Jan. 11, 1971, Ser. No. 105,288

Int. Cl. B61d 9/00

U.S. Cl. 298—23 MD

8 Claims



A tail gate apparatus includes an upstanding rear wall and a pair of spaced elongated arms rigidly connected to the rear wall adjacent the upper edge thereof and pivotally connected to respective side walls adjacent the upper edges thereof and forwardly remote from the rear body opening. The arms are disposed along and outwardly of the side wall upper edges for rigidifying same and guide members are connected to the rear wall adjacent the lower edge which cooperate with the side walls. Power means are attached to the tail gate apparatus for opening and closing the rear body opening and when open the rear wall is generally parallel to and above the body bottom wall and spaced upwardly a substantial distance above the side wall upper edges to provide a dumping opening of substantially twice the area of the rear wall.

3,721,470

## ROTARY CUTTER APPARATUS FOR ROOFING MATERIAL

Daniel P. Crispino, 451 Fawcett Street, Baltimore, Md.

Filed Feb. 2, 1971, Ser. No. 111,941

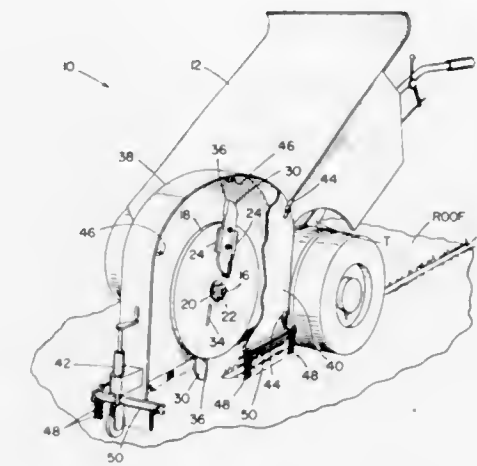
Int. Cl. E04d 15/00

U.S. Cl. 299—39

1 Claim

A power driven rotary cutter apparatus is provided for cutting of lines in old roofing material in preparation for

removing of the old roofing material and replacing it with new roofing material. The apparatus consists of a motor driven tractor having a drive member positioned substantially transversely to the direction of movement of the tractor. A heavy



flywheel type wheel is positioned on the drive member, and spaced blade members are positioned around the periphery of the wheel for use in cutting of roofing material. A device is provided for adjusting the height of the blade members from a roofing surface that is to be cut by the blade members.

3,721,471

## DRILL-AND-BLAST MODULE

Oswald R. Bergmann, Cherry Hill Township, N.J., and David L. Coursen, Newark, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

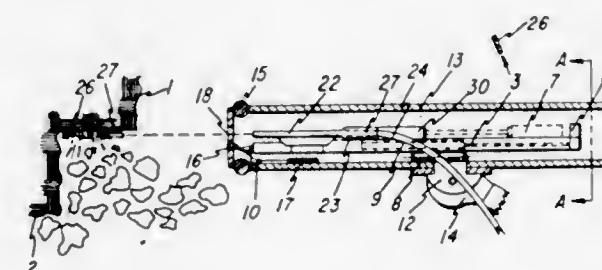
Division of Ser. No. 878,005, Nov. 19, 1969. This application

Oct. 28, 1971, Ser. No. 193,323

Int. Cl. E21c 37/00

U.S. Cl. 299—55

9 Claims



Working, e.g., excavating, a geological mass by a succession of substantially continuous drill-load-blast sequences, each sequence comprising drilling a hole in the mass, placing a charge of condensed secondary explosive in the hole, and initiating the charge by projecting propulsive energy, e.g., the kinetic energy of a high-velocity projectile, through an inactive medium, e.g., the atmosphere, to the charge from a location which confronts, and is separated from, the hole in a manner such that energy is released into the charge at a rate sufficiently high to cause detonation thereof. An apparatus including drilling means, explosives-delivery means, and means for projecting energy, e.g., a gun, mounted on support means that preferably can be moved so as to position the drilling means, explosives delivery means, and energy-projection path sequentially on substantially a common axis.

3,721,472

## COANDA EFFECT SWITCH FOR HANDLING AND CONVEYING WORKPIECES ON A LAYER OF FLUID

Walter Kester Mammel, Yardley, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Continuation-in-part of application Ser. No. 607,793,

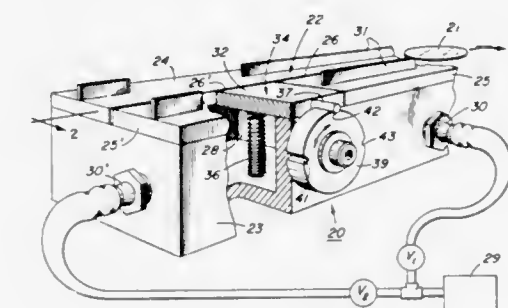
Jan. 6, 1967. This application Jan. 3, 1969, Ser.

No. 801,903

Int. Cl. B65g 53/04

U.S. Cl. 302—31

20 Claims



A method and device utilizes the Coanda effect of a fluid flowing use of an aperture and over an adjacent step to manipulate a workpiece, such as a slice of semiconductor material, relative to an aerodynamic conveyor or a pickup head.

3,721,473

## THREE SLOPE PROPORTIONING VALVE

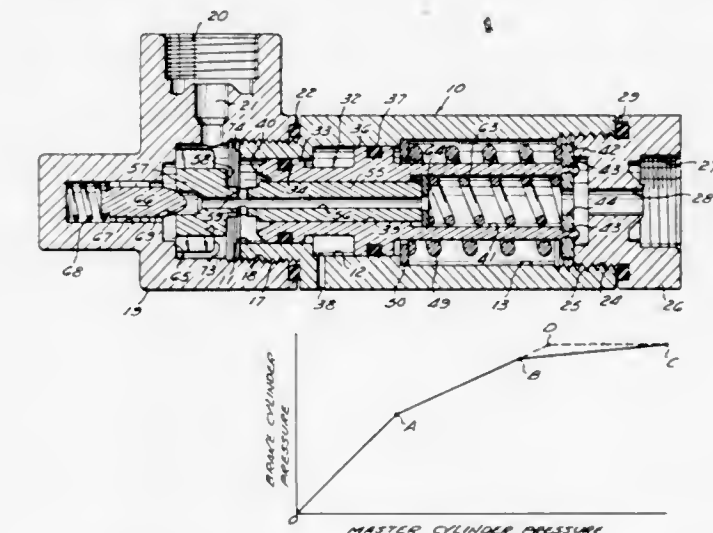
Tadeusz Budzich, Moreland Hills, Ohio, assignor to The Weatherhead Company, Cleveland, Ohio

Filed Dec. 20, 1971, Ser. No. 209,761

Int. Cl. B60t 11/34

U.S. Cl. 303—6 C

7 Claims



A three slope proportioning valve for a motor vehicle hydraulic brake system is disclosed. The valve is normally open to permit free fluid flow from the inlet port to the outlet port below a first predetermined inlet port pressure. At the first predetermined pressure, a differential area piston is displaced and engages a floating valve member to isolate the inlet port from the outlet port. The differential area piston and the valve member then move together to decrease the outlet port volume and maintain increases in outlet port pressure above the predetermined pressure in a first predetermined proportional relation to increases in inlet port pressure up to a second predetermined inlet port pressure level. At the second predetermined pressure, the floating valve member is stopped against further movement, and the differential area piston



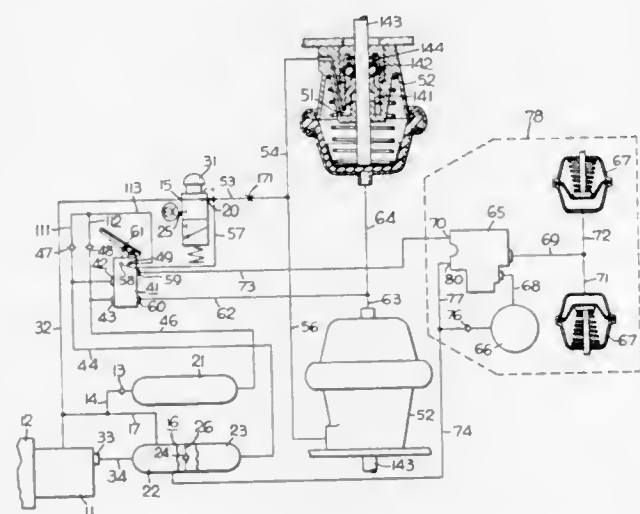
moves away from the valve member to establish throttled fluid pressure communication between the inlet port and the outlet port to maintain further increases in outlet port pressure in a second predetermined proportional relation to further increases in inlet port pressure.

**3,721,474**  
**VEHICLE BRAKE CONTROL SYSTEM WITH SAFETY PARKING FEATURE**  
George W. Rogers, Petersburg, Ill., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed March 27, 1972, Ser. No. 238,390  
Int. Cl. B60t 13/04

U.S. Cl. 303—9

13 Claims



An air compressor and three reservoirs are mounted on the tractor unit, one of which supplies pressure fluid to the tractor brakes, a second of which supplies pressure fluid to control the trailer brake actuators and a third of which supplies pressure fluid to the parking brake release chamber of the tractor brake actuators and to control an emergency braking mechanism which causes the tractor and trailer brake actuators to be applied if the pressure in the third reservoir falls below a predetermined safe value. Pressure fluid for the trailer brake actuators is stored in a fourth reservoir on the trailer and is controlled by a conventional relay valve with an emergency brake application feature. A manually operated emergency and parking brake valve on the tractor is pressure de-actuated in its parking brake released position. When pressure in the third reservoir falls below a predetermined value, the emergency and parking brake valve automatically moves to its exhaust (parking brake applied) position whereby the parking brake release chambers of the tractor brake actuators are exhausted and the emergency braking mechanism is actuated to apply the tractor and trailer brakes.

**3,721,475**  
**METHOD AND APPARATUS FOR THE CONTROL OF ANTISKID BRAKE SYSTEM FOR POWERED VEHICLES**  
Toshiharu Kawase, Toyota-shi, and Yukio Awakura, Aichi-ken, Japan, assignors to Aisin Seiki Company Limited, Toyota-shi, Japan

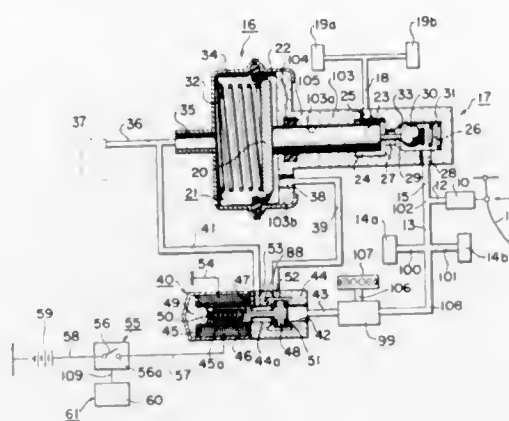
Filed Oct. 9, 1969, Ser. No. 865,091  
Int. Cl. B60t 8/12

U.S. Cl. 303—21 F

8 Claims

In a method and apparatus for antiskid control of a hydraulic brake system for powered vehicle wheels, the improvement comprises a sensor which senses occasional value of coefficient of adhesion appearing between said

wheels and a road surface on which the wheels travel, said memorized value being taken into account for the modifi-



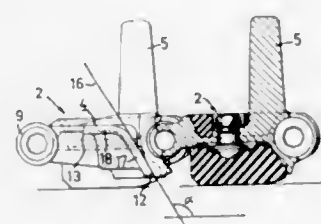
cation of the hydraulic brake pressure in a sudden and considerable brake application.

**3,721,476**  
**TRACK CHAIN FOR TRACKED VEHICLES**  
Björn Axel Henning Andersson, Gullanget, Sweden, assignor to AB Haggelund & Soner, Ornskoldsvik, Sweden  
Filed Mar. 3, 1971, Ser. No. 120,430  
Claims priority, application Sweden, Mar. 31, 1970, 4,389/70

Int. Cl. B62d 55/20

U.S. Cl. 305—35 R

5 Claims



The present invention relates to a track chain for tracked vehicles, said chain consisting of track members that are hinged to each other. The object of the invention is to improve the transmission of motive power from the vehicle to the surface travelled on, especially loose surfaces such as snow, or in water. The invention is mainly characterized by blades provided on the free ends of each track member. These blades have a longitudinal axis essentially perpendicular to the direction of motion of the track chain and essentially parallel to a plane through the joint parts of each track member. The blades are also curved in a plane perpendicular to its longitudinal axis, the curvature being, looking at the lower part of the track chain, essentially convex in a basically forward, upward direction as seen in the normal direction of motion of the tracked vehicle, and concave in a basically rearward, downward direction. A tangent plane to the blade's curved surface, near the blade's forward edge, forms an angle  $\alpha$  greater than  $90^\circ$  with the normal direction of motion of the tracked vehicle.

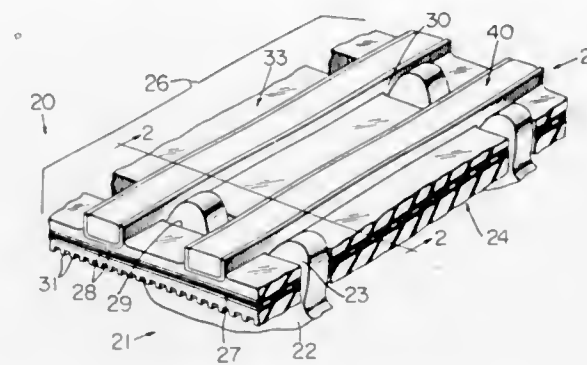
**3,721,477**  
**ENDLESS TRACK**  
Jerry W. Cooper; Leland E. Williams, both of Waynesville; John S. Haley, Lake Junaluska, and Rufus N. Ensley, Clyde, all of N.C., assignors to Dayco Corporation, Dayton, Ohio  
Filed Aug. 20, 1970, Ser. No. 65,568  
Int. Cl. B62d 55/24

U.S. Cl. 305—38

18 Claims

An endless track is provided that is comprised of band-like body made of an elastomeric material and a plurality of cleats

securely bonded thereto by partial embedment therein, and the body has a suitable drive mean enabling the track to be driven by an associated drive. Each cleat has a substantially U-



shaped configuration comprised of a bight and a pair of outwardly extending legs having exposed outer ends and the cleats provide both improved lateral stability and traction for the track.

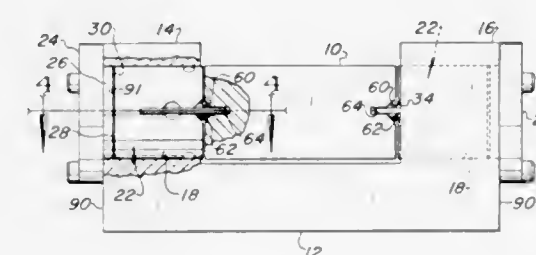
**3,721,478**  
**LINEAR ANTIFRICTION BEARING**  
Theodore D. Anderson, Fruitport, and William J. Harms, Nunica, both of Mich., assignors to Gardner-Denver Company, Quincy, Ill.

Filed Jan. 25, 1971, Ser. No. 109,280

Int. Cl. F16c 29/06

U.S. Cl. 308—6 C

7 Claims



A linear antifriction bearing arrangement including two relatively movable machine members and a plurality of cylindrical bearing cartridges mounted for providing linear movement of one member with respect to another. Each bearing cartridge includes a raceway and interconnected internal passageways forming a channel for recirculating a plurality of bearing balls. The cartridges include removable retainer plates for retaining and guiding the bearing balls through the recirculation channels. The bearing cartridges are slidably journaled in one of the machine members and are operable to support the other machine member for relative linear movement. The arrangement provides for ease of preloading to provide zero lateral play and the individual cartridges are self-aligning to provide even load distribution.

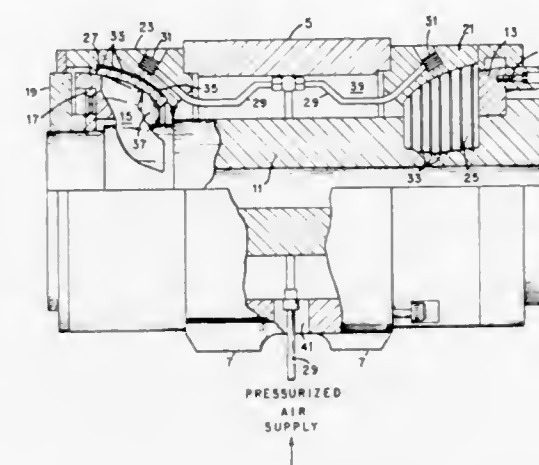
**3,721,479**  
**GAS BEARING AND METHOD OF MAKING SAME**  
William H. Rasnick, Concord, and Philip J. Steger, Oak Ridge, both of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission  
Filed May 19, 1971, Ser. No. 144,953  
Int. Cl. F16c 17/16

U.S. Cl. 308—9

4 Claims

An improved externally pressurized gas bearing and method of making same have been provided wherein the porous bearing surface is modified by a surface treatment which yields a boundary layer having selected permeability limits. The bearing materials are machined or formed by conventional means to the desired shape and size, then lapped to the desired surface finish and treated with an impregnant dissolved in a suitable

solvent. The permeability of the bearing is then checked to determine areas of high permeability. The bearing surface is then selectively treated so as to provide uniform limited permeability at the surface of the bearing. This process provides restricted uniform gas flow to the bearing film at the



bearing surface thereby providing improved operational stability by greater damping of self-induced or externally-induced vibrations of a load member supported for movement with respect to the bearing surface, independent of the bearing loading.

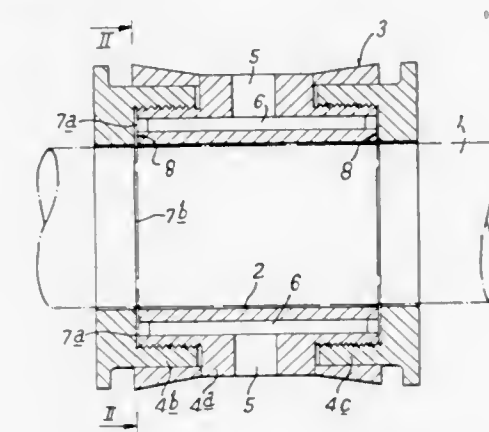
**3,721,480**  
**GAS BEARING ASSEMBLY**  
William C. Dee, Wimborne, Dorset, England, assignor to Aerostatic Limited, Poole, England  
Continuation-in-part of Ser. No. 557,231, June 13, 1966, Pat. No. 3,510,175. This application March 12, 1970, Ser. No. 26,463

Claims priority, application Great Britain, Oct. 15, 1968, 48,931/68

Int. Cl. F16c 17/16

U.S. Cl. 308—9

5 Claims



A fluid bearing has two or more gas feed slots opening at one or more axial positions into a bearing gap defined between two relatively movable bearing members, the slots being defined between two contiguous elements of one of the bearing members.

**3,721,481**  
**ROLLER DEVICE WITH IMPROVED HUB CONSTRUCTION**  
Louis A. Chenot, Oklahoma City, Okla., assignor to Fife Corporation, Oklahoma City, Okla.

Filed June 22, 1971, Ser. No. 155,444

Int. Cl. F16c 13/02

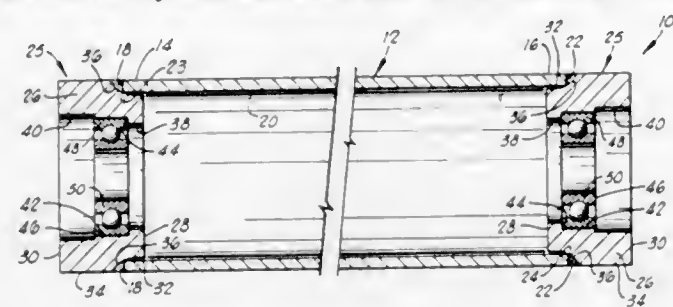
U.S. Cl. 308—20

20 Claims

A welded roller comprising a cylindrical roller tube with a roller hub welded to each end face thereof. In one form, a cir-



cumferential concave seating surface formed about the medial portion of each roller hub intersects the respective end of the roller tube along the line of intersection of the respective end face and the cylindrical inner surface of the roller tube. In



another form, a circumferential frusto-conical seating surface formed about the medial portion of each roller hub engages a chamfered annular surface intersecting the respective end face and the cylindrical inner surface of the roller tube.

3,721,482

**MOUNTING FOR PIN BEARING BLOCK**

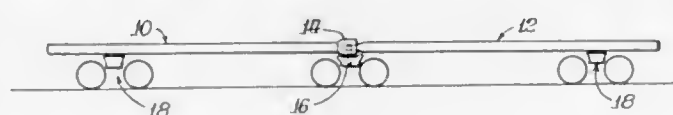
Carl E. Tack, Elmhurst, and Loyal J. Rodgers, Kenilworth, Ill., assignors to Amsted Industries Incorporated, Chicago, Ill.

Continuation-in-part of application Ser. No. 813,870, Apr. 7, 1969, now Patent No. 3,646,604. This application Nov. 11, 1971, Ser. No. 198,009

Int. Cl. F16c 23/04

U.S. Cl. 308—72

6 Claims



An articulated connection is provided having a bearing block with spherical protrusions which are seated in spherical pockets of a male member. The spherical protrusion—spherical pocket arrangement allows the bearing block to be rotated relative to the male member during angulation. The rotation is accomplished without the addition of unwanted slack.

3,721,483

**ADJUSTABLE DIAMETER ROLLER BEARING**

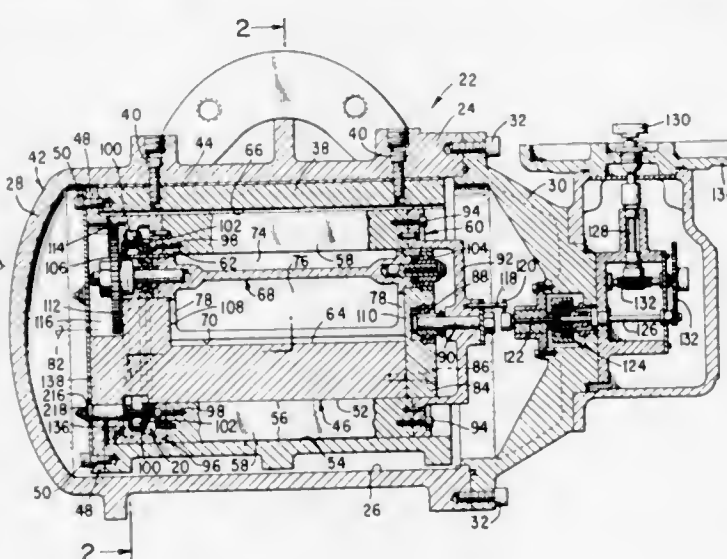
George W. Schneider, Huntingdon Valley, Pa., assignor to The Singer Company, New York, N.Y.

Filed Feb. 15, 1972, Ser. No. 226,588

Int. Cl. F16c 33/30

U.S. Cl. 308—196

24 Claims



An adjustable diameter roller bearing is mounted upon an internal stationary member having an axis of rotation. An ex-

ternal rotor is disposed to rotate about the axis of rotation. In order to reduce the cost of manufacturing the mating parts while holding to the required tolerances, the subject bearing has an adjustable diameter or is radially shiftable. A support means having at least one axially movable ring is carried on the stationary member. A split raceway is mounted upon the support means to be radially shiftable responsive to axial movement of the ring. A roller cage having a plurality of circumferentially spaced rollers is rotatively disposed upon the raceway means. Adjustable positioning means are connected to the support means to axially shift the support means and the raceway to force the rollers concentrically to engage the rotor. The support means are concentric to the axis of rotation, and by engaging the raceway, cause the raceway also to be concentric. Adjusting the diameter of the roller bearing causes the rotor to be likewise centered with respect to the axis of rotation. Wedge means in the form of annular chamfers or arcuate shoulders, are used to expand or contract the diameter of the raceway, while annular garter springs urge the raceway to contact the support means.

3,721,484

**MODULAR SHOWCASE**

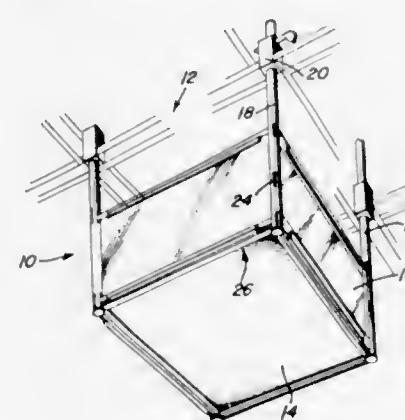
Frank Anthony Macioge, and Henry Grant Ingersoll, both of Washington, D.C., assignors to Canterbury Tales, Inc., Washington, D.C.

Filed March 16, 1972, Ser. No. 235,352

Int. Cl. A47b 67/02; A47f 5/08, 3/00

U.S. Cl. 312—245

7 Claims



A suspended showcase is developed from modular components including telescoping pole supports that project from a fixed structure such as a ceiling. Frame members key into slots that are formed in the pole supports, and a base panel is lowered into the frame. Side glass panels slide into channels formed in the frame members thereby completing the suspended showcase.

3,721,485

**TELEPHONE INDEX DEVICE**

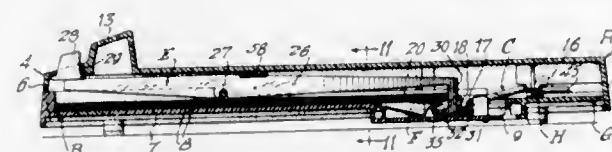
Richard E. Beger, Point Pleasant, N.J., assignor to The Bates Manufacturing Company, Orange, N.J.

Filed Feb. 17, 1972, Ser. No. 227,564

Int. Cl. A47b 88/00

U.S. Cl. 312—330

9 Claims



An index device includes a housing and a drawer therein supporting a plurality of edge-notched and perforated cards and slidable into open and closed positions and

held in closed position by a latch rod pivoted in the housing and biased into coaction with a keeper on the drawer, a manually operated key lever for each card pivoted between its ends in the housing which at one end actuates a card puller on the drawer into position to engage the notched edge of an associated selected card and has a stud which at the same time enters the holes in all cards above the selected one to hold them against movement with the drawer and then directly actuates the latch rod to release the drawer for movement outwardly of the housing with the selected card exposed.

3,721,486

**LIGHT SCANNING BY INTERFERENCE GRATING AND METHOD**

Arthur Bramley, 7124 Strathmore St.,

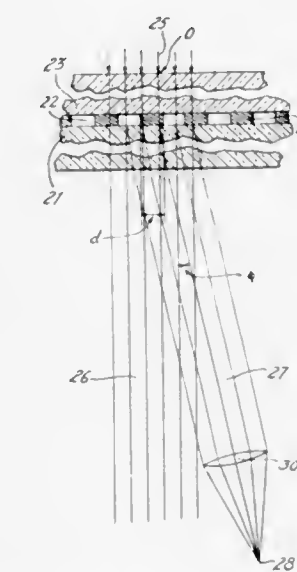
Falls Church, Va. 22042

Filed Jan. 13, 1970, Ser. No. 2,486

Int. Cl. G02b 17/00

U.S. Cl. 350—6

15 Claims



In producing a time sequential linear scan, light is passed through deflection gratings arranged adjoining one another in parallel planes, each of the gratings having its lines in ordered spacial relationship, preferably being divided into four equal sectors with the lines in each sector parallel. The gratings are moved oppositely while maintaining a position to intercept a light beam. The gratings preferably rotate oppositely on parallel axes. Light is passed through the gratings preferably normal to each of them and traces a linear scan on a viewing screen preferably placed parallel to the planes of the gratings. Mirrors between the gratings deflect the incident light to the second grating so that it is normal thereto on entering. In the preferred form the spacing between the gratings is approximately equal to the spacing between the viewing screen and the nearest grating. In the preferred embodiment each grating consists of two optical flats with grating elements located between them, the spacing of the optical flats being adjustable to change the phase.

3,721,487

**OPTICAL DIFFRACTION GRATING SCANNING DEVICE**  
Guy Pieuchard, Fontenay Le Fleury; Jean Flamand, Chateaufort Malabry, and Antoine Labeyrie, Gif Sur Yvette, all of France, assignors to JOBIN-YVON, ARCUEIL, Arcueil, France

Filed July 9, 1971, Ser. No. 161,038

Claims priority, application France, July 23, 1970, 7027185

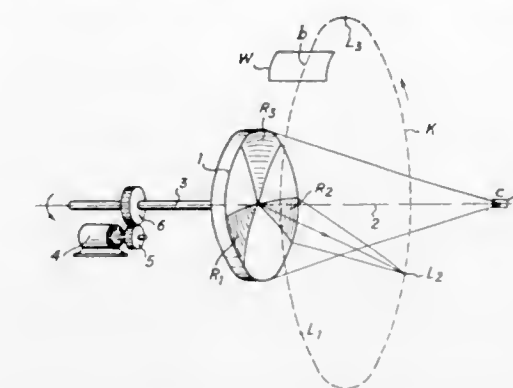
Int. Cl. G02b 5/18

U.S. Cl. 350—7

4 Claims

An optical scanning device comprises a source of monochromatic light and diffraction gratings on a spherical

concave surface for producing a number of light-spots having a diameter of between 0.1 and 100 microns. The concave sur-



face is rotated so that the light-spots describe a single circle intersecting, along the scanning line, a surface to be explored.

3,721,488

**FOCUSING ARRANGEMENT FOR AFOCAL TELESCOPES**  
Christoph Kuhne, Heidenheim, Germany, assignor to Carl Zeiss-Stiftung d/b/a Carl Zeiss, Heidenheim (Brenz) Wuerntember, Germany

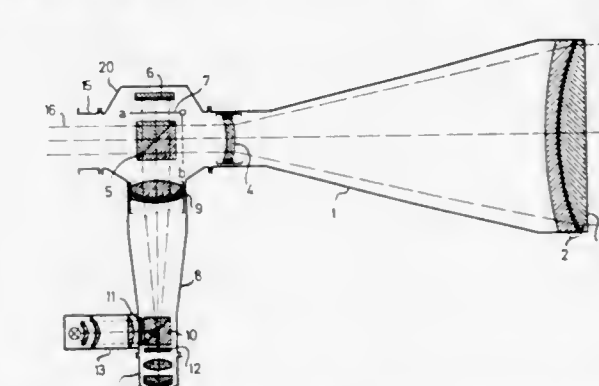
Filed May 4, 1971, Ser. No. 140,183

Claims priority, application Germany, May 29, 1970, P 20 26 340.5

Int. Cl. G02b 7/04

U.S. Cl. 350—46

4 Claims



A focusing arrangement for afocal telescopes in which a small autocollimating telescope limited to the cross-section of the entering beam is to be focused in itself toward a plane reference mirror and in which a plane glass-air surface is used to cover the objective of the afocal telescope, whereby the reflection from the autocollimating telescope is utilized for recognizing the deviation from the correct state of focusing of the afocal telescope.

3,721,489

**REFLECTOR**

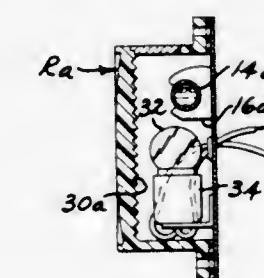
Steve Horvath, 915 W. Bluelick, Lima, Ohio

Filed July 23, 1971, Ser. No. 165,675

Int. Cl. G02b 5/12

U.S. Cl. 350—97

5 Claims



A reflector and/or tail light for mobile dwellings and the like having means therein for leveling a portable dwelling on uneven terrain.



3,721,490

**REMOVABLE PROTECTIVE SIDE SHIELD ASSEMBLY FOR MOUNTING ON SPECTACLES**

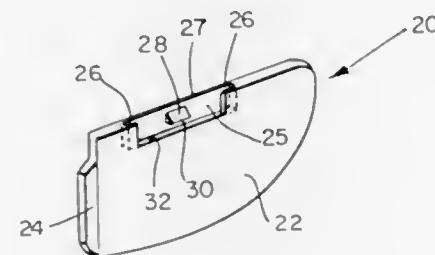
Jack M. Prince, Reading, Pa., assignor to ESB Incorporated

Filed May 11, 1971, Ser. No. 142,272

Int. Cl. G02c 7/16, 9/00

U.S. Cl. 351-47

3 Claims



A removeable clear protective side shield for spectacles is described in which a single universal side shield type is combined with one of several shapes of support slideably mountable on the spectacle temple so as to give a customer choice in finding a shield suitable for mounting on his particular spectacle design. Once a choice of support has been made, a shield is attached to the chosen support. Several attaching means are described including a mechanical snap lock that prevents subsequent separation of the two parts.

3,721,491

**SYSTEM FOR PROCESSING A STRIP OF PHOTOGRAPHIC MATERIAL**

Rogers B. Downey, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

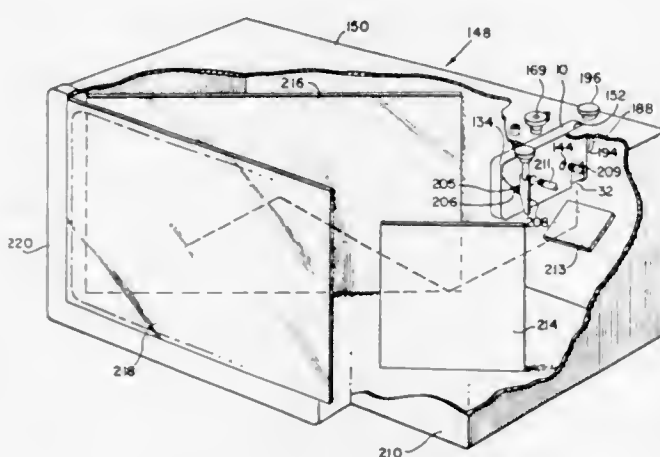
Division of Ser. No. 813,469, April 4, 1969, Pat. No.

3,608,455. This application Aug. 4, 1971, Ser. No. 169,007

Int. Cl. G03b 23/02

U.S. Cl. 352-72

4 Claims



A motion picture system including a film handling cassette and a rear projection screen viewer. The cassette has a projection station which may include a light reflecting element and is insertable into an elongated slot in the top wall member of the viewer. Complementary features of the cassette and viewer permit the viewer to selectively restrain rotation of a film guide idler within the cassette during film projection operations.

3,721,492

**ELECTROMAGNETIC SHUTTER RELEASE FOR CONTINUOUS OPERATION AND SINGLE-FRAME OPERATION IN MOTION PICTURE CAMERAS**

Arthur Kessler, Koppeln, Germany, assignor to Ernst Leitz GmbH, Wetzlar, Germany

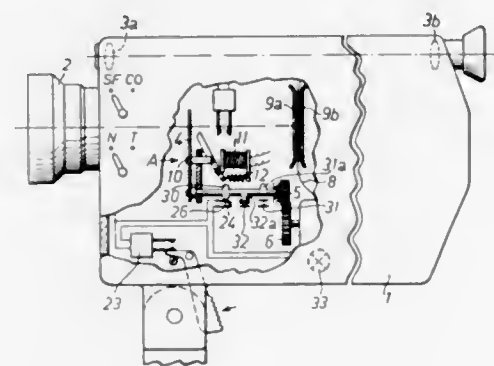
Filed Mar. 1, 1972, Ser. No. 230,767

Claims priority, application Germany, Mar. 22, 1971, P 21 13 789.3

Int. Cl. G03b 21/32

U.S. Cl. 352-137

5 Claims



A motion picture camera wherein the rotating shutter and the film advance mechanism are driven by an electric motor for optionally releasing the shutter for continuous operation or for single frame exposure. A bi-stable circuit is provided in series with the camera release switch, the circuit being switched to its conductive state when the camera release switch is closed. The bistable circuit controls a solenoid which releases the shutter for rotation when the bistable circuit is conductive. A series of cams on the shutter shaft operates a series of switches for controlling the bistable circuit and the solenoid to secure either continuous operation or time exposures.

3,721,493

**AUDIO VISUAL MEANS**

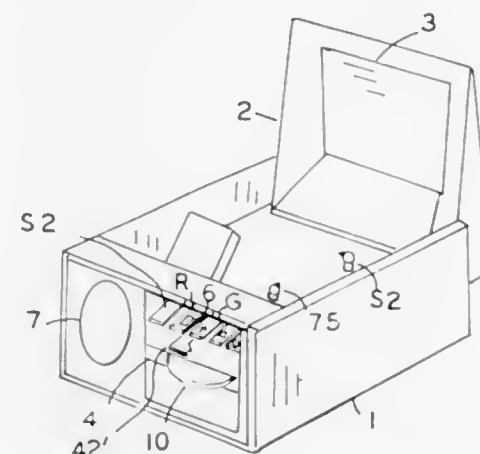
Abraham Schneideman, Westbury, N.J., and George G. Wechsler, North Bellmore, N.Y., assignors to Viewlex, Inc., Holbrook, N.Y.

Filed Sept. 10, 1971, Ser. No. 179,312

Int. Cl. G03b 31/06, 21/00

U.S. Cl. 353-19

4 Claims



In a machine of the type which projects pictures and synchronized audio information from an audio-visual cartridge of the type having a circular holder with a plurality of picture transparencies spaced along its periphery, said holder containing an audio record which is freely rotatable, and a

tone arm for said audio record, the improvement comprising new and improved rotatable drive means for said picture holders including roller clamping assembly means and operating lever means connected to said clamping means, pivotally mounted gear arm assembly means connected to index said picture holder, said operating lever being adapted to synchronize and control the operation of tone arm and the gear drive for the picture holder and having cartridge sensing means adapted to prevent the operation of the device unless a cartridge is properly inserted.

3,721,494

**SLIDE CHANGER**

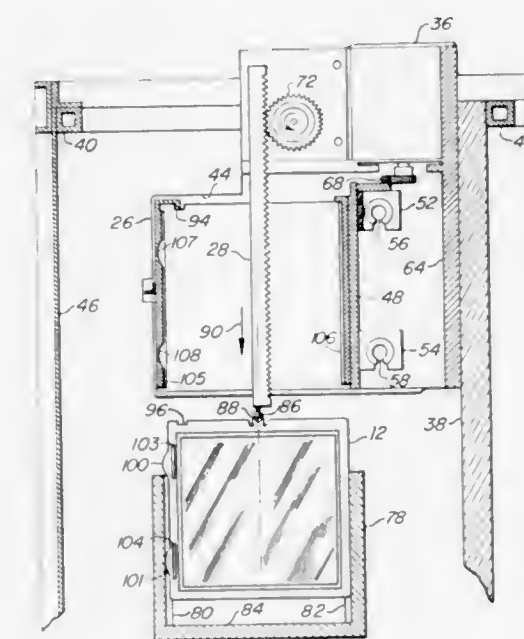
Richard L. Stine, Cardiff-by-the-Sea, Calif., assignor to Stromberg Datagraphix, Inc., San Diego, Calif.

Filed Jan. 15, 1971, Ser. No. 106,829

Int. Cl. G03b 23/00

U.S. Cl. 353-103

8 Claims



A slide changer especially adapted for handling forms slides in computer output microfilming equipment is disclosed. A magazine holds a plurality of slides in frictional engagement with substantially parallel grooves on inner magazine walls. An actuating bar adjacent to the magazine engages a selected slide to move the slide out of the magazine into a projection station. The actuating bar latches to the slide in a ball-and-socket manner as the slide is fully inserted into the projection station. After use, the bar moves the slide back into the magazine and automatically disengages from the slide. Each slide is provided with integral spring guide members formed in the slideframe along one edge, which comprise outwardly extending projections with slots parallel to the slide edge behind each projection. The magazine is movable in a direction perpendicular to the plane of the slides so that different slides may be selected.

3,721,495

**CONTROL APPARATUS FOR FILM TRAVEL ACTUATED BY PICTURE FRAME EDGE SIGNALS**

Atsuyuki Tanaka, Toyonakashi, Osaka-fu, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed June 9, 1970, Ser. No. 44,730

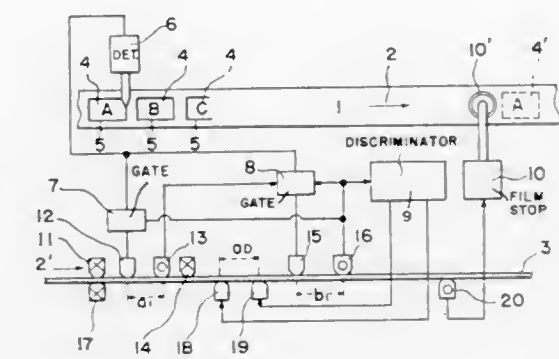
Int. Cl. G03b 27/46

U.S. Cl. 355-41

9 Claims

This invention relates to a control apparatus for film travel, actuated by picture frame edge signals, which apparatus controls the travel of a roll of film having no perforations, on which a number of picture images are successively disposed, in order to print in sequence each picture image on said film,

which apparatus controls the travel of the film by operating a film stop device by means of signals from a detection device for detecting the rapid change of the density at the fore edge and the aft edge of the picture image frame, and which, when



its discriminator cannot detect the above signals or does not accept the signal detected as a correct picture frame edge signal, controls the travel of the film by means of another edge signal.

3,721,496

**IMAGE EXPOSURE AND DEVELOPMENT METHOD**

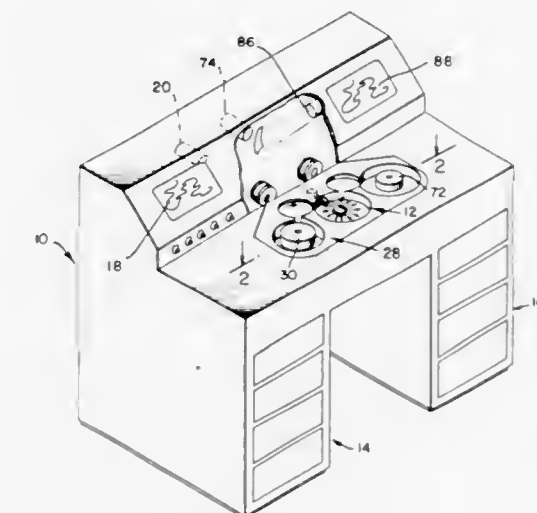
Alfred F. Kaspaul, Malibu, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Continuation-in-part of Ser. No. 115,943, Feb. 17, 1971, Pat. No. 3,664,249. This application Feb. 4, 1972, Ser. No. 223,533

Int. Cl. G03b 27/32

U.S. Cl. 355-77

6 Claims



The image exposure and development method of this invention comprises: the steps of exposure of a sensitive medium which is developable by the deposition of atoms thereon, feeding the exposed medium to wrap around a major portion of the circumference of spaced discs, and directing a vapor flux between the discs to impinge upon the medium so that the latent image thereon is developed by selective acquisition of the metal onto the surface.

3,721,497

**RING LASER GYROSCOPE LINEARIZATION SYSTEM**

Sidney G. Shutt, Brea; Thomas J. Hutchings, Orange, both of Calif., and James T. Hoffman, Kettering, Ohio, assignors to North American Rockwell Corporation, El Segundo, Calif.

Filed April 19, 1971, Ser. No. 135,200

Int. Cl. G01b 9/02

U.S. Cl. 356-106 LR

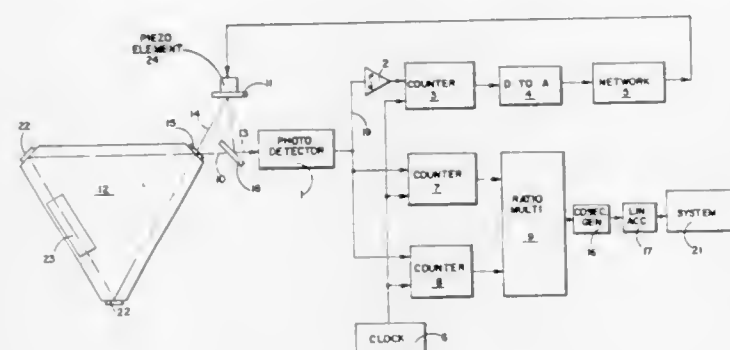
6 Claims

The invention is directed to a system which operates in combination with a ring laser gyroscope having an output defined by the equation  $\psi = \Omega / 30 \Omega_L \sin(\psi + \epsilon)$  such that the



system drives the term  $\epsilon$  to zero. In the equation  $\Omega$  is the input rotation rate of the ring laser gyroscope,  $\Omega_L$  is the lock-in rate or that rate below which no output is obtained due to frequency entrainment of the two optical oscillators,  $\psi$  is the instan-

aneous phase difference between the two optical oscillators and  $\epsilon$  is the phase angle at time,  $t$ , equal to zero. Additional electronic circuits then allow the complete term to be reduced to zero.



3,721,498

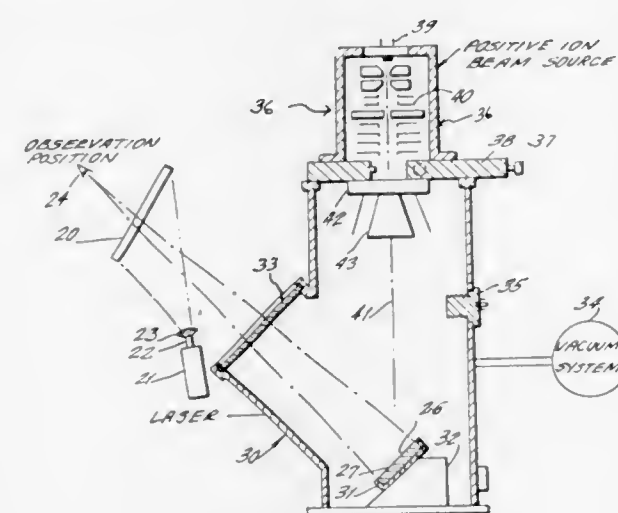
### SYNTHESIZED HOLOGRAM FOR AN ARTIFICIAL OPTICAL TEMPLATE

Leo Narodny, Cold Spring Harbor, and Louis E. Sharpe, Malverne, both of N.Y., assignors to Kollsman Instrument Corporation, Syosset, N.Y.

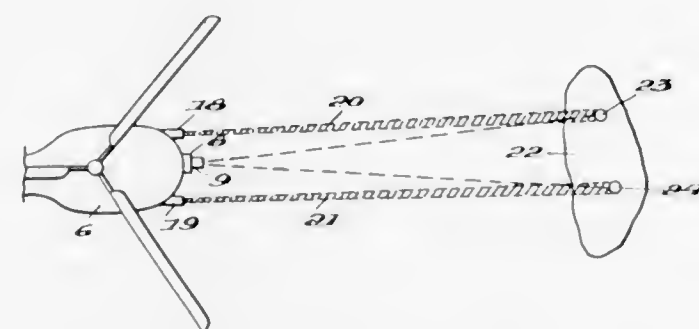
Filed June 16, 1969, Ser. No. 833,334  
Int. Cl. G01b 9/02; G02b

U.S. Cl. 356-109

7 Claims



The interference patterns that would be recorded on a hologram from a complexly shaped surface such as the surface of an optical element or jet turbine blade, or the like, is calculated in a suitably programmed computer which may be coupled to an automatic plotter. The automatic plotter will then print the interference pattern which would be produced by projection of the pattern on the film in the form of dots of variable spacing or of different shading in order to produce the desired pattern. This printed pattern is then photographed with a high resolution film such as one capable of resolving four-hundred separate dots per millimeter of length, with this film serving as a hologram containing the synthesized interference pattern that represents the computed surface. The hologram or artificial optical template is then illuminated by a laser source so that a virtual image of the computed surface is produced. An object having a surface which is to be compared to the computed surface is then superimposed on the virtual



A device for night navigation of aircraft has a television camera carried by the aircraft the axis of which is stabilized with respect to the ground. A video monitor is provided with scales on which the camera shows the images of two light beams projected from the aircraft. The beams are divergent and convergent.

3,721,500

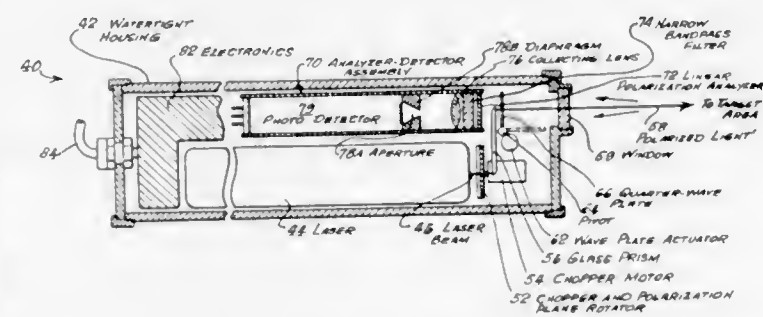
### INSTRUMENT FOR MEASURING THE DEPOLARIZATION OF BACKSCATTERED LIGHT

Ronald Bruce Fugitt, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Aug. 6, 1971, Ser. No. 169,715  
Int. Cl. G01n 21/40

U.S. Cl. 356-118

5 Claims



An instrument capable of obtaining information on the polarization properties of ocean waters. Operation of the instrument is as follows: Light from a He-Ne laser passes through a rotating beam chopper, a rotating linear polarizer, and a light guide and an aperture (to block spurious reflections) into the scattering medium, generally seawater. A portion of the backscattered light is intercepted by an analyzer-detector module, and after amplification the detector output is displayed on an oscilloscope. The beam is chopped at 20

times the rotational frequency of the polarizer. This provides an a-c backscatter signal which is independent of detector drift and changes in background illumination, if detector saturation is avoided. The rotating polarizer produces a modulation of the signal at twice the rotational frequency. The maximum signal  $P_{max}$  occurs when the polarizer and analyzer are in the "aligned" position, and the minimum signal  $P_{min}$  occurs when they are "crossed." The degree of polarization is given by

$$\psi = P_{max} - P_{min} / P_{max} + P_{min}$$

A quarter-wave plate which can be flipped into or out of the path of the light beam permits use of the instrument using circular polarization techniques.

3,721,501

### METHOD AND APPARATUS FOR MONITORING SURFACE COATINGS

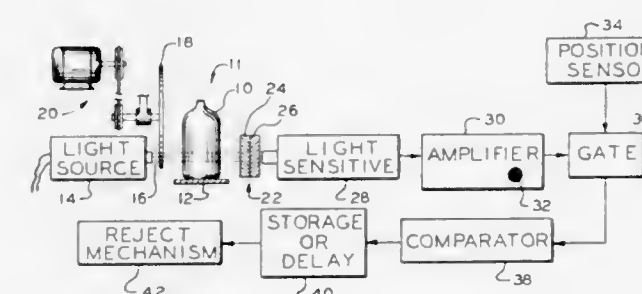
Everett J. Atkinson; James R. Sager, both of Toledo, Ohio, and Alan C. Bensch, Lowell, Mass., assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Jan. 4, 1971, Ser. No. 103,566

Int. Cl. G01n 21/06, 31/00; B07c 5/34

U.S. Cl. 356-201

9 Claims



There is disclosed herein in a preferred embodiment a method and apparatus for determining whether the layer of high alkali glass on the inside of a glass bottle has been effectively neutralized by the introduction of an acidic compound into the interior of the glass bottle. The method includes the steps of passing a beam of light through the bottle, and filtering the light beam to pass only a range of wave lengths which will be scattered, absorbed or otherwise inhibited by the presence of a coating on the inside of the bottle which has resulted from the reaction of the acidic compound and the layer of high alkali glass. The filtered light beam is sensed to determine the amount of light in the range of wave lengths which passes through the bottle and this is utilized as a measure of the effectiveness of the neutralization process. In the preferred embodiment the filtering step includes limiting the range of wave lengths to detect the amount of sodium sulphate in the coating on the inside of the bottle as the measure of the effectiveness of the neutralization process.

3,721,502

### PORTABLE APPARATUS FOR CLEANING WINDOW-PANES OR THE LIKE

Pietro Ognibene, Via Lanzoni, 277, Villarotta, Italy  
Filed Aug. 17, 1971, Ser. No. 172,394

Claims priority, application Italy, Aug. 28, 1970, 29132 A/70

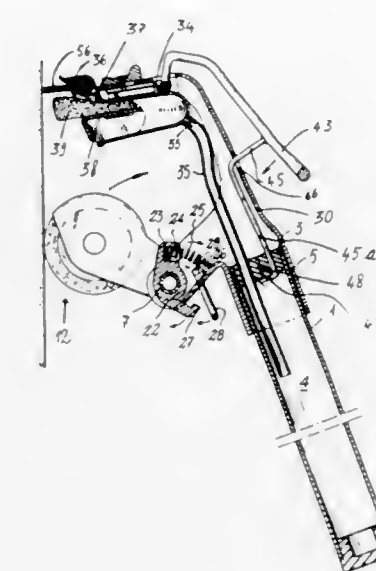
Int. Cl. A47I 1/08

U.S. Cl. 401-13

5 Claims

A portable apparatus for cleaning window-panes or the like, substantially comprising a handle carrying a roller swinging against a spring and containing a detergent liquid capable of

emerging from small valves which are pressed against the roller surface as the roller rotates, a squeegee being provided



3,721,503

### ROTARY TOOL HOLDER

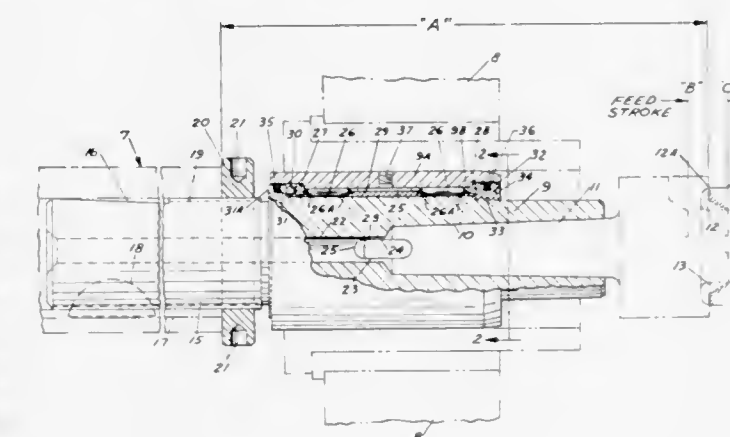
Bernard H. Johnson, Plymouth, Mich., assignor to Gatco Rotary Bushing Company, Plymouth, Mich.

Filed Feb. 8, 1971, Ser. No. 113,356

Int. Cl. B23b 51/12

U.S. Cl. 408-238

5 Claims



This Application discloses a wear free, precision, holder for a machine tool such as used for cutting, boring, end facing and the like. The invention resides in the particular combination and arrangement of elements and particularly in the provision of a holder having a fixed concentric shell portion and a rotatable body portion, with a plurality of small diameter needle roller bearings positioned between the said shell and said body to effect a closely spaced, frictionless, working relation between said fixed and rotatable portions.

3,721,504

### VERTICALLY ADJUSTABLE CENTRIFUGAL PUMP FOR USE IN MANHOLES

Angelo J. Crisafulli, P.O. Box 1051, Glendive, Mont.

Filed Feb. 18, 1971, Ser. No. 116,498

Int. Cl. F01d 13/00, 15/00; F04b 17/00

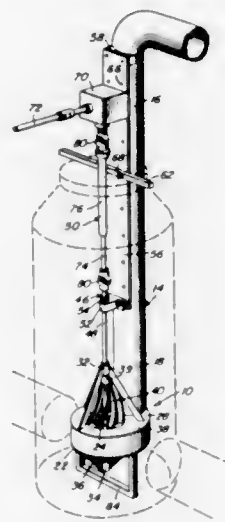
U.S. Cl. 415-74

10 Claims

A portable centrifugal pump for use in vertically extending cavities such as a manhole. A centrifugal pump having a force



feed blade assembly is located in the cavity and empties into a discharge duct extending upward out of the cavity. A drive shaft extends downward from a gear box located above the cavity and drives the pump. The gear box is adjustable to accommodate horizontally extending power shafts at varying



heights. The pump may be adjustably positioned at varying depths through the use of a vertically adjustable transverse support member which mounts the centrifugal pump in the cavity and is supported by a depending framework from the bottom of the cavity.

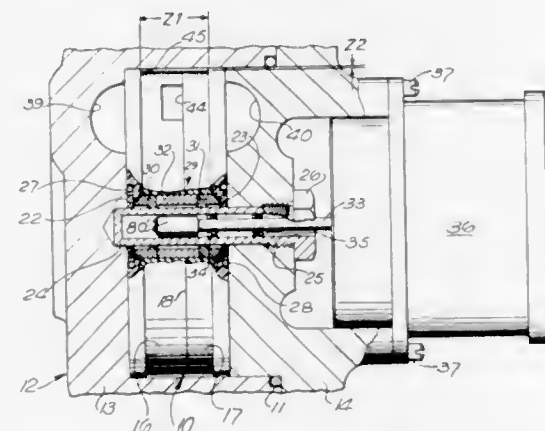
### 3,721,505 FLUID MOTOR

Lawrence Taylor Garnett, Fullerton, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Aug. 25, 1971, Ser. No. 174,711  
Int. Cl. F04d 5/00

U.S. Cl. 415-53

13 Claims



A flowmeter, the total angular travel of which is directly proportional to the total volume of a fluid flowing therethrough. A revolutions counter-indicator or the like is driven by a fluid motor having a bypass. The bypassed flow is turbulent over the otherwise linear portion of the motor curve and laminar at flow rates below the lowest turbulent flow rate. The bypass thus increases the range and accuracy of the flowmeter at low flow rates. A certain ratio greater than unity of inlet and outlet areas produces the same result as do internal ribs inside the motor housing.

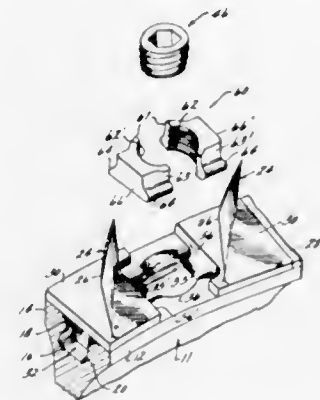
### 3,721,506 SPLIT-NUT BLADE LOCKING ASSEMBLY

Bernard Joseph Anderson, Danvers, Mass., assignor to General Electric Company, Lynn, Mass.

Filed May 25, 1971, Ser. No. 146,732  
Int. Cl. F01d 5/32

U.S. Cl. 416-215

7 Claims



A split-nut blade locking assembly, for maintaining the circumferential integrity of blades peripherally disposed within a groove around a rotor element includes a split-nut within which a set screw may be threadably engaged for spreading apart the halves of the split-nut and maintaining the halves in engagement with the side walls of the groove.

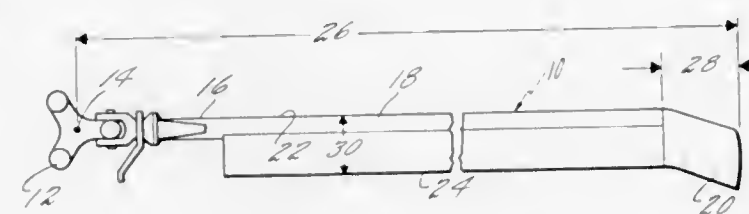
### 3,721,507 BLADE FOR HIGH SPEED HELICOPTER

Robert A. Monteleone, Monroe, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Sept. 22, 1971, Ser. No. 182,776  
Int. Cl. B64c 27/46

U.S. Cl. 416-223

27 Claims



To alleviate a helicopter blade instability which manifests itself as a submultiple oscillation of the rotor tip path plane during high speed flights, the blade tip is thinned between its inboard end and its outboard end so that the outboard end is approximately one half the thickness of the inboard end, while the tip chord remains substantially constant, and the blade tip is swept rearwardly to shift its aerodynamic center rearwardly and thereby establish a moment to counteract the instability and preferably, the blade tip is selectively cambered to delay retreating blade stall.

### 3,721,508 LIQUID-RING PUMP WITH CONTROL VALVES

Kurt Mugele, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Continuation-in-part of Ser. No. 871,868, Oct. 28, 1969, abandoned. This application May 11, 1971, Ser. No. 142,340  
Claims priority, application Germany, April 26, 1969, P 21 430.3

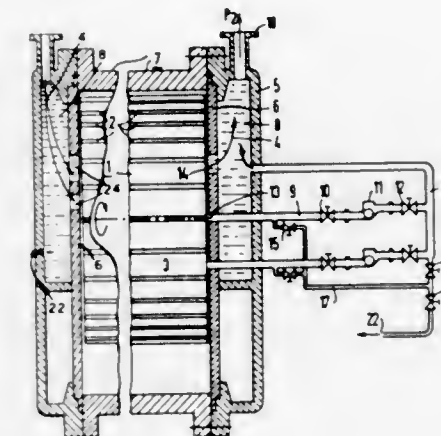
Int. Cl. F04c 19/00

U.S. Cl. 417-68

9 Claims

Liquid-ring pump includes a vane rotor, a housing structure enclosing the rotor and having suction and compression ports

communicating with intervane spaces of the rotor at respective suction and pressure localities thereof, pump outlet means, pressure-responsive control valves located outside the housing structure, pressure lines connecting the control



valves, respectively, with the compression ports of the housing structure, the valves having respective outlets communicating with the pump outlet means, and shut-off valve means serially connected with each of the respective control valves.

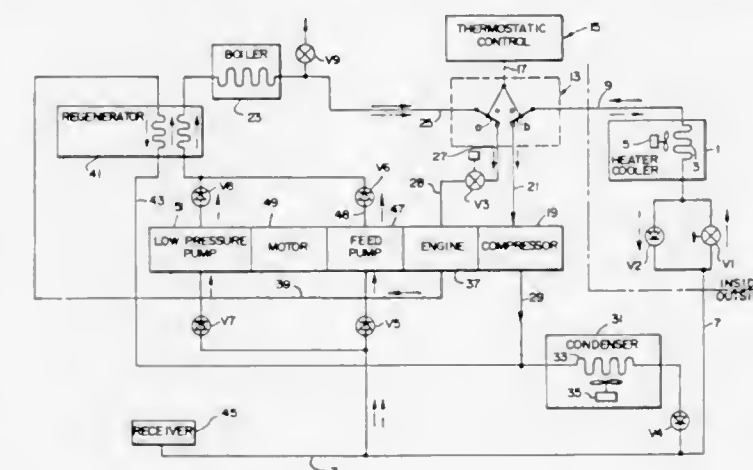
### 3,721,509 GAS HEATING AND COOLING SYSTEM

Sotiris S. Kitrilakis, Newtonville, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.

Division of Ser. No. 889,774, Dec. 22, 1969, abandoned, which is a division of Ser. No. 765,207, Oct. 4, 1968, Pat. No. 3,519,065. This application July 2, 1971, Ser. No. 159,560  
Int. Cl. F01b 23/08

U.S. Cl. 417-339

2 Claims



A gas fired temperature control unit for air conditioning and heating, comprising two interconnected units, one adapted to be mounted outside and one inside the space to be heated or cooled. The outside unit comprises a hermetically sealed housing in which there is a five-stage fluid processing system comprising a compressor, a Rankine cycle engine, a feed pump, an electric motor, and a low pressure liquid pump. Located in a common ventilated housing with this hermetically sealed unit are a condenser, a boiler, a regenerator and a fluid reservoir. The inside unit comprises a heat exchanger which serves as an evaporator for air conditioning and as a condenser for heating. The inside and outside units are interconnected by valving under thermostatic control that connects the apparatus either as a heater or as an air conditioner in dependence on the temperature in the space to be controlled.

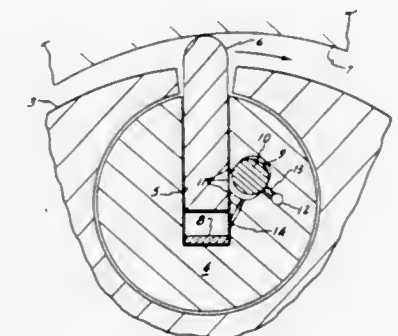
### 3,721,510 ROTOR APEX SEAL DAMPING DEVICE

William W. Gilbert, 372 South Williamsbury, Birmingham, Mich.

Filed June 25, 1971, Ser. No. 156,900  
Int. Cl. F01c 19/02; F03c 3/00; F04c 27/00

U.S. Cl. 418-113

5 Claims



A mechanism to damp vibration and chatter in the rotor apex seals of rotary internal combustion engines, pumps, compressors and other devices of generally epitrochoidal motion.

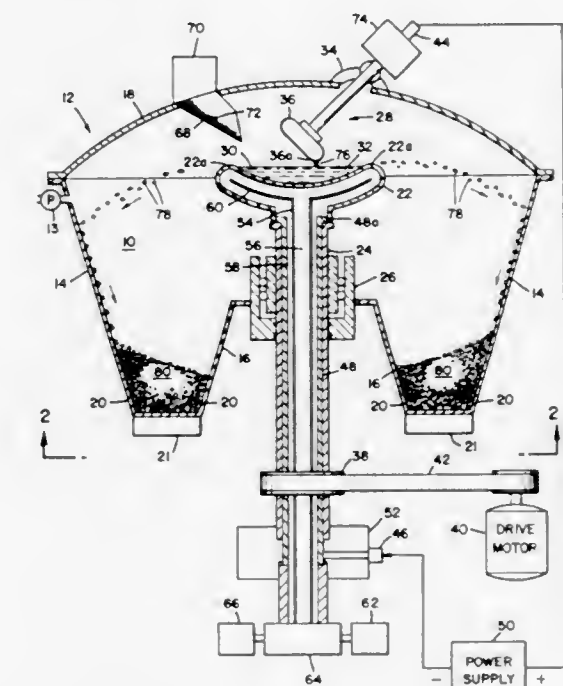
### 3,721,511 ROTATING ARC FURNACE CRUCIBLE

Max P. Schlienger, 136 Mitchell Boulevard, San Rafael, Calif.

Filed Feb. 18, 1971, Ser. No. 116,429  
Int. Cl. B29c 23/00

U.S. Cl. 425-8

10 Claims



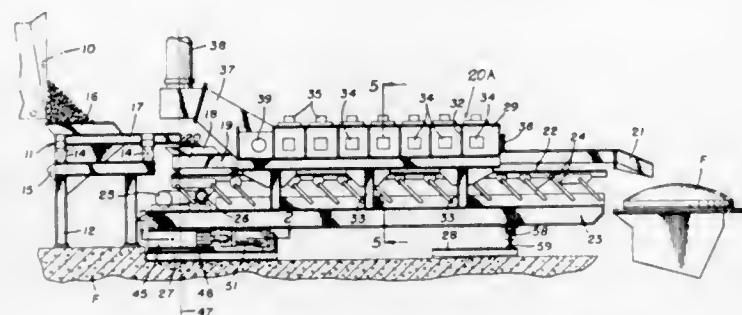
A method and apparatus for the melting of metallic scrap or other meltable material and the conversion of the molten material into shot or splatter. An arc furnace is provided incorporating a rotatable melt crucible with appropriate drive and cooling systems within an evacuated or controlled atmosphere enclosure. A rotating electrode wheel is positioned above the surface of the crucible in arc-forming proximity to the melt contained therein and a voltage source is applied between the electrode wheel and crucible to produce an arc of sufficient intensity to melt the materials involved. The crucible is rotated during the melting to vary the point of arc impingement on the melt surface. When a sufficient amount of molten material is contained within the crucible the rotational speed of the crucible is increased to cause molten material to leave the crucible at its periphery in the form of droplets.







material and its other end adapted to feed the material into any one of said furnaces, and a pre-heat furnace overlying the conveyor for preheating the charge material. The conveyor and furnace are carried by a common support frame which is pivoted about a vertical pivot so that the conveyor and furnace may be swung horizontally to alignment with any one furnace.



nace. The pre-heat furnace has a rotatable connection with an exhaust stack, which connection is concentric with the vertical pivot. In a further embodiment of the invention, a sub-frame supports the conveyor from the support frame so that the conveyor may be moved toward and away from the furnaces to compensate for variance in distance between the discharge end of the conveyor and the furnaces.

### 3,721,520 GALVANIZING WIRE

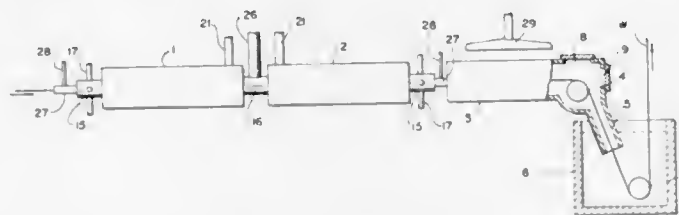
Quentin M. Bloom, Dresher, Pa., assignor to Selas Corporation of America, Dresher, Pa.

Division of Ser. No. 750,338, Aug. 5, 1968, abandoned. This application Sept. 2, 1971, Ser. No. 177,417

Int. Cl. F27b 9/28

U.S. Cl. 432-143

4 Claims



The invention relates to galvanizing of wire and shows the direct heating of the wire in such a manner that it is protected from oxidation prior to delivery to a galvanizing pot.

### 3,721,521 APPARATUS FOR CONVERTING PRESSURE ENERGY TO THERMAL ENERGY

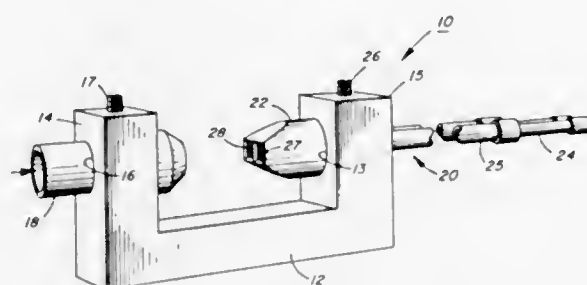
Albertus E. Schmidlin, Caldwell, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed April 30, 1971, Ser. No. 139,111

Int. Cl. F27b 17/00

U.S. Cl. 432-227

17 Claims



Apparatus is provided for converting pressure energy to thermal energy which includes a means for directing a high velocity flow of a compressible fluid at the open end of a resonance tube assembly. The resonance tube assembly includes a plurality of resonance tubes, the inlet ends of which are juxtaposed and separated by a knife-edge wall. The provision of the knife-edge wall common to the passages of the resonance tubes provides for the generation of oscillations of gas within each tube which are out of phase with oscillations in other tubes. The closed end of each resonance tube preferably embodies a mass of metallic material to define a "heat sink" for retaining thermal energy in that portion of the tube adjacent the closed end. The "heat sink" portion of the tube is thermally isolated from the remaining portions of the tube by a thin walled tube section which retards the flow by conduction of thermal energy away from the closed end of the tube.

### ERRATUM

For Class 432-25 see:  
Patent No. 3,721,728

## CHEMICAL

### 3,721,522 METHOD FOR SCOURING AND DYEING SILK IN A SINGLE OPERATION

Raymond Machon, Alles des Muriers; Jean Flechet, Bd. de la Loire, Maison Hugo; and Etienne Hugo, 21 Rue Gambetta, all of Saint-Just-sur-Loire, Loire, France

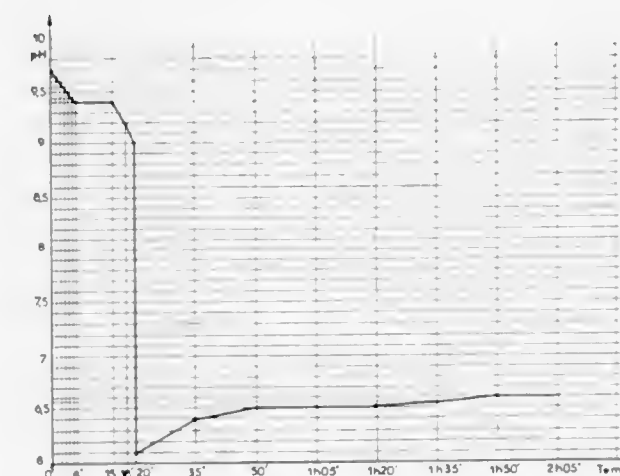
Filed Nov. 4, 1969, Ser. No. 873,857

Claims priority, application France, June 11, 1969, 6919242

Int. Cl. D06p 5/00

U.S. Cl. 8-19

10 Claims



The silk in skein, thread or fabric shape is treated in a single operation inside a single bath with degumming reagents and with dyestuffs. To this end, the silk is soaked in an aqueous bath containing a tension-active reagent and with which the degumming reagent and dyestuffs are incorporated in sequence with intermediate stirring periods provided by a circulation of the bath over the silk. The pH of the bath is caused to drop sharply through addition of sulfuric acid for instance from 9 to 10 down to 5 or even 6 to 6.5. This procedure reduces the handling of the silk to a minimum.

### 3,721,523 MODIFICATION OF REACTIVE HYDROGEN CONTAINING POLYMERS WITH AMINO EPOXY PHOSPHONATES

Giuliana C. Tesoro, Dobbs Ferry, N.Y., assignor to J. P. Stevens & Co., Inc., New York, N.Y.

No Drawing. Original application June 24, 1966, Ser. No. 560,101, now Patent No. 3,528,998. Divided and this application May 22, 1970, Ser. No. 38,636

Int. Cl. D06m 13/10, 13/32, 13/44

U.S. Cl. 8-196

13 Claims

Amino epoxy phosphonates, such as 1-amino-2,3-epoxypropylphosphonates and N-substituted derivatives thereof, including polyphosphonates and silyl phosphonates, can be homopolymerized, or reacted with active-hydrogen-containing polymers, such as cellulose, and the silyl derivatives can be reacted with glass. These compounds thus have utility as flame-retardant and cross-linking agents for cellulose, as finishes for glass surfaces, and as coupling agents for glass fiber-thermosetting plastic laminates.

### 3,721,524 PROCESS FOR THE DYEING OF TEXTILE MATERIALS OF HIGH MOLECULAR POLY-ESTER FIBRES

Hans-Ulrich von der Eltz, Frankfurt am Main, Richard Gross, Munich, and Walter Birke, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Feb. 10, 1970, Ser. No. 9,988

Claims priority, application Germany, Feb. 12, 1969, P 19 06 842.9

Int. Cl. D06p 5/04, 5/06

U.S. Cl. 8-169

4 Claims

Continuous process for the dyeing of textile materials made from high molecular polyester fibres or containing such fibres with disperse dyestuffs and/or organic pigment dyestuffs, wherein the textile material is treated with a dyeing bath heated up to 160-230° C. which consists of oxalkylation products of aliphatic, aromatic, alkylated aromatic or cyclo-aliphatic compounds or of polyglycol ethers, and in which the dyestuffs are dissolved or dispersed.

### 3,721,525 PROCESS AND DEVICE FOR STERILIZING BY FLAMING CONTAINERS FOR PHARMACEUTICAL PREPARATIONS

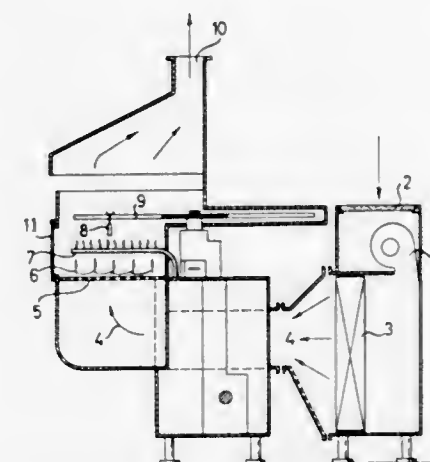
Hans-Peter Hortig, Frankfurt am Main, and Karl-Friedrich Schutz, Wiesbaden, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed July 15, 1971, Ser. No. 162,974

Int. Cl. A61l 1/00

U.S. Cl. 21-2

2 Claims



Containers for pharmaceuticals can be sterilized by flaming, if the flames burn in a laminar-flow current of air, with little risk of contamination. A device for flame-sterilizing such containers is fitted out with means to produce a laminar-flow air current through the sterilizing part of the device.

### 3,721,526 INHIBITION OF CORROSION IN HOT CARBONATE CARBON DIOXIDE REMOVAL UNITS

Zisis Andrew Foroults, East Orange, N.J., and Brian Eric Hopkinson, Judibana, Estado Falcon, Venezuela, assignors to Esso Research and Engineering Company, Linden, N.J.

Filed July 17, 1970, Ser. No. 55,943

Int. Cl. C23f 11/06

U.S. Cl. 21-2.7

6 Claims

Corrosion of metals and alloys by alkali metal carbonate solutions is greatly reduced by adding to the solution at least about 1.5 percent by weight, and preferably about 2 to 5 per-



cent by weight, of an alkali metal nitrite. Carbon steel is among the alloys which can be protected. Typical solutions are the hot carbonate solutions used to scrub carbon dioxide from gas mixtures.

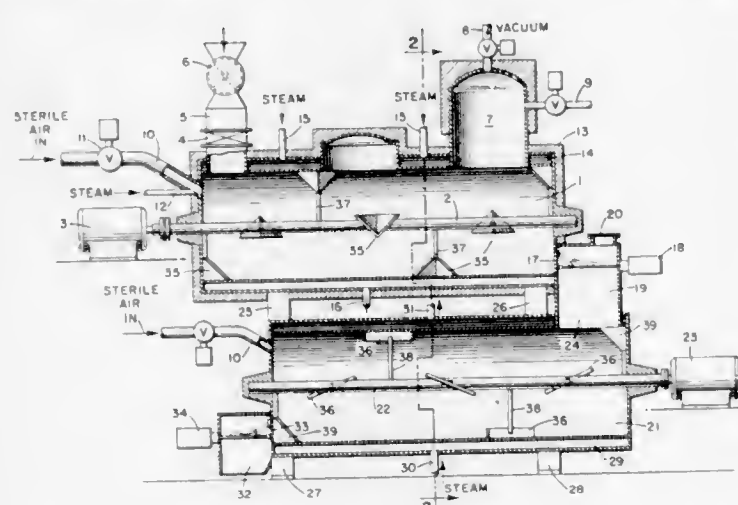
3,721,527

**METHOD FOR STERILIZING BULK MATERIALS**

Wilhelm Lodige; Fritz Lodige; Josef Lucke, all of Paderborn, Germany, and Theodor Ernst, Wettingen, Switzerland, assignors to Wilhelm Lodige; Fritz Lodige and Josef Lucke, by said Theodor Ernst, Paderborn, Germany  
Continuation-in-part of Ser. No. 760,803, Sept. 19, 1968, abandoned. This application Feb. 18, 1971, Ser. No. 116,539  
Claims priority, application Germany, Oct. 10, 1967, P 16 42 087.4

Int. Cl. A61l 13/00, 1/00

U.S. Cl. 21—56



A method and apparatus for sterilizing bulk materials. In the method, sterilization is achieved by means of steam or hot gas. Batches of the material are centrifuged in a closed chamber with simultaneous addition of sterilizing medium. Immediately thereafter, the sterilizing medium is separated out from the material at a sub-atmospheric pressure with centrifuging of the material.

The apparatus comprises a pressure-tight container with a built-in centrifuge mechanism. A closed conveyor device is connected to the inlet and outlet of the container, for the supply and discharge of material being handled.

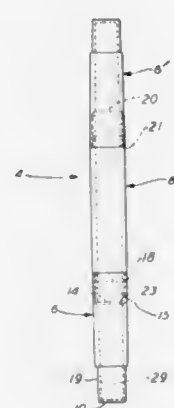
3,721,528

**METHOD AND APPARATUS FOR MEASURING THE AMOUNT OF A COMPONENT IN A BIOLOGICAL FLUID**

Louis W. Mead, 38 Somerset Road, Lexington, Mass., and Marshall E. Deutsch, 41 Concord Road, Sudbury, Mass.  
Filed June 4, 1970, Ser. No. 43,488  
Int. Cl. G01n 33/16, 23/12; G21h 5/02

U.S. Cl. 23—230 B

8 Claims



An improved mode of preparing certain reagents utilized in the measurement of components of biological fluids. In the

general mode contemplated, there is added to the biological fluid, which normally contains a binder (i.e. a protein) capable of binding the component to be measured, a combination of a component essentially similar to that which is to be measured as present in the biological fluid but modified to act as a tracer (by reason of its optical or radio-active properties) and an adsorbent. The tracer modified component is added in an amount greater than that capable of being bound by the binder present in the fluid. The adsorbent material is added to remove the unbound components, the adsorbent removed, and the amount of tracer in the liquid phase measured.

The improvements comprise the use of a milder adsorbent than theretofore used and a modification in the construction of the vials to carry out the measurements.

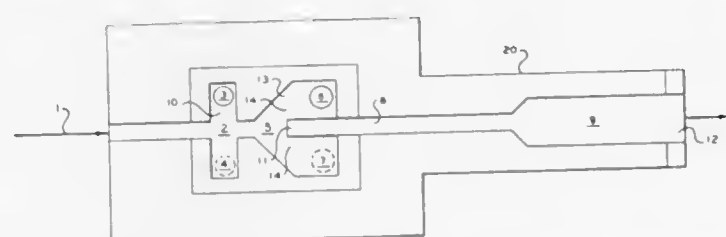
3,721,529

**APPARATUS FOR CARBON BLACK PRODUCTION**

Gerard Kraus, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.  
Division of Ser. No. 740,540, June 27, 1968, Pat. No. 3,582,277. This application Jan. 18, 1971, Ser. No. 107,078  
Int. Cl. C09c 1/50

U.S. Cl. 23—259.5

3 Claims



Apparatus for the production of carbon black wherein a hydrocarbon feed is contacted with two generally countercurrent impinging masses of hot combustion gases and the resulting mixture passed into a reaction zone wherein the hydrocarbon feed is pyrolytically decomposed into carbon black.

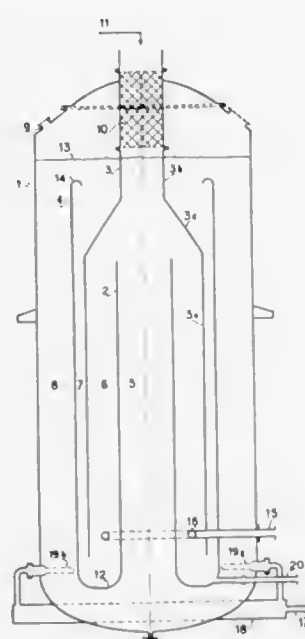
3,721,530

**REACTOR FOR PREPARATION OF CHLOROHYDRINS OF 1,2-GLYCOLS**

Robert Bouchet, Martigues, France, assignor to Naphtachimie, Paris, France  
Filed Jan. 12, 1971, Ser. No. 105,917  
Claims priority, application France, Jan. 13, 1970, 7000985  
Int. Cl. C07c 17/02; B01j 1/00

U.S. Cl. 23—285

5 Claims



A chemical reactor comprising a generally cylindrical reaction vessel, a series of three jackets defining a central chamber and three annular chambers within the reactor, means for

feeding a first gaseous reactant, such as chlorine, to the lower portion of the first annular chamber to displace liquid reaction medium therein to the centrally disposed chamber for flow downwardly therethrough, means for introducing a second gaseous reactant, such as an ethylenic hydrocarbon, to the third annular chamber to cause flow of the liquid reaction medium therein upwardly therethrough to the second annular chamber for reaction with the reaction product of the chlorine and water in the liquid reaction medium to thereby minimize the production of chlorinated alkanes.

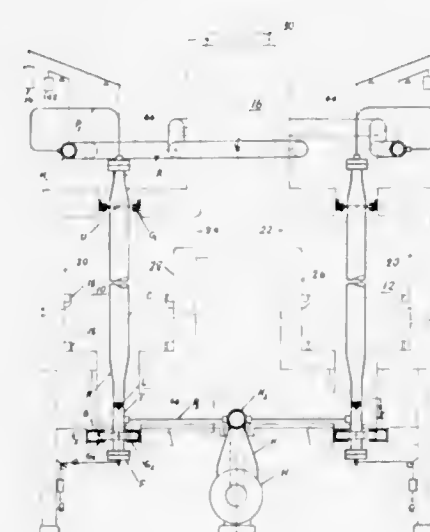
3,721,531

**STEAM-HYDROCARBON REFORMER WITH A SUPPORT SYSTEM FOR CATALYST TUBES THEREIN**

Mehmet Fahri Tuncer, 110 East 36 Street A.P. 3C, New York, N.Y.  
Filed Aug. 30, 1971, Ser. No. 175,934  
Int. Cl. B01j 9/04; F22b 37/24; F28f 5/00

U.S. Cl. 23—288 M

7 Claims



A steam-hydrocarbon reformer which includes a source of a gaseous charge with parallel inlet manifolds being coupled to the source. Two parallel rows of vertical catalyst tubes are provided which are connected by inlet tubes to the inlet manifolds. One outlet manifold is provided which is connected by outlet tubes to the catalyst tubes. A counterweight system suspends the catalyst tubes in vertical attitude to relieve the inlet and outlet tubes of the weight thereof. A system is provided at the bottoms of the catalyst tubes permitting horizontal movement of the same but restricting vertical movement thereof. A further counterweight system acts on the bottoms of the catalyst tubes to put the outlet tubes under tension. Sheets are arranged at the tops of the catalyst tubes to which latter freely extend to accommodate thermal expansion of the catalyst tubes. The catalyst tubes are connected together in their respective rows. The inlet manifolds and sheets are supported at the centers thereof to permit outward thermal expansion in opposite directions. A further counterweight system is provided for supporting the inlet manifolds.

3,721,532

**AMMONIA SYNTHESIS SYSTEM**

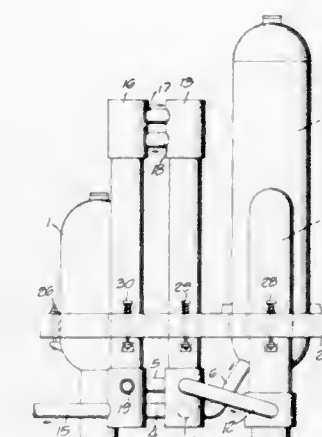
Lee E. Wright, West Covina, and Allan E. Pickford, Palos Verdes Estates, both of Calif., assignors to C. F. Braun & Co., Alhambra, Calif.  
Filed Feb. 8, 1971, Ser. No. 113,333  
Int. Cl. B01j 9/04; C01c 1/04; F28d 7/06

U.S. Cl. 23—289

5 Claims

A system of apparatus and process for synthesizing ammonia are disclosed, which includes first and second catalytic synthesis converters with a heat exchanger interposed therebetween and operatively connected to the inlet and outlet of one converter and to the inlet of the other converter to

permit a feed gas stream to be passed in heat exchange relationship with a partially synthesized gas stream passing from the outlet of the first converter to the inlet of the second converter. The converters and heat exchanger are mounted on a



support platform, with one converter and heat exchanger mounted for movement with respect to the platform to accommodate dimensional changes caused by thermal expansion during operation.

3,721,533

**METHOD OF EXTRACTING URANIUM FROM SEAWATER**

Hans-Jurgen Riedel, Julich, Germany, assignor to Kernforschungsanlage Julich Gesellschaft mit beschränkter Haftung, Julich, Germany  
Filed June 8, 1970, Ser. No. 44,628  
Claims priority, application Germany, June 6, 1969, P 19 28 864.3

Int. Cl. C01g 56/00

10 Claims

A method of extracting uranium in the form of tri-carbonate complexes of  $UO_2^{++}$  from seawater or other liquids rich in metal ions wherein the seawater is acidified to a pH of approximately 5 (e.g. with hydrochloric acid or  $HNO_3$ ) and then is treated with ultramarine blue in an ion-exchange relationship until equilibrium is reached in the distribution of uranium between the ultramarine blue and the seawater. Elution of the uranium is carried out with an alkali carbonate solution.

3,721,534

**METHOD OF FORMING PROTECTIVE COATINGS ON FERROUS METAL AND THE RESULTING ARTICLE**

Richard J. Kubick, Queens County, Beechhurst, N.Y., assignor to GTE Sylvania Incorporated, Detroit, Mich.  
Filed Sept. 1, 1971, Ser. No. 177,103  
Int. Cl. B32b 15/00, 15/04

U.S. Cl. 29—195

8 Claims

A composite comprising a ferrous metal substrate and three layers of specific materials is disclosed. The first layer is nickel aluminide, the second layer is a nickel-chromium alloy and the third layer is an aluminum oxide ceramic. A process for producing the composite is also disclosed which comprises depositing the layers in a specific order under controlled temperature conditions.



3,721,535

## COMPOSITE COPPER ALLOY

Michael J. Pryor, Woodbridge, and Robin P. M. Procter, North Haven, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Jan. 25, 1971, Ser. No. 109,125  
Int. Cl. B23p 3/00

U.S. Cl. 29—199

6 Claims

The disclosure teaches a novel, composite copper alloy having good stress corrosion resistance. The composite has a copper alloy core containing from 2 to 12 percent by weight aluminum, balance essentially copper, clad with copper or a high copper alloy containing at least 95 percent copper.

3,721,536

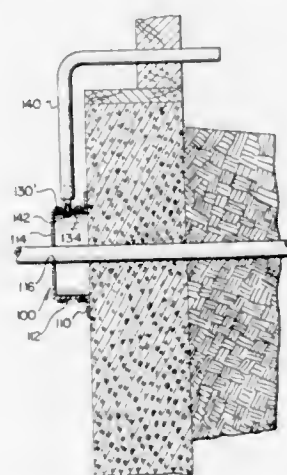
## GAS SAFETY DEVICE

John D. Lakes, 762 Ross Ave., Hamilton, Ohio 45013  
Filed Jan. 26, 1971, Ser. No. 109,773

Int. Cl. F17d 3/04; F16l 5/00

U.S. Cl. 48—193

2 Claims



Device for trapping gas leaks at the juncture of a gas lead-in pipe and a building wall, including an exhaust pipe having a flexible connection to the trap chamber to allow for shifting between portions of the building.

3,721,537

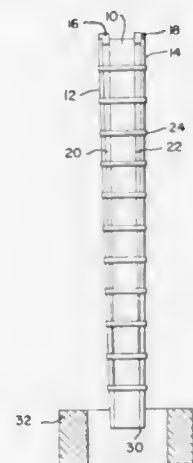
## METHOD FOR CLADDING POLYGONAL CROSS-SECTION LASER

Amadee D. Mario and Clifford W. Ask, Sr., Woodstock, Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed Feb. 16, 1971, Ser. No. 115,495  
Int. Cl. C03c 23/20

U.S. Cl. 65—14

5 Claims



A side of a polygonal cross-sectioned glass laser rod core may be clad by applying a slab of a suitable cladding glass material thereto. The fusing of the slab to the core without the formation of entrapped gas bubbles therebetween is accomplished by allowing the slab to rest in essentially line contact with the side of the core at the end adjacent a suitable drawing furnace. The other end of the slab is spaced away from the core material. Means is provided for urging the slab of cladding material

toward the side of the core such that as the core and cladding material are drawn within the drawing furnace, the line of contact between the core and cladding gradually traverses the length of the core and cladding thereby forcing any gas out of the space which exists between the core and cladding to provide a bubble-free interface in the resulting clad glass laser rod.

3,721,538

## BURNER APPARATUS AND METHOD FOR MANUFACTURING OF GLASS WOOL

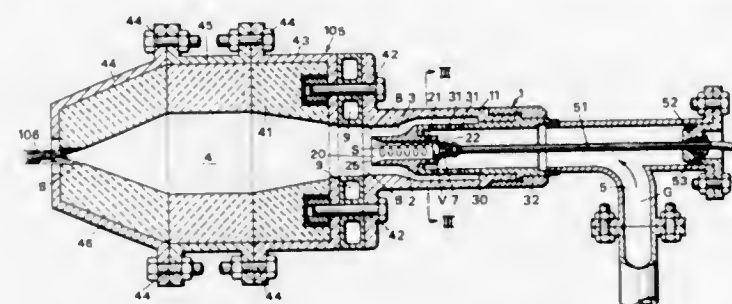
Kiwamu Okuma and Takeo Abe, Koriyama, Japan, assignors to Paramount Glass Mfg. Co., Ltd., Koriyama City, Fukushima-ken, Japan

Filed Dec. 22, 1971, Ser. No. 210,768  
Claims priority, application Japan, Dec. 23, 1970, 45/116,972

Int. Cl. C03b 37/06

U.S. Cl. 65—7

11 Claims



This invention relates to a method and apparatus for forming glass fibers by remelting primary filaments from a melting furnace by means of a high velocity jet uniform flame of increased width but with a lower width ratio of unused flame ends to total flame width. This is accomplished by placing a plurality of new burner units in a side by side relation while in communication with the combustion chamber. Each burner unit comprises a flame holder utilizing converging streams of combustible gas surrounded by a spiral configured stream around both of which is enveloped a third stream.

3,721,539

## CONSTRUCTION PROCESS AND APPARATUS FOR FORMING CERAMIC WALLS

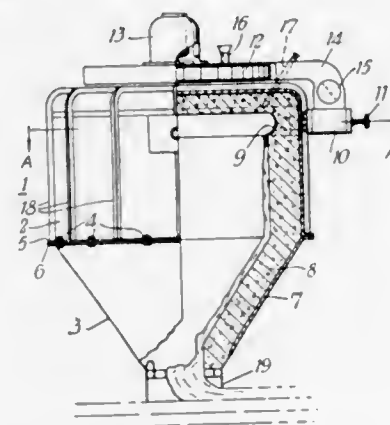
Robert Julian Hansford, Tirley Garth, Tarporley, Cheshire, England

Continuation of Ser. No. 796,692, Feb. 5, 1969, abandoned.  
This application June 3, 1971, Ser. No. 149,782  
Claims priority, application Great Britain, Feb. 7, 1968, 6,173/68

Int. Cl. C03b 5/04

U.S. Cl. 65—19

8 Claims



A method of heating raw material in which a stream of particles of raw material are fed through the hot zone of a heat source in a housing. The heat transforms the particles into a completely or partially molten state and the particles are then discharged from the housing. They may be deposited in moulds or in superposed successive layers.

3,721,540

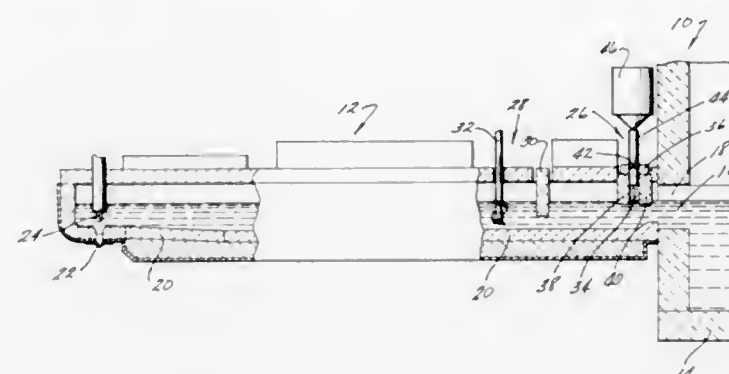
## FOREHEARTH ADDITION SECTION

Friedrich W. Hammer, Toledo, Ohio, assignor to Owens-Illinois, Inc.  
Continuation of abandoned application Ser. No. 648,063, June 22, 1967. This application Nov. 6, 1970, Ser. No. 87,596

Int. Cl. C03b 5/04

U.S. Cl. 65—27

5 Claims



Introduction of solid particulate compounds into a molten base glass by utilizing a forehearth addition section and automatic feeding equipment; the addition section including front and rear refractory blocks defining an isolated zone into which the compounds are discharged and thereby providing a more efficient, non-contaminating hygienically acceptable system.

3,721,541

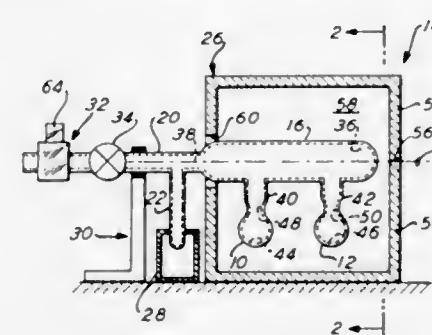
## METHOD OF MANUFACTURE OF A NUCLEAR MAGNETIC RESONANCE CELL

James H. Simpson, Katonah, and Donald I. Shernoff, White Plains, N.Y., assignors to The Singer Company, Little Falls, N.J.

Filed July 26, 1971, Ser. No. 166,158  
Int. Cl. C03c 25/02

U.S. Cl. 65—60

9 Claims



A method of manufacture of a nuclear magnetic resonance cell including, fabricating a manifold unit enclosing a chamber and having a side arm containing a deposit of mercury and having a bulb enclosing a cavity in communication with said chamber, heating said manifold unit and bulb for a predetermined time interval to a temperature approaching the softening temperature of the material of said bulb and simultaneously cooling said mercury deposit and said side arm to a temperature approaching that of liquid nitrogen and simultaneously evacuating the chamber and cavity to a relatively low pressure of about  $10^{-7}$  torr vacuum, cooling said manifold and bulb to about room temperature and simultaneously gently heating the mercury in the side arm until a portion of the mercury is vaporized and distilled within the manifold chamber, separating the side arm from the manifold and bulb assembly and sealing said chamber after again evacuating the chamber and cavity to said relatively low pressure, cooling the manifold until the manifold reaches a temperature of about 25 degrees centigrade and simultaneous-

ly raising the temperature of the bulb until the bulb reaches a temperature of about 100 degrees centigrade and maintaining said temperatures for a predetermined time interval, and separating the bulb from the manifold and simultaneously sealing the bulb while simultaneously maintaining said temperatures of the manifold and bulb, and heat cycling the sealed bulb for a plurality of cycles of heating and cooling for a predetermined time interval.

3,721,542

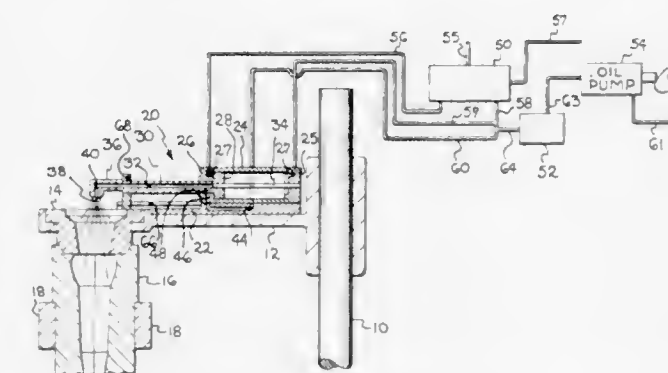
## FUNNEL ARM MOUNTED MOLD LUBRICATION APPARATUS

Robert H. Keller, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio  
Filed July 15, 1971, Ser. No. 162,809

Int. Cl. C03b 39/00

U.S. Cl. 65—169

6 Claims



A retractable lubrication unit mounted on the funnel arm of a glass forming machine for introducing a lubricant into glass forming molds. A reciprocating lubrication apparatus is mounted on the funnel arm of a glass forming machine and is operated to position a lubricant spray device over the funnel and retract the device during the period between seating of the funnel on the parison mold and the delivery of a glass charge through the funnel. During the time the spray device is over the open funnel, a mist of lubricant is sprayed into the forming mold through the funnel to provide the important lubricious surface on the forming mold and funnel necessary for efficient machine operation.

3,721,543

## FLOAT GLASS APPARATUS WITH MEANS FOR INSERTING WIRE

Franz Classen, Porz-Grengel, Germany, and Jean-Marc Parrot, Asnieres, France, assignors to Erste Deutsche Floatglas GmbH & Co. OHG, Porz, Germany

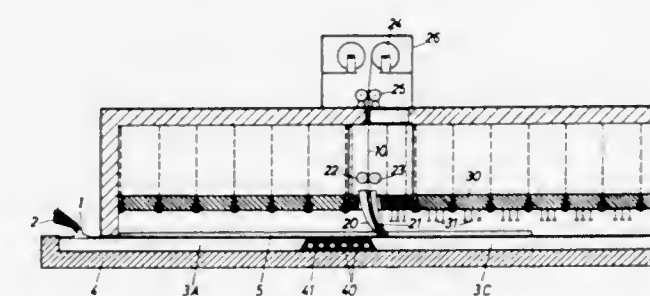
Filed June 9, 1969, Ser. No. 831,656

Claims priority, application Austria, June 14, 1968, A 5727/68

Int. Cl. C03b 18/00, 13/12

U.S. Cl. 65—146

2 Claims



A method and apparatus to make clear or transparent wire reinforced glass by the float process. Liquid glass, at a tem-



perature of about 1050° C., is brought to its finished width on a molten tin bath. A wire inlay is introduced downwardly into the upper surface of the liquid glass by wire guiding means which do not contact the glass. The surface of the glass in contact with the metal bath is cooled to make the glass strip stiffer. This is done to prevent the forces which act on the glass during the introduction of the wire inlay from pressing it into the tin bath, and to aid in controlling the depth to which the wire inlay penetrates it. After the wire inlay is introduced into the glass, heat is applied to the upper surface of the glass to form an even plane surface.

3,721,544

**MOLTEN GLASS GOB DISTRIBUTION SYSTEM**

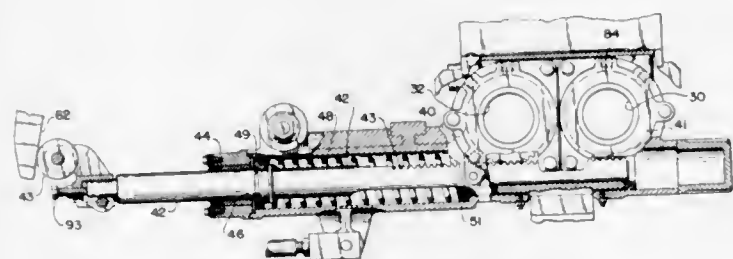
Wasył Bystryanyk, Hartford, and Francis A. Sarkozy, West Hartford, Conn., assignors to Emhart Corporation, Bloomfield, Conn.

Continuation of application Ser. No. 82,736, Oct. 21, 1970, which is a continuation of application Ser. No. 1,096, Jan. 7, 1970, both now abandoned. This application Nov. 17, 1971, Ser. No. 199,458

Int. Cl. C03b 5/30

U.S. Cl. 65—207

30 Claims



A system for distributing successively formed groups of glass gobs from a feeder bowl to the several individual sections of a Hartford I.S. type glassware forming machine includes a single scoop for each gob in the group, and mechanism for rotating the scoops between successive positions wherein each is aligned with a chute associated with a particular mold cavity in each machine section. A "double-gob" installation is described and the two scoops have associated annular spur gears which are driven in unison by a reciprocable rack gear through a predetermined schedule of angular displacements to successively align the two scoops with several sets of paired chutes according to a particular order and to then repeat this schedule. A cam follower connected to the rack gear causes programmed movement thereof in response to rotation of a cam having lobes of predetermined height to produce the predetermined schedule of angular displacements of the scoops.

3,721,545

**MULTIPLE-CAVITY GLASS MOLD OPENING APPARATUS**

George W. Irwin, Holland, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation of abandoned application Ser. No. 836,388, June 25, 1969. This application Aug. 2, 1971, Ser. No. 168,478

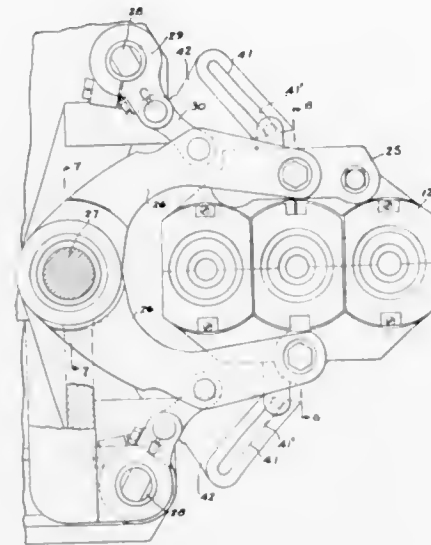
Int. Cl. C03b 9/40

U.S. Cl. 65—261

14 Claims

A glass forming machine wherein a plurality of charges are formed into parisons at a parison molding station and thereafter transferred to a blow molding station where they are blown into shape. Means are provided for

mounting the parison molds at the parison molding station in such a manner that they move away from one



3,721,546

**METHOD FOR PRODUCTION OF ALUMINUM**

Tadahisa Shiba, Junzo Tsuruki, Masaru Takahashi, Kunihiko Goto, and Isao Ono, Tokyo, Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 651,370, July 6, 1967. This application Aug. 11, 1970, Ser. No. 63,015

Claims priority, application Japan, July 13, 1966, 41/45,355, 41/45,356

Int. Cl. C22b 9/10, 21/02; C22d 7/02

U.S. Cl. 75—10

1 Claim

A method for the production of aluminum of high purity which consists exclusively of the steps of reducing alumina with carbon in an arc furnace, thereby obtaining an aluminum-containing composition, then maintaining the aluminum-containing composition at a temperature within the range of 1400° C. to 2000° C. on a filter in a vessel, whereby the aluminum is extracted alone and separated from the composition through the filter.

3,721,547

**METHOD OF FLUXING AND FLUIDIZING SLAG IN A CUPOLA**

Joseph E. Dvorak, South Euclid, and John F. Wallace, Shaker Heights, both of Ohio, assignors to Cleveland Flux Company, Cleveland, Ohio

Filed Sept. 15, 1971, Ser. No. 180,928

Int. Cl. C21b 3/02; C21c 1/02

U.S. Cl. 75—30

4 Claims

A method of fluxing and fluidizing the slag in a cupola by adding to the charge therein a fluxing material comprising, by weight, from 30 to 60% CaO, as limestone; from 5 to 25%  $Al_2O_3$  (alumina); from 20 to 50%  $Na_2O$ ; and from 0 to 1%  $SiO_2$ . For basic and neutral operating cupolas, the flux will be used in amounts ranging from about 0.25 to 2.5% by weight, based upon the metal charge. Acid operations require somewhat less (about 0.15 to 2.0% of the metal charge). The flux serves to improve the fluidity of the slag, lower oxidation losses, remove sulfur and improve carbon pick-up of the metal without emitting gases harmful to the atmosphere.

3,721,548

**TREATMENT OF IRON-CONTAINING PARTICLES**

Abram L. Hodge, Cranford, N.J., and Michael P. Fedock, Cleveland, Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Filed Dec. 23, 1968, Ser. No. 786,100

Int. Cl. C21b 3/04, 1/00, 1/08

U.S. Cl. 75—25

14 Claims

Iron-containing particles such as fume in steel furnace gases are removed by exposing the gas to lime at selected high temperature and under controlled conditions, e.g. of CO and  $CO_2$  content in the gas, such that the particles are essentially  $FeO$ , whereby a rapid absorption results, with substantial penetration of the lime pieces by iron oxide, at least in part producing a compound identified as dicalcium ferrite. Complete operation involves continuously calcining limestone and advancing the calcined lime lumps through a reaction zone while the fume-laden gas passes countercurrently through the solids, heat being supplied for the incoming gas and for the limestone calcination as needed. An iron-containing lime product results, preferably in discrete, non-clinkered pieces, having good physical properties and special advantages of reactive availability when used as lime feed in iron and steelmaking operations, accompanied by efficient recovery and use of iron values.

3,721,549

**PREPARATION OF METAL INGOTS FROM THE CORRESPONDING METAL OXIDES**

Jean-Jacques Gallay, deceased, late of Talant, France, by Marielle Gallay, administratrix, Talant, Jean-Louis Helary, Nantes, and Marcel Jurien-de-la-Graviere, Fontaine-les-Dijon, France; said Helary and said Jurien-de-la-Graviere assignors to Commissariat a l'Energie Atomique, Paris, France

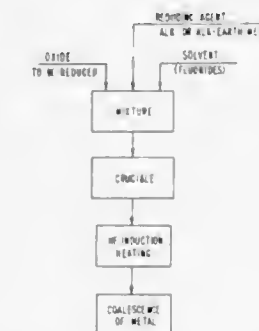
Filed July 7, 1970, Ser. No. 52,829

Claims priority, application France, July 11, 1969, 6923886

Int. Cl. C22b 5/00

U.S. Cl. 75—84.1

13 Claims



Metals such as U, Pu, Ti, Zr in the massive state are prepared from their oxides by heating a mixture in a non-oxidizing atmosphere by direct induction of HF electric currents, said mixture comprising the oxide, an alkali-earth reducing metal (Ca or Mg) and the fluoride of the reducing metal, either alone or mixed with calcium fluoride. Induction heating is maintained beyond start-up of the reaction metal until coalescence of the metal.

3,721,550

**PROCESS FOR PRODUCING A HETEROGENOUS PENETRATION-BONDED METAL**

Horst Schreiner, Nurnberg, and Heinrich Hassler, Wendelstein, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed March 25, 1971, Ser. No. 128,059

Claims priority, application Germany, March 26, 1970, P 20 14 639.8

Int. Cl. B22f 3/26, 7/02

U.S. Cl. 75—208 R

4 Claims

The invention relates to a method of producing a heterogenous, penetration-bonded metal for use as a contact

material for vacuum switches. The pores of a pore containing sintered structure comprising a burn-off resistant, high melting metal such as tungsten, rhenium or molybdenum, are filled with a lower melting metal of good electrical conductivity, such as silver, copper, or a lower melting alloy of these metals. A structure or skeleton of the high melting metal is first sintered. This is then saturated or impregnated with the lower melting metal or alloy. Subsequently, at least one metal, with a high vapor pressure is installed as an alloy component, by means of diffusion, into the lower melting impregnation metal which is contained in the pores of the high melting metal structure. The diffusion metal is located in an auxiliary metal and the diffusion temperature is below the melting temperature of the impregnation metal.

3,721,551

**METHOD OF PRODUCING ELECTROGRAPHIC IMAGE FROM ORIGINAL PROVIDED WITH A CONDUCTIVITY PATTERN**

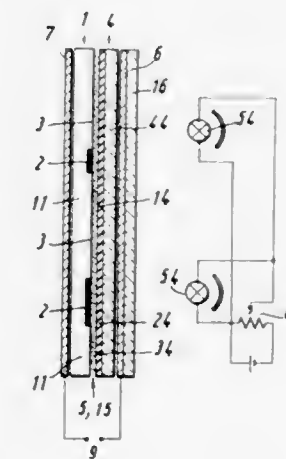
Costantino Marcus Cantarano, 49, avenue Franklin Roosevelt, Thiais, France

Continuation-in-part of Ser. No. 631,792, April 8, 1967, abandoned. This application Dec. 8, 1969, Ser. No. 870,404

Int. Cl. G03g 17/00

U.S. Cl. 96—1 R

10 Claims



The invention provides an electrographic image by generating between a first and second electrode an electric field across a developer powder sandwiched between an original having a conductivity pattern of maximum and minimum conductivities and an image carrier of uniform conductivity intermediate the maximum and minimum conductivities of said pattern.

3,721,552

**ELECTROPHOTOGRAPHIC REPRODUCTION MATERIAL**

Jacques C. T. Tellier, Conklin, N.Y., and Henri G. J. deBoer, Delft, Netherlands, assignors to GAF Corporation, New York, N.Y.

Continuation of Ser. No. 723,590, April 23, 1968, abandoned. This application July 22, 1971, Ser. No. 165,408

Int. Cl. G03g 5/06

U.S. Cl. 96—1.5

15 Claims

Photoconductive compositions containing a resin and as a photoconductor, a 2-tricyanovinyl-pyrrol, a 3-tricyanovinylindole or a tricyano-vinyl-benzene which may have an amino or hydroxy group in 4-position, optionally including an optical sensitizer, and electrophotographic reproduction materials having a layer of said composition adhering to a substrate.



3,721,553

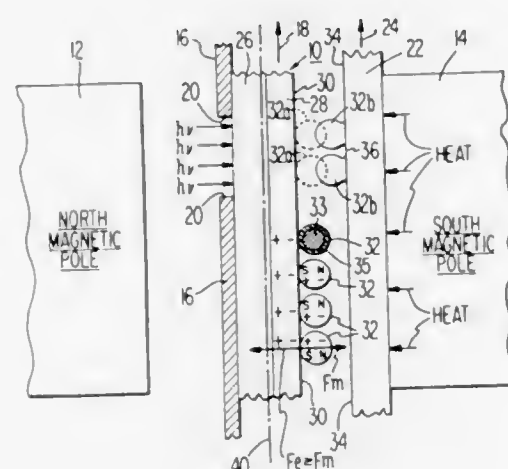
## METHOD OF TRANSFERRING MAGNETIC TONER PARTICLES IN AN IMAGE CONFIGURATION AND APPARATUS THEREFOR

Edward Charles Glaimo, Jr., Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed April 16, 1971, Ser. No. 134,770

Int. Cl. G03g 13/14

U.S. Cl. 96—1.4



Magnetic toner particles, adhered to an electrostatically charged photoconductive layer of a recording element in an image configuration, are transferred to the surface of a sheet of paper by (a) disposing the paper adjacent to the toner particles, (b) exposing the photoconductive layer to light to reduce the electrostatic attraction between the toner particles and the recording element; and, (c) applying a magnetic field between the recording element and the paper to attract the toner particles to the paper. The apparatus includes a transfer station where a light pipe exposes the photoconductive layer with light and a heater fixes the toner particles to the paper.

3,721,554

## ORGANIC PHOTOCONDUCTIVE MATERIALS FORMED BY CONDENSING PHOTOCONDUCTIVE AND DYESTUFF REACTANTS

Shinichiro Nagashima, and Kaichi Tsuchiya, both of Tokyo, Japan, assignors to Canon Inc., Tokyo, Japan

Filed Dec. 29, 1969, Ser. No. 888,886

Int. Cl. G03c 5/04

U.S. Cl. 96—1.5

3 Claims

A light-transparent photoconductive material for use in electrophotography is the reaction product obtained by condensing

- an organic photoconductive compound containing an amino and/or hydroxyl group and
- a reactive colored compound containing an active halogen atom;

or by condensing

- an organic photoconductive compound containing an active halogen atom and
- a reactive colored compound containing an amino and/or hydroxyl group.

3,721,555

## DIFFUSION TRANSFER RECEPTION ELEMENTS, FILM UNITS AND PROCESSES THEREFOR

Richard W. Becker, and Glen M. Dappen, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 24, 1971, Ser. No. 174,505

Int. Cl. G03c 7/00, 5/54, 1/40

10 Claims

U.S. Cl. 96—29 D

Vinyl polymers containing anionic solubilizing groups are employed as the binder in a light-reflective layer which is associated with a dye image-receiving layer employed in color diffusion transfer systems.

22 Claims

3,721,556

## DIFFUSION TRANSFER RECEPTION ELEMENTS, FILM UNITS AND PROCESSES THEREFOR

Delbert D. Fix, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 24, 1971, Ser. No. 174,506

Int. Cl. G03c 7/00, 5/54, 5/48

U.S. Cl. 96—3

A dye image-receiving element comprising a light-reflecting layer underneath a dye image-receiving layer, each of the layers containing a basic polymeric mordant, is useful in color development diffusion transfer systems utilizing immobile couplers which form diffusible dyes.

30 Claims

3,721,557

## METHOD FOR TRANSFERRING COLORED IMAGE AND LIGHT-SENSITIVE TRANSFER SHEETS THEREFOR

Nobuyuki Inoue, Kawagoe City, Japan, assignor to Process Shizai Company Limited, Tokyo, Japan

Filed March 6, 1969, Ser. No. 804,908

Claims priority, application Japan, Aug. 14, 1968, 43/57367

Int. Cl. G03c 5/54

U.S. Cl. 96—28

16 Claims

A method of preparing a mono-color or multicolor image by transferring one or more transparent positive images of different primary colors, such as magenta, yellow, cyan, and black on an image-receiving member. Positive colored images of primary colors are produced on light-sensitive transfer sheets by exposing the light-sensitive transfer sheets to actinic light through a picture, such as color separation films, such as magenta, yellow, cyan, and black screened color separation negatives or positives, respectively, and developing the transfer sheets thus exposed. The positive colored images are transferred in turn onto an image-receiving member in registration with each other, while inserting an adhesive layer with each positive colored image and receiving surface of the image-receiving member. A light-sensitive transfer sheet usable for preparing the color-proofing sheet, which comprises a support, a stripping film laminated on the support, and a photosensitive layer overlaid on the stripping film and mainly consisting of photopolymer. After exposure and development, each colored image formed on the light-sensitive transfer sheet is transferred onto an image-receiving member by inserting an adhesive layer therebetween.

3,721,558

## MORDANT VEHICLE FOR COLOR IMAGE TRANSFER RECEIVERS

Thomas I. Abbott, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 24, 1971, Ser. No. 174,545

Int. Cl. G03c 5/54, 5/58

U.S. Cl. 96—29 D

23 Claims

The use of a hydrophobic, alkali-permeable polymer as a binder for a dye mordant in a dye image-receiving layer employed in color diffusion transfer systems results in less stain than conventional gelatin vehicles.

3,721,559

## PHOTOGRAPHIC MATERIAL FOR THE PREPARATION OF PRINTING PLATES

Louis Maria De Haes; Hugo Karel Gevers, both of Edegem, and Johannes Josephus Vanheertum, Halle-Zandhoven, all of Belgium, assignors to Agfa Gevaert N.V., Mortsel, Belgium

Continuation of Ser. No. 738,097, June 19, 1968, abandoned.

This application Aug. 23, 1971, Ser. No. 174,140

Claims priority, application Great Britain, June 19, 1967, 28,237/67; April 26, 1968, 19,887/68

Int. Cl. G03f 7/02

U.S. Cl. 96—33

12 Claims

A planographic printing plate is prepared from a photographic sheet material comprising a support, a light-sensitive silver halide emulsion layer and an exterior hydrophilic colloid stratum having at its free surface a pattern of finely divided silver particles, by contacting the same with an aqueous alkaline fixer composition containing an oxidizing agent for metallic silver and an organic thione, or mercapto tautomer thereof, for converting the pattern of silver particles into a hydrophobic ink-receptive pattern, the colloid stratum being hardened before the material is used for printing and preferably before or at least concurrently with its contact with said fixer composition, the extent of the hardening being at least that necessary to prevent removal of the colloid material during printing. The pattern of silver particles is produced by means of the silver complex diffusion transfer process in which insoluble development nuclei are applied to the free layer surface either from the diffusion transfer developing liquid or a separate liquid applied prior to the developing liquid. Preferably the colloid stratum is hardened by means of a latent hardener released during the course of the diffusion transfer process. The colloid stratum can be an external stratum of the emulsion layer or a separate colloid layer applied to the emulsion layer.

3,721,560

## PHOTOTHERMOGRAPHIC MATERIAL CONTAINING A PHOTOSENSITIVE METAL OXIDE SEMICONDUCTOR OR BENZOPHENONE AND A FREE METAL GENERATING ALKANOLAMINE

Frans Clement Heugebaert, Kontich, and Eric Maria Brinckman, Mortsel, both of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed May 10, 1971, Ser. No. 142,044

Claims priority, application Great Britain, May 11, 1970, 22,682/70

Int. Cl. G03c 1/00, 5/32

U.S. Cl. 96—48 HD

8 Claims

A photosensitive recording material comprising a metal-containing amino-alcohol reaction product yielding free metal on heating and in inter-reactive relationship with said product a photosensitive substance, which in photo-exposed state lowers the decomposition temperature of said product.

The preferred reaction product is a reaction product of yellow lead(II)oxide and tri-isopropanolamine. Preferred photosensitive substances are photoconductive lead(II)oxide, zinc oxide and titanium(IV)oxide.

3,721,561

## DYE IMBIBITION IMAGING

Rexford W. Jones and William B. Thompson, Columbus, Ohio, assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

No Drawing. Continuation-in-part of abandoned application Ser. No. 796,897, Feb. 5, 1969. This application Mar. 10, 1971, Ser. No. 123,084

Int. Cl. B05c 1/16; G03c 5/24

U.S. Cl. 96—48

24 Claims

Process of forming dye-imbibition images wherein powder particles comprising a dye, held in image-wise configuration in particulate form in or on a substrate, is contacted with vapors of a material, which is a solvent

for said dye and capable of swelling the surface of said substrate, molecularly imbibing said dye into said substrate. Line, continuous-tone or half-tone images are preferably produced by exposing to actinic radiation in image-receiving manner a substrate bearing a positive-acting or negative-acting light-sensitive organic layer having a thickness of at least 0.1 micron, said layer being capable of developing a  $R_d$  of 0.2 to 2.2; continuing the exposure to either clear the background of positive-acting light-sensitive layers or to establish a potential  $R_d$  of 0.2 to 2.2 with negative-acting light-sensitive organic layers; applying to said layer of organic material, free flowing powder particles having a diameter, along at least one axis of at least 0.3 micron but less than 25 times the thickness of said organic layer wherein said powder particles comprise a solid carrier and dye; while the layer is at a temperature below the melting points of the powder and of the organic layer, physically embedding said powder particles as a monolayer in a stratum at the surface of said light-sensitive layer to yield images having portions varying in density in proportion to the light exposure of each portion, removing non-embedded particles from said organic layer to develop an image; and molecularly imbibing dye into the substrate (including subbing layer on said substrate) by contacting the particles embedded in said organic layer with vapors of a material which is a solvent for said dye and capable of swelling said substrate.

3,721,562

## INTEGRAL LAMINATE PHOTOGRAPHIC UNITS COMPRISING DEVELOPING COMPOSITION-SPREADER SHEETS CONTAINING A POLYMERIC ACIDIFYING LAYER

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 888,919, Dec. 29, 1969.

Filed July 29, 1971, Ser. No. 167,455

Int. Cl. G03c 5/38, 5/54, 7/00

U.S. Cl. 96—61 M

22 Claims

Novel system for forming visible images wherein an aqueous alkaline processing composition is applied between a first sheet comprising a photosensitive element and a second sheet including an acid-neutralizing layer, said sheets being adapted for being maintained together after application of the processing composition. In a preferred embodiment, a system is disclosed for forming negative images wherein a developed and fixed negative image in silver is provided with a transparent overlay through which the image may be viewed. In another disclosed embodiment, an image in color, which may be a positive transfer image, is provided with such a transparent overlay.

3,721,563

## PHOTOGRAPHIC DEVELOPER CONCENTRATE

Richard S. Fisch; Norman Newman, and Joel L. Bexell, all of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Filed Sept. 24, 1971, Ser. No. 183,674

Int. Cl. G03c 5/30, 7/00

U.S. Cl. 96—66.1

8 Claims

A phase-stable acidic photographic color developing solution which includes, in aqueous solution, a p-phenylenediamine developing agent and ascorbic acid.



3,721,564

**GELATINO SILVER HALIDE EMULSION CONTAINING A HALOGENATED ALDEHYDE ACID AND A PERHYDROTIAZINE COMPOUND AS HARDENING AGENTS**

Raphael Joris Velter, Mortsel, Belgium, and Karl-Otto Meyer, Leverkusen, Germany, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

Filed Feb. 16, 1970, Ser. No. 11,789

Claims priority, application Great Britain, Feb. 24, 1969, 9,811/69

Int. Cl. G03c 1/30

U.S. Cl. 96—111

7 Claims

A photographic silver halide emulsion element comprising a gelatin layer including therein as a combination of hardening agents, a hexahydro-1,3,5-triazine carrying at least two N-vinylcarbonyl or N-vinylsulphonyl groups, mucochloric or mucubromic acid is described. The hardening of the gelatin layer is rapid without loss of permeability to processing solutions and with no after-hardening occurring.

3,721,565

**POLYMERIC BINDERS FOR PHOTOGRAPHIC EMULSIONS**

Maurice J. Fitzgerald, Canton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed July 6, 1971, Ser. No. 160,214

Int. Cl. G03c 1/04

U.S. Cl. 96—114

23 Claims

A photosensitive silver halide emulsion wherein the emulsion binder comprises a graft copolymer of an amine diamide monomer on a polymer containing a plurality of hydroxyl groups.

3,721,566

**INCREASING THE LIGHT SENSITIVITY OF POLYMERIC COMPOSITIONS COMPRISING AZIDO GROUPS**

Urban Leopold Laridon, Wilrijk; Gerard Albert Delzenne, S-Gravenwezel, and Hugo Karel Peeters, Mortsel, all of Belgium, assignors to Gevaert-AGFA N.V., Mortsel, Belgium

Filed July 6, 1970, Ser. No. 52,690

Claims priority, application Great Britain, Dec. 23, 1969, 62,709/69

Int. Cl. G03c 1/70

U.S. Cl. 96—115 R

5 Claims

The light-sensitivity of polymeric compositions comprising azido groups is increased by intimately mixing them with sensitizing agents taken from imidazoles, oxazoles, oxadiazoles, thiazoles, polynuclear aromatic hydrocarbons and polynuclear quinones.

The polymeric compositions may be composed of a mixture of a polymer comprising reactive groups with a compound or polymer containing at least two arylazide or sulphonyl azide groups. These aryl azide or sulphonyl azide groups may also be attached as substituents to the polymers containing reactive groups occasionally via a sensitizing group, or the polymer may be mixed with a compound wherein at least two azido groups are linked by means of a sensitizing group.

Production of photographic printing plates and etching resists.

3,721,567

**PRODUCTION OF LIVERSTOCK FEED FROM SUGARCANE**

Robert Boothe Miller, Montreal, Canada, and C. Keith Laurie, Bridgeport, Barbados, assignors to Canadian Cane Equipment Ltd., Montreal, Quebec, Canada

Filed April 8, 1970, Ser. No. 26,598

Int. Cl. A23k 1/18, 1/22

U.S. Cl. 99—2 ND

4 Claims



A process for sustaining livestock, e.g., ruminants such as cattle, is described which involves providing the livestock with a feed comprising sugarcane pith which contains a substantial amount of the naturally present sugar juice and which is substantially free from the highly lignified outer rind fibers of the sugarcane. This feed may also contain nitrogenous protein substituents such as urea, a leguminous meal, and various minerals. The sugarcane pith may be obtained by longitudinally opening sugarcane without expressing a significant amount of the sugar juice from the pith, and then separating the pith from the outer rind fibers while retaining substantially all of the sugar juice in the pith.

3,721,568

**METHOD OF TREATING SPENT GRAIN**

Jack P. Wilson, Wynnewood, Pa., assignor to Proctor &amp; Schwartz, Inc., Philadelphia, Pa.

No Drawing. Filed July 14, 1970, Ser. No. 56,217

Int. Cl. A23l 1/10

U.S. Cl. 99—80 B

7 Claims

The spent grain coming from a still is spray dried in a conventional spray dryer to arrive at a dried grain product fit for human consumption or substantially mitigate the problems of pollution caused by spent grain constituents.

3,721,569

**METHOD FOR DEFATTING SOYBEAN MEAL**

Keith H. Steinkraus, Geneva, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 687,479, Dec. 4, 1967. This application Mar. 1, 1971, Ser. No. 119,846

Int. Cl. A23l 1/20

U.S. Cl. 99—98

2 Claims

Organoleptically bland soybean meal is prepared by extracting ground, unheated, unpressed soybeans with concentrated ethyl alcohol followed by a mixture of concentrated ethyl alcohol and chloroform. The meal, in addition to being completely defatted and debittered, is free of undesirable mouth-coating factor.

3,721,570

**MILK-FREE MARGARINE**

Lino L. Linteris, Demarest, N.J., assignor to Lever Brothers Company, New York, N.Y.

Filed July 20, 1971, Ser. No. 164,454

Int. Cl. A23d 3/02

U.S. Cl. 99—123

5 Claims

Milk-free margarines, unlike margarines having milk solids in the aqueous phase, have little tendency to discolor when used for frying but have the undesirable attribute of a reduced salt sensation, and the reduction is counteracted by the presence of very small amounts of sodium caseinate.

3,721,571

**PUDDING COMPOSITIONS**

Martin Glicksman, 229 Valley Road, Valley Cottage, N.Y. 10989, and Elizabeth H. Farkas, 377 N. Broadway, Yonkers, N.Y. 10701

No Drawing. Filed Jan. 14, 1971, Ser. No. 106,583

Int. Cl. A23l 1/14, 1/04

U.S. Cl. 99—139

4 Claims

Room-temperature setting dessert compositions which exhibit good resistance to syneresis, even under conditions of high temperature heat treatment or freeze-thaw, are prepared from non-chemically modified starch and xanthan gum either alone or in combination with locust bean gum and/or tara gum.

3,721,572

**PRESERVATION OF OLIVES**

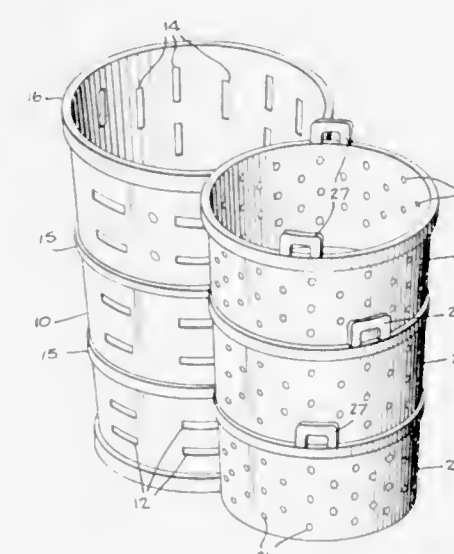
Victor N. Cory, 465 W. 23rd St., New York, N.Y. 10011

Filed July 30, 1970, Ser. No. 59,657

Int. Cl. A23b 7/02, 7/04

U.S. Cl. 99—197

13 Claims



Processes for preserving foods which comprise subjecting a brine food, such as olives, to a gaseous medium having a temperature of from about 160° F. to about 180° F. to evaporate the free surface moisture on the food, chilling the dried food to a temperature of from about 26° F. to about 33° F. with a blast of a gaseous medium having a temperature of from about 20° F. to about 30° F., and maintaining the chilled food at a temperature of from 26° F. to 35° F. by circulation of a gaseous medium over the food; as well as products obtained thereby.

3,721,573

**PEELING CITRUS FRUIT**

Lyle J. Martinsen, Murray, Utah, assignor to Practical Innovations, Inc., Murray, Utah

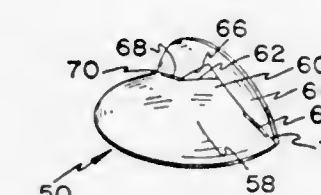
Division of Ser. No. 9,804, Feb. 9, 1970, Pat. No. 3,674,503.

This application April 27, 1972, Ser. No. 248,359

Int. Cl. A23l 1/00; A47j 17/04

U.S. Cl. 99—233.12

14 Claims



Peelers for cutting and peeling citrus fruit and the like and related methods. Each peeler is formed in one piece and has a holding flange adapted to be gripped between the fingers of the user, a cutting portion having a cutting edge, and a depth gauge flange which regulates the depth of the cut made by the cutting edge. The holding flange and the depth gauge flange are joined to one another by a weakened or structurally less resistant bend line so that in one position the two flanges are linearly continuous with the cutting edge being closely juxtaposed the opposed flanges whereby the user of the citrus fruit is not inadvertently cut, and in another position the two flanges are angular with respect to each other, the cutting edge being situated in an exposed cutting position. Each peeler may be conveniently releasably attached, as by bonding, to the citrus fruit so that the peeler and citrus fruit may be conveniently shipped, stored or carried by a person. The configuration of each peeler is adapted to match the exterior configuration of the fruit so as to be flush therewith when attached thereto.

3,721,574

**SILICATE COATINGS COMPOSITIONS**

Robert H. Schneider, 3639 Grennoch, Houston, Tex., and John B. Schutt, 2403 Peach Stone Ct., Silver Spring, Md.

Filed Aug. 6, 1968, Ser. No. 750,461

Int. Cl. C09d 1/04

U.S. Cl. 106—74

10 Claims

Water resistant and air-drying alkali metal silicate coatings contain a base of an alkali metal silicate solution having a high molar ratio of solvated silica to alkali metal oxide. To this base is added colloidal silica in amounts to increase the SiO<sub>2</sub>:alkali metal oxide mole ratio to as high as 9:1. The compositions are advantageously modified with silane wetting agents and multivalent metal ions, e.g., calcium. Ultimately, the coatings may be modified with various materials such as tetrafluoroethylene polymer or zinc.

3,721,575

**CONTINUOUS PROCESS FOR THE PREPARATION OF MODIFIED STARCH DISPERSIONS**

Wadym Jarowenko, Plainfield, N.J., assignor to National Starch and Chemical Corporation, New York, N.Y.

Filed Jan. 5, 1971, Ser. No. 103,989

Int. Cl. C08b 25/02

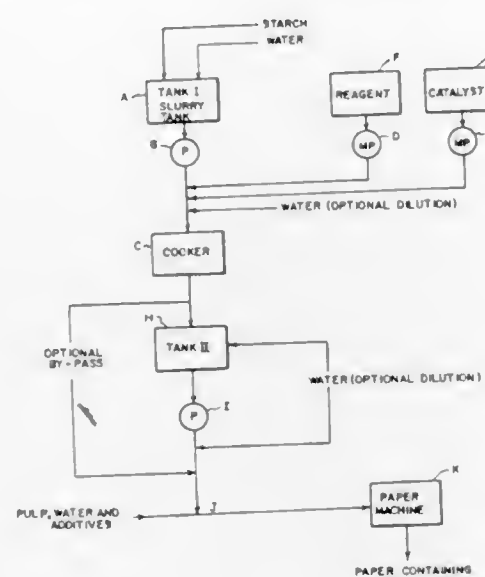
U.S. Cl. 106—213

7 Claims

A process for preparing dispersions of modified starches containing cationic groups which comprises continuously and simultaneously gelatinizing and reacting a starch with a monofunctional cationogenic reagent in an aqueous reaction medium having a pH of 8 or higher at a tem-



perature of at least 100° C. The derivatized starch products are conveniently utilized at the site of their preparation of the metal or metalloid to be deposited in a hydrogen atmosphere, the hydrocarbon concentration being at least



.5% per volume and the temperature of reaction being at least 1050° C.

### 3,721,578 PLASTICIZED SULFUR, BITUMINOUS OR ASPHALT IMPREGNATED FABRIC

Richard J. Bennett, and Rector P. Louthan, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

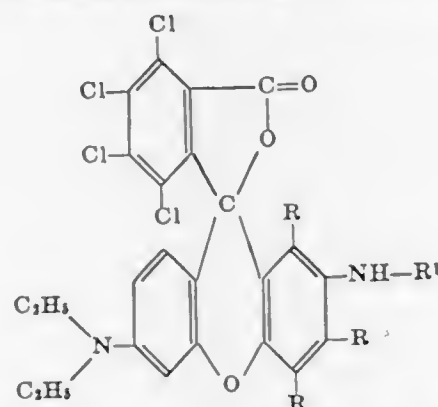
Division of Ser. No. 720,368, April 10, 1968, Pat. No. 3,619,258. This application Sept. 24, 1970, Ser. No. 75,262  
Int. Cl. D06n 7/00; B32b 11/00

U.S. Cl. 117—92 2 Claims  
A fabric is asphalt or bitumen coated and then adhesively coated at least on one side with plasticized sulfur. Bitumens including asphalt and asphalt emulsions now available are applicable. Hot melt application which can be followed immediately by the plasticized sulfur is possible. The product, which is flexible, solvent, weather resistant and light reflecting, and can be used for water-proofing as in roofing, road liners, pond and ditch liners, as wrapping material, it can be packaged as in rolls for marking stripes on tennis courts, athletic fields. Also, it can be used as pipe wrap, tank cladding and for decorative purposes.

### 3,721,579 METHODS FOR PRODUCING PLASTIC COMPOSITE MATERIALS

Lawrence G. Barrett, Lynchburg, Va., assignor to The American Novawood Corporation, Lynchburg, Va.  
Continuation-in-part of Ser. No. 678,584, Oct. 27, 1967. This application Nov. 20, 1970, Ser. No. 91,381  
Int. Cl. B44d 1/50

U.S. Cl. 117—93.31 10 Claims  
Methods and apparatus are provided for converting a base material such as paper, wood or concrete to a plastic composite material in which the steps of pressure impregnation of the base material with a monomer and polymerization of the monomer after impregnation by irradiation is accomplished in a single container. The apparatus includes an irradiation tank equipped with an irradiation absorbing fluid recirculation system for bacteria control and an inert gas system for displacing the irradiation absorbing fluid from between the submerged containers and the irradiation source. The methods described include placing a first canister containing composite material impregnated with a liquid monomer within radiation receiving proximity to the radiation source, irradiating through walls of the canister the impregnated material in the canister by an amount sufficient to effect partial polymerization of the monomer without raising the temperature to a disadvantageous level, and after partial polymerization of the monomer in the first canister, placing a second canister con-

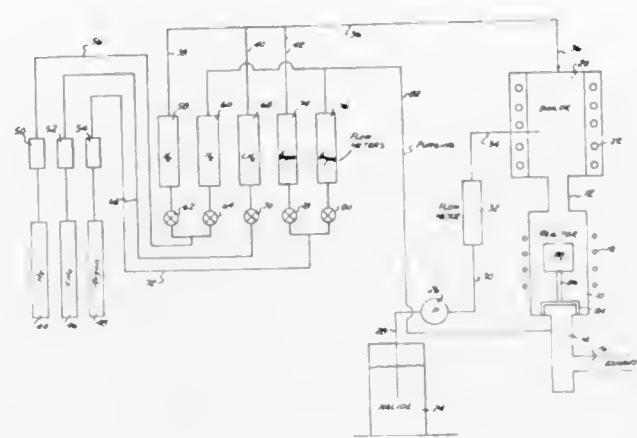


wherein R is hydrogen, an alkyl radical having 1 to 4 carbon atoms per R group or chlorine and R<sup>1</sup> is hydrogen, an alkyl radical having 1 to 4 carbon atoms per R<sup>1</sup> group or phenyl.

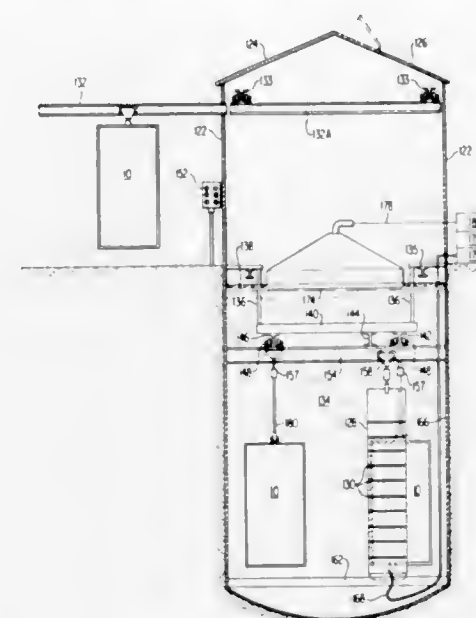
### 3,721,577 PROCESS FOR THE DEPOSITION OF REFRACTORY METAL AND METALLOID CARBIDES ON A BASE MATERIAL

Paul F. Woerner, Grosse Pointe, Mich., assignor to Teeg Research, Inc., Detroit, Mich.  
Continuation-in-part of application Ser. No. 581,646, Sept. 23, 1966, now Patent No. 3,529,988. This application Aug. 26, 1968, Ser. No. 755,242  
Int. Cl. B44d 1/00; C23c 11/08

U.S. Cl. 117—46 CC 10 Claims  
A process for the deposition of refractory metal or metalloid carbides on ferrous and non-ferrous base materials by heat reacting a hydrocarbon and halide vapors



taining the material impregnated with a liquid monomer between the first canister and the radiation source whereby substantially only radiation passing through the second



canister effects complete polymerization of the monomer in the first canister without further materially raising the temperature of the composite material therein.

### 3,721,580 SURFACE TREATMENT POLYMER STRUCTURES

Gene F. Trott, Clarksville, Ind., and Joseph M. Starita, Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

No Drawing. Filed Mar. 31, 1971, Ser. No. 129,951

Int. Cl. B32b 27/06, 27/16; B44d 5/12  
U.S. Cl. 117—118 13 Claims

The surface characteristics of parts composed of or containing an aromatic carbocyclic polymer are improved by contacting the surface with an imido-alkylene compound and a Friedel-Crafts' alkylation catalyst in the presence of a selected mixture of solvents having a limited solubility for the polymer to effect a reaction of the imido-alkylene compound with the polymer surface.

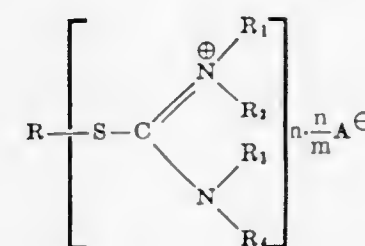
### 3,721,581 PROCESS FOR FLAMEPROOFING TREATMENT

Kazuhiro Teramura and Terukazu Ishizuka, Kyoto-shi, Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

No Drawing. Filed Jan. 6, 1971, Ser. No. 104,463

Int. Cl. C09d 5/18; C09k 3/28  
U.S. Cl. 117—137 3 Claims

A process for flameproof treatment of fibers, films, sheets, boards and other articles by use of a compound having the general formula:



wherein R represents a non-substituted or substituted hydrocarbon group or a heterocyclic group; and R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>,

and R<sub>4</sub>, respectively, represent hydrogen atoms or non-substituted or substituted hydrocarbons or a component of a heterocyclic group formed from two components selected from R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, and R<sub>4</sub> and A represents an inorganic or an organic anion, and n represents an integer of 1-6 and m represents the valency of A.

### 3,721,582 DRY, CARDABLE, SELF-BONDABLE FIBERS OF REGENERATED CYANOETHYL CELLULOSE

Theodore S. Matter, Upper Darby, and James E. McMaster, Secane, both of Pa., assignors to FMC Corporation, Philadelphia, Pa.

Filed Jan. 8, 1971, Ser. No. 105,101

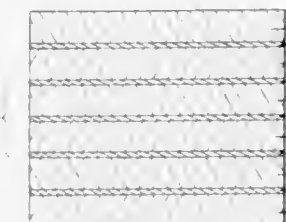
Int. Cl. D06m 13/40 10 Claims  
U.S. Cl. 117—139.5 CQ  
Dry, soft, cardable, self-bondable fibers of regenerated cyanoethyl cellulose having an average degree of substitution of from about 0.25 to about 0.65 which have been prepared by neutralizing wet-gel fibers of regenerated cyanoethyl cellulose while maintaining them in a substantially non-swollen condition in a concentrated aqueous salt solution, contacting the fibers with a lubricant for cellulosic fibers under non-swelling conditions, and then drying the fiber down to at least a normal moisture regain content.

### 3,721,583 VAPOR PHASE EPITAXIAL DEPOSITION PROCESS FOR FORMING SUPERLATTICE STRUCTURE

A. Eugene Blakeslee, Mount Kisco, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 8, 1970, Ser. No. 96,206

Int. Cl. B44d 1/18 18 Claims  
U.S. Cl. 117—215



A vapor phase epitaxial process for forming a superlattice structure comprising alternate layers of different semiconductor materials on a substrate. In the superlattice, the proportion of one component is caused to periodically vary from a desired maximum to a desired minimum over an extremely small period. For an n component system, this is accomplished by forming a stream comprising n-1 components and injecting pulses of the nth component in a carrier gas separated by pulses of carrier gas into the n-1 component stream, to thereby provide at the substrate alternate, discrete bursts of gas comprising n components and n-1 components, respectively. By critically controlling diffusion of adjacent pulses and bursts, the proportion of the nth component in the superlattice structure can be varied from a maximum to a minimum within an extremely small period.

High temperature, vapor phase epitaxial deposition apparatus for depositing such a repetitive superlattice structure: basically a pulsing chamber to receive the n-1 component stream; pulsing means to periodically pulse the nth component into the n-1 component stream, whereby the bursts described above are formed; and deposition means containing a substrate to receive said bursts for the formation of said superlattice. All elements are correlated to permit diffusion to be critically controlled.



3,721,584

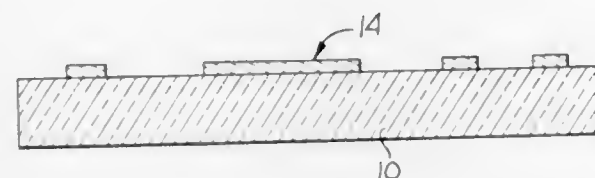
# SILICON COATED SUBSTRATES AND OBJECTS FABRICATED THEREFROM

Albert R. Diem, 1181 Lake Street, Salt Lake City, Utah  
Filed April 13, 1970, Ser. No. 27,744

Int. Cl. B44d 1/18

U.S. Cl. 117—212

13 Claims



Silicon coated substrates for such uses as optical filters, photo masks, passive circuits and as an information storage means.

3,721,585

# METHOD FOR MANUFACTURE OF LACTOSE

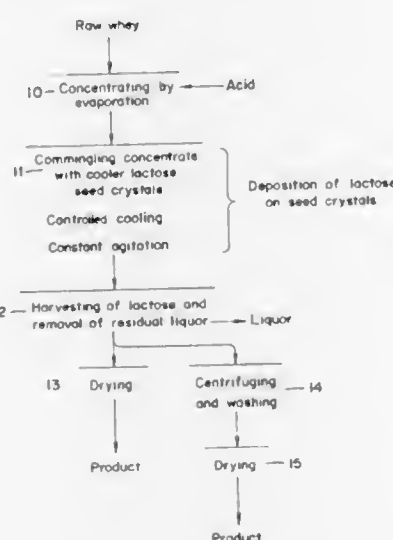
Leo H. Francis, Burlingame, and Henry L. Pollard, Millbrae, Calif., assignors to Foremost McKesson, Inc., San Francisco, Calif.

Continuation of abandoned application Ser. No. 840,129, June 27, 1969, which is a continuation-in-part of application Ser. No. 477,852, Aug. 6, 1965. This application Jan. 28, 1971, Ser. No. 110,743

Int. Cl. C13k 5/00

U.S. Cl. 127—60

4 Claims



Process for removing lactose from whey in which a crystallizing cycle is commenced by introducing a quantity of whey concentrate at an elevated temperature into the lower end of a crystallizing tank. The tank contains a seed bed comprising a quantity of liquor and lactose seed crystals left from a preceding cycle, whereby the incoming concentrate flows upwardly through the seed bed. Crystallization of lactose from solution commences by deposition of lactose on the seed crystals. After the batch of concentrate has been introduced, crystallization is continued until the end of the cycle during which time the mass of material in the tank is subjected to cooling. At the end of the cycle a quantity of material is withdrawn from the upper portion of the tank and lactose crystals removed from the same. The material remaining in the tank forms a seed bed for the next cycle. The material in the tank is continuously agitated throughout introduction of the concentrate, during the subsequent part of the crystallizing cycle and during withdrawal of material from the tank at the end of the crystallizing cycle.

# METHOD OF REMOVING WATER FROM LITHIUM BATTERIES

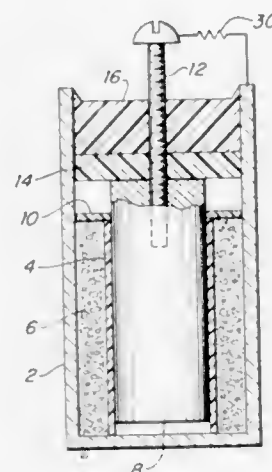
Raymond J. Jasinski, Boston, and Lewis H. Gaines, Framingham, Mass., assignors to Tyco Laboratories, Inc., Waltham, Mass.

Filed Apr. 1, 1971, Ser. No. 130,279

Int. Cl. H01m 1/00

U.S. Cl. 136—175

6 Claims



An improvement in the manufacture of lithium batteries, the improvement comprising electrolytically converting trace water to hydrogen gas and venting said gas before the batteries are sealed.

3,721,587

# LOW CARBON, NIOBIUM AND ALUMINUM CONTAINING STEEL SHEETS AND PLATES AND PROCESS

Alfred G. Allten, Rosemont, and Frederick J. Semel, Philadelphia, Pa., assignors to Alan Wood Steel Company, Conshohocken, Pa.

No Drawing. Continuation-in-part of application Ser. No. 749,273, Aug. 1, 1968. This application Dec. 2, 1970, Ser. No. 94,618

Int. Cl. C22c 39/54; C21d 7/13

U.S. Cl. 148—36

14 Claims

An improved mild carbon steel which exhibits an unusual combination of properties including satisfactory high yield strengths, good toughness and weldability, and superior cold formability in the hot rolled condition. The steel, which is characterized by microstructures which are virtually free of elongated silicate inclusions, has the following composition by weight:

Carbon: 0.02 to 0.08%  
Manganese: 0.25 to 0.80%  
Silicon: 0.05% maximum  
Niobium: 0.025 to 0.10% preferably 0.025 to 0.045%  
Aluminum: 0.005 to 0.025%, preferably 0.008 to 0.018%  
Iron and impurities, balance.

3,721,588

# THIN SINGLE CRYSTAL SILICON ON AN INSULATING SUBSTRATE AND IMPROVED DIELECTRIC ISOLATION PROCESSING METHOD

Robert G. Hays and Chongkook Rhee, Scottsdale, Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Aug. 13, 1971, Ser. No. 171,453

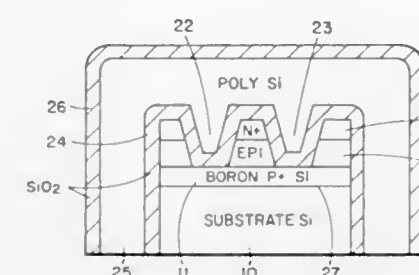
Int. Cl. H01l 7/50, 7/00; B01j 17/00

U.S. Cl. 148—175

13 Claims

A method is disclosed whereby by incorporating a P<sup>+</sup> boron layer of  $5 \times 10^{19}$  atoms per cubic centimeter or greater added during the fabrication of a wafer acts as an etch stop for a potassium hydroxide anisotropic etch solution (KOH). Thereby thin controlled layers of single

crystal silicon on an insulating substrate can be made. Similarly using the same etch stop dielectrically isolated



islands of single crystal silicon may be formed with improved yields and thickness control.

3,721,589

# METHOD FOR DIFFUSING ZINC INTO A SEMI-CONDUCTOR SUBSTRATE WITHOUT WINGING

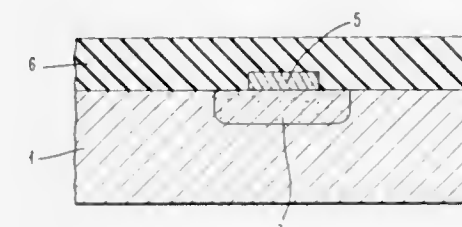
Joseph A. Aboaf, Peekskill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 4, 1970, Ser. No. 34,914

Int. Cl. H01l 7/36

U.S. Cl. 148—188

15 Claims



A method of diffusing zinc into gallium arsenide without winging is disclosed. Zinc silicate is utilized as a diffusion source while silicon nitride and aluminum oxide are utilized to mask selected areas of a gallium arsenide substrate such that the diffused regions are precisely defined within the substrate. The use of these materials as diffusion source and mask prevent winging, i.e., lateral spreading of the diffusant at the interface between the mask material and the gallium arsenide substrate.

3,721,590

# AMMONIUM PERCHLORATE WITH COCRYSTALLIZED OXALATE ANIONS

John Norman Maycock, Baltimore, Md., and Louis Witten, Cincinnati, Ohio, assignors to Martin Marietta Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 803,436, Feb. 28, 1969, which is a continuation-in-part of application Ser. No. 589,185, Oct. 19, 1966, both now abandoned. This application Nov. 20, 1969, Ser. No. 878,588

Int. Cl. C06b 11/00

U.S. Cl. 149—76

2 Claims

The rate of thermal decomposition of certain high energy solid state materials, such as explosives and propellant oxidizers, may be either increased or decreased by doping to replace ions in the structure with ions having a different valence. Decomposition rate is increased if univalent anions are replaced with multivalent anions, and rate is conversely decreased if univalent cations are replaced with multivalent cations that are less colored than the host material.

3,721,591

# METHOD OF MAKING INFLATABLE BALLS

John Michael Crook, Luddendenfoot, near Halifax, England, assignor to Benjamin Crook & Sons Limited, Yorkshire, England

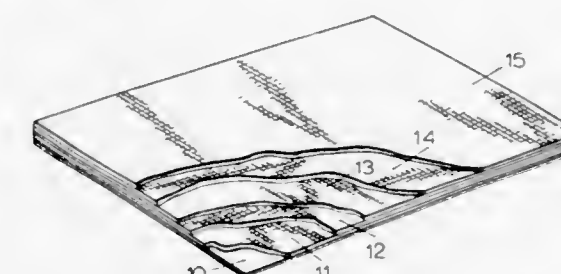
Filed Aug. 11, 1969, Ser. No. 848,783

Claims priority, application Great Britain, July 2, 1969, 33,485/69

Int. Cl. B32b 7/08

U.S. Cl. 156—93

6 Claims



In the production of an inflatable ball, a laminate is made of a plurality of fabric layers and a layer of plastics materials (which may be rubber or synthetic rubber). At least one of said fabric layers is impregnated with an uncured adhesive (which may be rubber). The layers are bonded together and then panels are cut from the laminate and stitched together to form the ball.

3,721,592

# ETCHING METHOD EMPLOYING AN ETCHING MASK WHILE SUPPRESSING UNDERETCHING

Reiner De Werdt, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

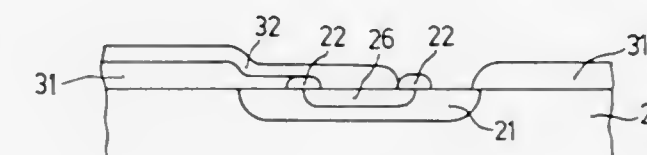
Filed May 4, 1970, Ser. No. 34,489

Claims priority, application Netherlands, May 22, 1969, 6907831

Int. Cl. C23f 1/02

U.S. Cl. 156—11

5 Claims



The invention relates to etching with the aid of a mask while limiting underetching as much as possible by using an etch-resistant and stable mask and by filling up after some time of etching, the cavities produced by underetching underneath the metal film with an etch-resistant resist by means of a photomechanical method.

3,721,593

# ETCH STOP FOR KOH ANISOTROPIC ETCH

Robert G. Hays and Chongkook Rhee, Scottsdale, Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Aug. 13, 1971, Ser. No. 171,455

Int. Cl. H01l 7/50

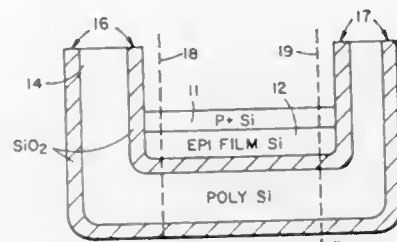
U.S. Cl. 156—17

5 Claims

The etch rate of boron doped silicon by a potassium hydroxide anisotropic etch solution varies with the doping level. Thus an etch stop for KOH anisotropic etch for silicon is disclosed comprising a layer of silicon doped



with boron to a surface concentration level of about  $5 \times 10^{19}$  atoms of boron per cc. Preferably the surface



concentration of boron is greater than  $5 \times 10^{19}$  atoms per cc., for example  $1 \times 10^{20}$  atom per cc. for best results.

3,721,594

#### APPLYING ELECTROCONDUCTIVE HEATING CIRCUITS TO GLASS

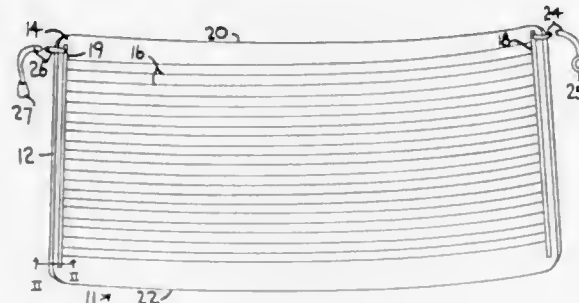
Milton S. Tarnopol, Brackenridge, and Thomas P. Snyder, Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 838,163, July 1, 1969, Pat. No. 3,671,311, which is a continuation-in-part of Ser. Nos. 737,907, June 18, 1968, abandoned, and Ser. No. 826,433, May 21, 1969, abandoned. This application July 20, 1971, Ser. No. 164,263

Int. Cl. B32b 17/10

U.S. Cl. 156—89

10 Claims



Applying a decorative coating or design of electroconductive material to a glass base. When the base is transparent, the resulting article is useful as a readily heated window from which fog and ice can be readily removed on heating. A frit composition having an appropriate coefficient of expansion, an appropriate maturing temperature, and which matures into a rough, porous coating, is applied to a glass sheet surface in the circuit pattern desired, the sheet is heated and then cooled rapidly to produce a tempered glass sheet having a rough, porous frit coating conforming to the pattern desired for the electroconductive heating circuit, and a conductive metal coating is selectively deposited on the rough, porous frit by electroless plating. The frit may be sensitized by incorporating a minor amount of a sensitizing metal therein or by applying a sensitizing composition.

3,721,595

#### APPLYING ELECTROCONDUCTIVE HEATING CIRCUITS TO GLASS

Milton S. Tarnopol, Brackenridge, and Thomas P. Snyder, Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 838,163, July 1, 1969, Pat. No. 3,671,311, which is a continuation-in-part of Ser. Nos. 737,907, June 18, 1968, abandoned, and Ser. No. 826,433, May 21, 1969, abandoned. This application July 20, 1971, Ser. No. 164,262

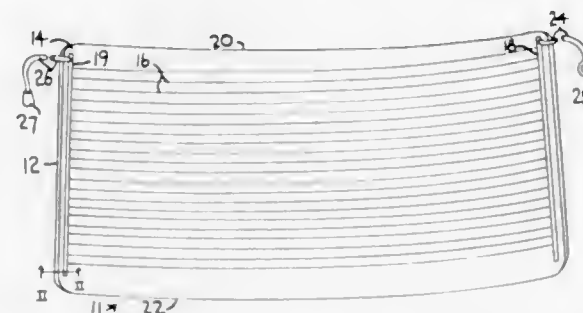
Int. Cl. B32b 17/10

U.S. Cl. 156—89

10 Claims

Applying a decorative coating or design of electroconductive material to a glass base. When the base is transparent, the resulting article is useful as a readily heated window from

which fog and ice can be readily removed on heating. A frit composition having an appropriate coefficient of expansion, an appropriate maturing temperature, and which matures into a rough, porous coating, is applied to a glass sheet surface in the circuit pattern desired, the sheet is heated and then cooled rapidly to produce a tempered glass sheet having a rough,



porous frit coating conforming to the pattern desired for the electroconductive heating circuit, and a conductive metal coating is selectively deposited on the rough, porous frit by electroless plating. The frit may be sensitized by incorporating a minor amount of a sensitizing metal therein or by applying a sensitizing composition.

3,721,596

#### FLUID SEPARATION AND METHOD AND APPARATUS FOR FORMING SAME

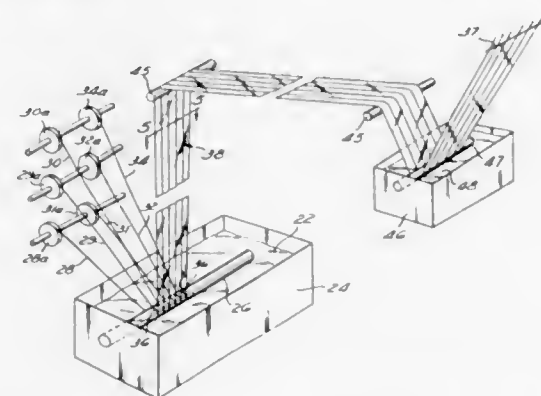
Gene F. Drake, 1325-C 37th St. NE., Canton, Ohio 44714

Continuation-in-part of application Ser. No. 693,665, Dec. 26, 1967. This application Nov. 24, 1969, Ser. No. 879,132

Int. Cl. B05c 3/12; B01d 13/04, 39/06

U.S. Cl. 156—181

2 Claims



A method of forming a thin membrane is disclosed which has a substantially uniform thickness and is particularly useful for osmotic desalinization. An apertured film support member or assembly is immersed in a liquid casting solution and withdrawn therefrom so that a part of the liquid casting solution forms a homogeneous bridging film across the apertures provided by the film support member such that the thickness of the film is primarily determined by the fluid characteristics of the casting solution. The withdrawn portion of the film support member and the bridging film are suspended until the film sets to form a membrane which is substantially stable in nature.

3,721,597

#### BONDING METAL LAMINAE WITH THERMOPLASTIC FILM

Lyle W. Colburn, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 2, 1969, Ser. No. 821,339

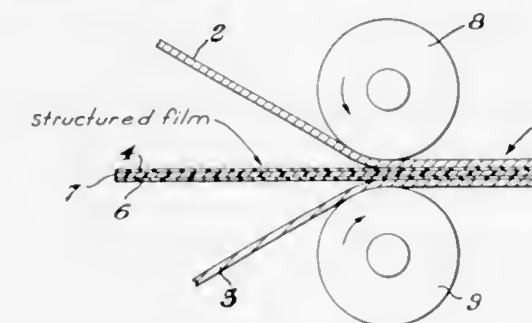
Int. Cl. C09J 5/06

U.S. Cl. 156—309

9 Claims

A laminate of two metal laminae is produced by disposing between two metal laminae a structured film comprising an

inner layer of a thermoplastic material positioned between two layers of an adhesive thermoplastic material and applying heat and pressure to the metal laminae of sufficient magnitude to effect a bond between the adhesive layers and the metal laminae but of insufficient magnitude to destroy the integrity of the inner layer in the structured film. The inner thermoplastic layer in the structured film has a melting point at least about 25° F. greater than the melting point of the adhesive layers.



In the practice of this method, metal laminae of aluminum strips can be bonded together with an adhesive thermoplastic such as a copolymer of ethylene and acrylic acid. The inner layer is fashioned of a material such as high density polyethylene. The laminate produced by this method is characterized by being free of metal-to-metal contact of the metal laminae. Laminates produced by this method have utility in a variety of fields including packaging and construction.

3,721,598

#### CONDITIONING OF THERMOPLASTIC COMPOSITIONS FOR BONDING

Stephen D. Marcey, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

No Drawing. Filed Feb. 24, 1971, Ser. No. 118,481

Int. Cl. B32b 31/14; B44d 1/092

U.S. Cl. 156—330

15 Claims

The bonding properties of polyamide or acetal thermoplastic compositions are improved by conditioning the thermoplastic composition prior to bonding. Conditioners such as isopropyl phenol or hexafluoroacetone sesquihydrate have been employed. Conventional epoxy adhesives then are employed to bond the conditioned thermoplastic composition to metallic and non-metallic materials.

3,721,599

#### METHOD AND APPARATUS FOR SECURING A CONTINUOUS THREAD ON A SUPPORT SURFACE

Kenneth J. Addis, Spartanburg, S.C., assignor to Deering Millikan Research Corporation, Spartanburg, S.C.

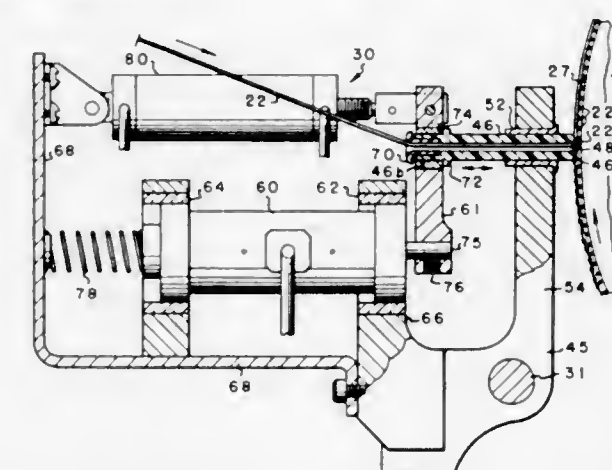
Division of Ser. No. 730,301, May 20, 1968, Pat. No.

3,616,001. This application Dec. 8, 1970, Ser. No. 96,082

Int. Cl. B29h 17/28; B65h 57/12

U.S. Cl. 156—394

8 Claims



A method and apparatus for securing at least one continuous length of thread on a support surface in a desired pattern,

wherein the thread and support surface have a pressure sensitive adhesive affinity for each other, and wherein the thread is longitudinally laid on the support surface from a thread guide mechanism moving relative to the support surface while a pressure is intermittently applied against the thread closely adjacent its lay point to minimize movement of the thread on the surface due to tension forces acting on the thread and to minimize damage or dislocation of the thread due to frictional engagement with the thread guide mechanism.

3,721,600

#### TIRE BUILDING MACHINE

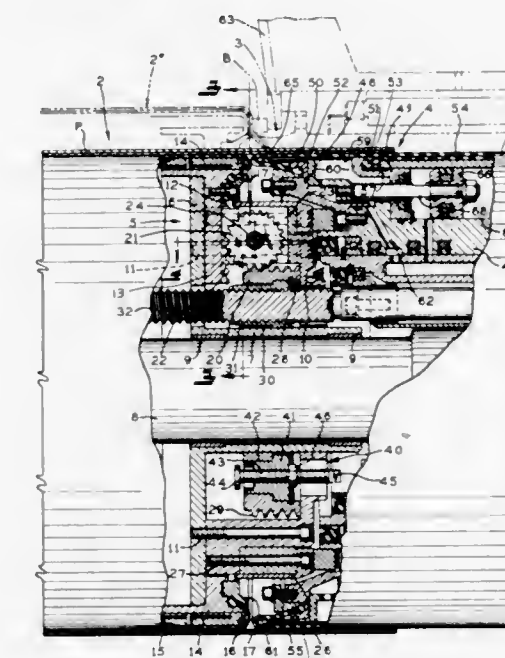
Armando Cantarutti, Akron, Ohio, assignor to NRM Corporation, Akron, Ohio

Filed Aug. 19, 1970, Ser. No. 65,139

Int. Cl. B29h 17/12, 17/16

U.S. Cl. 156—401

18 Claims



A tire building machine including an expandable drum having a plurality of radially movable drum segments which are simultaneously moved a predetermined amount by controlled axial movement of an annular rack having external teeth in meshing engagement with a plurality of pinions for driving radial racks associated with each of the drum segments. An adjustable stop means may also be provided on the annular rack for limiting axial movement of the rack in the direction of expansion of the radially movable segments, and the ply turn-up and side wall applying mechanism may comprise an inflatable bladder having an axial inner marginal portion clamped to the radially movable drum segments for radial movement therewith into engagement with the tire bead disposed thereabout for uniform and concentric clamping of the tire bead while the remaining portion of the bladder is supported by a rigid support adjacent the end of the drum.

3,721,601

#### ADDRESS LABELER MEANS

Thomas R. Pituch, Blackwood, N.J., and Stanley E. Truesdell and Brian W. Winston, Mentor, Ohio, assignors to Avery Products Corporation, San Marino, Calif.

Filed Nov. 12, 1970, Ser. No. 88,673

Int. Cl. B44c 1/24

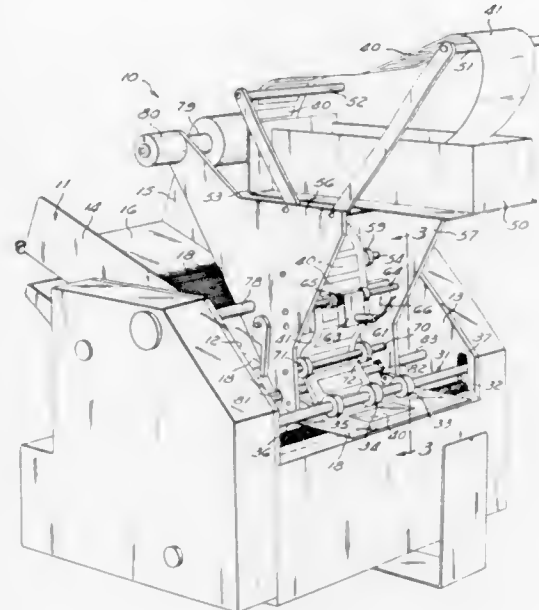
U.S. Cl. 156—542

5 Claims

A machine and method for applying pressure-sensitive adhesive labels to flat articles. The method and machine according to this invention are particularly suitable for applying address labels to envelopes. The apparatus includes feed rolls which are intermittently operated to deliver envelopes into a first set of pinch rolls. The first



set of pinch rolls is continuously driven and grips the envelope while driving the envelope to a second set of pinch rolls. The second set of pinch rolls is driven at a speed corresponding to the speed of the first set of pinch



rolls. A labeling head is positioned between the first and second pinch rollers and applies a label to the article as the article is driven between the pinch rolls. The article is gripped by at least one of the pinch rolls while the label is applied.

3,721,602

#### APPARATUS FOR APPLYING HEAT-SEALED SEAMS TO AT LEAST TWO-PLY COMPOSITE MATERIAL OF WHICH THE CONFRONTING PLIES

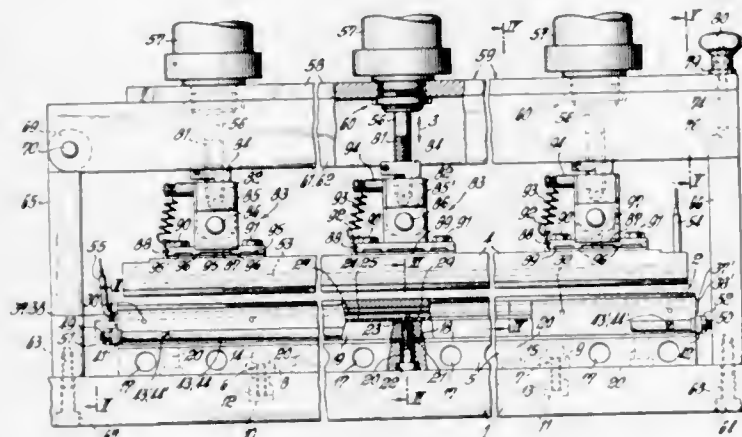
Frank Bosse, Am Wasserwerk, Germany, assignor to Windmoller & Holscher, Westphalia, Germany

Filed Feb. 2, 1971, Ser. No. 111,842

Int. Cl. B30b 15/34; B02c 11/08

U.S. Cl. 156—583

16 Claims



The invention relates to an apparatus for applying heat-sealed seams to at least two-ply composite material of which the confronting plies are heat-sealable at the operating temperature and the plies facing heat-sealing jaws are adapted to transmit the sealing heat without changing their structure. Such material is primarily used in machines for making hermetically sealed bags so that the humidity and aroma of the contents remain unaffected by the atmosphere. The inner ply of the bag can be a thermoplastic material while the ply which later forms the outside of the bag is either a non-thermoplastic carrier material such as aluminum foil or paper or a plastics material which has a higher melting point than the inner ply.

#### 3,721,603 CYLINDRICAL BODIES FROM POLYETHYLENE OR POLYPROPYLENE

Shigekazu Takeda, No. 141, 1-chome, Chofumine-machi, Ohta-ku, Tokyo, Japan

Division of Ser. No. 649,556, June 28, 1967, Pat. No.

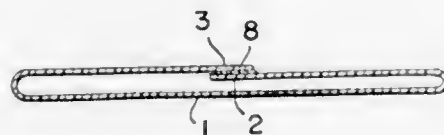
3,597,292. This application Jan. 11, 1971, Ser. No. 105,316

Claims priority, application Japan, July 4, 1966, 41/43431; Sept. 8, 1966, 41/59594

Int. Cl. B32b 3/26, 7/14

U.S. Cl. 161—92

5 Claims



Cylindrical bodies from polyethylene or polypropylene fabrics are prepared with tensile strength at least 22 kg/50 mm, in the bonded and unbonded portions.

3,721,604

#### CONTINUOUS CULTIVATION OF HYDROCARBON-CONSUMING MICRO-ORGANISMS

Richard S. Silver, Monroeville, Pa., and Joel K. Wong, Bakerfield, Calif., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 883,583, Dec. 9, 1969,

abandoned. This application Nov. 4, 1971, Ser. No. 195,827

Int. Cl. C12h 1/00; A23j 1/18

U.S. Cl. 195—28 R

17 Claims

A process for cultivating a hydrocarbon-consuming micro-organism includes the following steps:

1. A culture medium consisting of aqueous nutrient medium, surface active agent and hydrocarbon is seeded with a low cell concentration of a hydrocarbon-consuming micro-organism.

2. Aerobic culturing of the micro-organism is initiated and continued until essentially equilibrium conditions are reached in the logarithmic growth phase.

3. Continuous culturing is initiated and continued under aerobic conditions in the presence of aqueous nutrient medium and hydrocarbon in the absence of added surface active agent.

3,721,605

#### PROCESS FOR PRODUCING AMYLOSE IN INDUSTRIAL SCALE

Mikihiko Yoshida and Hirao Mamoru, Okayama, Japan, assignors to Hayashibara Company, Okayama, Japan

No Drawing. Filed Apr. 14, 1970, Ser. No. 28,512

Claims priority, application Japan, Apr. 15, 1969, 44/29,171

Int. Cl. C131 1/08

U.S. Cl. 195—31 R

10 Claims

This invention relates to a process for producing amylose chiefly composed of macromolecular amylose from starch rich in amylose by heat gelatinizing the starch and then rapidly cooling to a temperature in the range of 50–60° C. and treating with a heat-resistance  $\alpha$ -1,6-glucosidase. The reaction mixture is then further cooled to a temperature of 40–50° C. and treated with a second  $\alpha$ -1,6-glucosidase in order to complete debranching of the amylopectin therein and permit precipitation of the amylose. The resultant macromolecular amylose may then be separated therefrom.

3,721,606

#### GLUTAMINASE GA

Tamotsu Yokotsuka, Nagareyama, and Takashi Iwaasa and Mitsuharu Fujii, Noaa, Japan, assignors to Kikkoman Shoyu Co., Ltd., Noda-shi, Japan

Filed Oct. 13, 1970, Ser. No. 80,279

Claims priority, application Japan, June 13, 1970, 45/50,712

Int. Cl. C12d 13/10

U.S. Cl. 195—62

5 Claims

Glutaminase GA having the nearly equal activities of a glutaminase and asparaginase, which is useful in the fields of food and pharmaceutical industries, is obtained from *Pseudomonas fluorescens* ATCC 21541.

3,721,607

#### REAGENT COMPOSITION AND PROCESS FOR THE DETERMINATION OF GLUCOSE

Wolfgang Gruber, Garathshausen; Hans Ulrich Bergmeyer, Tutzing/Obb.; Wolfgang Werner, Mannheim-Vogelstang; Erich Bernt, Munich, and Karlfried Gawehn, Tutzing/Obb., all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Postfach, Germany

Filed Aug. 11, 1971, Ser. No. 170,949

Claims priority, application Germany, Aug. 28, 1970, P 20 42 828.8

Int. Cl. C12k 1/04

U.S. Cl. 195—103.5 C

13 Claims

Compositions comprising glucose oxidase, peroxidase, a chromogen, a buffer, an azide, and 2,2'-azino-di-(3-ethyl-benzothiazoline-6-sulfonic acid) provide remarkably stable test reagents for the enzymatic determination of glucose.

3,721,608

#### FLUIDIZING DEVICES FOR FLUID BEDS, WITH IN-PROCESS CLEANING

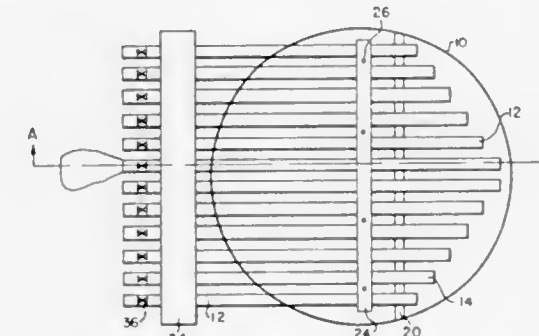
Erik Saller, Stamford, Conn., and Jack Trechok, Woodbury Heights, N.J., assignors to FMC Corporation, New York, N.Y.

Filed July 12, 1971, Ser. No. 161,649

Int. Cl. C10b 43/00

U.S. Cl. 202—241

3 Claims



A device for feeding fluidized gas into a fluidized-bed vessel, particularly useful in the charring of coal at elevated temperatures, which comprises a series of relatively large pipes disposed near the bottom of the vessel, each affixed to the vessel at only one point to permit ready expansion and contraction, and having a plurality of holes therein to pass fluidizing gas into the vessel, a second smaller pipe in each of the large pipes through most of its length and open at the inner end, one pipe of each pair being connected to a source of fluidizing gas, and the other being connected through a valve to the outside. On start-up, or when finely-divided combustibles begin to ac-

cumulate in the large pipes during operation, the valves may be opened so that the fluidizing gas pressure blows out the particulate material, to minimize the occurrence of fires in the pipes with consequent damage.

3,721,609

#### POLLUTION FREE COKE QUENCHING CAR

Heinrich Spindeler, Bochum-Langendreer, Germany, assignor to Dr. C. Otto & Comp. GmbH, Christstrasse, Bochum, Germany

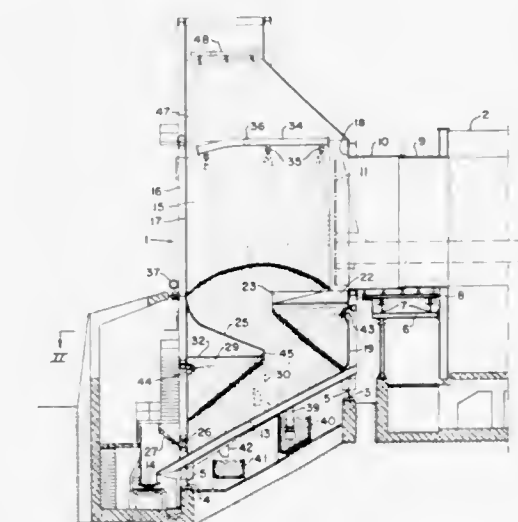
Filed May 6, 1971, Ser. No. 140,810

Claims priority, application Germany, May 13, 1970, P 20 23 253.5

Int. Cl. C10b 39/04, 39/12

U.S. Cl. 202—230

8 Claims



A coke quenching car, movable along a battery of horizontal coke ovens, has a pair of spaced vertical walls extending transversely of the car and defining a fall space between them. The upper part of this space has a front opening for receiving coke from an oven. The space below the opening is closed by a front wall, while the back of the fall space is closed by a back wall. Extending from the bottom of the opening rearwardly in the fall space part way across the car is a ramp as wide as the fall space. A deck slopes from the back wall downwardly below the inner end of the ramp for receiving coke from it and discharging it beneath the ramp onto a floor that slopes from the front wall downwardly to the back wall. The lower part of the back wall has an outlet opening in it that normally is closed by a door. In the upper part of the fall space and also below the ramp and the deck there are water sprays for quenching coke beneath them.

3,721,610

#### PROCESS FOR THE SEPARATION OF LACTIC ACID FROM WATER AND NITRIC ACID BY RAPID PREEVAPORATION AND DISTILLATION

Gerard Chaintron, Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed Nov. 23, 1970, Ser. No. 91,801

Claims priority, application France, Nov. 24, 1969, 6940393

Int. Cl. C07c 59/08

U.S. Cl. 203—77

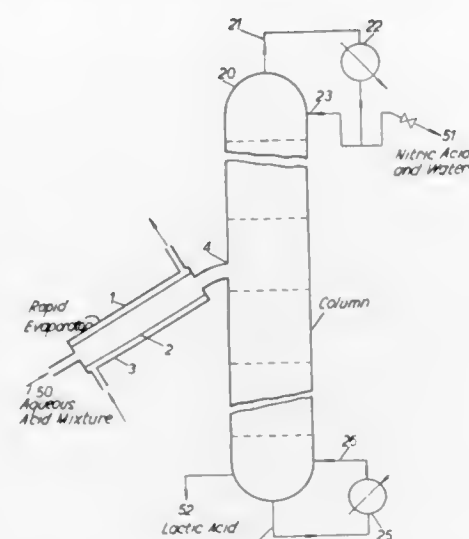
8 Claims

Lactic acid is recovered from aqueous mixtures containing it together with nitric acid, e.g. obtained by hydrolysis of the oxidation product of propylene with nitric acid, by passing the mixture into a rapid evaporator operating at a pressure less than 200 mm. mercury with a residence time less than 5 minutes to give a vaporized phase containing at least 60 percent by weight of the water and nitric acid and less than 40



percent by weight of the lactic acid, passing this vaporized phase together with non-vaporized material directly to a distil-

Alternate layers of copper and gold are deposited by electrolysis over a metal substrate thus forming a stacked body. This body is separated from the substrate. Ferromagnetic

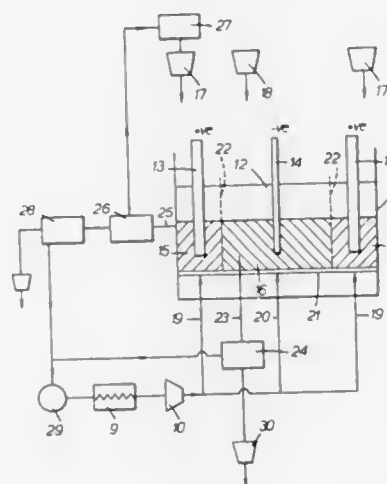


lation column operating under reduced pressure and recovering the lactic acid as bottom product.

**3,721,611**  
**PROCESS FOR THE PRODUCTION OF METALS**  
Gordon Kenneth Jones, Reigate, England, assignor to Humphreys & Glasgow Limited, London, England  
Filed Oct. 31, 1969, Ser. No. 872,902  
Claims priority, application Great Britain, Nov. 11, 1968, 53,417/68

Int. Cl. B01k 3/04  
U.S. Cl. 204—1 R

9 Claims



A process for the electrodeposition of metal comprises passing an electric current through a cell containing a cathode consisting of a bed of conducting particles of the metal to be recovered fluidized by passing the electrolyte therethrough and supplied with current by a stationary conducting member in electrical contact therewith, the conducting member forming a portion of the total cathode area.

**3,721,612**  
**METHOD OF MAKING MAGNETIC CIRCUIT ELEMENTS**  
Claude R. Gignoux, and Antide Putz, both of Paris, France, assignors to Thomson-CSF, Paris, France  
Filed Nov. 7, 1969, Ser. No. 874,910  
Claims priority, application France, Nov. 14, 1972, 72173755

Int. Cl. C23b 5/48, 7/02; H01f 3/00  
U.S. Cl. 204—15

9 Claims

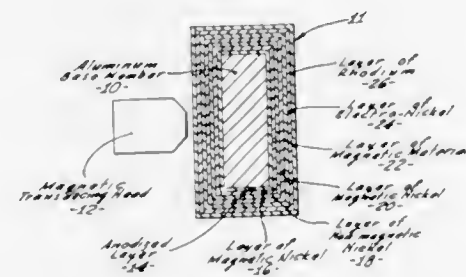
The invention has for object a method of manufacturing a magnetic circuit element, consisting of an hollow elongated cylinder.

**3,721,613**  
**ARTICLE HAVING AN ELECTROLESS DEPOSITION AND METHOD OF PRODUCING SUCH ARTICLE**

George E. Wilhelm and Stanley S. Nagy, Studio City, Calif., assignors to Sperry Rand Corporation  
Division of application Ser. No. 580,823, Sept. 20, 1966, Continuation of application Ser. No. 871,088, July 22, 1969, now abandoned. This application Dec. 6, 1971, Ser. No. 205,413

Int. Cl. C23b 5/50; H01r 13/50  
U.S. Cl. 204—29

14 Claims



The invention relates to a method of producing a storage medium having a heat hardened layer of a magnetic metal or alloy. The invention also relates to a method of providing an aluminum substrate for a magnetic storage medium and anodizing the aluminum surface and applying a metallic layer before the effects of the anodizing have disappeared.

**3,721,614**  
**PROCESS FOR ENAMELLING STEEL USING AN ELECTROLYTIC NICKEL PREPLATE**  
Heinz Groschopp; Rudolf Schoenemann, both of Dusseldorf-Holthausen; Hans Gunther Gernscheid, Hesel, and Hubert Venschott, Hilden, all of Germany, assignors to Henkel & Cie, GmbH, Dusseldorf, Germany  
Filed July 23, 1970, Ser. No. 57,819  
Claims priority, application Germany, Sept. 10, 1969, P 19 45 715.9

Int. Cl. C23f 17/00; C23b 5/08  
U.S. Cl. 204—38 C

12 Claims

A novel process for electroplating nickel before enamelling, particularly direct white enamelling, on degreased and pickled steel surfaces.

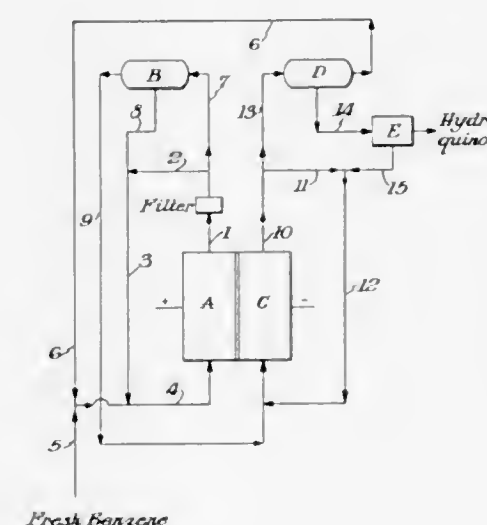
**3,721,615**  
**PROCESS FOR THE PRODUCTION OF HYDROQUINONE**  
Max Fremery; Hermann Hover, both of Wesseling, and Gert Schwarzlose, Bonn-Bad Godesberg, all of Germany, assignors to Union Rheinische Braunkohlen Kraftstoff Aktiengesellschaft, Wesseling near Cologne, Germany  
Filed Feb. 14, 1972, Ser. No. 226,124

Claims priority, application Germany, Feb. 24, 1971, P 21 08 623.7

Int. Cl. C07b 29/06; C07c 37/00, 49/00

U.S. Cl. 204—73 R

1 Claim



Process for the production of hydroquinone by electrochemically oxidizing benzene to quinone and reducing the quinone to hydroquinone. The process involves circulating a finely dispersed recycle stream of benzene and dilute sulfuric acid, which contains no more than 2 percent of quinone related to the benzene, through the anode compartment of an electrolytic cell and a finely dispersed recycle stream of benzene, dilute sulfuric acid and hydroquinone through the cathode compartment of an electrolytic cell whereby the quinone content of the benzene solution introduced into the cathode compartment for reduction is not higher than about 2 percent.

**3,721,616**  
**PHOTOPOLYMERIZABLE EPOXY SYSTEMS CONTAINING NITRILE GELATION INHIBITORS**  
William Russell Watt, Princeton Junction, N.J., assignor to American Can Company, Greenwich, Conn.  
Filed May 18, 1971, Ser. No. 144,667

Int. Cl. C08d 1/00; C08f 1/00

U.S. Cl. 204—159.11

22 Claims

Polymerization of epoxide monomers and prepolymers, and of other materials polymerizable through the action of cationic catalysts, is controlled in compositions essentially free of volatile solvents by providing in such compositions, in association with a radiation-sensitive catalyst precursor, a gelation inhibitor in the form of a nitrile compound such as acetonitrile present in small amounts up to several percent by weight.

**3,721,617**  
**PHOTOPOLYMERIZABLE EPOXY SYSTEMS CONTAINING CYCLIC AMIDE GELATION INHIBITORS**  
William Russell Watt, Princeton Junction, N.J., assignor to American Can Company, Greenwich, Conn.  
No Drawing. Filed May 18, 1971, Ser. No. 144,642

Int. Cl. B01j 1/00; C08d 1/00

U.S. Cl. 204—159.11

20 Claims

Polymerization of epoxide monomers and prepolymers, and of other materials polymerizable through the action

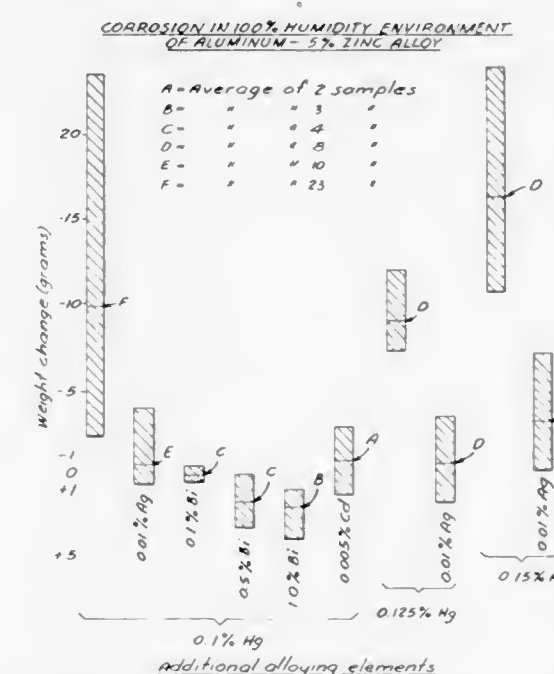
of cationic catalysts, is controlled by providing, in association with a radiation-sensitive catalyst precursor, a gelation inhibitor in the form of a cyclic amide, such as an N-substituted 2-pyrrolidone, or a 2-pyrrolidinone monomer or polymer substituted in the 1-position.

**3,721,618**  
**ALUMINUM SACRIFICIAL ANODE**  
John T. Reding, Lake Jackson, and David W. Barnett, Clute, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.  
Filed March 11, 1971, Ser. No. 123,284

Int. Cl. C23f 13/00

U.S. Cl. 204—197

14 Claims



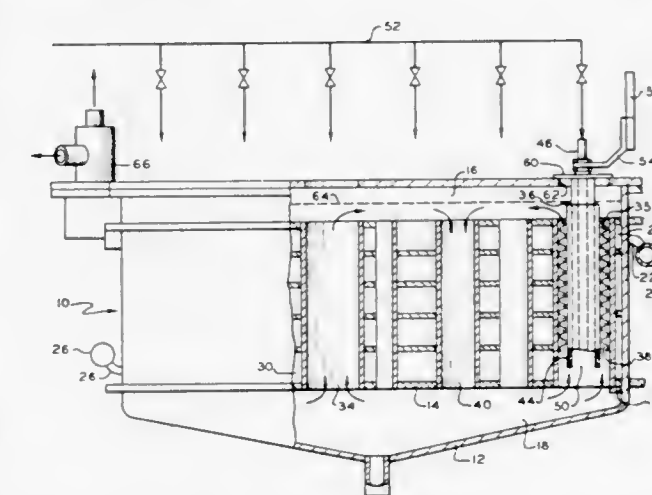
An aluminum base alloy comprising about 0.01 to about 0.2 weight percent mercury, about 0.1 to about 20 weight percent zinc, and a heavy metal. The heavy metal can be about 0.03 to about 2.0 weight percent bismuth, about 0.001 to about 0.05 weight percent cadmium, and about 0.001 to about 0.04 weight percent silver. Methods of producing the alloy and of using the alloy as a sacrificial anode are described.

**3,721,619**  
**ELECTROLYTIC CELL**  
Forrest N. Ruehlen, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.  
Filed Sept. 25, 1970, Ser. No. 75,317

Int. Cl. B01k 3/04

U.S. Cl. 204—272

10 Claims



An electrolytic cell having a heat exchanging shell disposed therein and dividing the cell container into an upper and lower



electrolyte chamber. Electrode tube means extend through said shell and are in communication with said electrolyte chamber. Electrode means are disposed in said electrode tube means in a manner to preserve said communication. Downcomer tube means, interspersed among said electrode tube means, also extend through the shell into communication with said electrolyte chamber. An auxiliary electrode is disposed in said electrode tube means between the wall thereof and said electrode, with guide vanes disposed on the auxiliary electrode to direct gases formed at the auxiliary electrode toward the inner surface of the electrode tube means.

3,721,620

# PROCESS FOR THE EXTRACTION OF AROMATIC HYDROCARBONS

Giancarlo Paret, Milan, and Ermanno Cinelli, San Donato Milanese, Italy, assignors to Snam Progetti S.p.A., Milan, Italy

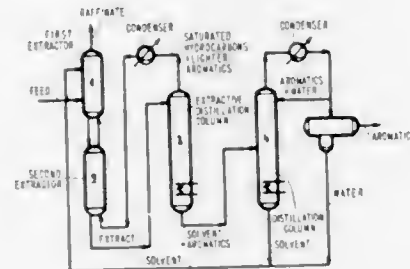
Filed July 17, 1970, Ser. No. 55,904

Claims priority, application Italy, July 18, 1969, 19,813/69

Int. Cl. C10g 21/02

U.S. Cl. 208—317

6 Claims



A multi-stage countercurrent process for the solvent extraction of aromatic hydrocarbons from a mixed feed stock is disclosed wherein the feed is contacted with solvent and extracted in a first stage, extract from the first stage is purified in a second stage by countercurrent contact with an overhead fraction from a third stage wherein the second stage extract is distilled, and rectification is effected in a fourth stage wherein water is refluxed and a part of the water, obtained as reflux free of solvent, is vaporized and recycled to the bottom of this rectification stage to recover the sensible heat of lean solvent.

3,721,621

# FORWARD-OSMOSIS SOLVENT EXTRACTION

William T. Hough, 312 S. Finley Ave., Basking Ridge, N.J. 07920

No Drawing. Continuation-in-part of applications Ser. No. 813,376, Feb. 26, 1969, and Ser. No. 816,765, Apr. 16, 1969. This application Dec. 2, 1969, Ser. No. 881,572

Int. Cl. B01d 13/00

U.S. Cl. 210—22

19 Claims

In a preferred embodiment, a process for extracting palatable water from a polluted water such as sea water having typical sea salinity, the preferred process including applying pressure to a quantity of sea water adjacent an osmotic membrane to facilitate the forward osmosis of water from the sea water in passing through an osmotic membrane having osmotic pores of maximum diameter into a solution of more concentrated removable solute removable by adding sufficient acid, or base—as the case may be, to render the removable solute insoluble in the diluent of the adjusted pH value, thereafter filtering the insoluble solute from the water which is collected as the palatable water after adjustment of the pH if and when desirable or necessary.

# PROCESS FOR THE BIO-OXIDATION OF NITROGEN DEFICIENT WASTE MATERIALS

Robert K. Finn, 107 Oakwood Lane, and Alex L. Tannahill, 305 Tareyton Drive, both of Ithaca, N.Y.

Filed March 10, 1972, Ser. No. 233,784

Int. Cl. C02c 1/02

U.S. Cl. 210—11

19 Claims

Nitrogen deficient waste is biooxidized from about 3 to about 12 hours in an aerated zone containing an active pure or semipure culture of aerobic free living nitrogen fixing bacteria.

3,721,623

# METHOD OF IMPROVING THE SALT REJECTION OF SEMIPERMEABLE REVERSE OSMOSIS MEMBRANES

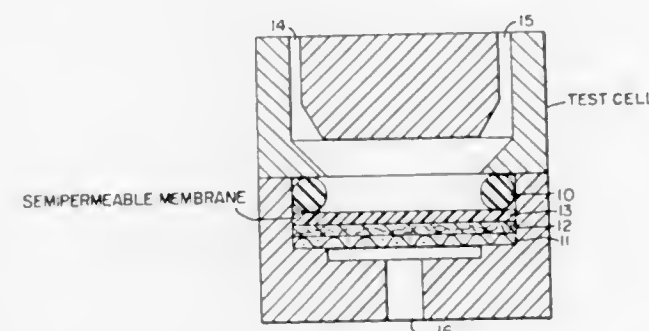
Regis R. Stana, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 23, 1971, Ser. No. 165,458

Int. Cl. B01d 13/00

U.S. Cl. 210—23

8 Claims



A method of improving the salt rejection of supported semipermeable membranes comprises contacting the membrane with sodium phosphate and alkyl or alkylaryl sulfonates.

3,721,624

# PROCESS FOR TREATING WASTE EFFLUENT

Richard Fisch and Norman Newman, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Nov. 26, 1971, Ser. No. 202,544

Int. Cl. C02c 5/04

U.S. Cl. 210—47

4 Claims

A process for reducing the pollution level of spent color photographic processing solutions from a process including a thiosulfate-containing fix solution and a phenylene diamine-containing color developer solution, which process comprises adding an oxidizing agent to said spent fix solution to oxidize thiosulfate to sulfate, then adding said oxidized fix solution to said spent color developer solution, thereby insolubilizing said phenylene diamine and forming a sludge, and removing said sludge from said solution.

3,721,625

# SOLID LUBRICANT COMPOSITIONS EMPLOYING POLYBENZIMIDAZOLE RESINS AND LUBRICATING PIGMENTS

Bobby D. McConnell, Dayton, Ohio, Melvin T. Lavik, Kansas City, Mo., and Mahlon E. Campbell, Merriam, Kans., assignors to the United States of America as represented by the Secretary of the Air Force

No Drawing. Filed June 11, 1968, Ser. No. 736,009

Int. Cl. C10m 5/22, 5/26

U.S. Cl. 252—12

6 Claims

Solid lubricant compositions employing polybenzimidazole resins (PBI) and lubricating pigments are produced by admixing finely divided lubricant pigments into a solution of polybenzimidazole resin and solvent therefor. For

3,721,629

# METHOD AND COMPOSITION FOR REMOVING IRON STAINS FROM PORCELAIN

Robert D. Goodenough, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 21, 1969, Ser. No. 826,389

Int. Cl. C11d 7/54

U.S. Cl. 252—105

9 Claims

A solid or liquid composition for removing iron from stains on hard, smooth surfaces, comprising (a) a sufficient amount of a hydrogen ion source to produce a pH of between about 1.5 and 4.5 under operating conditions; (b) an amount of a chelate agent sufficient to couple the Fe<sup>+++</sup> present in the stain, said chelate agent having a positive formation constant for Fe<sup>+++</sup> in the pH range of 1.5 to 4.5; (c) a soluble Fe<sup>++</sup> salt in an amount less than equimolar with respect to the chelate agent; and, optionally, agents capable of producing effervescent gases; disinfectants; detergents; dyes; binders; solvents; perfumes; etc.

3,721,630

# DESCALING METHOD AND COMPOSITION OF ALKALI METAL HYDROXIDE

Milan Stanek, Vysni Lhoty, and Jiri Mostecky, Prague, Czechoslovakia, assignors to Valcovny Plechu, Narodni Podnik, Frydek-Mistek, Czechoslovakia

No Drawing. Filed Feb. 3, 1969, Ser. No. 797,379

Int. Cl. C02b 5/02

U.S. Cl. 252—81

12 Claims

A concentrate for use in alkaline descaling baths is formed of alkali metal hydride and alkali metal oxide as active descaling constituents, dispersed or dissolved in alkali metal hydroxide, the latter being present in a sufficient amount to passivate the active descaling constituents prior to introduction of the concentrate into the descaling bath. Generally alkali will be sodium.

3,721,627

# BUILDER FOR PHOSPHATE-FREE DETERGENT COMPOSITIONS

James William Adams, Schofield, and Henry Wilbert Hof-tiezer, Rothschild, both of Wis., assignors to American Can Company, Greenwich, Conn.

Filed Dec. 7, 1970, Ser. No. 95,992

Int. Cl. C11d 3/12

U.S. Cl. 252—89

4 Claims

A detergent composition including an anionic or non-ionic surfactant and a novel, hydrophilic but water-insoluble building agent comprising natural cellulose fibers having chemically bonded therein and thereon by in situ polymerization, an alkali salt of polyacrylic acid or polymethacrylic acid.

3,721,628

# FERROELECTRIC MATERIALS AND INFRARED DETECTOR DEVICE CONTAINING SAME

Peter John Lock, Chandlersford, and Edward Thomas Keve, Wembley, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed April 26, 1971, Ser. No. 137,174

Claims priority, application Great Britain, April 24, 1970, 19,842/70; Jan. 5, 1971, 440/71

Int. Cl. G01t 1/202

U.S. Cl. 252—62.9

5 Claims

An organic pyroelectric material such as triglycine sulphate in which a permanent poling of the crystal is effected by addition of a doping ingredient possessing pseudosymmetry.

The poled crystal may be used for constructing an optical device or a pyroelectric detector.

3,721,630

# SULFUR MODIFIED YTTRIUM OXIDE PHOSPHOR

Emil J. Mehakchick, Towanda; James E. Mathers, Ulster, and John L. Ferri, Towanda, all of Pa., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed Sept. 27, 1971, Ser. No. 184,236

Int. Cl. C09k 1/10, 1/14

U.S. Cl. 252—301.4 S

7 Claims

Cathodoluminescent yttrium oxide phosphors activated with less than about 4 mole percent of europium are improved by a dopant of from about 1 to about 6 percent of sulfur which is incorporated during the firing step. The phosphors are brighter than prior art phosphors with the same color, in addition to having improved physical handling characteristics.

3,721,631

# HUMIDITY SENSORS COMPRISING ALKALI METAL OXIDE, DIVANADIUM PENTOXIDE AND SILICON

Kiyoshi Sumi, and Osamu Asakura, both of Kyoto, Japan, assignors to Shinyei Kaisha, Ikuta-ku, Kobe-shi, Japan

Filed Aug. 16, 1971, Ser. No. 172,055

Int. Cl. H01c 13/00; G01n 31/06

U.S. Cl. 252—408

10 Claims

A humidity sensor having a negative relative humidity coefficient of resistivity comprises 0.10 to 12.00 mole percent of alkali metal oxide, 0.05 to 10.00 mole percent of divanadium pentoxide and the balance substantially all silicon.

3,721,632

# METHOD OF CATALYST PREPARATION

Clarence O. Miller, Sulfur, La., Floyd Welch, deceased, late of Sulfur, La., by Bonnie Welch, heiress, Sulfur, La., and Charles G. McAlister, deceased, late of Lake Charles, La., by Bernice McAlister, heiress, Lake Charles, La.; said Miller assignor to Cities Service Company, New York, N.Y.

No Drawing. Filed Dec. 30, 1970, Ser. No. 102,998

Int. Cl. B01j 11/78

U.S. Cl. 252—442

4 Claims

A process for the preparation of supported catalysts. The components of the catalyst are melted and mixed with a suitable porous support material or carrier. On cooling, the support material is coated and/or impregnated with the solidified catalyst.



3,721,633

**AQUEOUS BUILT LIQUID DETERGENTS CONTAINING ALKYL GLYCOSIDES**

Humbert J. Ranauto, Wilmington, Del., assignor to Atlas Chemical Industries, Inc., Wilmington, Del.

No Drawing. Filed Oct. 6, 1969, Ser. No. 864,165

Int. Cl. C11d 1/66, 3/06, 17/08

U.S. Cl. 252—527

11 Claims

Disclosed are aqueous built liquid detergent compositions which do not require the presence of a hydrotrope to prevent phase separation. The detergent compositions are an aqueous solution of an alkyl glycoside and a builder selected from the group consisting of potassium nitrilotriacetate, sodium nitrilotriacetate, and a potassium polyphosphate.

3,721,634

**POLYMERIZATION PROCESS**

John Versnel, Plainsboro, N.J., assignor to Cities Service Company, New York, N.Y.

No Drawing. Filed July 30, 1971, Ser. No. 167,800

Int. Cl. C08j 1/26

U.S. Cl. 260—2.5 FP

10 Claims

Metallic iron is used as an ingredient of the polymerization recipe to improve the melt flow of a polymer, prepared by polymerizing at least one vinylidene monomer, e.g., styrene, in the presence of a halogenated flame retardant. A preferred embodiment of the invention is the improvement of the melt flow of a foamable polymer prepared by suspension polymerization, with the consequent improvement of the dimensional stability of a self-extinguishing foam prepared therefrom.

3,721,635

**TRANSFER MEDIUM FOR PRODUCING SCRATCH AND SMUDGE RESISTANT MARKS AND A PROCESS FOR MAKING THE SAME**

Charles T. Fellows, Kettering, and Stanley R. Hermann, Xenia, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

No Drawing. Original application May 6, 1970, Ser. No. 35,230, now Patent No. 3,639,166. Divided and this application Nov. 3, 1971, Ser. No. 195,496

Int. Cl. C08f 45/52

U.S. Cl. 260—28.5 A

25 Claims

A transfer medium comprising a base having a transferable coating composition thereon. The coating composition comprises about 3 to 40 percent by weight of an olefinic polymer; about 3 to 40 percent by weight of a wax; about 15 to 70 percent by weight of a thermoplastic aminotriazine-sulfonamide-aldehyde resin; and about 1 to 45 percent by weight of a sensible material.

3,721,636

**FREEZE-THAW STABLE HIGH SOLIDS LATEXES OF INTERPOLYMERS OF VINYL CHLORIDE, ETHYLENE AND CERTAIN CARBOXYL-CONTAINING MONOMERS**

Samuel J. Makower, 1492 Wistar Drive, Wyncote, Pa. 19005; Philip A. Cautilli, 2012 Shadybrook Lane, Feasterville, Pa. 19047; and Jack Dickstein, 318 Keats Road, Huntingdon Valley, Pa. 19006

No Drawing. Filed Nov. 12, 1970, Ser. No. 88,975

Int. Cl. C08f 29/24

U.S. Cl. 260—29.6 RW

10 Claims

This invention relates to freeze-thaw stable latexes of vinyl chloride interpolymers whose composition by weight

includes between about 6 and 30% ethylene and between about 0.5 and 10% of a coreactive carboxylated monomer selected from the group consisting of acrylic acid, methacrylic acid, crotonic acid and the monoesters of maleic, fumaric, itaconic and aconitic acids with alcohols having from one to ten carbon atoms. The latexes have particular utility as adhesives for the durable bonding of polymeric films such as polyvinyl chloride to aluminum, iron and other metals, such as in structural siding. The method of making the latexes comprises maintaining under ethylene pressure an aqueous composition containing a seed latex and a free-radical initiating system and having a pH not greater than 5, and gradually adding thereto the monomers to be interpolymerized over a period of at least six hours. The method can be used to make stable latexes containing as high as about 55% solids.

3,721,637

**METHOD FOR DISPERSING ASBESTOS FIBERS**

Fred D. Schultz, 1820 Bradford St., Plainfield, N.J. 07061, and Howard J. Fogel, 210 Lucia St., Middlesex, N.J. 08846

No Drawing. Continuation of application Ser. No. 874,071, Nov. 4, 1969. This application Nov. 8, 1971, Ser. No. 196,757

Int. Cl. C08f 15/02, 15/26

U.S. Cl. 260—29.6 M

5 Claims

A method for dispersing asbestos fibers employing low concentrations of selected acrylic or methacrylic acid polymers is described; said method providing dispersions being particularly characterized by their excellent homogeneity.

3,721,638

**PROCESS FOR THE POLYMERIZATION OF TETRAFLUOROETHYLENE IN AQUEOUS PHASE AND PRODUCTS OBTAINED THEREFROM**

Dario Sianesi, Giancarlo Bernardi, Canzo, and Gianfranco Veroli, all of Milan, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed Aug. 6, 1969, Ser. No. 848,772

Claims priority, application Italy, Aug. 8, 1968, 19948 A/68

Int. Cl. C08f 45/24

U.S. Cl. 260—29.6 F

14 Claims

Improved high molecular weight tetrafluoroethylene polymers are obtained in the form of hydrophilic aqueous gel or hydrophobic fine powder compatible with organic plasticizing fluids by aqueous phase polymerization at super-atmospheric pressure and temperature between about 0°C and 120°C, in presence of known polymerization initiators and of at least one perfluorinated ether ketone. Hydrophilic gel can be transformed to hydrophobic powder to several alternate techniques. Products are more easily processable than those produced by prior processes, and can be formed into manufactured articles having superior physical and mechanical characteristics.

3,721,639

**PROCESS FOR CASTING POLYPHENYLENE OXIDE FILMS ON STAINLESS STEEL SUPPORTS USING A VEGETABLE OIL ADDITIVE**

Jean Gattus, 43 Rue des Charmettes, 69 Villeurbanne, and Maurice Mallet, 37 Rue Servient, Lyon, both of France

Continuation-in-part of Ser. No. 882,804, Dec. 5, 1969, abandoned. This application July 19, 1971, Ser. No. 164,010

Claims priority, application France, Dec. 9, 1968, 68177237

Int. Cl. C08g 23/18

U.S. Cl. 260—18 PF

8 Claims

Polypheylene oxide containing films which do not adhere to stainless steel casting plates are formed from compositions containing polypheylene oxide and a vegetable oil which may be epoxidized.

3,721,640

**CROSSLINKABLE COATING AGENTS**

Hans Wilhelm, 6700 Ludwigshafen; Klaus Gulbins, and Heinrich Hartmann, both of 6703 Limburgerhof, all of Germany, assignors to Badische Anilin &amp; Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

Continuation-in-part of Ser. No. 686,754, Nov. 29, 1967, abandoned. This application Dec. 3, 1970, Ser. No. 94,986

Claims priority, application Germany, Dec. 3, 1966, P 16 69 078.1

Int. Cl. C08f 45/34

U.S. Cl. 260—31.2 N

16 Claims

Crosslinkable coating agents based on an organic dispersion (I) of a crosslinkable copolymer (A) which dispersion is stable without an emulsifier and a diisocyanate or polyisocyanate (II). The organic dispersion (I) of the copolymer (A) is prepared by the copolymerization of:

- polymerizable compounds containing hydroxyl groups, with
- other comonomers in
- an organic liquid in which the copolymer (A) formed is not soluble, and in the presence of (B) a copolymer of comonomers from groups (a) and (b) and which is soluble in the organic liquid (c).

3,721,641

**FLEXIBLE VARNISH**

James A. Whitt, Fort Wayne, Ind., assignor to General Electric Company

No Drawing. Filed Feb. 25, 1971, Ser. No. 119,018

Int. Cl. C08g 37/18

U.S. Cl. 260—33.4 EP

10 Claims

An electrically insulating varnish characterized as having flexibility and long shelf life is composed of a polyester resin and epoxy resin wherein the weight ratio of polyester resin to epoxy resin is about 1.8:1, and phenolic resin, the phenolic resin being present to the extent of about 13 weight percent.

3,721,642

**POLYMERIZABLE UNSATURATED POLYESTER COMPOSITION CONTAINING THERMOPLASTIC ADDITIVE**

Edmund Schalin and Joseph J. Dietrich, Mentor, Clarence L. Sturm and Reynold A. Berkey, Painesville, and John R. Semancik, Mentor, Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

No Drawing. Filed Dec. 10, 1970, Ser. No. 96,994

Int. Cl. C08f 21/02; C08g 51/04, 51/18

U.S. Cl. 260—40 R

12 Claims

Thermosetting molding compositions are prepared using polymerizable unsaturated polyesters, polymerizable unsaturated monomers and polymers derived from the polymerization of a mixture of vinyl chloride and vinyl acetate. Fillers and reinforcing agents are incorporated in the compositions to obtain the desired physical and chemical properties in end use applications. These compositions produce molded articles having low shrinkage, dimensional stability, and improved surface smoothness characteristics.

3,721,643

**UNSATURATED POLYESTER RESIN COMPOSITIONS**

Silvio Vargiu, Sesto S. Giovanni, and Beppino Passalenti, Milan, all of Italy, assignors to Societa Italiana Resine S.P.A., Milan, Italy

Filed Nov. 18, 1971, Ser. No. 200,193

Claims priority, application Italy, Nov. 26, 1970, 32209 A/70

Int. Cl. C08g 51/04

U.S. Cl. 260—40 R

17 Claims

Polyester compositions for pre-impregnates comprise 50–60 parts resin diluted in styrene, 40–50 parts inert filler, up to 1 part magnesium oxide, and catalyst.

3,721,644

**THERMOSETTING ACRYLIC RESINS AND THEIR USE AS BINDERS IN DENTAL FILLING COMPOSITIONS**

Donald G. Stoffey, Hacienda Heights, and Henry L. Lee, Jr., San Marino, Calif., assignors to Lee Pharmaceuticals, South El Monte, Calif.

No Drawing. Filed Dec. 28, 1970, Ser. No. 102,044

Int. Cl. C08f 45/04

U.S. Cl. 260—41 A

4 Claims

Bisphenol-A-bis(2,3-dimethacrylatopropyl ether) and the adduct of methacrylic acid and triglycidyl ether of trihydroxy biphenyl are utilized as binders for dental restorative compositions.

3,721,645

**POLYURETHANES STABILIZED WITH 1,2,3-1,2,4-1,2,5- AND 1,3,4-TRIAZOLES**

John C. Zemlin, Reading, Mass., assignor to Liner Technology, Inc., Burlington, Mass.

Filed Feb. 25, 1971, Ser. No. 118,983

Int. Cl. C08g 51/60, 22/32

U.S. Cl. 260—45.8 N

8 Claims

Improved process for preparation of stabilized but reactive polyurethanes, the stabilizer compositions containing amounts of either substituted or unsubstituted triazoles, and the polyurethane compositions prepared from di- or poly-isocyanates, polyols, and at least one of the selected triazoles.

3,721,646

**PROCESS FOR THE PREPARATION OF SELF-EXTINGUISHING POLYMERS**

Rosario Lanzo, Mantova, and Nicolino Rainaldi, Mestre, both of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed April 8, 1970, Ser. No. 26,794

Claims priority, application Italy, April 10, 1969, 15341 A/69

Int. Cl. C09k 3/28

U.S. Cl. 260—45.7 R

3 Claims

A process for producing self-extinguishing polymers in which, during the polymerization of a styrene-based monomeric composition, there is added a bromofluorohydrocarbon (alkane) of the general formula:



wherein  $n$  is an integer ranging from 1 to 8,  $y$  is greater than  $x$  and  $x + y = 2n + 2$ .

3,721,647

**ONE-PACKAGE HEAT-CURABLE URETHANE POLYMER CASTING COMPOSITION**

Michael P. Mazzeo, Hightstown, N.J.; Riad H. Gobran, Levittown; Anthony F. Santaniello, Newtown, and Marina N. Gillis, Morrisville, all of Pa., assignors to Thiokol Chemical Corporation, Bristol, Pa.

Continuation-in-part of Ser. No. 77,354, Oct. 1, 1970, abandoned. This application Dec. 20, 1971, Ser. No. 210,195

Int. Cl. C08g 51/58, 22/32

U.S. Cl. 260—45.7 R

20 Claims

A one-package heat-curable urethane polymer casting composition which comprises three components is disclosed. The first component is a urethane prepolymer in which the isocyanate terminals have been blocked with a high molecular weight, solid, non-volatile, substituted phenol. The second component is a curative diamine in curative amounts. The third component is an organic acidic material in stabilizing amounts. The resultant composition of these components is stable at ambient temperature conditions. On the application of heat, however, this composition forms a void-free polyurethane which maintains its desirable urethane properties. Said composition is designed to be cast into thick sections, as opposed to thin films or coatings.



3,721,648

**RADIATION-CROSSLINKABLE POLYMERS PREPARED FROM OLEFINICALLY UNSATURATED MONOMERS AND VINYLENE CARBONYL MONOMERS**

Bodo Ehrig; Erwin Muller, and Ludwig Mott, all of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed March 16, 1971, Ser. No. 124,948

Claims priority, application Germany, March 20, 1970, P 20 13 414.9

Int. Cl. C08g 33/10, 15/00

U.S. Cl. 260—47 UA

6 Claims

Polymers and Copolymers of olefinically unsaturated monomers with radiation-crosslinkable vinylene carbonyl groups ( $-\text{CH}=\text{CH}-\text{CO}-$ ) or vinylene carbonyl vinylene groups ( $-\text{CH}=\text{CH}-\text{CO}-\text{CH}=\text{CH}-$ ) are obtained by radical polymerization in heterogeneous phase at a temperature between about  $0^{\circ}$ – $150^{\circ}\text{C}$ .

3,721,649

**PHTHALEIN-FLUORAN SEMICONDUCTIVE POLYMERS**  
Mario Dominguez-Burquette, Lake Elmo Village, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed June 19, 1970, Ser. No. 47,861

Int. Cl. C08g 15/00

U.S. Cl. 260—47 C

4 Claims

A semiconductive phthalain-fluoran polymer adapted for use in a friction element in an electrostatic device of the Johnsen-Rahbek type. The semiconductive polymer is produced by a Friedel-Crafts type condensation reaction, e.g., of an alpha hydroxyanthraquinone or an alpha hydroxynaphthalene with phthalic anhydride, 1,8-naphthalic anhydride, or 3,4,5,6-tetrahydrophthalic anhydride, at a reaction temperature in the range of from  $259^{\circ}$  to  $268^{\circ}\text{C}$ .

3,721,650

**REACTIVE HYDROXYALKYL-ONIUM CATALYSTS FOR SYNTHESIS OF POLYOXAZOLIDONES**

Gaetano F. D'Alelio, 2011 E. Cedar St., South Bend, Ind. 46617

No Drawing. Filed Mar. 22, 1971, Ser. No. 126,946

Int. Cl. C08g 30/04

U.S. Cl. 260—47 EP

19 Claims

A process for preparing polyoxazolidones is provided in which a polyepoxide is reacted with a polyisocyanate in the presence of chemically reactive hydroxyalkyl-onium catalysts, selected from the class of ammonium and phosphonium halides having at least two hydroxyalkyl groups. Novel polymers are obtained when these new catalysts containing two or more hydroxy groups are condensed with polyisocyanates.

3,721,651

**CATIONIC RESIN PREPARED BY TWO STAGE CONDENSATION OF MELAMINE, FORMALDEHYDE AND ALIPHATIC HYDROXYLATED MONOAMINE**

Raymond W. Yates, West Bromwich, England, assignor to British Industrial Plastics Limited, Manchester, England

No Drawing. Filed May 22, 1970, Ser. No. 39,885

Claims priority, application Great Britain, May 22, 1969, 26,265/69

Int. Cl. C08g 9/30

U.S. Cl. 260—29.4 R

19 Claims

Production of cationic resin syrup comprising modified melamine-formaldehyde resin by two-stage condensation of melamine, formaldehyde and an aliphatic hydroxylated monoamine, the ratio of formaldehyde to melamine being between 2:1 and 6:1, the solids content of the reactants at least 60 wt. percent, the first stage of condensation being carried out at pH greater than 8.5 and the second

stage carried out at pH in range 7.0–8.5. Where storage is required, the pH is adjusted after condensation to 6.5–7.5. The product is of particular value in increasing wet-strength of paper.

3,721,652

**POLYMERS OF 2-PYRROLIDONE**

Carl E. Barnes, New Canaan, Conn., assignor to Radiation Research Corporation, Stamford, Conn.

Continuation-in-part of application Ser. No. 763,898, Sept. 30, 1968, which is a continuation-in-part of application Ser. No. 711,926, Mar. 11, 1968. This application Sept. 3, 1970, Ser. No. 69,471

Int. Cl. C08g 20/16

U.S. Cl. 260—78 P

17 Claims

2-pyrrolidone is polymerized to a new white, high molecular weight polymer being particularly suitable for melt extrusion into fibers, films and other shaped articles. A continuous process of polymerization is described.

3,721,653

**POLYAMIDE FIBERS FROM MIXTURE OF BIS-(P-AMINOCYCLOHEXY)METHANE AND 4,4'-METHYLENE DIANILINE**

Robert W. Campbell, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed April 12, 1971, Ser. No. 133,416

Int. Cl. C08g 20/20

U.S. Cl. 260—78 R

10 Claims

Polyamide fibers employing 4,4'-methylenedianiline or a methyl derivative thereof as a comonomer in combination with bis(p-aminocyclohexyl)methane or methyl derivative thereof and an acyclic  $\text{C}_8$  to  $\text{C}_{18}$  dicarboxylic acid have improved dyeability with retention of crystallinity.

3,721,654

**PROCESS FOR PREPARING COPOLYMERS OF MALEIC ANHYDRIDE AND 2-ALKOXY-PROPENE**

Peter Schlumbom, Irvington, and David A. Gordon, Scarsdale, both of N.Y., assignors to Ciba-Geigy Corporation, Greenburgh, N.Y.

Continuation-in-part of Ser. No. 888,832, Dec. 29, 1969, Pat. No. 3,635,916. This application Nov. 2, 1970, Ser. No. 86,371

Int. Cl. C08f 17/00

U.S. Cl. 260—78.5 R

5 Claims

A process for the preparation of maleic anhydride/2-alkoxypropene copolymers which comprises polymerizing maleic anhydride and 2-alkoxypropene in an organic solvent in the presence of a radical catalyst. The resulting copolymers have an intrinsic viscosity of from about 0.1 to about 0.5 at  $30^{\circ}\text{C}$  in tetrahydrofuran. When esterified, the copolymers are useful in treating leather and in hairspray compositions.

3,721,655

**COPOLYMERS OF HALFESTERS OF MALEIC ANHYDRIDE AND-ALKOXYPROPENE**

Peter Schlumbom, Irvington, and David A. Gordon, Scarsdale, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 888,832, Dec. 29, 1969, Pat. No. 3,635,916. This application Jan. 8, 1971, Ser. No. 105,081

Int. Cl. C08f 29/38

U.S. Cl. 260—78.5 T

3 Claims

Alkylene oxide monoether halfesters of maleic anhydride/2-alkoxypropene copolymers and alkyl and alkylene oxide mixed halfesters of said copolymers are homogeneous film-forming compositions useful in hair spray preparations. These

halfesters are prepared by the esterification of the maleic anhydride/2-alkoxypropene copolymer with an appropriate alcohol.

3,721,656

**METHOD OF PRODUCING STABLE POLYURETHANE SOLUTIONS**

Yuichi Ikeda, Yokohama; Choji Yuyama, Kosakai; Tsuguhisa Hirukawa, Kosakai, and Yoshio Isshiki, Kosakai, all of Japan, assignors to Ameliotex, Inc., New York, N.Y.

Filed Sept. 3, 1971, Ser. No. 177,632

Int. Cl. C08g 22/04

U.S. Cl. 260—77.5 AA

4 Claims

A method for improving the solution stability and homogeneity of substantially linear polyurethanes obtained by the reaction in solution of a diamine chain extending agent with an isocyanate-terminated prepolymer.

3,721,657

**HYDROPHILIC GEL POLYMERS OF VINYLPIRROLIDINE AND HYDROXYALKYL METHACRYLATE**

Maurice Seiderman, 3306 Deronda Drive, Los Angeles, Calif.

Continuation-in-part of Ser. No. 845,499, July 28, 1969, Pat. No. 3,639,524. This application Nov. 23, 1970, Ser. No. 92,280

Int. Cl. C08f 17/00

U.S. Cl. 260—80.72

24 Claims

A plastic or resin product obtained by mixing a comminuted pyrrolidone such as polyvinylpyrrolidone, and optionally modifiers and additives such as organic methacrylates, and optionally crosslinking agents, and optionally catalysts, and causing polymerization to take place by elevating the temperature. The inventive product is insoluble in water but is hydratable with water, depending upon proportions of above mentioned components, and may take up in its structure as little as 5 percent by weight of water to as high as 90 percent by weight of water. The inventive hydrated product is optionally transparent, translucent, or opaque, and produced in any shape or size, depending only on the mold in which it is cast. The transparent product is especially suitable for contact lenses. The translucent and opaque products may be fabricated into membranes with pore sizes that can be made selectively, or cast into useful shapes and for other uses.

3,721,658

**METHOD OF PREPARING HIGH SOFTENING POINT THERMOPLASTICS**

Ghazi Mourad Dickakian, Sterrebeck, Belgium, assignor to Esso Research and Engineering Company

Filed May 3, 1971, Ser. No. 139,866

Claims priority, application Great Britain, May 5, 1970, 21,629/70

Int. Cl. C08f 15/42

U.S. Cl. 260—82

8 Claims

High softening point thermoplastic materials are prepared by the contacting of steam-cracked tar or fractions thereof with oxygen containing gases in the presence of a catalyst comprising salts of iron, copper, aluminum and zinc. The product materials result from the oxidative polymerization which occurs at temperatures in the range of  $200^{\circ}$  to  $300^{\circ}\text{C}$ . and are useful binder materials for the manufacture of fiberboard and other products.

3,721,659

**TREATMENT OF RUBBER**

Maurice Edward Cain, Welwyn Garden City; Geoffrey Thomas Knight, Shefford; Keith Frederick Gazeley, and Peter McHigh Lewis, both of Hitchin, all of England, assignors to The Natural Rubber Producers' Research Association, London, England

Filed Nov. 16, 1970, Ser. No. 90,138

Claims priority, application Great Britain, Nov. 28, 1969, 58,403/69

Int. Cl. C08d 5/02

U.S. Cl. 260—83.3

6 Claims

Novel urethane reaction products of aromatic nitroso compounds with isocyanates are used to improve the resistance of unsaturated rubbers to oxidative degradation by providing antioxidant groups bound to the rubber molecules. Dry rubber or rubber latex is conveniently reacted with decomposition products of the urethane during normal vulcanization.

3,721,660

**MOLECULAR SIZING TECHNIQUE FOR PREPARING LOW MOLECULAR WEIGHT COPOLYMERS OF ISOBUTYLENE AND CONJUGATED POLYENES**

Jerome Robert Olechowski, Trenton, N.J., assignor to Cities Service Company, New York, N.Y.

No Drawing. Filed May 28, 1971, Ser. No. 148,243

Int. Cl. C08d 5/00; C08f 1/88

U.S. Cl. 260—85.3 R

24 Claims

Low molecular weight butyl-type copolymers having narrow molecular weight distributions are prepared by contacting a higher molecular weight butyl-type copolymer, e.g., a butyl rubber, with a catalyst composition comprising a transition metal salt, an organometallic compound of a metal of Group I-A, II-A, II-B, or III-A of the Periodic Table, a proton donor, and an alkene. The catalyst composition preferably comprises a halide of tungsten, molybdenum, or rhenium, an alkyl aluminum halide, a lower alcohol, and an alkene containing 2–4 carbon atoms.

3,721,661

**PROCESS FOR PRODUCING POLYISOBUTENE**Ermanno Susa, 44 Via Dei Navali, Trieste, Italy  
No Drawing. Continuation-in-part of application Ser. No. 37,452, May 15, 1970, and a continuation of application Ser. No. 610,254, Jan. 19, 1967, now abandoned. This application May 5, 1971, Ser. No. 140,570

Claims priority, application Italy, Jan. 25, 1966, 13,774/66

Int. Cl. C08f 3/14

U.S. Cl. 260—94.8

3 Claims

Process for regulating the molecular weight of polyisobutene and producing high polymer yields by using tert. butyl chloride as the molecular weight regulator during the polymerization of isobutene in the presence of a Friedel-Crafts catalyst and a solvent having a low dipole moment.

3,721,662

**METHOD FOR PRODUCING AN ACTIVE CARBOXYLIC ACID ESTER**

Masahiko Fujino, Hyogo, and Chitoshi Hatanaka, Suita, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed Feb. 2, 1968, Ser. No. 702,555

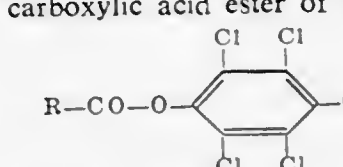
Claims priority, application Japan, Feb. 4, 1967, 42/7,401; June 26, 1967, 42/40,900

Int. Cl. C07c 67/02, 103/52

U.S. Cl. 260—112.5

7 Claims

An active carboxylic acid ester of the formula



useful in the synthesis of peptide, is prepared by reacting formic acid, certain hydrocarbon-carboxylic acids, N-protected amino acids or a peptide with protected terminal



amino group with pentachlorophenyl dichloroacetate or pentachlorophenyl trichloroacetate, in the presence of a tertiary amine or dicyclohexylamine.

3,721,663

# NOVEL METHOD FOR PREPARING ASCORBIC ACID COMPOUNDS AND NOVEL INTERMEDIATES FOR PREPARING SAME

David F. Hinkley, Plainfield, and Alexander M. Holnowski, Union, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation-in-part of application Ser. No. 689,287, Dec. 11, 1967. This application Mar. 2, 1970, Ser. No. 15,958

Int. Cl. C07c 47/18

U.S. Cl. 260—210 R

5 Claims

Process for preparing ascorbic acid compounds by catalytic oxidation of a loweralkyl sorboside or loweralkyl fructoside to form the corresponding glycosidic acid which is then simultaneously hydrolyzed and lactonized. Novel  $\alpha$ -loweralkyl glycoside of 2-keto-gulonic acid is useful as an intermediate in the preparation of ascorbic acid.

3,721,664

# PREPARATION OF 5-CYTOSINE NUCLEOSIDES

Max Hoffer, Nutley, N.J., assignor to Hoffman-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 811,666, March 28, 1969, abandoned. This application Jan. 27, 1970, Ser. No. 6,289

Int. Cl. C07c 51/52

U.S. Cl. 260—211.5 R

5 Claims

Cytosine nucleosides are prepared by silylating cytosine or a 5-substituted cytosine derivative, condensing the silyl derivative with an acylated sugar halide and saponifying the condensation product. The process is used in preparing known chemotherapeutically useful cytosine nucleosides, particularly the anti-viral 5-fluorocytosine arabinoside and 1- $\beta$ -D-arabino furanosyl-cytosine.

3,721,665

# STARCH BASED POLYETHER POLYOLS

Philip Hotchkiss Moss and Michael Cuscurida, Austin, Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.

No Drawing. Original application June 29, 1970, Ser. No. 50,901. Divided and this application Oct. 7, 1971, Ser. No. 187,564

Int. Cl. C08b 19/06

U.S. Cl. 260—233.3 R

8 Claims

A starch based polyol for polyurethanes is described which is made by reacting cornstarch with glycol ethers and alkoxylating the resulting reaction product.

3,721,666

# 1 - (PHENYL OR PYRIDYL) - 4 - (ALKYL OR ALKENYL)-3H-1,4 - BENZODIAZEPINE-2,5-(1H,4H)-DIONES

Karl-Helz Weber, Gau-Algesheim, Karl Zeile and Peter Danneberg, Ingelheim am Rhein, Rolf Giesemann, Bingen, Adolf Bauer and Herbert Merz, Ingelheim am Rhein, and Franz Josef Kuhn, Bingen, Germany, assignors to Boehringer G.m.b.H., Ingelheim am Rhein, Germany

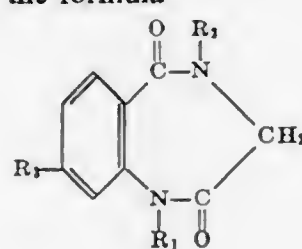
No Drawing. Continuation-in-part of applications Ser. No. 777,193, Nov. 19, 1968, and Ser. No. 24,837, Apr. 1, 1970. This application Nov. 12, 1971, Ser. No. 198,429

Int. Cl. C07d 53/06

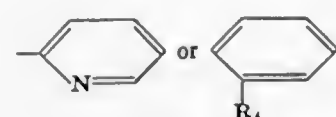
U.S. Cl. 260—239.3 D

11 Claims

Compounds of the formula



wherein

R<sub>1</sub> is

where R<sub>4</sub> is hydrogen, halogen, nitro or trifluoromethyl, R<sub>3</sub> is alkyl of 1 to 4 carbon atoms or allyl, and R<sub>3</sub> is chlorine, bromine, nitro, trifluoromethyl or cyano, which are useful as psychosedatives and anticonvulsives.

3,721,667

# NOVEL ANTIBACTERIAL COMPOUNDS AND A PROCESS FOR THE PREPARATION OF THE SAME

Saburo Ueno; Etsuzo Shimogo, Takao Kawasaki, Daisaku Imaru, Fumio Hirose, Satoshi Heya, Yoshio Omura, Yoshiaki Osaka, Takayoshi Fujii, and Osamu Otake, all of Tokyo, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Tokyo; Yoshio Omura, Tanashi-shi, Tokyo; Yoshiaki Osaka, Nezu, Bunkyo-ku, Tokyo; Takayoshi Fujii, Touwa, Adachi-ku, Tokyo, and Osamu Otake, Chofu-shi, Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 26, 1970, Ser. No. 40,733

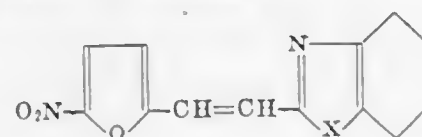
Claims priority, application Japan, May 30, 1969, 44/42331; May 30, 1969, 44/42332

Int. Cl. C07d 85/48, 91/42

U.S. Cl. 260—240 A

3 Claims

There are described new chemical compounds, or more specifically 1-(5-nitrofuryl)-2-(2-cyclohexeno-azoyl)-ethylene of the following formula:



wherein X is a member selected from the group consisting of oxygen and sulfur.

and a method for the preparation of the same, as well as compositions containing the same.

These new compounds represent superior antibacterial properties and a low mammalian toxicity, and are not subjected to inactivation in medium. The method for the preparation thereof comprises: reacting a compound selected from the group consisting of 2-methylcyclohexeno-oxazole and 2-methyl-cyclohexeno-thiazole with a compound selected from the group consisting of 5-nitro-furfural and the diacetate thereof.

3,721,668

# NOVEL 5-NITRO-IMIDAZOLE ANTIMICROBIAL EFFECTIVE COMPOUNDS

Clemens Rufer; Rudolf Albrecht; Hans-Joachim Kessler, and Eberhard Schroeder, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

Filed July 8, 1970, Ser. No. 53,298

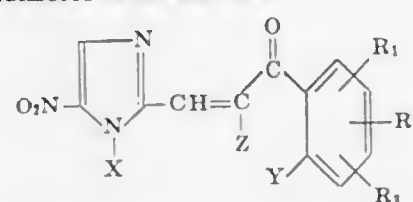
Claims priority, application Germany, July 10, 1969, P 19 35 685.5

Int. Cl. C07d 49/36

U.S. Cl. 260—240 J

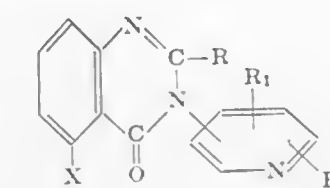
47 Claims

5-Nitro-imidazoles of the formula



wherein X is hydrocarbon or a free or esterified hydroxy group; Y and Z each are H or, collectively, a bridging group

consisting of  $-\text{CH}_2-$  and/or one of O, S, SO and  $\text{SO}_2$ ,  $-\text{CH}_2\text{CH}_2-$ , or  $-\text{CHA}-$  wherein A is  $-\text{CH}_3$ ,  $-\text{C}_2\text{H}_5$  or  $-\text{C}_6\text{H}_{13}$ ; R<sub>1</sub> and R<sub>2</sub> each are alkyl, halogen or free, esterified or etherified  $-\text{OH}$ ; and R<sub>3</sub> is H, alkyl, substituted alkyl, halogen, free, esterified or etherified  $-\text{OH}$ , amino, amido or aminoalkoxy; have antibacterial and antifungal activity, particularly against protozoa and especially against *Trichomonas vaginalis*.



3,721,669

# PROCESS FOR THE NITROSYLATION OF ORGANIC COMPOUNDS

Yvon G. M. Conseiller, Paris, and Gerard J. Fontaine, Choisy-Le-Roi, both of France, assignors to Rhone-Poulenc S.A., Paris, France

Filed Sept. 18, 1970, Ser. No. 73,621

Claims priority, application France, Sept. 22, 1969, 6932160

Int. Cl. C07d 55/52

U.S. Cl. 260—248.5

8 Claims

Organic compounds are nitrosylated with nitrous fumes which are essentially free from molecular oxygen, and in which the molar ratio of nitric oxide to nitrogen peroxide is at least 9:1. An advantage of the process is that the product is free from alkali metal salts, so facilitating recovery of the product and re-use of material in the mother liquor. For example, in the production of dinitrosopentamethylenetetramine, by-product formaldehyde can be reconverted into hexamethylenetetramine by adding ammonia, and the mother liquor containing this regenerated hexamethylenetetramine recycled.

3,721,670

# 3-SUBSTITUTED-AS-TRIAZINO[5,6-c]QUINOLINES

George Carlin Wright and Chia Nien Yu, Norwich, N.Y., assignors to Morton-Norwich Products, Inc.

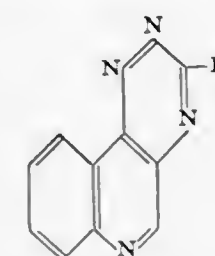
No Drawing. Filed Apr. 5, 1971, Ser. No. 131,482

Int. Cl. C07d 55/08

U.S. Cl. 260—248 A5

6 Claims

Novel 3-substituted-as-triazino[5,6-c]quinolines of the formula:



wherein R is chloro, amino, 2-hydroxyethylamino, methoxy, or diallylamino are useful as antifungal agents.

3,721,671

# NOVEL QUINAZOLINONE DERIVATIVES 2-ALKYL-3-(3'-METHYLPYRIDINE-2'-YL)-5-CHLORO-4(3H)-QUINAZOLINONE

Hisao Yamamoto; Shigeo Inaba, both of Nishinomiya; Seitetsu Arasaki; Isamu Maruyama, both of Minoo; Kei Takahashi, Takarazuka; Chiharu Saigo, and Shigeru Sakai, both of Toyonaka, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 683,813, Nov. 17, 1967, abandoned. This application May 4, 1970, Ser. No. 34,587

Claims priority, application Japan, Jan. 23, 1967, 42/4725

Int. Cl. C07d 51/48

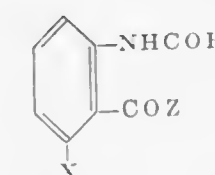
U.S. Cl. 260—256.4 Q

3 Claims

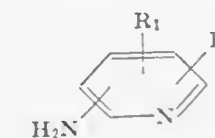
Novel quinazolinone derivatives, which exhibit central nervous system depressing activities such as tranquilizing, seda-

tive, muscle-relaxing, spasmolytic and barbitol potentiating activities with low toxicity, having the formula,

wherein R is hydrogen, lower alkyl or halogenated lower alkyl, R<sub>1</sub> is hydrogen, halogen, lower alkyl, halogenated lower alkyl, lower alkoxy or nitro, R<sub>2</sub> is halogen, lower alkyl, halogenated lower alkyl, lower alkoxy or nitro, and X is chlorine or bromine are prepared by reacting an N-acylantranilic acid derivative of the formula



wherein R and X have the same meanings as above and Z is hydroxyl, lower alkoxy, halogen or a group  $-\text{OY}$  where Y is an alkali metal, with an aminopyridine derivative of the formula



wherein R<sub>1</sub> and R<sub>2</sub> have the same meanings as defined above.

3,721,672

# SPIRO[CYCLOHEXANE-1,9-THIOXANTHENES]

Helmut Muller-Calgan, Richard Unger, and Hans Joachim Enekel, Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Germany

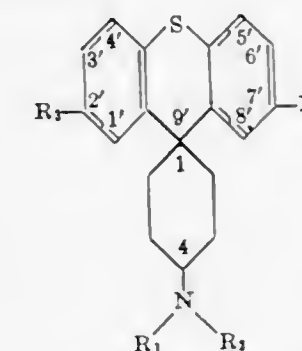
No Drawing. Filed Nov. 13, 1970, Ser. No. 89,489

Claims priority, application Germany, Nov. 15, 1969, P 19 57 490.4

Int. Cl. A61k 27/00; C07d 65/16, 51/66

U.S. Cl. 260—268 PC

4 - aminospiro[cyclohexane - 1,9' - thioxanthene] compounds of the formula



wherein R<sub>1</sub> is H or alkyl of 1-6 carbon atoms; R<sub>2</sub> is H or alkyl of 1-3 carbon atoms, or, R<sub>1</sub> and R<sub>2</sub> collectively with the nitrogen atom to which they are attached are a morpholine, pyrrolidine, piperidine or piperazine ring, the latter three can optionally be substituted by a methyl or ethyl group; and R<sub>3</sub> and R<sub>4</sub> each are H or Cl, including the physiologically acceptable acid addition salts and quaternary ammonium salts thereof, have psychotropic



activity, including tranquilizing and thymoanaleptic activity, and blood circulatory stimulating, spasmolytic and antihistaminic activity.

3,721,673

## SUBSTITUTED PYRROLEMETHYLAMINES

Charles Harmon Tilford, De Kalb, Ga., assignor to Richardson-Merrell, Inc., New York, N.Y.

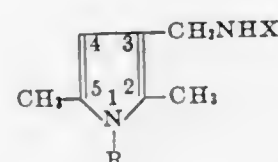
No Drawing. Filed May 14, 1970, Ser. No. 37,313

Int. Cl. C07d 87/10

U.S. Cl. 260—268 H

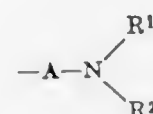
10 Claims

Disclosed as novel compounds useful as hypotensive and antihypertensive agents are compounds having the formula



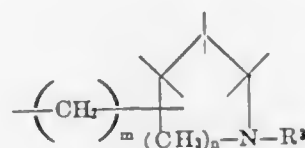
wherein R is cycloalkyl of 5 to 7 carbon atoms, pyridyl, methylpyridyl, quinolyl, phenyl, a mono- or di-substituted phenyl group in which case the substituents may be halogen, (lower)alkyl of 1 to 3 carbon atoms, lower alkoxy of 1 to 4 carbon atoms or di(lower)alkylamino having 1 to 4 carbon atoms in each alkyl group, or aralkyl such as phenethyl or  $\alpha$ -methylbenzyl; and X is

(A) The group



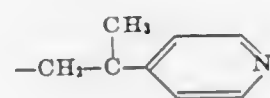
wherein A is a straight or branched alkylene chain of 2 or 6 carbon atoms; R<sup>1</sup> and R<sup>2</sup> may be the same or different and represent hydrogen, alkyl of 1 to 3 carbon atoms, hydroxyalkyl, di(lower) alkylaminoalkyl, cycloalkyl of from 5 to 7 carbon atoms, phenyl, phenyl substituted with (lower)alkyl, or R<sup>1</sup> and R<sup>2</sup> together with the nitrogen atom to which they are attached may be a saturated heterocyclic group such as pyrrolidino, piperidino, morpholino, piperazino or N-(lower alkyl)piperazino,

(B) The group



wherein m is a whole integer of from 0 to 3 with the proviso that when m is 0 the point of attachment of X may not be at either carbon atom alpha to the nitrogen atom; n is a whole integer of 1 or 2 and R<sup>3</sup> is hydrogen or (lower)alkyl; or

(C) The group



and the acid addition salts of said compounds. The novel compounds may be prepared from trisubstituted pyrrole-carboxaldehydes by reaction with primary amines followed by reduction to the corresponding pyrrolemethylamines or by a Mannich type reaction of a trisubstituted pyrrole with a primary or secondary amine and formaldehyde.

3,721,674  
PIPERAZINYL ETHYL CARBAMATES  
Franklin W. Abbate, North Haven, and William J. Far-  
rissey, Jr., Northford, Conn., assignors to The Upjohn  
Company, Kalamazoo, Mich.  
No Drawing. Filed Mar. 2, 1970, Ser. No. 15,878  
Int. Cl. C07d 51/70

U.S. Cl. 260—268 R

2 Claims

Piperazinyl ethyl carbamates are obtained in good yield by reacting an N,N-dihydrocarbylcarbamate with triethylenediamine at an elevated temperature. The piperazinyl derivative so formed are useful in the preparation of acid-soluble and acid-dyeable polyurethanes, and as catalysts in the manufacture of polyurethanes.

3,721,675

## OXAZOLIDIN-2-ONE DERIVATIVES

Jacques G. Maillard, Paris, France, assignor to Laboratoires  
Jacques Logeais, Issy-les-Moulineaux, France

Filed March 19, 1970, Ser. No. 21,188

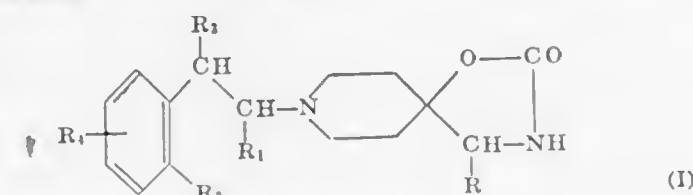
Claims priority, application France, March 25, 1969,  
6908662

Int. Cl. C07d 99/04

U.S. Cl. 260—293.62

12 Claims

The 5-(piperidine-4-spiro)-oxazolidin-2-one derivatives of formula:



in which R is hydrogen, an alkyl radical or an aryl radical, R<sub>1</sub> is an alkyl radical and R<sub>2</sub> is hydrogen, or R<sub>1</sub> and R<sub>2</sub> form together a methylene or ethylene bridge, R<sub>3</sub> is hydrogen or an alkyl radical and R<sub>4</sub> is hydrogen, halogen, an alkoxy radical or a hydroxy radical, R, R<sub>2</sub> and R<sub>4</sub> not being simultaneously hydrogen, have analgesic and hypotensive properties.

3,721,676

## CERTAIN 3-AMINO-2(1H)PYRIDONES

Bruce E. Witzel and Tsung-Ying Shen, Westfield, Patricia  
M. Graham, Mountainside, Robert L. Clark, Wood-  
bridge, and Arsenio A. Pessolano, Colonia, N.J., as-  
signors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation-in-part of abandoned applica-  
tion Ser. No. 876,058, Nov. 12, 1969. This application  
June 11, 1970, Ser. No. 45,547

The portion of the term of the patent subsequent to

Apr. 4, 1989, has been disclaimed

Int. Cl. C07d 31/42

U.S. Cl. 260—296 R

10 Claims

Novel secondary and tertiary aminopyridones useful  
as antiinflammatory, analgesic and antipyretic agents.

3,721,677

METHOD FOR INVERTING D AND L CONFIGURATIONS  
OF OPTICALLY ACTIVE ISOMERS OF ASYMMETRICAL  
ORGANOPHOSPHOROUS COMPOUNDS

Henryy Tolkmith, Midland, Mich.; James N. Seiber, Davis,  
Calif., and Paul B. Budde, Midland, Mich., assignors to  
the Dow Chemical Company, Midland, Mich.

Division of Ser. No. 868,595, Oct. 22, 1969, Pat. No.

3,621,031, and a continuation-in-part of Ser. No. 604,153,  
Dec. 23, 1966, abandoned. This application Dec. 14, 1970, Ser.  
No. 98,190

Int. Cl. C07f 9/22, 9/44

U.S. Cl. 260—309

1 Claim

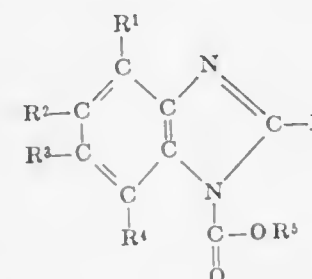
Optically active isomers of asymmetrical diamino phos-  
phine sulfides containing a P-imidazolyl radical are resolved  
and separated.

3,721,678  
2-TRIFLUOROMETHYL-OR 2-  
PENTAFLUOROETHYLBENZIMIDAZOLE  
Dennis Ernest Burton, Frog Cottage, South Street, Ickleton,  
Saffron Walden, Essex; Geoffrey Tattersall Newbold, Glen  
Orchy, Rookery Lane, Wendens Ambo, Saffron Walden, Es-  
sex; Albert Percival, "Northumbria", The Lane, Hauxton,  
Cambridgeshire; Alan James Lambie, 78 Habberley Road,  
Kinderminster, Worcestershire, and Ian Robert Sencial, 6  
Cleves Drive, Rubery, Worcestershire, all of England  
Continuation-in-part of Ser. No. 457,519, May 20, 1965,  
abandoned. This application April 17, 1967, Ser. No. 631,175  
Claims priority, application Great Britain, May 27, 1964,  
21,845/64; April 23, 1966, 17,876/66  
Int. Cl. C07d 49/38

U.S. Cl. 260—309.2

11 Claims

The invention provides physiologically active compounds of  
the formula



wherein the above formula X is selected from the group con-  
sisting of trifluoromethyl and pentafluoroethyl, and R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>  
and R<sup>4</sup> are selected from the group consisting of hydrogen, al-  
kyl, hydroxy, alkoxy, nitro, halogen, pseudo-halogen, sub-  
stituted alkyl, carboxy, carboxy ester, carboxy amide, N-sub-  
stituted carboxy amide, N-disubstituted carboxy amide, amino  
monosubstituted amino, disubstituted amino, thiol, alkylthiol  
and oxygenated derivatives thereof, sulphonic acid, ester and  
amide, substituted amide, and a heterocyclic ring attached to  
the benzimidazole system through a nitrogen atom, radicals  
and R<sup>5</sup> is selected from the group consisting of alkyl, sub-  
stituted alkyl, aryl, substituted aryl, cycloalkyl and substituted  
cycloalkyl radicals. Also disclosed are physiologically active  
compositions containing the substituted benzimidazole com-  
pounds as an active ingredient as well as methods for the treat-  
ment of plants, materials, the soil, land or aquatic areas which  
comprises applying thereon or thereto a physiologically active  
composition as defined.

3,721,679

1,3-DISUBSTITUTED-2-TRICHLOROMETHYL-  
5-IMINO-4-IMIDAZOLIDINONES

Malcolm Scott Singer, Richmond, Calif., assignor to  
Chevron Research Company, San Francisco, Calif.

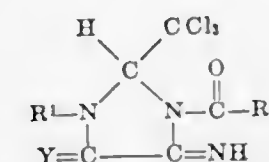
No Drawing. Filed Sept. 3, 1970, Ser. No. 69,466

Int. Cl. C07d 49/30

U.S. Cl. 260—309.7

6 Claims

Compound of the formula



wherein Y is oxygen or sulfur, R<sup>1</sup> is alkyl of 1 to 8 car-  
bon atoms substituted with 0 to 3 halogen atoms or aryl  
of 6 to 10 carbon atoms substituted with 0 to 3 halogen  
atoms, R<sup>2</sup> is hydrogen, R<sup>3</sup>, an alkoxy of 1 to 8 carbon  
atoms or phenoxyethyl substituted with 0 to 3 halogen  
atoms in the benzene nucleus. The compounds are pesti-  
cides and/or herbicides.

3,721,680  
5-AROYL-2-( $\beta$ -HYDROXYETHYL)-1-LOWERALKYL-  
PYRROLES  
John Robert Carson, Norristown, Pa., assignor to McNeil  
Laboratories, Inc., Fort Washington, Pa.  
Filed June 15, 1970, Ser. No. 46,519  
Int. Cl. C07d 27/26

U.S. Cl. 260—326.5 J

6 Claims

Compounds of the class of 5-aryl-2-( $\beta$ -hydroxyethyl)-1-  
loweralkyl-pyrroles useful as anti-inflammatory agents.

3,721,681  
PHENYLFURAN-AND PHENYLTHIOPHENE-ALKANOLS  
AND DERIVATIVES THEREOF  
Jonathan Hutton, and Gilbert Joseph Stacey, both of Mac-  
clesfield, England, assignors to Imperial Chemical Indus-  
tries, Limited, London, England  
Continuation-in-part of Ser. No. 758,581, Sept. 9, 1968, Pat.  
No. 3,652,575. This application Aug. 26, 1971, Ser. No.  
175,402

Int. Cl. A61k 27/00; C07d 5/16, 63/12

U.S. Cl. 260—332.3 R

2 Claims

This invention relates to new heterocyclic compounds, and  
more particularly to new phenyl-heterocyclic-alkanol deriva-  
tives, which have anti-inflammatory, analgesic and antipyretic  
activity.

3,721,682  
MANUFACTURE OF BENZYLIDENE SORBITOLS  
Koichi Murai, Kyoto-fu; Giichi Akazome, Kyoto; Yasuo Cho-  
shi, Uji; Toshiaki Kobayashi, Kyoto, and Atsuo Tsuji,  
Kyoto-fu, all of Japan, assignors to New Japan Chemical  
Company Limited, Fushimi-ku, Kyoto-shi, Japan  
Filed Oct. 5, 1970, Ser. No. 78,207  
Int. Cl. C07d 13/04, 15/04

U.S. Cl. 260—340.7

6 Claims

In reacting an aqueous solution of sorbitol with benzal-  
dehyde in the presence of a dehydrating catalyst to produce a  
benzylidene sorbitol, a method of this invention comprises ad-  
ding cyclohexane to the reaction system in an amount of five  
to 20 weight parts based on one weight part of the benzal-  
dehyde, heating with stirring the reaction system to effect the  
reaction between sorbitol and benzaldehyde while boiling an  
azeotropic mixture of cyclohexane and water, said azeotropic  
mixture being condensed and separated to remove the water  
from the reaction system and recycle the cyclohexane to the  
system, and recovering the resultant benzylidene sorbitol thus  
produced.

3,721,683  
PROCESS FOR THE PREPARATION OF AROMATIC  
CARBOXYLIC ANHYDRIDES

Ryoichi Yokoyama, Hiroshima-ken, Japan, assignor to Teijin  
Chemicals Limited, Tokyo, Japan

Filed June 13, 1969, Ser. No. 833,191

Int. Cl. C07c 63/18

U.S. Cl. 260—346.4

10 Claims

A process for the preparation of an aromatic carboxylic an-  
hydride comprising reacting o-xylene or durene with molecu-  
lar oxygen in the vapor phase, in the presence of a solid oxida-  
tion catalyst, which is characterized in that the solid oxidation  
catalyst in that obtained by calcining, at temperatures not  
lower than 560°C., a mixture of a vanadium compound, a  
chromium compound and a promoter metal component  
selected from the group consisting of tin plus antimony, ger-  
manium, tin plus indium, niobium, tantalum, gallium and zir-  
conium, the atomic ratio of vanadium to chromium in the  
catalyst being within the range of 1:0.5~1:1.





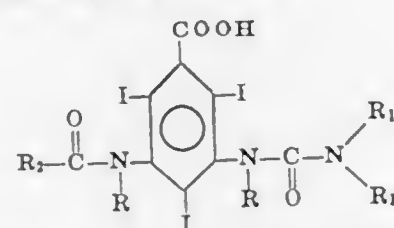


phenoxy radical are disclosed as microbially active compounds. A method for controlling microorganisms with the aid of such compounds and compositions containing them are also described.

**3,721,700**  
**FLUORINATED POLYGLYCOL DERIVATIVES AND THEIR PREPARATION**  
Erich Schulerer and Dieter Hoffmann, Burghausen, Salzach, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany  
No Drawing. Filed Aug. 26, 1970, Ser. No. 67,278  
Claims priority, application Germany, Sept. 17, 1969, P 19 46 956.8  
Int. Cl. C07c 125/06

**U.S. Cl. 260—471 C** 11 Claims  
Adducts from fluoroalkanols, toluene diisocyanates and polyethylene glycols are useful for rendering textiles oil- and water repellent and achieve the "soil release effect." Furthermore, they are dispersing agents for oil- and water repellent polymers made of adducts from said fluoroalkanols, toluene diisocyanates and ethylene imine.

**3,721,701**  
**RADIOPAQUE TRIHIOALKYLUREIDO BENZOIC ACIDS**  
Jack Bernstein and Kathryn Alice Losee, New Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.  
No Drawing. Filed June 19, 1970, Ser. No. 47,902  
Int. Cl. C07c 127/16, 127/18  
**U.S. Cl. 260—471 R** 6 Claims  
Compounds having the formula



wherein R and R<sub>1</sub> are hydrogen or lower alkyl and R<sub>2</sub> is lower alkyl, as well as salts and lower alkyl esters of these compounds are useful as diagnostic agents.

**3,721,702**  
**PROCESS FOR PREPARING DIETHYL 3,4-DIALKOXYANILINOMETHYLENEMALONATES**  
Nicholas D. Harris, Norwich, N.Y., assignor to Morton-Norwich Products, Inc.  
No Drawing. Filed July 22, 1968, Ser. No. 746,247  
Int. Cl. C07c 101/20

**U.S. Cl. 260—471 A** 1 Claim  
Dialkyl anilinomethylenemalonates, useful as intermediates via cyclization to form useful hypotensives and coccidiostats, are prepared by displacement of the dimethylamino group of diethyl dimethylaminomethylenemalonate with an aniline.

**3,721,703**  
**PHENOXYALKANE-CARBOXYLIC ACIDS, SALTS AND ESTERS THEREOF**  
Helmut Nahm, Frankfurt am Main, Germany, and by Helene Elise Siedel, heiress, late of Bad Soden/Taunus, Germany (by Helene Elise Siedel, heiress), assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany  
Filed Jan. 9, 1969, Ser. No. 790,897  
Claims priority, application Germany, Jan. 11, 1968, P 16 68 896.3  
Int. Cl. C07c 101/44

**U.S. Cl. 260—471 R** 12 Claims  
Phenoxyalkane-carboxylic acids with a 4-substituted phenoxy group in para position of the benzene ring, their esters with aliphatic, cycloaliphatic or araliphatic alcohols and

their salts with non-toxic bases having a decreasing effect on the serum cholesterol level and a process for their manufacture.

**3,721,704**  
**ESTERS OF (DIALKYL-4-HYDROXY-PHENYL)MALONIC ACID AND RELATED COMPOUNDS**  
Martin Dexter, Briarcliff Manor, N.Y., assignor to Geigy Chemical Corporation, Ardsley, N.Y.  
Filed Feb. 17, 1967, Ser. No. 616,801  
Int. Cl. C07c 69/76

**U.S. Cl. 260—473 S** 12 Claims  
Derivatives of malonic acid substituted with groups containing a hindered phenol are disclosed. A preferred compound is di-n-octadecyl-2,2-bis-(3',5'-di-t-butyl-4'-hydroxybenzyl) malonate. The compounds are stabilizers suitable for stabilizing numerous substrates of organic material subject to oxidative deterioration, in particular polypropylene. Synergistic combinations of these compounds and dialkyl thiodipropionates are disclosed.

**3,721,705**  
**PROCESS FOR PRODUCING METHACRYLIC ACID OR ITS ESTERS**  
Hitoshi Nakajima, Ageoshi; Masazumi Chono, Saitamaken; Masayoshi Taguchi, Itabashiku; Tokio Sakurai, Kawagoe, and Noriaki Matsuo, Itabashiku, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan  
Filed June 11, 1971, Ser. No. 152,381  
Claims priority, application Japan, June 18, 1970, 45/52388; Dec. 15, 1970, 45/111304  
Int. Cl. C07c 69/54

**U.S. Cl. 260—486 D** 6 Claims  
Methacrylic acid or its esters is produced by reacting one part by mole of isobutyric acid or its esters, for example, methyl isobutyrate, ethyl isobutyrate, propyl isobutyrate and butyl isobutyrate with 0.1 to 30 parts by mole, preferably 0.2 to 1 part by mole of sulfur vapor at a temperature of 300°–700° C.

**3,721,706**  
**PERFLUORO-ALKYL-ALKYLENE-SULFONAMIDO-ALKYLENE-DIALKYLAMINES AND THEIR QUATERNARY AMMONIUM SALTS**  
Dieter Hoffmann, Burghausen, Salzach, Germany, and Hans Stach, Sao Paulo, Brazil, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany  
No Drawing. Filed Mar. 17, 1971, Ser. No. 125,352  
Claims priority, application Germany, Mar. 19, 1970, P 20 13 104.8  
Int. Cl. C07c 101/24

**U.S. Cl. 260—501.12** 6 Claims  
Partially fluorinated paraffin sulfonic acid amides having in their amide moiety an alkylene group with a terminal tertiary amino group or a quaternary ammonium group are obtained by reacting a partially fluorinated paraffin sulfochloride with an N,N-dialkyl-alkylenediamine and, optionally, transforming the so-obtained sulfonic acid amides into their salts with acids or quaternizing agents. The products are useful as surface- or interface-active agents, especially as emulsifiers or foaming agents.

**3,721,707**  
**ORGANIC SULFONIC ACID OLIGOMERS AND PRODUCTION PROCESS**  
Alan E. Straus, El Cerrito, William A. Sweeney, Larkspur, Ralph House, El Sobrante, and Samuel H. Sharman, Kensington, Calif., assignors to Chevron Research Company, San Francisco, Calif.  
No Drawing. Filed Sept. 15, 1969, Ser. No. 858,097  
Int. Cl. C07c 143/02

**U.S. Cl. 260—513** 22 Claims  
Organic disulfonic acids are produced by heating a sulfonate monomer at a temperature above 110° C. in

the substantial absence of water. Olefin sulfonation product mixtures, hydroxyalkane sulfonic acids, alkane sulfones, alkene sulfonic acids and mixtures thereof are oligomerized under these conditions.

**3,721,708**  
**PROCESS FOR THE PREPARATION OF o-PHTHALIC ACID**  
Ferdinand List, Johann Dödt, and Helmut Alfs, Marl, Germany, assignors to Chemische Werke Huels, A.G., Marl, Germany  
No Drawing. Filed Dec. 11, 1969, Ser. No. 884,371  
Claims priority, application Germany, Dec. 14, 1968, P 18 13 707.4  
Int. Cl. C07c 63/02, 63/18

**U.S. Cl. 260—524 R** 10 Claims  
The preparation of phthalic acid by the oxidation of o-xylene in the presence of a carboxylic acid and a bromine compound is improved by conducting the oxidation in the presence of phthalic anhydride to react with at least some of the water of the reaction, thereby reducing the heat energy required to remove the water from the reaction mixture.

**3,721,709**  
**SUBSTITUTED BENZANILIDES**  
Albrecht Mueller, Frankenthal, Hans Osieka, Ludwigshafen, and Ernst-Heinrich Pommer, Limburgerhof, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany  
No Drawing. Filed May 24, 1971, Ser. No. 146,449  
Int. Cl. C07c 103/30

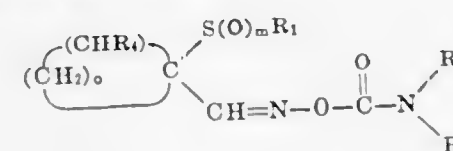
**U.S. Cl. 260—558 D** 4 Claims  
New and valuable substituted benzanilides having a good fungicidal action and a process for controlling fungi with these compounds.

**3,721,710**  
**SUBSTITUTED ANILIDES**  
John Krapcho, Somerset, N.J., assignor to E. R. Squibb & Sons, Inc., New York, N.Y.  
No Drawing. Continuation-in-part of application Ser. No. 808,351, Mar. 18, 1969, which is a continuation-in-part of application Ser. No. 414,838, Nov. 30, 1964. This application May 7, 1971, Ser. No. 141,399  
Int. Cl. C07c 103/34

**U.S. Cl. 260—562 R** 2 Claims  
Disclosed herein are novel anilide derivatives useful as central nervous system depressants.

**3,721,711**  
**CYCLOALKANE CARBOXALDOXIME CARBAMATES**  
Lester L. Maravetz, Westfield, N.J., assignor to Esso Research and Engineering Company  
Filed April 29, 1970, Ser. No. 33,059  
Int. Cl. C07c 131/02

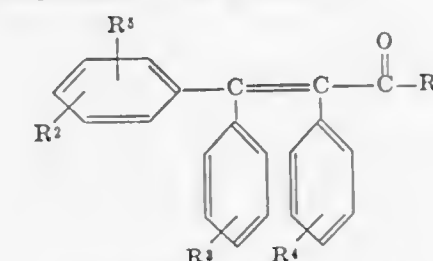
**U.S. Cl. 260—566 AC** 5 Claims  
Chemical compounds useful as pesticides and characterized by the following structure:



wherein R<sub>1</sub> is C<sub>1</sub>–C<sub>4</sub> alkyl and R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> are the same or different and are hydrogen or C<sub>1</sub>–C<sub>4</sub> alkyl; n is 1 to 6 and m is 0, 1 or 2.

**3,721,712**  
**AMINOALKOXY- OR AMINOMETHYL- TRIARYLALKENONES**  
Frank P. Palopoli and Harvey D. Benson, Cincinnati, Ohio, assignors to Richardson-Merrell Inc., New York, N.Y.  
No Drawing. Original application Aug. 19, 1968, Ser. No. 753,741, now Patent No. 3,634,517. Divided and this application Mar. 25, 1971, Ser. No. 128,200  
Int. Cl. C07c 93/06

**U.S. Cl. 260—570 R** 6 Claims  
Novel compounds of the formula:



wherein R<sup>1</sup> is lower alkyl; each of R<sup>2</sup>, R<sup>3</sup>, and R<sup>4</sup> is hydrogen, lower alkyl, halogen, hydroxy, lower alkoxy, dilower-alkylaminoloweralkoxy or trifluoromethyl; and R<sup>5</sup> is hydrogen, lower alkyl, or diloweralkylaminomethyl, provided that when R<sup>5</sup> is diloweralkylaminomethyl R<sup>2</sup> is hydroxy in the para-position of said benzene ring and the diloweralkylaminomethyl is ortho to said hydroxy group; and pharmacologically acceptable, non-toxic acid addition salts of the basic compounds. These compounds possess estrogenic, anti-estrogenic and anti-inflammatory activities.

**3,721,713**  
**PROCESS FOR OBTAINING 2,4,7-TRINITROFLUORENONE**  
Albert Bloom, Boston, Mass., assignor to Industrial Dyestuff Company, East Providence, R.I.  
Filed April 10, 1970, Ser. No. 27,446  
Int. Cl. C07c 49/76

**U.S. Cl. 260—590** 10 Claims  
2,4,7-trinitrofluorenone, prepared by nitrating fluorenone with a mixture of nitric and sulfuric acids, without refluxing, is obtained in high purity by addition of water to the reaction mass thereby precipitating it from solution while leaving dissolved isomers and other nitration products.

**3,721,714**  
**DECOMPOSITION OF CARBONATES TO FORM ALDEHYDES**  
Donald M. Fenton, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.  
No Drawing. Filed Dec. 23, 1968, Ser. No. 786,426  
Int. Cl. C07c 45/00

**U.S. Cl. 260—601 R** 11 Claims  
A process for the preparation of aldehydes and alcohols comprising contacting a dicarbohydric carbonate with a catalyst comprising a complex of a Group VIII noble metal and a biphyllic ligand at a temperature between 150° C. and 250° C. and at a pressure sufficient to maintain liquid phase reaction conditions. The aldehyde and alcohol products produced are useful as intermediates for a variety of products including plasticizers, acids and resins, etc.

**3,721,715**  
**ALKYLATION OF CONDENSED RING ARYLOLS**  
Donald M. Fenton, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.  
No Drawing. Filed Dec. 10, 1970, Ser. No. 97,032  
Int. Cl. C07c 37/12

**U.S. Cl. 260—624 C** 11 Claims  
Condensed ring arylols can be alkylated with an alkyl or cycloalkyl amine in the presence of a Group VIII noble metal catalyst complexed with a biphyllic ligand. A typical embodiment comprises the alkylation of naphthol



with butylamine in the presence of a complex of ruthenium of triphenylphosphine in liquid phase under refluxing conditions and at atmospheric pressure. Preferably, the reaction is run under basic conditions and, if desired, elevated temperatures and pressures sufficient to maintain liquid phase conditions can be employed. The resulting products are useful as antioxidants or as intermediates in the manufacture of dyes and perfumes.

3,721,716

# PROCESS FOR THE PREPARATION OF 5-ALKYLIDENENORBORNENE-2

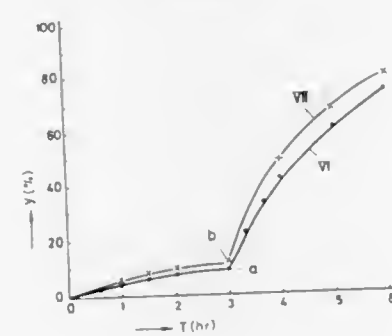
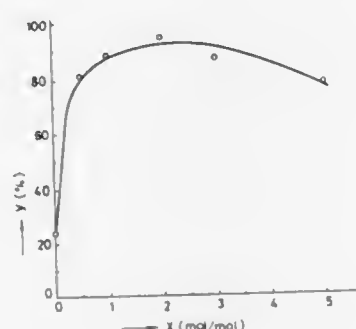
Hirosuke Imai, Yokohama, and Mitsuo Matsuno, Kawasaki, both of Japan, assignors to Nippon Oil Company Limited, Tokyo, Japan

Filed Sept. 29, 1971, Ser. No. 184,708

Claims priority, application Japan, Oct. 5, 1970, 45/86909  
Int. Cl. C07c 5/24

U.S. Cl. 260—666 PY

8 Claims



A process is disclosed for the preparation of 5-alkyldenenorbornene-2 for use as an important component of EPDM rubber. This product is obtained by the isomerization of 5-alkenylnorbornene-2 which is accelerated by the catalytic action of certain complexes. These complexes are formed by combining organic alkalimetal compounds with alkylene diamines.

3,721,717

# DISPROPORTIONATION OF TOLUENE OR XYLENE

George Suld, Springfield, and Ralph L. Urban, Newtown Square, Pa., assignors to Sun Oil Company, Philadelphia, Pa.

No Drawing. Filed Dec. 17, 1970, Ser. No. 99,280

Int. Cl. C07c 3/62

U.S. Cl. 260—672 T

4 Claims

Disproportionation of toluene or xylenes to benzene and various alkyl substituted benzenes using as catalyst a silica:alumina mole sieve catalyst having a silica:alumina ratio of from 12 to 20:1. The reaction is carried out at from 250 to 500° C. and a pressure of atmospheric up to 70 atm. Preferably, the catalyst is promoted with from 0.1 to 1.0 weight percent of Cr<sup>3+</sup> ions.

# 3,721,718 CONVERSION OF OLEFINS USING COMPLEXES OF Fe, Ru, Os, Rh OR Ir WITH ORGANOALUMINUMS

William B. Hughes, and Ernest A. Zuech, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 810,021, March 24, 1969, Pat. No. 3,558,517, which is a continuation-in-part of Ser. No. 717,025, March 28, 1968, abandoned, which is a continuation-in-part of Ser. No. 696,109, Jan. 8, 1968, abandoned, which is a continuation-in-part of Ser. No. 635,688, May 3, 1967, abandoned. This application Sept. 17, 1970, Ser. No. 73,232  
Int. Cl. C07c 3/62

U.S. Cl. 260—683 D

20 Claims

A process for the conversion of olefinic hydrocarbons according to the olefin reaction (e.g., the olefin disproportionation reaction) by contacting the olefinic hydrocarbon with a catalyst comprising a compound of ruthenium, iron, osmium, rhodium, cobalt or iridium complexed with a selected complexing agent (e.g., triphenylphosphine) and combined with an organoaluminum compound (e.g., methylaluminum sesquihalide). A process of preparing rhodium and iridium NO-containing complexes is described. Metal complexes which contain both NO and NO<sub>2</sub> complexing agents are also described.

3,721,719

# PROCESS FOR CONVERTING ETHYLENE TO NORMAL ALPHA OLEFINS

Herbert B. Fernald, Glenshaw, Pa.; Donald E. Hillier, Jr., Baytown; Charles F. Hughes, Jr., Houston, and John R. Strausser, Baytown, all of Tex., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Aug. 27, 1970, Ser. No. 67,624

Int. Cl. C07c 3/10

U.S. Cl. 260—683.15 D

1 Claim

In a process wherein an ethylene stream containing ethane is treated with an aluminum hydrocarbon to obtain a product predominating in normal alpha olefins, the improvement which involves substantially reducing the ethane content of the ethylene stream in order to improve catalyst efficiency, reactor efficiency and reactor productivity.

3,721,720

# PURIFICATION OF HF CATALYST IN ALKYLATION PROCESS

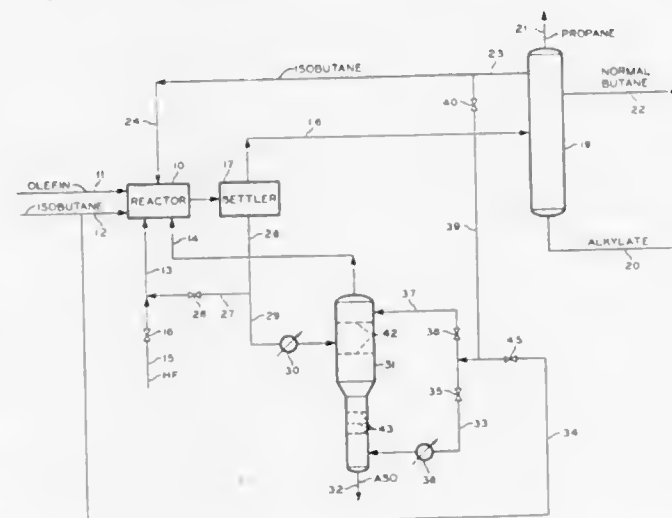
Charles C. Chapman, William P. Cannady, and Joe Van Pool, Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Jan. 25, 1971, Ser. No. 109,165

Int. Cl. C07c 3/54

U.S. Cl. 260—683.48

5 Claims



Olefins and isoparaffins are alkylated in the presence of an HF catalyst. The reactor effluent is passed to a settling zone. The hydrocarbon phase is fractionated to

recover an alkylate product. The acid phase is recycled to the reactor. A portion of the recycled acid is passed to a purification column for removal of acid soluble oil. Stripping vapor and reflux liquid are passed to the purification column in specific ratios to remove a substantial amount of the HF from the acid soluble oil.

3,721,721

# METHOD OF ETHYLENE POLYMERIZATION

Kenichi Maemoto, Takatsuki, Takezo Sano, Ibaragi, and Akio Kobayashi, Toyonaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

No Drawing. Filed Apr. 15, 1971, Ser. No. 134,440

Claims priority, application Japan, Apr. 21, 1970, 45/34,453

Int. Cl. C08f 1/56, 3/06

U.S. Cl. 260—85.3

15 Claims

An ethylene polymer having optional molecular weight distribution from narrow to broad is easily produced in good slurry state, in high solvent efficiency and in high catalyst efficiency, by polymerizing ethylene alone or together with other unsaturated hydrocarbon in the presence or absence of hydrogen, using a catalyst comprising (1) as a first component a substance prepared by a method which comprises reacting a vanadium compound with a phosphoric acid and/or its derivative, treating the reaction product with an alcohol, separating from the alcohol-treated product an alcohol soluble product in the form of a solid and adding 1 to 20% by weight of water to said solid alcohol soluble product and (2) as a second component a substance composed mainly of an organo-aluminum compound having the formula,



wherein R is a hydrocarbon group having 1 to 8 carbon atoms; X is a halogen atom, an alkoxy group or a hydrogen atom; and n is a positive number of 3 or less.

3,721,722

# THICKENABLE UNSATURATED POLYESTER RESIN SYSTEM

Melvin E. Baum, Monroeville, Pa., assignor to Koppers Company, Inc.

Continuation of application Ser. No. 671,849, Sept. 29, 1967. This application July 16, 1970, Ser. No. 56,236

Int. Cl. C08f 21/02, 43/08

U.S. Cl. 260—862

1 Claim

An unsaturated polyester resin capable of being chemically thickened comprises: (1) an unsaturated polyester; (2) a copolymerizable vinyl aryl monomer; (3) a polymerizable vinyl ether and (4) an acrylonitrile-zinc chloride complex. The polyester resin is chemically thickened by the polymerization of the vinyl ether which is catalyzed by the acrylonitrile-zinc chloride complex. The polyester resin is, therefore, thickened before the initiation of the vinyl copolymerization between the unsaturated polyester and the copolymerizable vinyl aryl monomer.

3,721,723

# STORABLE PHOTSENSITIZED POLYESTER MOLDING AND COATING COMPOSITIONS

Klaus Heidel, Marl, Germany, assignor to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

No Drawing. Filed Sept. 10, 1970, Ser. No. 71,277

Claims priority, application Germany, Sept. 10, 1968, P 19 45 725.1

Int. Cl. C08f 1/00, 21/00

U.S. Cl. 260—865

12 Claims

The storage stability in the dark of polyester prepolymer compositions curable by ultraviolet radiation by the presence therein of a benzoin photosensitizer is improved by incorporating an organophosphite therein.

3,721,724

# RUBBER MODIFIED OLEFINIC NITRILE-VINYL AROMATIC-MALEIMIDE INTERPOLYMERS

Curtis E. Uebele, Bedford; Russell K. Griffith, Chagrin Falls, and Irving Rosen, Painesville, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Sept. 22, 1970, Ser. No. 74,290

Int. Cl. C08f 19/08, 1/13, 5/00

U.S. Cl. 260—880 R

8 Claims

Interpolymers having high impact strength, high softening temperature and other excellent properties result from the polymerization of an olefinic nitrile such as acrylonitrile, a vinyl aromatic monomer such as styrene, and maleimide in the presence of a conjugated diolefin elastomer.

3,721,725

# PROCESS FOR PREPARING POWDER BLENDS

Angelis R. Briggs, Wilmington, and Thomas J. Maxwell, Newark, both of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 14, 1970, Ser. No. 63,942

Int. Cl. B01j 2/06

U.S. Cl. 264—6

14 Claims

A method of making a homogeneous solid particulate blend of solid initial ingredients involves dissolving in an aqueous solvent a sugar that is sublimable to dryness, a lesser amount of a biological product, and, if the biological product is not sufficiently lubricative, a lubricant; spraying this solution into boiling dichlorodifluoromethane or other fluorocarbon refrigerant; and lyophilizing the resulting frozen droplets. The sugar is usually either mannitol, maltose, lactose, inositol or dextran, or combinations of these sugars. Other sugars in an amount less than the above sugars may also be added to the solution. Less than about 5 percent w/v of an electrolyte may be added to the solution, as well as other substances, such as acid, base, etc. Ultrasonic waves applied to the fluorocarbon refrigerant in the region where the solution is sprayed increases the freezing rate. Limiting the distribution of sizes of those particles to be tableted increases the weight homogeneity of the resulting tablets.

3,721,726

# METHOD OF MAKING AN INTEGRALLY MOLDED APPLICATOR AND VALVE THEREFOR

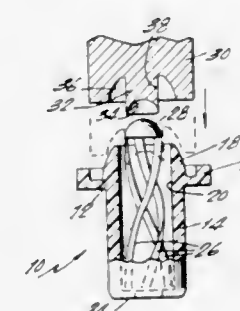
Gilbert Schwartzman, 20 Wilmont Circle, Scarsdale, N.Y.

Filed Feb. 16, 1971, Ser. No. 115,398

Int. Cl. B29c 17/00

U.S. Cl. 264—249

3 Claims



A method of forming a fluid applicator comprising a retainer ring having a projecting portion provided with an opening therein and having a tapered flange surrounding the opening. Integral with the retainer ring is a valve assembly including a valve head and helical springs. The applicator is made through the steps of a one-piece molding after which the valve head is shaped and finished simultaneously with the swaging of a tapered flange to form a valve seat. Thereafter, the projecting portion in the form of a squeezeable container is filled and has its end crimped.



3,721,727

**ELECTRIC FURNACE METHOD OF BENEFICIATING TANTALUM-AND NIOBIUM-CONTAINING TIN SLAGS AND THE LIKE**

Robert A. Gustison, Reading, Pa., assignor to Kawecky Berylo Industries, Inc., New York, N.Y.

Filed Sept. 9, 1971, Ser. No. 179,191  
Int. Cl. C22b 59/00

U.S. Cl. 423-62

6 Claims

Tin slags containing recoverable amounts of tantalum and niobium are beneficiated with respect to these components by subjecting the slag first to a carbiding treatment followed by a two-stage oxidation treatment in the first stage of which a metal oxide is used to selectively oxidize carbided components of the slag other than the tantalum and niobium and in the second stage of which the carbided tantalum and niobium are re-oxidized to form a product slag which can be substituted for tantalum and niobium ores in methods for the recovery of these metals.

3,721,728

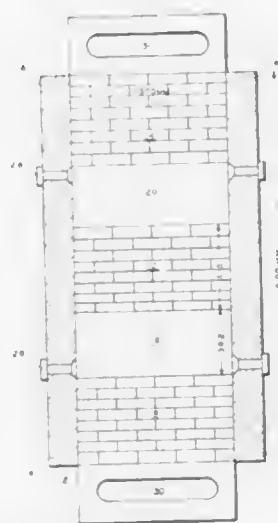
**FURNACE HAVING CYCLICALLY MOVING FLAMES**

Wayne E. Luetzelshwab, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Sept. 13, 1971, Ser. No. 179,706  
Int. Cl. F23n 1/02

U.S. Cl. 432-26

11 Claims



By cycling the pressure of fuel gases which impinge upon an air or other oxygen-containing stream directed at an angle to the fuel gases, the gas jet pattern can be caused to sweep across the combustion zone in a furnace, e.g., a Wulff regenerative furnace. This cyclic motion varies penetration and evens out heat distribution. The cyclic changes in pressure can be accomplished by rotating members presenting varying cross-sectional areas to flow or by other devices all of which may be powered externally or powered by the energy of the flowing stream.

3,721,729

**PROCESS FOR THE SEPARATION OF CADMIUM AND NICKEL**

Karl-Heinz Schulte-Schrepping, Bonn-Beuel; Lothar Kaufmann, Henn/Sieg, and Paul Tilp, Bonn-Beuel, all of Germany, assignors to Deutsche Gold-und Silber Scheideanstalt vormals Roessler, Frankfurt, Main, Germany

Filed Oct. 15, 1970, Ser. No. 81,184

Claims priority, application Germany, Jan. 17, 1970, P 20 01 985.6

Int. Cl. C01g 53/04

U.S. Cl. 423-105

13 Claims

Cadmium and nickel are separated from an aqueous solution of their salts, which solution contains not over 200 grams per liter of cadmium and nickel, by adding ammonia, precipitating the cadmium as the carbonate with alkali carbonate, and heating the filtrate with alkali hydroxide to precipitate nickel as the hydroxide. The amount of ammonia

depending on the amount of nickel in the range of 10 to 100 grams of nickel per liter is varied between 8 and 4 moles per liter.

3,721,730

**ALUMINA RECOVERY FROM RETORTED OIL SHALE RESIDUE**

Frank C. Haas, Arvada, Colo., assignor to The Oil Shale Corporation, New York, N.Y.

Filed Dec. 30, 1970, Ser. No. 102,930

Int. Cl. C01f 7/34, 7/14

U.S. Cl. 423-119

6 Claims

Alumina is recovered from a dawsonite-bearing oil shale matrix by treatment of the retorted oil shale residue or spent shale containing fixed carbon with a dilute aqueous soda ash-caustic soda leach liquor having a concentration of from about 5 to about 20 grams per liter of soda ash and from about 8 to about 20 grams per liter of caustic soda in a mole ratio of soda ash to caustic soda of from about 0.1:1 to about 0.9:1 to provide ultimately a high yield of cell-grade alumina substantially free of silica contamination.

3,721,731

**ALUMINUM TRICHLORIDE PRODUCTION**

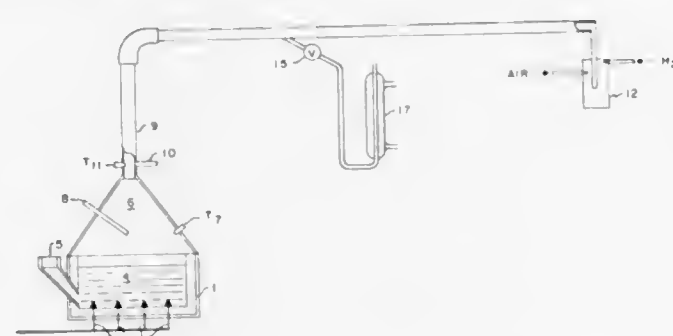
Louis S. Belknap, Hingham, Mass., assignor to Cabot Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 840,705, July 10, 1969, abandoned. This application Oct. 23, 1970, Ser. No. 83,323

Int. Cl. C01f 7/62, 7/58, 7/30

U.S. Cl. 423-264

4 Claims



There is provided a process for the production of aluminum trichloride substantially free from elemental aluminum color impurity. The aluminum trichloride product formed in accordance with the process is especially useful as a feedstock in the further production of white aluminum oxide by vapor phase hydrolysis thereof. Broadly, the process of the invention involves direct primary chlorination of a molten aluminum pool and the injection of further amounts of secondary chlorine into the vaporous effluent from said pool.

3,721,732

**METHOD OF MANUFACTURING FILAMENTARY BODIES OF CIRCULAR CROSS-SECTION CONSISTING OF SILICON CARBIDE SINGLE CRYSTALS AND FILAMENTARY BODIES OBTAINED BY SAID METHOD**

Wilhelmus Franciscus Knippenberg and Gerrit Verspui, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 690,005, Dec. 12, 1967. This application Mar. 7, 1968, Ser. No. 711,349

Claims priority, application Netherlands, Mar. 8, 1967, 6703609

Int. Cl. C01b 31/36; B01j 17/32, 17/00

U.S. Cl. 423-346

7 Claims

A method of manufacturing filamentary bodies of silicon carbide having a circular cross-section in which iron

is heated on a substrate to a temperature between 1150 and 1230° C. while gaseous compounds containing silicon and carbon are decomposed over the substrate and the silicon carbide thus formed absorbed by the iron droplets which become supersaturated and deposit the silicon carbide which is formed as a filamentary body having a circular cross-section.

3,721,733

**ANTI-MICROBIAL COMPOSITIONS CONTAINING HISTAMINASE**

Gerrit Hendrik van Leeuwen, Soesterengweg 2-4, Soestdijk, Netherlands

No Drawing. Continuation of application Ser. No. 827,151, May 23, 1969. This application Oct. 4, 1971, Ser. No. 186,546

Claims priority, application Netherlands, Oct. 24, 1968, 6815177

Int. Cl. A61k 19/00

U.S. Cl. 424-94

3 Claims

The present invention provides for the addition to anti-microbial compositions the enzyme histaminase. In addition to histaminase, other enzymes such as lipase, proteinase, peptidase and/or chondrosulphatase or admixtures of the same may be added to the composition. Other embodiments include the addition to the basic anti-microbial, histaminase composition of cystein-oxidase or glutaminase. It is preferable that the composition be prepared as a sterile, injectable composition in an ampoule.

3,721,734

**METHOD OF TREATING PROSTATIC HYPERTROPHY**  
Harry W. Gordon, New York, N.Y., assignor to Julius Schmid Inc., New York, N.Y.

Division of Ser. No. 70,509, Sept. 8, 1970, which is a continuation-in-part of Ser. No. 544,712, April 25, 1966, abandoned, and a continuation of Ser. No. 623,847, March 17, 1967, Pat. No. 3,584,118. This application Oct. 29, 1971, Ser. No. 194,052

Int. Cl. A61k 21/00

U.S. Cl. 424-278

3 Claims

Orally administered compositions for treating prostatic hypertrophy are described herein, these compositions containing an effective dose of a pharmaceutical formulation comprising filipin, a polyenic macrolide. Also the method of treating prostatic hypertrophy with such compositions, is described herein.

3,721,735

**COMPOSITIONS FOR AND METHOD OF LOWERING CHOLESTEROL LEVELS**

Charles A. Thiffault, 3078 Avenue de la Promenade, Ste. Foy, Quebec, Canada

No Drawing. Filed July 15, 1970, Ser. No. 55,254

Int. Cl. A61k 27/00

U.S. Cl. 424-195

2 Claims

There is disclosed a method for lowering the cholesterol levels of humans suffering from hyperlipidemia and associated conditions comprising the administering thereto of effective doses of lignin. Suitable pharmaceutical compositions of lignin are also disclosed.

3,721,736

**CERTAIN PHOSPHATES AND THEIR UTILIZATION AS FUNGICIDES**

Hironari Sugiyama, Shimizu, Eiichi Yoshinaga, Fujieda, and Hideo Itoh, Shimizu, Japan, assignors to Kumiai Chemical Industry Co., Ltd., Tokyo, Japan

No Drawing. Filed July 6, 1970, Ser. No. 52,679

Claims priority, application Japan, July 10, 1969, 44/54,151

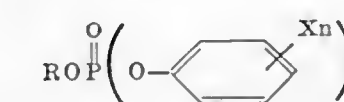
Int. Cl. A01n 9/36

U.S. Cl. 424-217

6 Claims

A method controlling and killing fungi, insects and

mites in agriculture and horticulture by using a lethally effective amount of the compound of the formula



wherein R is an alkyl group substituted with at least one of the groups selected from the group consisting of halogen atom, cyano group, thiocyno group and alkoxy group, X is selected from the group consisting of hydrogen atom, halogen atom and alkyl group and n is an integer of 1 to 5, in combination with an inert carrier.

3,721,737

**2',5'-DIHALO-3-TERT.ALKYL-5-NITROSALICYLANILIDES FOR COMBATING LEPIDOPTERA CHEWING LARVAE**

Walter A. Darlington, St. Louis, and John P. Chupp, Kirkwood, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 15, 1968, Ser. No. 776,276

Int. Cl. A01n 9/20

U.S. Cl. 424-230

5 Claims

Compounds having a 2', 5'-dihalo-3-tert.alkyl-5-nitrosalicylanilido nucleus useful in combatting chewing insect larvae species of the order Lepidoptera, particularly species of the family Noctuidae.

3,721,738

**TREATMENT AND PROPHYLAXIS OF THROMBOVASCULAR DISEASES WITH 2-IMIDAZOLONE DERIVATIVES**

William D. Cash, Riverside, Conn., and Murray Weiner, White Plains, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 14, 1971, Ser. No. 143,666

Int. Cl. A61v 27/00

U.S. Cl. 424-273

2 Claims

A method for treating and preventing thrombovascular diseases in warm-blooded animals by administration of an effective amount of a 1,4-dialkyl-5-phenyl-2-imidazolone, such as for example, 1,4-dimethyl-5-phenyl-2-imidazolone.

3,721,739

**IMIDAZOLIDINONE DERIVATIVES IN A COMPOSITION AND METHOD FOR PRODUCING C.N.S. DEPRESSANT EFFECTS**

Walter Schindler, Riehen, near Basel, and Armin Züst, Birsfelden, near Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 832,011, June 10, 1969, Pat. No. 3,646,039. This application Sept. 22, 1971, Ser. No. 182,878

Claims priority, application Switzerland, June 20, 1968, 9211/68; Dec. 23, 1968, 19149/68

Int. Cl. A61k 27/00

U.S. Cl. 424-250

2 Claims

1-(2- or 1-[3-[4-(4,5-Dihydrothieno[2,3-b][1] benzothiepin-4-yl)-1-piperazinyl]-alkyl]-3-alkyl-2-imidazolidinones and the pharmaceutically acceptable acid addition salts thereof which compounds exhibit depressant activity on the central nervous system; pharmaceutical compositions comprising these compounds and their salts as aforesaid and methods of producing central nervous system depressant effects in mammals which comprise administering an effective amount of a compound according to the invention or a pharmaceutically acceptable acid addition salt thereof; an illustrative embodiment is 1-[2-[4-(4,5-dihydrothieno[2,3-b][1] benzothiepin-4-yl)-1-piperazinyl]-ethyl]-3-methyl-2-imidazolidinone.



3,721,740

**ANTHELMINTIC METHOD AND FORMULATIONS  
EMPLOYING PHENYLHYDRAZONE DERIVATIVES**  
Sylvester D. Folz, Kalamazoo, Mich., assignor to The Upjohn  
Company, Kalamazoo, Mich.

Filed July 13, 1970, Ser. No. 54,621

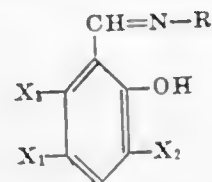
Int. Cl. A61k 27/00

U.S. Cl. 424—327

34 Claims

Certain new ar or ar' (alkylthio) benzoyl chloride phenylhydrazones have been found to be effective, broad-spectrum anthelmintics for suppressing parasitic worms in animals particularly sheep. The method of using the new compounds and new anthelmintic formulations are described. The new compound p-(methylthio)benzoyl chloride phenylhydrazone is effective at rates at least as low as 100 mg. per kilogram of body weight in sheep. The compounds are readily prepared by conventional chemical reactions.

prises, as active substance, a compound of general formula



wherein X<sub>1</sub> and X<sub>2</sub> represent halogen atoms, X<sub>3</sub> represents a hydrogen or a halogen atom and R represents the hydroxyl group or an aryl or an aralkyl residue which is substituted by at least one member selected from the group consisting of a halogen atom, the CF<sub>3</sub>, NO<sub>2</sub>, CN, alkyl, alkoxy, SCN and a tertiary amino group, together with a carrier. If desired, there may be present one or more of the following additives: a carrier, a solvent, a diluent, a dispersing agent, a wetting agent, an adhesive, a fertilizer or other pesticides.

3,721,742

**ANTHELMINTIC METHOD AND FORMULATIONS  
EMPLOYING PHENYLHYDRAZONE DERIVATIVES**  
Sylvester D. Folz, Kalamazoo, Mich., assignor to The Upjohn  
Company, Kalamazoo, Mich.

Filed July 13, 1970, Ser. No. 54,619

Int. Cl. A61k 27/00

U.S. Cl. 424—327

24 Claims

Certain new (α-fluoroalkyl)benzoyl chloride phenylhydrazones have been found to be effective, broad-spectrum anthelmintics for suppressing parasitic worms in animals particularly sheep. The method of using the new compounds and new anthelmintic formulations are described. The new compound α,α,α-trifluoro-m-toluoyl chloride phenylhydrazone is effective at rates at least as low as 100 mg. per kilogram of body weight in sheep. The compounds are readily prepared by conventional chemical reactions.

3,721,741

**COMBATING PHYTOPATHOGENIC FUNGI ON PLANTS  
WITH SUB-PHYTOLOGIC FUNGICIDALLY EFFECTIVE  
AMOUNTS OF HERBICIDAL N-PHENYL DERIVATIVES  
OF 3,5-DIHALO-SALICYLALDEHYDE**

Otto Rohr, Therwil; Ludwig Ebner, Stein/Ag.; Volker Dittich, Basle, and Heinz Siegle, Binningen, all of Switzerland, assignors to Ciba-Geigy AG, Basle, Switzerland  
Division of Ser. No. 31,868, April 1, 1970, Pat. No. 3,652,770, which is a continuation of Ser. No. 677,760, Oct. 24, 1967, abandoned. This application Oct. 4, 1971, Ser. No. 186,497  
Claims priority, application Switzerland, Oct. 28, 1968, 15711/68

Int. Cl. A01n 9/20

U.S. Cl. 424—330

5 Claims

A preparation for combating harmful insects, acarides, nematodes phytopathogenic fungi and bacteria, which com-

## ELECTRICAL

3,721,743

**AN ELECTRIC SMELTING FURNACE OF THE CLOSED  
TYPE**

Toshio Shilina, Kokubunji-shi, Tokyo, and Itatu Tisaki, Setagaya-ku, Tokyo, both of Japan, assignors to Tanabe  
Kakoki Co., Ltd., Niigata-ken, Japan

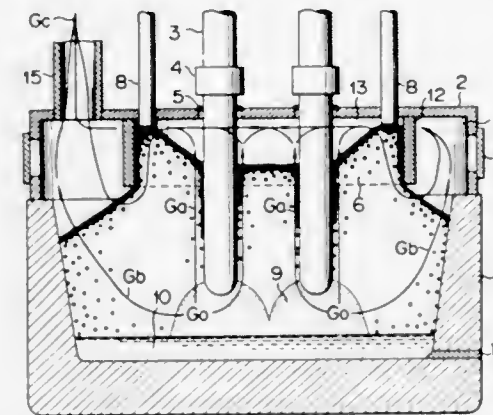
Filed Sept. 15, 1971, Ser. No. 180,764

Claims priority, application Japan, Sept. 25, 1970, 45/83700; Sept. 28, 1970, 45/84542

Int. Cl. H05b 7/00; F27d 13/00

U.S. Cl. 13—9

2 Claims



A closed electric smelting furnace is provided with a cylindrical partition wall of substantially the same height as the furnace lid secured to the underside of the lid in a position to surround the electrodes and material feeding chutes. The partition together with the lid defines an annular gas collecting chamber. The raw materials are charged into the furnace to a level where they extend into the annular gas collecting chamber. Dust rich furnace gases rise quickly around the electrodes and collect in the upper portion of the chamber after which they pass slowly outwardly through the raw material so that they are filtered before leaving the furnace through a vent in the furnace lid which is positioned radially outwardly of the partition.

3,721,744

**ELECTRICALLY HEATED PIT FURNACE,  
PARTICULARLY FOR MELTING VITREOUS SILICA**  
Karl Vatterodt, and Werner Weiss, both of Berlin, Germany, assignors to Patent-Treuhand-Gesellschaft für Elektrische  
Gluhlampen mbH, Munich, Germany

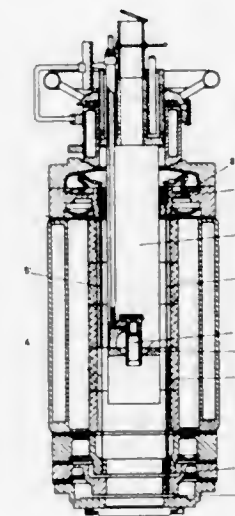
Filed Dec. 1, 1971, Ser. No. 203,574

Claims priority, application Germany, Dec. 30, 1970, P 20 64 433.1

Int. Cl. H05b 3/40

U.S. Cl. 13—25

11 Claims



To provide separately controllable temperature zones in the furnace, for melting of the silica, and for subsequent drawing

908 O.G.—27

3,721,745

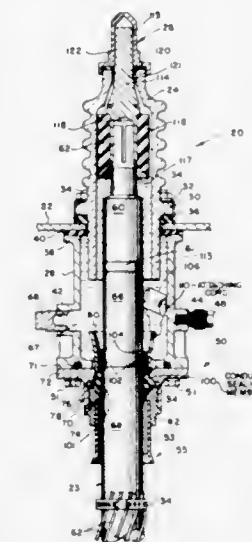
**POTHEAD CONSTRUCTION AND METHOD OF  
TERMINATING A POWER CABLE THEREWITH**  
Argus F. Parks, and Byron G. Darnell, both of Greenville, Tex.,  
assignors to ESCO Manufacturing Company, Greenville,  
Tex.

Filed June 16, 1971, Ser. No. 153,705

Int. Cl. H02g 15/22

U.S. Cl. 174—19

40 Claims



A pothead device for termination of a power cable which is factory assembled, filled with dielectric insulating material and sealed to prevent contamination of and leakage of the dielectric material. A metallic cone-shaped stress relief device mounted in the terminator and electrically connected to the cable by means of a seal at the cable entrance portion of the pothead. This seal has a triangular shaped cross section of conducting rubber material which is mounted in the pothead so that it can be deformed or contracted by a gland nut. The seal is provided with an inwardly extending lip portion which has an enlarged cross section adjacent the inner periphery thereof. A removable plug which is displaced by the insertion of the cable is provided to seal the opening formed by this lip portion to prevent leakage of dielectric material from the pothead before the cable is inserted.

3,721,746

**SHIELDING TECHNIQUES FOR R.F. CIRCUITRY**  
Thomas A. Knappenberger, Phoenix, Ariz., assignor to Mo-  
torola Inc., Franklin Park, Ill.

Filed Oct. 1, 1971, Ser. No. 185,552

Int. Cl. H05k 9/00

U.S. Cl. 174—35 MS

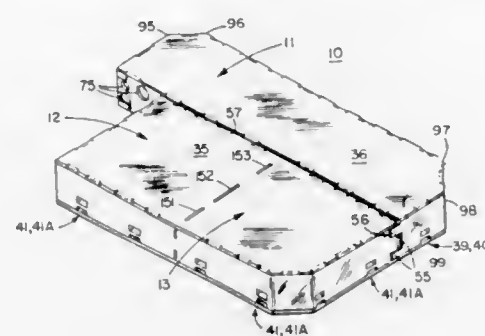
12 Claims

A technique for shielding R.F. circuitry is disclosed wherein thin metal strips are formed by chemical etching, and include bend or fold grooves similarly etched, the strips being bent into the desired configuration at the time of assembly. Printed circuit boards with the components all on one side and the connections all on the other are placed in the compartments

711



formed by the bent metal strips. Tabs are provided between the edges of the strips to hold the boards in place. Syntactic foam may be placed in the compartments on the component side and visco-elastic damping foam and or double sided pressure sensitive foam tape is placed between the bottom of the



printed circuit board and the bottom shield cover.

Covers also formed by chemical etching are attached to the top and bottom of the compartments and puncture resistant tape may be mounted on the inside of the top and bottom covers.

3,721,747

## DUAL IN-LINE PACKAGE

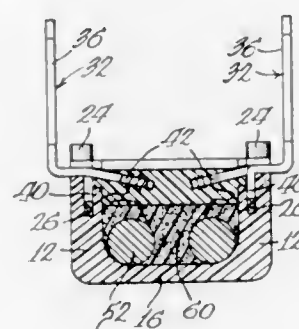
John O. Renskers, Crystal Lake, Ill., assignor to Coilcraft Inc., Cary, Ill.

Filed March 15, 1972, Ser. No. 234,923

Int. Cl. H05k 3/30

U.S. Cl. 174—52 PE

11 Claims



A dual in-line package construction conforming exteriorly to a standard size but providing greater interior capacity and greater ease of circuit element mounting characterized by the mounting of bifurcated lugs by one leg only in the side walls of an open-topped box with the remaining legs extending from the free edges of the walls.

3,721,748

## DEVICE FOR UPGRADING THE CORONA RESISTANCE OF GROUNDING STUDS

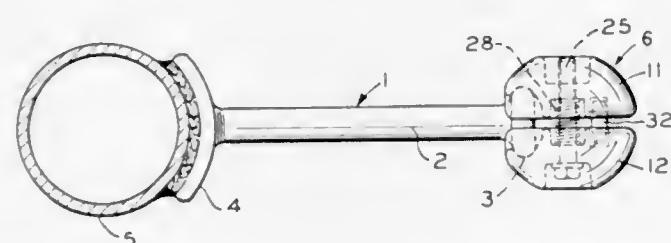
James J. Seaquist, Birmingham, Ala., assignor to Anderson Electric Corporation, Leeds, Ala.

Filed May 5, 1972, Ser. No. 250,509

Int. Cl. H01t 19/02

U.S. Cl. 174—73 R

11 Claims



The device is for upgrading the corona resistance of grounding studs used in the distribution of electrical power to and

from substations so that, as voltages are upgraded to what are commonly referred to as "extra high voltages," the existing grounding studs can be modified to function efficiently at the higher voltages. The device is attached to the free end of the stud and in combination therewith provides an enlarged globular head. It can be installed on the stud in situ by means of tools mounted on "hot sticks."

3,721,749

## HEAT RECOVERABLE ARTICLES

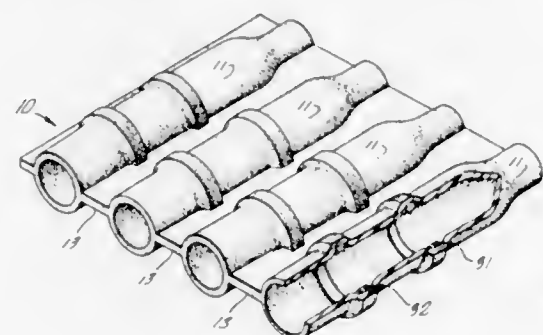
Robin James Thomas Claburn, Highworth, England, assignor to Rchem Corporation, Menlo Park, Calif.

Filed Nov. 16, 1970, Ser. No. 89,742

Int. Cl. H01r 5/00

U.S. Cl. 174—88 R

14 Claims



Described herein are means for simultaneously connecting multi-conductor flat cable to other such cable or to terminals of connector blocks or the like while providing for electrical insulation and environmental isolation of the resulting connections. The connection means comprise an open-ended hollow heat recoverable member having a train of longitudinal seams disposed across the width thereof integrally bonding the opposed walls thereof to one another to define and integrally connect a plurality of spaced parallel tubular members sized to receive individual conductors of the cable whereupon, in operation, the tubular members are heat recovered therearound. A soldered joint is formed between individual conductors of the cable and conductors or terminals of the device to which the cable is to be connected within said tubular members which serve to electrically insulate one connection from adjacent connections. Solder inserts may be positioned within the tubular members so that upon heat recovery of the connection device the solder fuses to form a permanent connection while simultaneously the connection device heat shrinks to isolate and insulate the formed connections. Fusible rings of polymeric material may be positioned within the tubular members to form solder dams. The heat recoverable connection device is preferably transparent to permit inspection of the formed connections.

3,721,750

## STRAPPING FASTENER

Albert J. Countryman, Mohawk, N.Y., assignor to Ty-Lok Assembly Systems Inc., Ilion, N.Y.

Division of Ser. No. 6,084, Jan. 27, 1970, Pat. No. 3,633,633, which is a continuation-in-part of Ser. No. 831,527, June 9, 1969, abandoned. This application June 9, 1971, Ser. No. 151,517

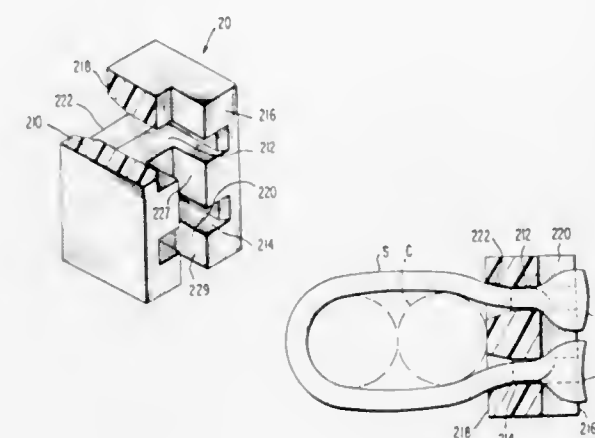
Int. Cl. B65b 13/24; B65d 63/14; A44b 11/04

U.S. Cl. 174—135

2 Claims

A strapping fastener for holding twisted ends of a length of plastic strapping around a bundle of electrical conductors is formed of a rectangular parallelepipedal block of electrically insulating plastic material having two through-holes for the strapping and a cross slot for twisted strapping ends. The plastic strapping is generally rectangular in section and the through-holes in the fastener are parallel and of slightly larger section dimension to accommodate the strapping fed therethrough without twisting. The cross slot is in one face of

the fastener block extending perpendicular to the through-holes so that the twisted ends of the plastic strapping will be held in their twisted position thereby preventing the strapping



from slipping out of the fastener. The fastener is adapted to be used in a fastening system using an apparatus as disclosed in U. S. Pat. No. 3,633,633.

## ERRATUM

For Class 174—50.64 see:  
Patent No. 3,721,852

3,721,751

## COLOR TELEVISION RECEIVER

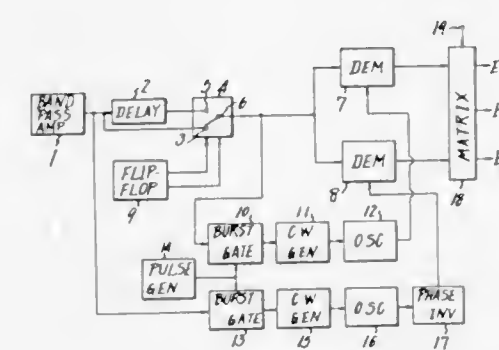
Yoshiharu Taira, Shiyuku-ku, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed June 15, 1971, Ser. No. 153,251

Int. Cl. H04n 9/02

U.S. Cl. 178—5.4 P

14 Claims



In a decoding system to receive PAL television signals, one reference sub-carrier signal is produced with the proper phase by controlling an oscillator with every burst signal and utilizing the time constant in the oscillator system to average the alternating phase of the burst signal. A second chrominance signal is demodulated by selecting alternate bursts and using them to control an oscillator to demodulate the chrominance signal along an axis other than the correct one. The resultant demodulated signals are properly combined in a matrix to separate the component color signals. Alternatively, burst-controlled signals with alternating phase can be vectorially added to burst control signals with the correct, fixed phase to produce reference sub-carrier signals of the correct phase and phase alternation for both chrominance components.

3,721,752

## IMAGE PICKUP TUBE

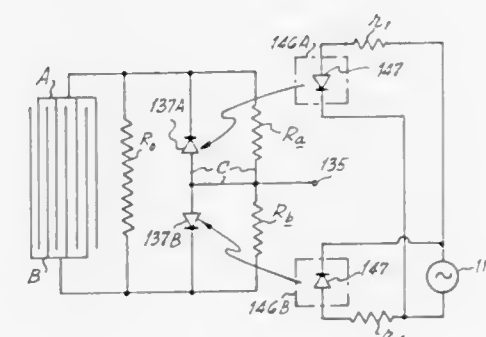
Takehiro Kakizaki, Hodogaya-ku, Yokohama-shi, Kanagawa-ken, and Yasuharu Kubota, Fujisawa-shi, Kanagawa-ken, both of Japan, assignors to Sony Corporation, Tokyo, Japan  
Filed Dec. 21, 1971, Ser. No. 210,425

Claims priority, application Japan, Dec. 24, 1970, 45/140392

Int. Cl. H04n 9/06

U.S. Cl. 178—5.4 ST

14 Claims



In an image pickup tube for a color television camera having a photoconductive layer for the conversion of images projected thereon into an electrical output and onto which a color separated image of an object to be reproduced is projected through a color filter which is part of the tube or separate therefrom and a pair of indexing electrodes disposed in close proximity to the photoconductive layer to electrically produce an index image on such layer in response to the application of different voltages to the indexing electrodes; two photovoltaic cells are included in the image pickup tube and electrically connected in parallel with each other between the indexing electrodes with their polarities reversed, and the photovoltaic cells are alternately activated by radiant energy originating outside the tube to provide the different voltages for producing the index image so that the electrical output is a composite signal containing a color video signal corresponding to the color separated image and a balanced index signal corresponding to the index image and by which individual color component signals may be separated from the color video signal. The electrical output is preferably derived at a junction between a pair of series-connected resistors also connected between the indexing electrodes; and a biasing voltage is also applied to the indexing electrodes by way of that junction.

3,721,753

## COLOR TELEVISION RECEIVER

Koichiro Mima, Kanagawa-ken, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 22, 1971, Ser. No. 191,764

Claims priority, application Japan, Oct. 26, 1970, 45/94188; April 13, 1971, 46/23299

Int. Cl. H04n 9/02

U.S. Cl. 178—5.4 P

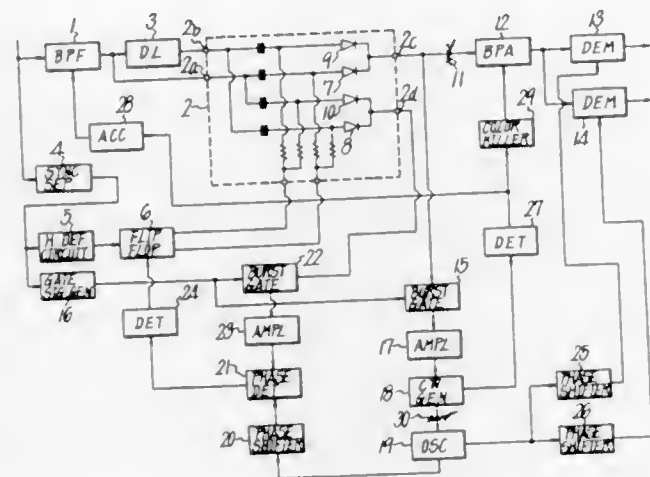
12 Claims

A decoding system to receive PAL color television signals in which one line of chrominance information is applied to synchronous demodulators and the same line, delayed one line interval by means of a switching circuit and delay means, is again applied to the same demodulators. Detecting means are provided for detecting the phase of burst signals in the chrominance information applied to the demodulators. Reference subcarrier generating means connected to the demodulators are phase-controlled in response to the phase of the burst signals, and the switching circuit is controlled by the



output of the detecting means in response to the phase of the burst signal so as to apply to the demodulators only the

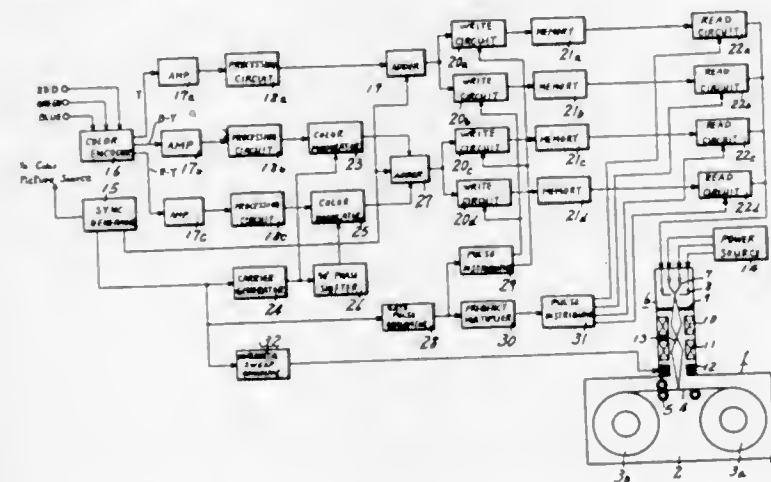
are fed through respective bootstrap emitter-followers, the outputs of these emitter-followers are chopped by respective field effect transistors gated by respective 3.58MHz clock signals which are 180° out of phase and a third field effect



chrominance information whose suppressed carrier signal has a predetermined phase relation with the reference subcarriers.

### 3,721,754 METHODS AND APPARATUS FOR RECORDING SIGNALS

Sakae Miyauchi, Tokyo, Japan, assignor to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan  
Filed July 9, 1971, Ser. No. 161,186  
Int. Cl. H04n 5/86  
U.S. Cl. 178—5.4 CD 6 Claims



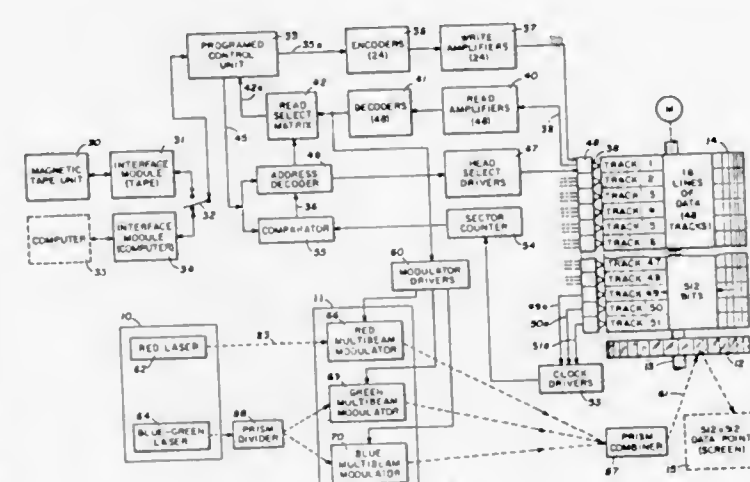
Methods and apparatus for recording a plurality of dissimilar signals such as the brightness, color and sound signals forming part of television signals, said signals being simultaneously generated by a generating means, said signals then being respectively memorized by individual memories and read out in accordance with a predetermined order, said read out signals being applied to the control electrode of an electron beam recorder in order to modulate the beam intensity, said signals then being finally recorded in monochrome on a radiant energy sensitive recording medium, and recorded at different positions on the recording medium in transverse formation.

3,721,755  
COLOR TELEVISION ENCODER MODULATOR  
Philip V. C. Craig, Salt Lake City, Utah, assignor to Telematic, Inc., Salt Lake City, Utah  
Filed March 29, 1971, Ser. No. 129,079  
Int. Cl. H04n 5/40; H03c 1/52  
U.S. Cl. 178—5.4 R 5 Claims

A balanced modulator circuit for use in television cameras to impress color information on the chrominance subcarrier wherein the video input is phase-split and the resulting signals

transistor, operated in a saturation mode wherein 10 ma. forward current is drawn, is connected across the outputs of the emitter-followers and gated by clamp source pulses to clamp the emitter-follower outputs at zero reference.

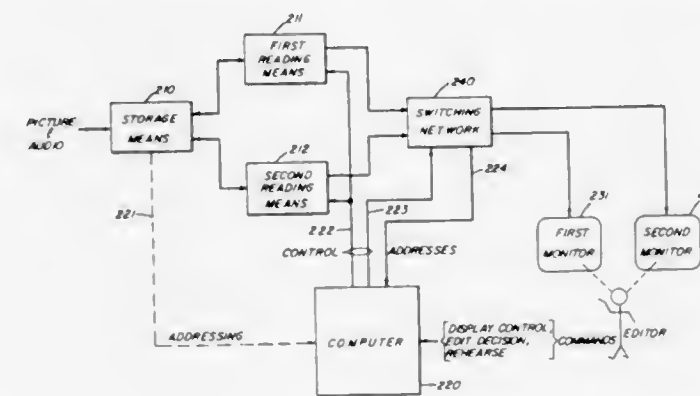
3,721,756  
INFORMATION DISPLAY METHOD AND SYSTEM  
Charles E. Baker, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.  
Continuation of application Ser. No. 587,095, Oct. 17, 1966. This application Apr. 20, 1970, Ser. No. 29,941  
Int. Cl. H04a 1/04  
U.S. Cl. 178—6 13 Claims



A large screen real time laser display system is described. A magnetic drum and a multi-faceted scanning mirror are mounted on a common shaft and rotated at a high rate of speed. Digital data descriptive of the image to be displayed is stored on a plurality of tracks on the drum and updated as required by a digital computer. The data is continually read from the drum and red, blue and green laser beams are split into a plurality of beams each of which is modulated in accordance with the stored information. The modulated beams are then recombined and directed onto the multi-faceted mirror which scans the beams over a screen to produce a full color image. The light modulators are acoustic modulator bodies in which stress waves having a plurality of separate wavelengths, each individually amplitude modulated, are established. This produces a plurality of individually amplitude modulated light beams.

### 3,721,757 METHOD AND APPARATUS FOR AUTOMATICALLY EDITING TELEVISION INFORMATION

Adrian B. Ettlinger, Hastings-on-Hudson, N.Y., assignor to Columbia Broadcasting System, Inc.  
Filed Feb. 8, 1971, Ser. No. 113,429  
Int. Cl. G11b 27/02, 27/32; H04n 5/78  
U.S. Cl. 178—6.6 A 31 Claims

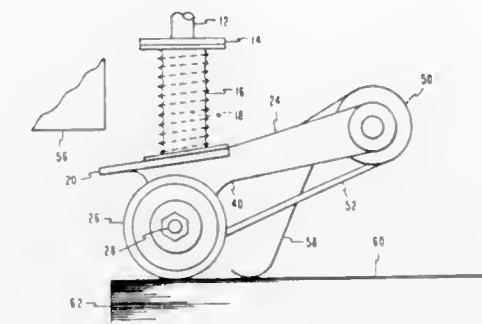


An automatic editor-controllable system for selecting excerpts from a source of electronic picture information and forming a program representative of the sequence of the excerpts. Means are provided for storing the picture information signals in a predetermined order, each frame of the picture information having an address associated therewith. First and second reading means are provided for simultaneously reading out picture information signals from two editor-selected regions of the stored picture information. First and second display means coupled to the reading means are adapted to simultaneously display to the editor the outputs of the reading means. Switching means couple the first and second reading means to the first and second display means. Means are provided for sensing and storing the addresses with the two regions corresponding to an editor-selected transition point as between the two regions. The stored addresses corresponding to editor-selected transition points constitute a "program" of excerpts which can later be utilized to form a final assembled program on an ultimate storage media. In a preferred embodiment of the invention the addresses corresponding to editor-selected transition points are stored in program operable computing means, the computing means generating digital signals which are a function of the addresses. Control circuits means responsive to the digital signals are provided for actuating the first and second reading means to read out in a real time the sequence of excerpts constituting the formed program. This real time readout or "rehearse" is accomplished by viewing the stored picture information, actual splicing or re-recording not being required.

3,721,758  
CAMERA SCANNING DEVICE AND ANALYZING APPARATUS COMPRISING SUCH A DEVICE  
Michel Joseph Auphan, Courbevoie, and Jean Robert Perillou, Bourg-la-Reine, both of France, assignors to U.S. Philips Corporation, New York, N.Y.  
Filed April 16, 1971, Ser. No. 134,802  
Claims priority, application France, April 17, 1970, 7014012  
Int. Cl. H04n 3/10, 5/26  
U.S. Cl. 178—7.2 11 Claims

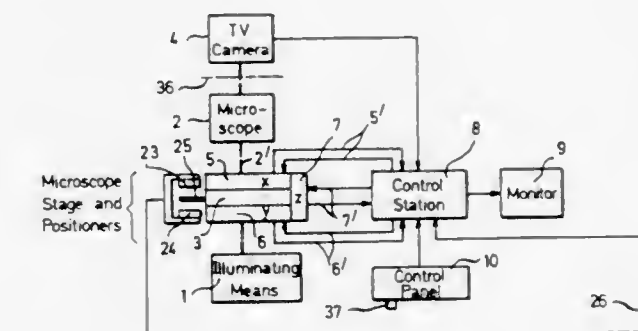
A plurality of analyzing fibers are arranged in the hollow shaft of one of the motors of a scanning device substantially in crown-like fashion around the optical center in the case of a

single fiber, while the electron beam of the cathode-ray tube is caused to perform a wobbling movement so that the center of



the beam is shifted in place along the scanning line corresponding to the case of a single fiber.  
The device is used in medical endoscopy.

3,721,759  
METHOD OF AND DEVICE FOR THE AUTOMATIC FOCUSING OF MICROSCOPES  
Walter Lang, Aalen, Germany, assignor to Carl Zeiss-Stiftung, Wuertemberg, Germany  
Filed Feb. 11, 1971, Ser. No. 114,596  
Claims priority, application Germany, Feb. 24, 1970, P 20 08 390.3  
Int. Cl. H04n 7/18  
U.S. Cl. 178—7.2 10 Claims



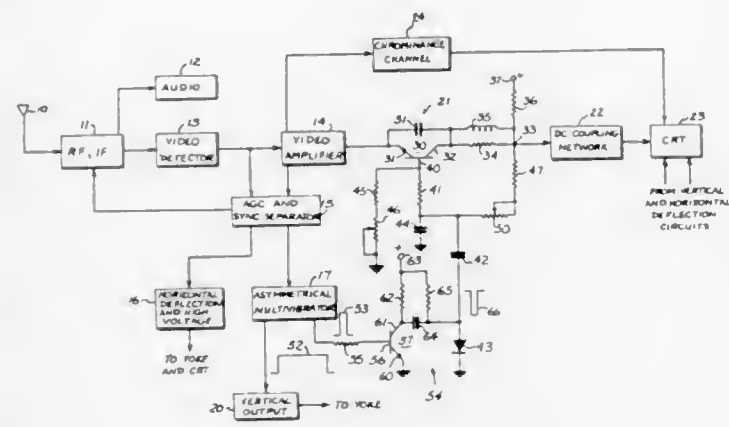
The invention contemplates a method and means whereby critical focus can be automatically achieved in a microscope, using TV scanning of the imaged object while the focused condition of the microscope is varied. As its criterion for critical focus, the invention in a preferred form uses a minimum-length or a minimum-area evaluation, while the fine-focus mechanism of the microscope is being driven, continuously and at constant speed. As soon as the television system indicates that the minimum of the measuring signal has been reached, the fine-focus drive is terminated. The microscope is then critically focused.

3,721,760  
BLANKING CIRCUITRY FOR BLANKING A CATHODE RAY TUBE  
Arthur Harold Klein, Oakfield, N.Y., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.  
Filed Aug. 26, 1971, Ser. No. 175,158  
Int. Cl. H04n 5/44, 5/68  
U.S. Cl. 178—7.5 R 9 Claims

A blanking circuit for blanking a cathode ray tube by cutting off the video output transistor and hence the cathode ray tube in response to a retrace pulse from an asymmetrical



multivibrator is disclosed. The common electrode of the video output transistor is connected to a potential reference by a



normally forward biased diode which is reverse biased by the blanking circuit during retrace intervals.

### 3,721,761 OPTICAL-TO-ELECTRICAL SIGNAL TRANSDUCER APPARATUS

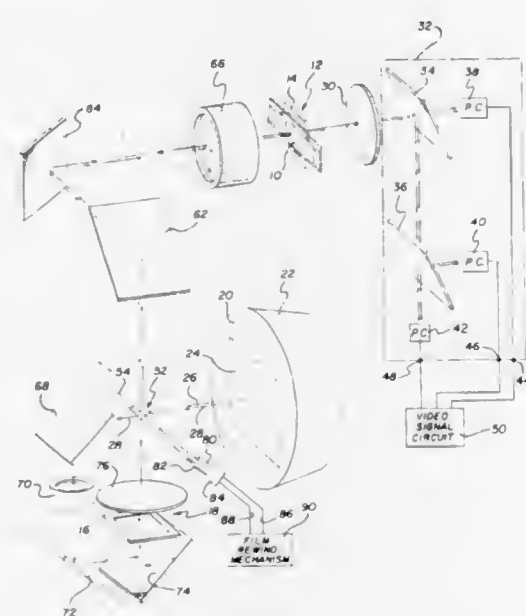
William P. Ewald, Webster, and Lenard M. Metzger, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 23, 1971, Ser. No. 211,541

Int. Cl. G03b 21/12, 21/28; H04n 9/08

U.S. Cl. 178-7.88

13 Claims



Method and apparatus for alternately scanning first and second image frames on information bearing media located in first and second scanning positions, respectively, and providing electrical signals representative of the information in the image frames. A scanning spot of light traversed in two dimensions in a repetitive raster pattern is produced by a flying spot scanner tube and is directed in a first path including the first scanning position of the first image frame or a second path including the second scanning position of the second image frame. A reflective device is operable between a first position for reflecting the scanning spot of light to a first lens which directs the scanning spot of light through the first scanning position in the first path and to optical-to-electrical signal transducer apparatus and a second position for directing the scanning spot of light through a second lens, the second

scanning position, a third lens and to the first lens of the first path. Optical-to-electrical signal transducer apparatus responds to the intensity of the light transmitted by a first image frame located in the first scanning position when the reflective device is located in the first position or transmitted by a second image frame located in the second scanning position when the reflective device is located in the second position to produce electrical signals representative of the information content of the first or second image frame. The first image frame may be carried by a moving information bearing media such as moving motion picture filmstrips, and the second image frame may comprise a stationary photographic transparency. The first lens is operable to alter the size of the scanning raster pattern produced by the flying spot scanner to correspond to the size of the first image frame; likewise the second lens is operable to change the size of the scanning raster pattern to correspond to the size of the second image frame. The third lens is operable to focus the scanning raster pattern directed through the second image frame upon the first lens. Normally, only one or the other of the first and second image frames is located in the first and second scanning position, respectively, and a switch may be activated by the manual movement of the reflective device from its first position to its second position to remove or prevent the location of the first image frames in the first scanning position.

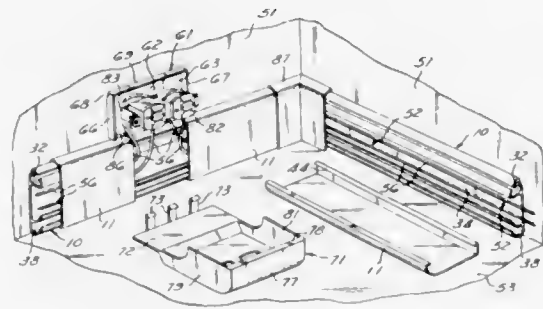
### 3,721,762 ELECTRICAL RACEWAY AND DECORATIVE MOLDING

Gale A. Gooding, Middlefield, Ohio, assignor to Johnson Plastic Corporation, Auburn Township, Ohio

Filed Dec. 8, 1971, Ser. No. 205,870

Int. Cl. H02g 3/04

10 Claims



An electrical raceway and decorative molding combination is disclosed which includes a retainer clip which is adapted to be secured to a wall and a removable cover member. The retaining clip and cover member are formed with extrusions shaped to provide a plurality of separate wire receiving channels along the raceway so that different types of wiring can be contained. An outlet structure is provided with an outlet receptacle adjacent to the raceway and a removable cover fits over the outlet receptacle and adjacent portions of the raceway.

### 3,721,763 SINGLE LINE BI-DIRECTIONAL DATA TRANSMISSION SYSTEM

Alfred A. Homan, Collingswood, and Herbert P. Brockman, Riverton, both of N.J., assignors to The United States of America as represented by the Secretary of the Navy

Filed July 29, 1971, Ser. No. 167,409

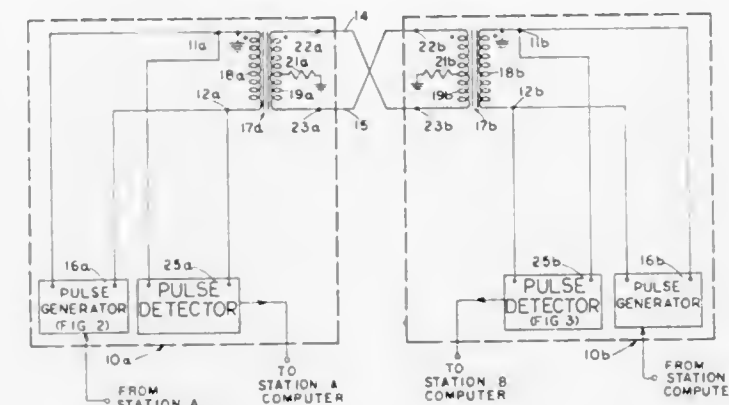
Int. Cl. H04L 5/14

U.S. Cl. 178-58 R

6 Claims

Digital information is transmitted in either direction on a time sharing basis over a single transmission line having identical transmit/receive stations sending out pulse signals of one polarity and having detectors adapted to receive pulses of the opposite polarity. The detectors block pulses of the same

polarity as those that are generated and transmitted from its own station. A transmission line is transformer coupled to



each station with an inversion in the line so that the signal received at the opposite station is of inverted polarity to that transmitted.

### 3,721,764 AUDITORY TEST FACILITY WITH MULTISTAGE SINGLE SIDEBAND HETERODYNING

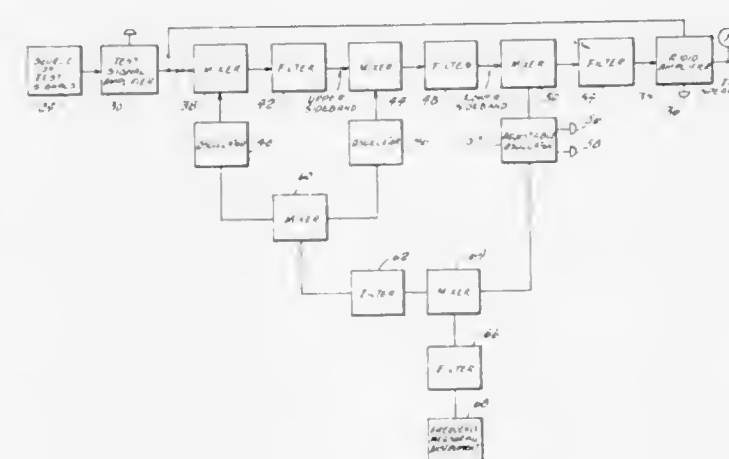
Cletus M. Dunn, Waterford, Conn., assignor to The United States of America as represented by the Secretary of the Navy

Filed Jan. 14, 1970, Ser. No. 2,761

Int. Cl. A61b 5/12

U.S. Cl. 179-1 N

4 Claims



A facility for testing auditory characteristics of any person, but particularly a sonarman, and including a hi-fi speaker-equipped sound insulated chamber for the test candidate and a hi-fi speaker-equipped test post for an acoustician, a hi-fi audio amplifier for the speakers, an intercom linking the sound insulated chamber and the testing position, a source of tonal sound and of noise and including controls at the test post, a pitch changing circuit coupled to the audio amplifier and pitch deviation metering circuit including dependent pitch controls in the chamber and at the testing post coupled to pitch changing circuit push a pitch deviation meter at the test post. A switch at the test post enables the acoustician to coupled the source of tonal sound wither to the test chamber directly or indirectly via the pitch changing and pitch deviation metering circuit.

### 3,721,765 TELEPHONE ANSWERING MACHINE

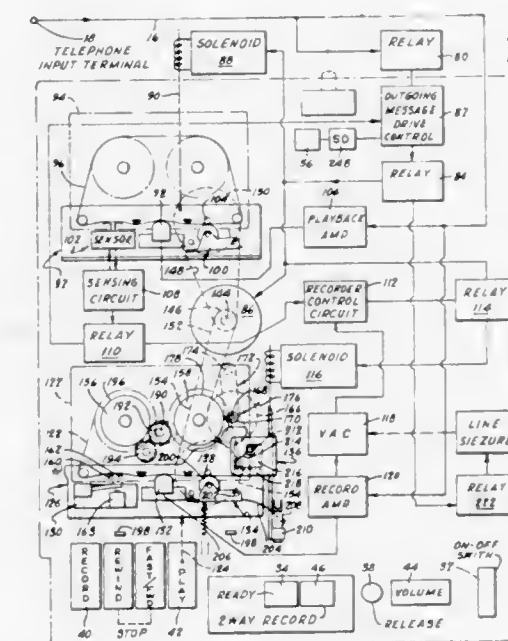
Charles W. Ho, San Francisco, Calif., assignor to Dictran International Corporation, San Francisco, Calif. and Victor Company of Japan, Limited, Tokyo, Japan, part interest to each

Filed June 7, 1971, Ser. No. 150,428

Int. Cl. H04m 1/64; G11b 23/04

U.S. Cl. 179-6 R

4 Claims



An automatic telephone answering machine for use in combination with a conventional telephone utilizes a first magnetic tape cassette to store a prerecorded message and a second tape cassette to record a caller's message. The two tape cassettes are driven by transport means which operates to drive the first tape cassette with a prerecorded message in response to receipt of an incoming call and which automatically shifts to drive the second cassette for recording the caller's message when the prerecorded message is completed. The machine provides for counting each incoming message received, an automatic cutoff circuit that stops the second recording cassette after a predetermined period of silence and for recording any desired message on the first tape cassette.

### 3,721,766 FREQUENCY MULTIPLYING CIRCUIT UTILIZING TIME GATES AND SWITCHING SIGNALS OF DIFFERING PHASES

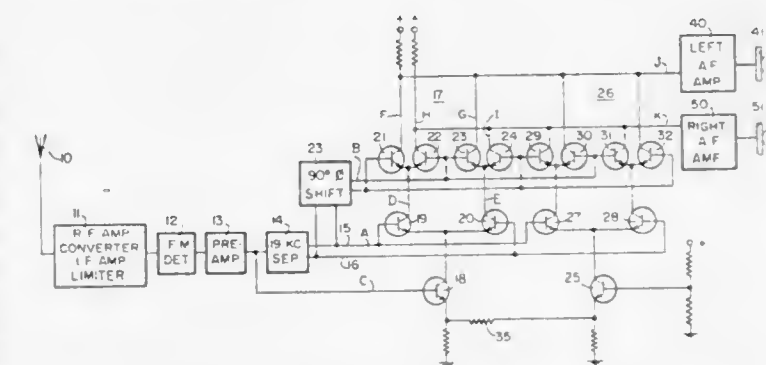
Francis H. Hilbert, Addison, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Continuation-in-part of Ser. No. 849,853, Aug. 13, 1960, abandoned. This application Nov. 16, 1970, Ser. No. 89,706

Int. Cl. H04h 5/00

U.S. Cl. 179-15 BT

10 Claims



Demodulation of standard FM multiplex stereophonic signals is accomplished without using a 38kHz frequency doubler operating in response to the 19kHz pilot tone signal. The



first stage of demodulation is accomplished in a first gated symmetrical time gate which is supplied with the composite input signals and is switched in synchronism with the 19kHz pilot signal. The two outputs of this time gate then constitute inputs to second and third time gates which are synchronously switched by a 19kHz signal at quadrature with the signal switching the first time gate. By combining appropriate outputs of the second and third time gates, the demodulated left and right audio information is obtained.

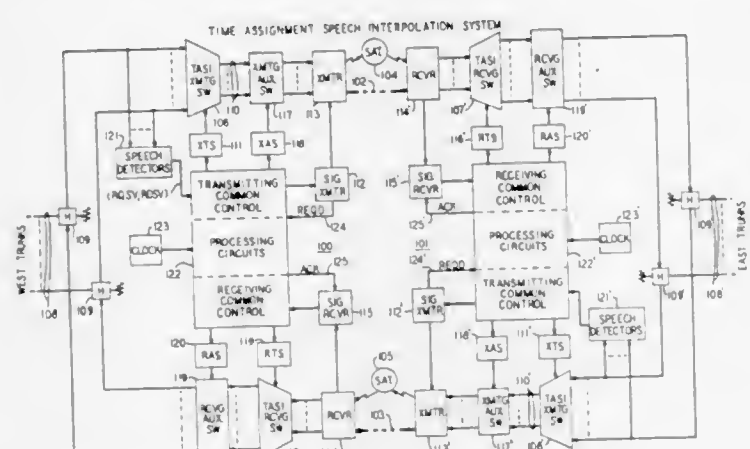
### 3,721,767 DELAY COMPENSATION IN MULTIPLEX TRANSMISSION SYSTEMS

Robert Ernest LaMarche, Atlantic Highlands; Carl Jerome May, Jr., Holmdel; Charles William Rosenthal, Short Hills, and Frederick Alan Saal, Colts Neck, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 28, 1971, Ser. No. 212,920  
Int. Cl. H04j 5/00

U.S. Cl. 179—15 AS

12 Claims



A time assignment speech interpolation system is disclosed utilizing time-shared common control processing circuits. Speech signals from a plurality of trunks are interpolated on a lesser plurality of transmission channels by connecting trunks only during active periods. In order to accommodate transmission channels of varying delay times (e.g., cable and satellite channels), receiving terminal switching operations are delayed for a time corresponding to the transmission delay of the corresponding channel. This is implemented by common control digital delay time-out for each new connection.

### 3,721,768 GROUND START ADAPTER UNIT

Frank P. Mazzac, Santa Ana, and Alan R. Fitzsimons, Laguna Beach, both of Calif., assignors to San/Bar Corporation, Santa Ana, Calif.

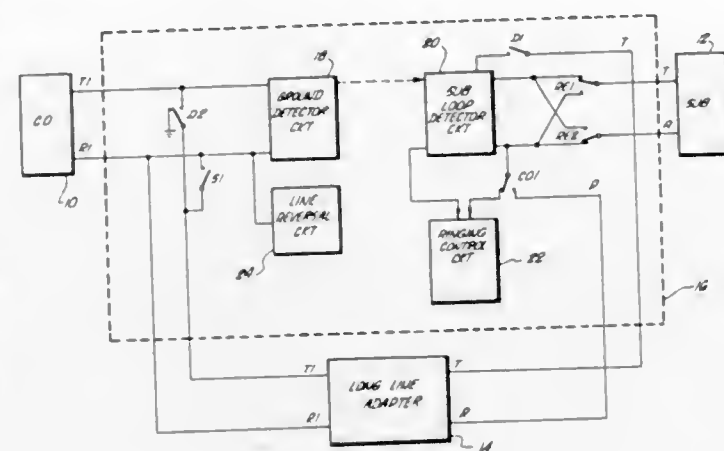
Filed Oct. 4, 1971, Ser. No. 186,270  
Int. Cl. H04m 1/50

U.S. Cl. 179—16 F

18 Claims

A ground start adapter unit for use with telephone systems is disclosed. The ground start adapter unit serves to enable peripheral telephone units that are designed for loop start operation to be employed with telephone systems designed for ground start operation. The unit generally operates by responding to the application of ground potential to either a tip or ring conductor from a central office or subscriber facility, respectively. A ground start adapter unit thus includes circuitry for detecting ground potential applied to either one of the conventional tip and ring conductors from either a central office or from a subscriber facility. Also included is circuitry for detecting a loop condition at the subscriber facility and circuitry for tripping the transmission of ringing signals from the central office when the subscriber facility is in an off-hook

condition. A reversal circuit operates to detect any polarity reversal of the line conductors from the central office and effect a corresponding reversal of the line conductors connected to the subscriber facility.



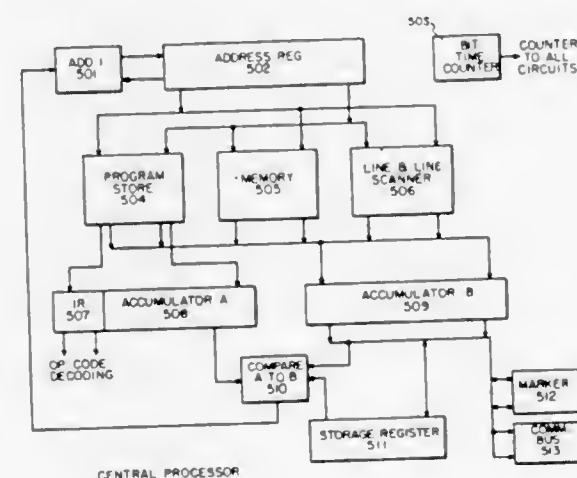
### 3,721,769 CALL METERING FOR PABX TELEPHONE SYSTEM

Elmer W. Krock, Chicago, and Charles J. Simon, Hinsdale, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed July 22, 1971, Ser. No. 162,215  
Int. Cl. H04m 15/34

U.S. Cl. 179—18 AD

6 Claims



Metering of local calls made from stations of a private automatic branch telephone system, is provided for use in hotels, motels, etc. The attendant can secure up-dated information as to calls from each station, on a common readout display.

### 3,721,770 SEQUENTIAL GATING CIRCUIT

Robert Gary Beidel, Reynoldsburg; Thomas Viktor Burns, and John Mason Catterall, both of Columbus, all of Ohio, assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 22, 1971, Ser. No. 155,427  
Int. Cl. H04m 3/60

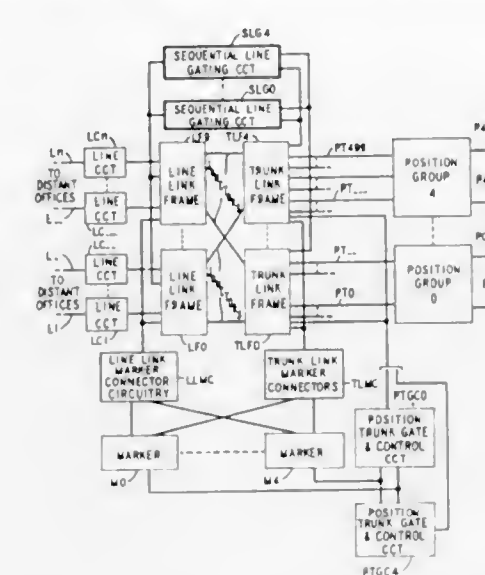
U.S. Cl. 179—27 D

21 Claims

A system is disclosed for automatically distributing calls from groups of incoming lines through crossbar switch line and trunk link frames to teams of operator positions under control of markers. Sequential line gating circuits continually monitor the trunk link frames for idle trunks to operator posi-

tions and compare the number of such frames having idle trunks with the number of line link frames enabled to bid for service by the markers for establishing call connections to operators. The gating circuits include scanners that sequen-

by the cassette for controlling the recording circuit of the apparatus and placing the recording circuit in its operative and inoperative modes. The cassette has a safety device adapted to be removably mounted on the cassette



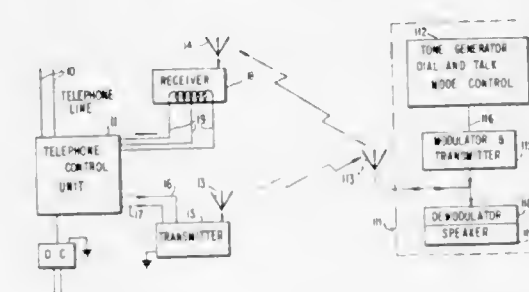
### 3,721,771 TELEPHONE RANGE EXPANDER

Gene Greneker III, 730 Wildwood Road NE., Atlanta, Ga. 30324

Filed Dec. 12, 1969, Ser. No. 884,505  
Int. Cl. H04m 3/06

U.S. Cl. 179—41 A

10 Claims



An extension telephone is coupled to a telephone line through a control unit which receives and forwards by radio incoming calls and is fully controlled from the extension unit for outgoing calls. Incoming calls ring the remote mobile unit which is then coupled for conversation to the line through a control unit actuated from the extension unit. The mobile unit transmits actuation and dialing signals to the control unit for outgoing calls from the mobile unit in response to successively transmitted tone modulations to dial any party on the telephone line and thereupon connects the mobile microphone and receiver directly to the line.

### 3,721,772 TAPE CASSETTE WITH A REMOVABLY MOUNTED ERASURE PREVENTION MEANS HAVING TWO OPERATIVE POSITIONS

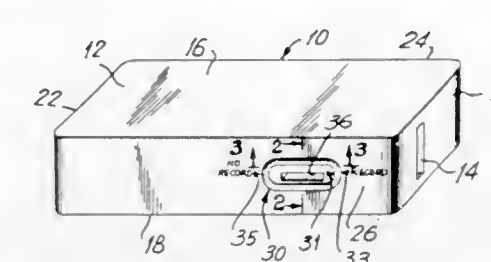
Yotaro Miura and Yoshiharu Matsumoto, Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed July 20, 1970, Ser. No. 56,484  
Claims priority, application Japan, July 22, 1969  
(utility model), 44/69,661  
Int. Cl. G11b 15/04

U.S. Cl. 179—100.2 D

5 Claims

A tape cassette for use in a tape recording and reproducing apparatus having a switch adapted to be engaged



in at least two operative positions and has first and second switch control surfaces which are selectively adapted to engage the switch, thereby maintaining the switch in one of its two operative positions to select the mode of the recording circuit.

### 3,721,773 MAGNETIC HEAD TRANSDUCER ASSEMBLY FOR REDUNDANTLY RECORDING DATA ON AND REPRODUCING DATA FROM DUAL TRACKS OF A MAGNETIC RECORDING MEDIUM

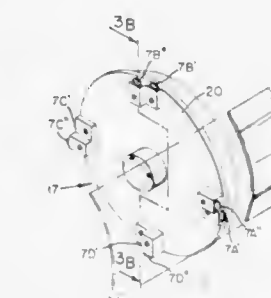
Gerald A. Kluge, Redwood City, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Continuation of abandoned application Ser. No. 695,542, Dec. 7, 1967. This application Oct. 9, 1970, Ser. No. 79,647

Int. Cl. G11b 5/28, 5/44, 5/52

U.S. Cl. 179—100.2 T

9 Claims



A data processing method and system for redundant recording and reproducing of digital or other forms of data on a magnetic medium utilizing a single channel of processing electronics. In record, the data is fed through a single channel of processing electronics to a pair of transducers of a head assembly whereat the signal is divided to create two redundant tracks on the tape. In playback, the redundant data is simultaneously reproduced from dual tape tracks and summed together directly at the head assembly and processed as a single playback signal by a standard single channel of processing electronics to reconstitute the original data with negligible error due to tape dropouts.

### 3,721,774 MAGNETIC RECORDING AND/OR REPRODUCING APPARATUS WITH SIGNAL MUTING DURING CHANGE OF OPERATIVE CONDITION

Hiroshi Yonemoto, Urawa-shi, Saitama-ken, and Koichi Kawakyu, Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 14, 1971, Ser. No. 143,483  
Claims priority, application Japan, May 21, 1970  
(utility model), 45/49,631  
Int. Cl. G11b 15/18, 21/08

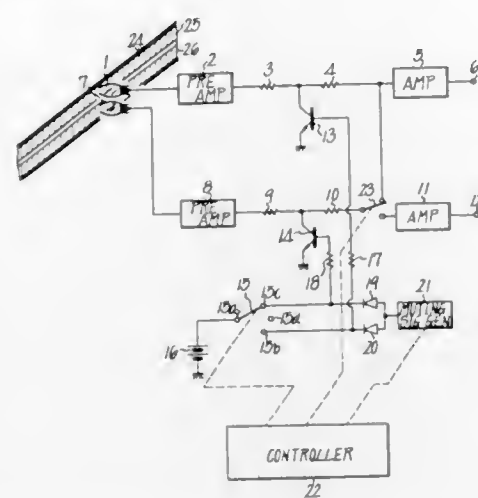
U.S. Cl. 179—100.2 MD

15 Claims

In a magnetic recording and/or reproducing apparatus capable of reproducing signals recorded on a magnetic tape during movement of the tape in both forward and



reverse directions, at least two magnetic heads pick up the signals from the tape and independent signal transmitting lines are provided for transmitting the signals from the corresponding magnetic heads to a common output terminal.



nal, such signal transmitting lines having switching means for muting the signals during changing of the operative condition of the apparatus and also for selecting the signal or signals to be reproducing during movement of the tape in the forward or reverse direction.

3,721,775

#### DEVICE FOR TRANSFERRING MAGNETIC SIGNALS FROM A MASTER SHEET TO MAGNETIC SHEETS

Sakae Fujimoto, Chofu-shi, Tokyo; Saburo Kato, Koto-ku, Tokyo; Masimi Koizumi, Kawasaki-shi, Kanagawa-ken, and Takaji Sue, Kohoku-ku, Yokohama-shi, all of Japan, assignors to K. K. Ricoh, Tokyo, Japan

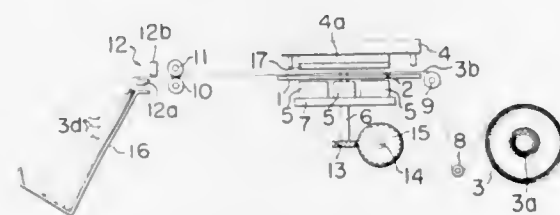
Filed Oct. 16, 1969, Ser. No. 867,007

Claims priority, application Japan, Oct. 20, 1968, 43/76057; Oct. 20, 1968, 43/91034; Oct. 20, 1968, 43/91035; Oct. 23, 1968, 43/3579; Nov. 18, 1968, 43/84374

Int. Cl. G11b 5/85

U.S. Cl. 179—100.2 E

4 Claims



Device for transferring magnetic signals of a master sheet having a spiral recording track to magnetic sheets wherein a magnetic sheet to be copied (transferred) is intermittently fed so as to be overlaid upon the master sheet held stationary; both of the master and magnetic sheets are pressed against each other by a vertically movable pressure plate; the magnetic fields are applied to both of the sheets for transfer; and the holes for positioning are punched through the magnetic sheet by the punching means fixed to the pressure plate.

3,721,776

#### MAGNETIC RECORDING AND/OR REPRODUCING APPARATUS

Katsu Inaga, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 11, 1971, Ser. No. 170,785

Claims priority, application Japan, Aug. 11, 1970, 45/79882

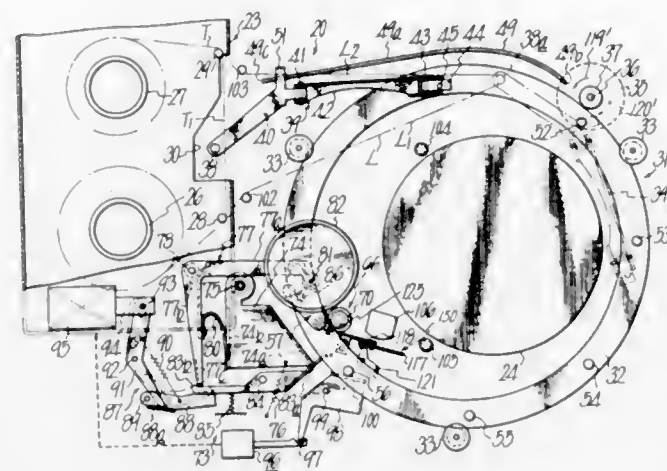
Int. Cl. G11b 5/52

U.S. Cl. 179—100.2 T

14 Claims

A magnetic recording and/or reproducing apparatus of the type having a tape guide drum, at least one rotary magnetic

head to scan a tape wrapped on the drum, a stationary magnetic head positioned on a tape path to erase a previously recorded signal from the tape, or to record an information signal on the tape or reproduce previously recorded information, and an automatic tape guide device for automatically threading and wrapping the tape on the guide drum. Such ap-



paratus further includes a movable magnetic shielding means to protect a recorded signal on the tape from undesired magnetic flux produced by the stationary magnetic head. Said movable magnetic shielding means is positioned in front of said stationary magnetic head by the tape guide device carried at a predetermined position to wrap the tape on the guide drum.

3,721,777

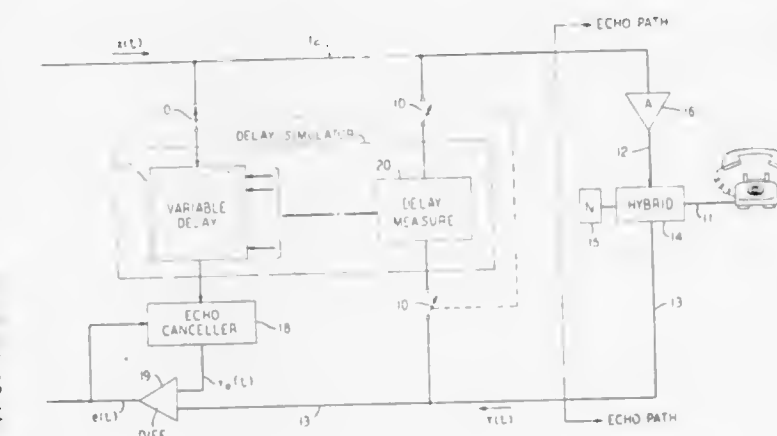
#### ECHO PATH DELAY SIMULATOR FOR USE WITH ADAPTIVE ECHO CANCELLERS

Edmond Joseph Thomas, New Shrewsbury, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 26, 1971, Ser. No. 202,338

Int. Cl. H04b 3/20

8 Claims



The echo path of a four-to-two wire junction is bridged by a variable delay device and an adaptive echo canceller connected in series. If the variable delay device is controlled so as to provide a delay to an incoming signal equal to the echo path delay, the number of taps required in the echo canceller can be reduced and the stability of the canceller thereby improved. To this end, a delay measuring circuit serves to form the cross-correlation function between the incoming or echo generating signal and the echo. The point at which this cross-correlation function is first determined to be a maximum corresponds to the echo path delay. The determination is then used to control the variable delay device so as to achieve a delay therein substantially equal to the echo path delay.

3,721,778

#### KEYBOARD SWITCH ASSEMBLY WITH IMPROVED OPERATOR AND CONTACT STRUCTURE

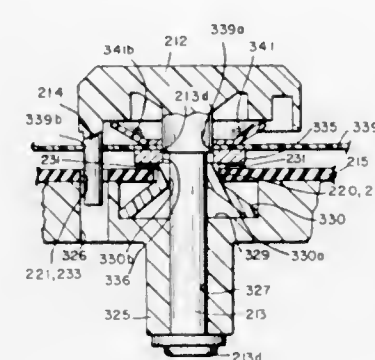
Richard E. Seeger, Jr., Marblehead, and William J. Lynn, Groveland, both of Mass., assignors to Chomerics, Inc., Woburn, Mass.

Filed June 21, 1971, Ser. No. 154,752

Int. Cl. H01h 13/52

U.S. Cl. 200—5 R

8 Claims



An encoded keyboard device which includes a plurality of layers of insulator material, at least two of which have patterns of electrically conductive material supported thereby, a plurality of holes extending through one of said layers and positioned with respect to said conductive patterns so that electrically conductive material may extend through the holes and electrically interconnect the patterns, and a plurality of keys adapted to push electrically conductive material against one of said patterns to produce a coded output representative of the key depressed.

3,721,779

#### SLIDING ACTION ELECTRICAL SWITCH WITH RAMP PORTIONS BETWEEN CONTACTS AND INSULATING STRIPS

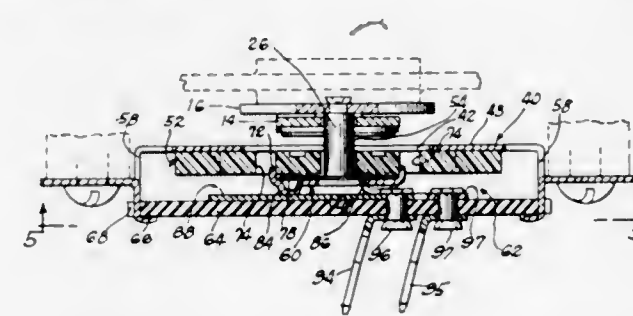
Andrew F. Raab, Morton Grove, Ill., assignor to Indak Manufacturing Corp., Northbrook, Ill.

Filed June 4, 1971, Ser. No. 150,037

Int. Cl. H01h 15/04, 9/06, 3/50

U.S. Cl. 200—16 C

2 Claims



The illustrated switch comprises an insulating carriage which is slidable longitudinally within a casing. The carriage is arranged to be actuated by a pin which projects into an opening in the carriage through a slot in the casing. In this case, the pin is movable along a curved path and is slidable in the opening, which is laterally elongated. A contactor is mounted on the carriage and is provided with three contact points which are engageable with three contact strips secured to an insulating support on the casing. A spring is provided to bias the contactor toward the contact strips. The strips extend parallel to the path of movement of the contactor and are disposed along laterally spaced lines. The line of the first strip extends between the lines of the second and third strips. Two terminals are connected to the first strip and the second and third strips, which are connected together. The switch has an off position in which the first contact point engages the first strip, while the second and third contact points engage insulating bosses or projections disposed opposite the ends of the second and

third strips. Upon movement of the contactor, the second and third contact points move smoothly from the insulating bosses into substantially simultaneous engagement with the ends of the second and third strips, which are provided with inclined ramp portions. Throughout a range of movement of the carriage, the three contact points engage the three contact strips.

3,721,780

#### LIMIT SWITCH ASSEMBLY INCLUDING ROTATABLE CAM WITH LONGITUDINALLY GUIDED INDEXING NUT AND CAM LONGITUDINAL DISPLACEMENT MEANS

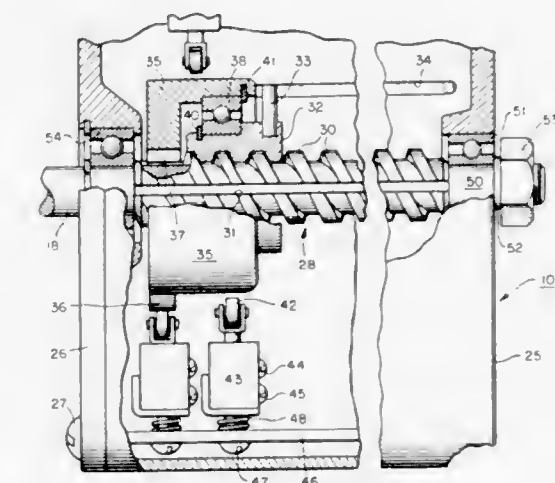
Robert R. Kelly, Hoffman Estates, and Donald H. Ward, Glen Ellyn, both of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed May 4, 1971, Ser. No. 140,192

Int. Cl. H01h 3/16

U.S. Cl. 200—47

5 Claims



A switch assembly provides position signals from a series of switches as a function of motor shaft rotation. A lead screw, rotated as a function of motor shaft rotation, includes an exterior threaded surface and a plurality of longitudinal slots. An indexing nut rides on the lead screw, but the indexing nut is restrained against rotation. A rotatable cam body has a plurality of drive tangs which extend into the lead screw slots, to afford rotation of the cam body in accordance with lead screw rotation. A bearing with a pair of snap rings translates the longitudinal movement of the indexing nut into a corresponding longitudinal displacement of the cam body. The cam has a lobe positioned to contact and selectively actuate the extending portions of a series of switches as the cam body is rotated and displaced lengthwise.

3,721,781

#### PNEUMATIC READ HEAD FOR DOCUMENT CARDS

John W. Berkman, Oronoco; Richard E. Lagergren, Rochester; Merlin J. Ricklefs, Rochester, and Walter S. Schaffer, Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 7, 1971, Ser. No. 187,491

Int. Cl. H01h 43/08

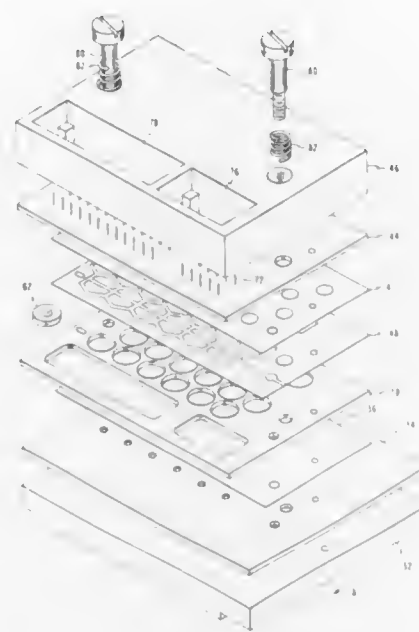
U.S. Cl. 200—46

13 Claims

A pneumatic read head or switch assembly having a row of air reception ports therein into which jetted air may flow after passing through the apertures of a document card, the reception ports being connected with air pressure responsive switches by means of equal length air passages. The switches comprise pistons movable under the influence of air pressure, and the pistons are disposed in a plurality of rows each of which extends parallel with the row of reception ports and spaced sideways therefrom. Each of the pistons is effective on the center of a bar portion of copper cladding for moving the



center of the bar portion into contact with another contact, and the bar portion and other contact for each switch is surrounded by bar portions arranged in hexagonal form for



providing a column of support around the switch. A rigid backing plate acted on by springs holds the parts of the switch assembly together.

3,721,782

## TRIGGERING DEVICE FOR SWITCHGEAR

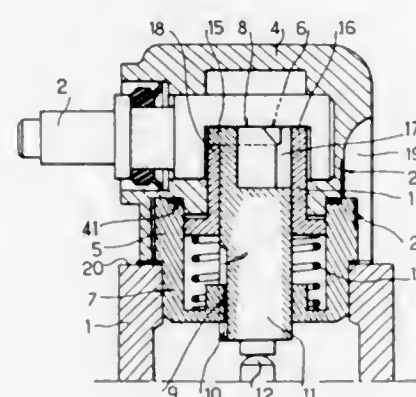
Michel Roumagnac, Angoulême, France, assignor to La Telemecanique Electrique, Nanterre, France  
Filed April 17, 1972, Ser. No. 244,385

Claims priority, application France, April 21, 1971, 7114119

Int. Cl. H01h 3/16

U.S. Cl. 200—47

7 Claims



Triggering device for switchgear, characterized by an oscillating shaft 2 acting as a control unit and cooperating with an adjustable transmission unit consisting of two component parts 11, 7 and connected to the contact 12, this unit being accessible from outside without dismantling to enable it to assume several easily recognizable positions, at the same time keeping the dimensions the same as those of non-adjustable devices.

Applied to the control of the travel of moving parts in machinery.

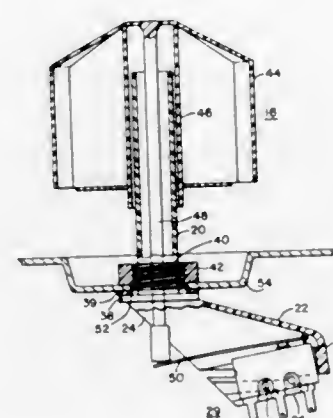
3,721,783  
OVERFLOW FLOAT ARRANGEMENT FOR DISHWASHER

Charles L. Hancock, Columbus, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.  
Filed July 27, 1971, Ser. No. 166,385

Int. Cl. H01h 35/18

U.S. Cl. 200—84 R

3 Claims



An overflow control float arrangement in which a structurally integral member secured to the bottom wall of the dishwasher tub includes a float guide portion projecting up into the tub and a switch mounting portion located below the tub wall so that as assembled the adjusted relation between the float and control switch is automatically obtained.

3,721,784

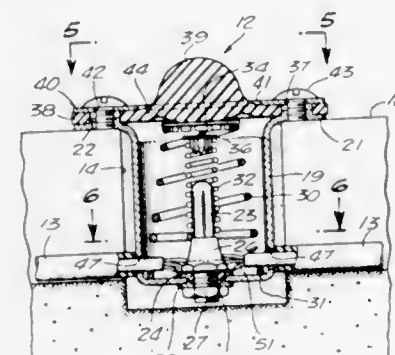
## IMPACT RELIEF PRESSURE SWITCH FOR ROADWAY VEHICLE DETECTOR

Joseph R. Viracola, 1423 7th Street, Santa Monica, Calif.  
Filed April 14, 1972, Ser. No. 244,115

Int. Cl. H01h 13/16

U.S. Cl. 200—86 R

15 Claim



A pressure switch is disclosed for use in a roadway vehicle detector system. The pressure switch includes a cylindrical metal case which has a diaphragm of resilient material secured on the open top thereof. The diaphragm is formed with a protruding solid bulb on the upper surface thereof. A spring assembly comprised of an outer spring with a shorter and smaller diameter inner spring nested therein is enclosed within the case with the diaphragm bulb located above the outer spring. A cable having a plurality of conductors has one of its conductors connected to the lower end of the outer spring and another of its conductors connected to an isolated conductive member centrally located on the bottom of the case. When a tire of a vehicle passes over the switch it depresses the solid bulb of the diaphragm into the case to thereby depress the outer spring and enable a contact on the end of the inner spring to close the electrical circuit between the conductors of the cable.

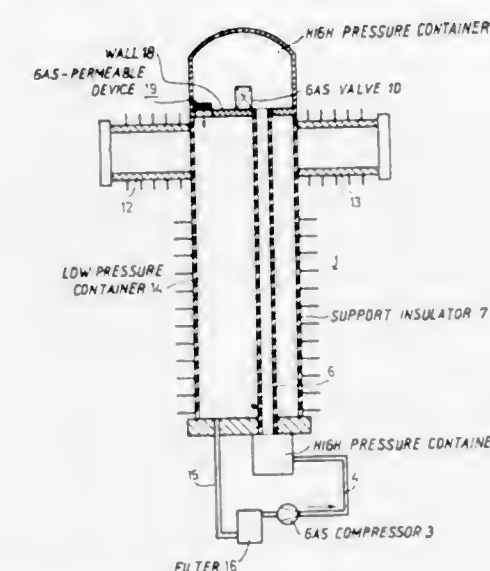
3,721,785  
PRESSURE SWITCH DEVICE HAVING A PRESSURE DEPENDENT CIRCUIT FOR A COMPRESSOR

Karl Heinz Picard, and Horst Eggert, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany  
Filed June 11, 1971, Ser. No. 152,096

Int. Cl. H01h 33/57

U.S. Cl. 200—148 B

8 Claims



A pressure gas switch has a gas-permeable device which is a plate of porous material having an area with dimensions larger by at least one order of magnitude than the thickness of the plate.

3,721,786

## CIRCUIT BREAKER

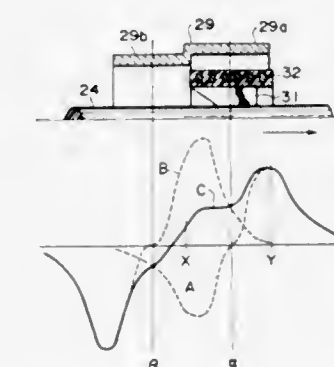
Yoshio Yoshioka, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 30, 1971, Ser. No. 203,234

Int. Cl. H01h 33/88

U.S. Cl. 200—148 A

7 Claims



A puffer type circuit breaker is provided in which an arc extinguishing gas is compressed and released into an arc between contacts upon the initiation of an interrupting operation. The means for compressing the arc extinguishing gas is actuated by an electromagnetic driving means comprising at least two electromagnetic driving units provided by a primary coil and a short ring electromagnetically coupled to said primary coil, and the electromagnetic driving means exhibits a stepped electromagnetic driving force characteristic in response to the displacement in the driving direction when a predetermined current flows in the primary coil. Thus, current arcs for a range of small and medium currents may be extinguished by means of gases compressed by the driving forces generated in the neighborhood of the upper step portion of the stepped electromagnetic driving force characteristic and directed to the current arcs, while current arcs for a range of

large currents may be extinguished by means of gases compressed by the driving forces generated in the neighborhood of the lower step portion of the stepped electromagnetic driving force characteristic and directed to the current arcs.

3,721,787

## MINIMUM FLUID CIRCUIT BREAKER INCLUDING STROKE-DEPENDENT INJECTION OF QUENCHING FLUID INTO SWITCH CONTACT CHAMBER

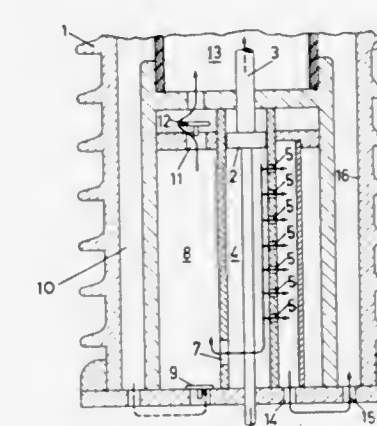
Robert Wehrli, Nurensdorf, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed May 10, 1971, Ser. No. 141,799

Int. Cl. H01h 33/68

U.S. Cl. 200—150 A

1 Claim



A minimum-fluid circuit-breaker includes a quenching chamber in which the fixed and movable contacts are located, a pump of the piston-cylinder type, the piston being rigidly connected to the movable contact and serving to force arc-quenching fluid from the pump cylinder into a pressure chamber and thence from the latter through non-return valving into the quenching chamber to facilitate arc extinction as the contacts disengage. The rate-of-flow of the arc quenching fluid into the quenching chamber is varied during movement of the pump piston. By utilizing a row of bypass ports in the pump cylinder which are progressively cut out by the piston during its movement in the contact opening direction, the flow rate is progressively increased. By utilizing a double concentric pump piston arrangement both pistons act conjointly on the fluid during the initial part of the piston movement to provide a high flow rate while thereafter only the smaller of the two pistons is effective thus providing a correspondingly lower flow rate. When the contacts reclose, the pressure chamber and pump cylinder refill with fresh fluid from a reservoir.

3,721,788

## LOCATOR SPRING STRUCTURE FOR CONTACT ASSEMBLY OF HIGH VOLTAGE ELECTRICAL CIRCUIT BREAKERS

Alan Lister Kidd, Southport, England, assignor to Dorman Smith Switchgear Limited, Preston, England

Filed Sept. 29, 1971, Ser. No. 184,800

Claims priority, application Great Britain, Oct. 22, 1970, 50,094/70

Int. Cl. H01h 1/50, 9/30

U.S. Cl. 200—166 R

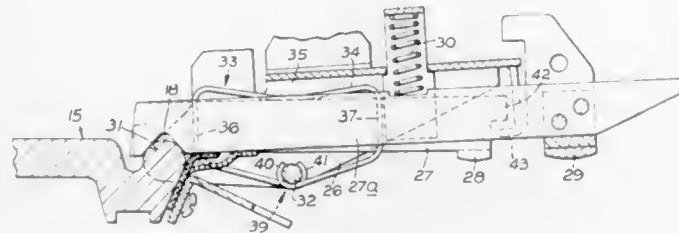
6 Claims

An electrical circuit breaker or isolator, intended to carry high currents of the order of 100,000 amperes, has for each pole a respective moving contact assembly comprising a plurality of parallel-connected movable contact arms each carrying a respective movable contact, said arms being of strip metal, to reduce manufacturing costs, are disposed side-by-side and substantially parallel in a carrier, each said arm being mounted in the carrier by a respective locator spring shaped to provide a loading portion which engages one longitudinal edge of the arm and a pair of limbs extending across the arm one adjacent each side thereof and which locates on a cross-



member, extending transversely of the arms, of the carrier adjacent the other longitudinal edge of the arm, the locator

thereof. The rotatable contact arm is affixed to a sleeve which slidably rotates about the operating shaft, and has an abutment portion, which during the opening operation, makes impact engagement with an impact pin, the latter moving with the operating shaft, and striking the abutment portion of the



springs serving yieldingly and resiliently to mount the movable contact arms in the carrier and the limbs of the springs effectively locating the arms relative to one another.

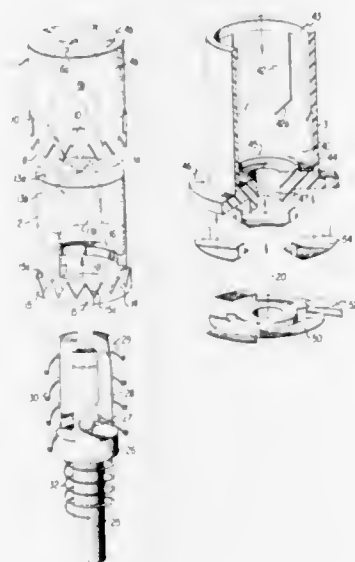
3,721,789

## ELECTRICAL SWITCH INDICATOR

Marion R. Black, 804 Hallam Avenue, Security, Colo.  
Filed March 17, 1972, Ser. No. 235,742  
Int. Cl. H01h 9/16

U.S. Cl. 200—167 R

10 Claims



A push-button electrical switch indicator for simultaneously changing an electrical contact and readily indicating a new switch position. A drive member imparts a rotary motion to an indicia-bearing rotor which connects to a central shaft to change the electrical contacts. The rotor indicia are visible from the top and side of the switch assembly.

3,721,790

CONTACT-PRESSURE LINKAGE FOR A CIRCUIT INTERRUPTER OF THE TORSION-SPRING TYPE  
Charles D. Bice, Pittsburgh; Frank W. Senchur, Delmont, both of Pa., and Robert A. Few, Bloomington, Ind., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 10, 1971, Ser. No. 141,686

Int. Cl. H01h 1/50

U.S. Cl. 200—170 A

7 Claims

A rotatable operating shaft carries a contact-pressure torsion spring thereon, one end of the torsion spring being secured to the rotatable operating shaft itself, and the other end of the torsion spring biasing a contact arm, which loosely slides about the rotatable operating shaft. The free end of the contact arm is mechanically linked to the movable contact of a circuit interrupter to cause the opening and closing motions

thereof. The rotatable contact arm is affixed to a sleeve which slidably rotates about the operating shaft, and has an abutment portion, which during the opening operation, makes impact engagement with an impact pin, the latter moving with the operating shaft, and striking the abutment portion of the

slidable sleeve during the opening operation for impact opening.

The contact-pressure linkage is particularly suitable for multi-phase operation in which a number of pairs of separable contacts are simultaneously actuated in gang-operation by a single common rotatable operating shaft actuated by a single mechanism.

3,721,791

## ARCuate FORM ELECTRICAL SWITCHES HAVING AN AXIALLY DISPLACEABLE ACTUATOR

Gordon Grieves, Newcastle upon Tyne, and Brian Astbury Holden, Washington, both of England, assignors to Burgess Micro Switch Company Limited, Gateshead, Durham, England

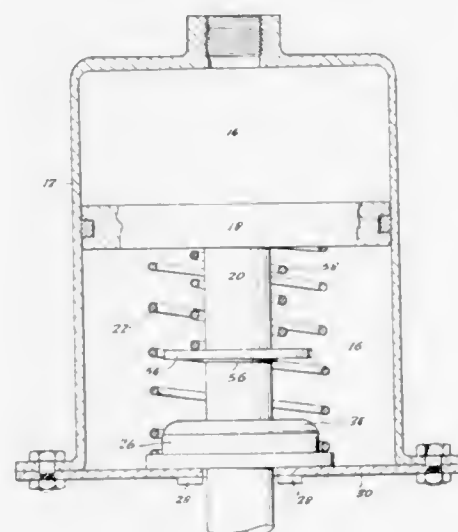
Filed June 25, 1971, Ser. No. 156,817

Claims priority, application Great Britain, July 1, 1970, 31,996/70

Int. Cl. H01h 9/04

U.S. Cl. 200—168 G

13 Claims



3,721,792

## APPARATUS FOR BURN-FITTING WOODEN GUN STOCKS TO METAL RECEIVERS

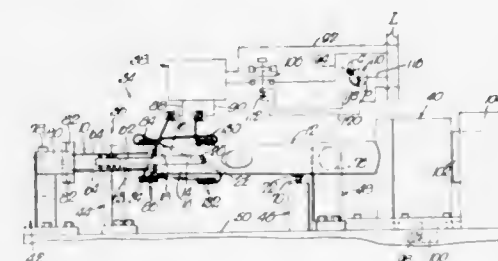
Stephen J. Morris, North Haven, and James M. O'Keefe, Cheshire, Conn., assignors to The Marlin Firearms Co., North Haven, Conn.

Original application June 4, 1971, Ser. No. 149,904, now Patent No. 3,697,715. Divided and this application May 25, 1972, Ser. No. 257,004

Int. Cl. H05b 5/08

U.S. Cl. 219—10.57

4 Claims



Method of, and apparatus for, fully seating on a receiver end the ends of tangs on a wooden gun stock, of which the stock tangs are partially interprojected with receiver tangs on the receiver end, and have excess wood interfering with their full interprojection with the receiver tangs, with the partially interprojected receiver and stock being placed in a holding fixture, and only part of the held receiver therein, including its end, being subjected to high-frequency induction heating to stock-burning temperature, whereupon the stock is driven into full interprojection with the held receiver to the extent of a complete burn-fit of the stock tang ends with the receiver end.

3,721,793

## SPIRAL-SEAM WELD PIPE AND TUBE MILL

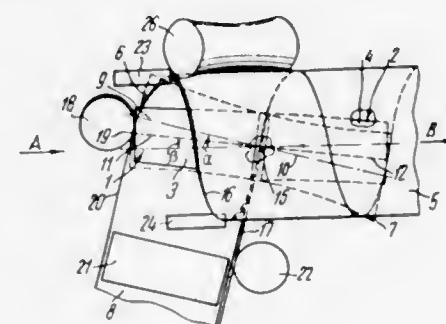
Jury Nikolaevich Skachko; Venedikt Feofanovich Moshkin; Rodimiz Ivanovich Gazkaljuk; Vladimirovich Popov; Valery Vasilievich Polukhin, all of Kiev; Igor Illarinovich Kazakevich, Moskovskaya oblast, Elektrostal; Alexandr Nikolaevich Medvedov, Moskovskaya oblast, Elektrostal; Vladimir Alexandrovich Korshunov, Moskovskaya oblast, Elektrostal; Vladimir Mikhailovich Bokov, Moskovskaya oblast, Noginsk, and Boris Pavlovich Skorudsky, Moskovskaya oblast, Elektrostal, all of U.S.S.R., assignors to Institut elektrosvarki imeni E.O. Patona Akademii Nauk Ukrainskoi SSR, Kiev, U.S.S.R.

Filed July 19, 1971, Ser. No. 163,755

Int. Cl. B23k 1/16

U.S. Cl. 219—62

5 Claims



A mill is provided with a device for pipe or tube forming by strip wrapping into a spiral, a device for the pressure welding of convergent edges of a strip and pipe, being formed therefrom and a device for locating the strip and pipe into the spiral and to weld the convergent edges of the strip and pipe, being formed therefrom. The pipe forming device comprises at least two pairs of rolls arranged opposite each other in the direction of the strip motion or movement so that the roll ex-

teriors act as guides for abutting convergent edges of the strip during the welding process, with one roll in each pair being mounted outside and the other roll inside the pipe (tube) to be formed. The geometric axes of the external rolls are disposed at right angles to the direction of the strip movement and those of the internal rolls — at an angle to the direction of the pipe movement less than the angle defined by the axis of the external rolls and the direction of the pipe movement.

3,721,794

## CLUTCH DEVICE

Shoji Jinbo, Okazaki; Setsuo Kedo, and Takehisa Yaegashi, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota City, Aichi-ken, Japan

Filed Dec. 13, 1971, Ser. No. 207,496

Claims priority, application Japan, Dec. 22, 1970, 45/130284

Int. Cl. F16d 13/44

U.S. Cl. 192—70.19

2 Claims



A clutch device comprising a flywheel, a pressure plate and a clutch disk interposed between said flywheel and said pressure plate for clutching and de-clutching the fly-wheel and clutch disk to effect or interrupt power transmission therethrough by bringing the pressure plate into or out of pressing engagement with the clutch disk. Said clutch disk is brought into engagement with a driven shaft through a spline connection of an angle of torsion capable of producing an axially directed thrust acting in a direction in which the clutch disk moves away from the flywheel when the driven shaft is driven by the clutch disk.

3,721,795

## SERVOMECHANISM FEED SYSTEM

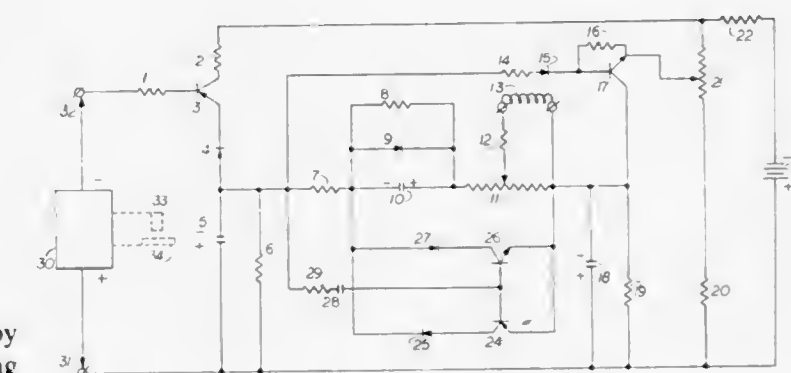
Walter Lobur, Clawson, Mich., assignor to Electronic Removal of Metals, Inc., Clawson, Mich.

Filed Jan. 11, 1972, Ser. No. 217,008

Int. Cl. B23p 1/14

U.S. Cl. 219—69 G

10 Claims



A servomechanism feed system providing delayed "triggered" backup in combination with an automatic velocity control. The system permits high velocity approach of a movable object, and retract and automatic damping of velocity for



stable operation thereby relieving the operator from manual search for desired conditions. Approach means operates in response to an input signal and at low velocity stabilizes near desired conditions. Backup or retract signal is "transistor triggered" only after high velocity overshoot of the reference signal. At this time complementary transistors or other electronic control devices shunting the output become conductive to reduce the velocity and give stable operation.

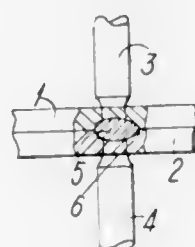
### 3,721,796 WELDING ELECTRODES

Alan Reed, Sydney, Australia, assignor to Plessey Handel Und Investments A.G., Zug, Switzerland  
Filed Dec. 2, 1971, Ser. No. 204,041  
Claims priority, application Great Britain, Dec. 31, 1970, 61,978/70

Int. Cl. B23k 11/30

U.S. Cl. 219—119

3 Claims



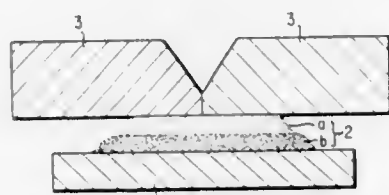
A welding electrode for the electrical resistance welding of zinc and/or tin coated metal including a body member of copper or a copper-base alloy having an electroless nickel/phosphorus alloy coating on a welding face or faces thereof. The preferred electrode material is beryllium-copper and the thickness of the electroless nickel/phosphorus alloy coating is preferably in the range 0.0001 inches to 0.010 inches.

### 3,721,797 WELDING PROCESS AND PLURAL LAYERED BACKING MATERIAL

Masayasu Arikawa and Motomi Kano, Fujisawa, and Naoki Okuda, Kamakura, Japan, assignors to Kobe Steel, Ltd., Kobe, Japan  
Filed Mar. 18, 1970, Ser. No. 20,657  
Claims priority, application Japan, Mar. 25, 1969, 44/22,587; Dec. 4, 1969, 44/97,458  
Int. Cl. B23k 9/02

U.S. Cl. 219—137

6 Claims



A single-side welding process is facilitated by the use of a flux material which is held against the back of the workpieces to be joined by a copper backing strip. At least 40% by weight of the flux is in particulate form having a particle size of less than 840μ. The flux also contains a binder material which is fusible under the influence of the arc heat.

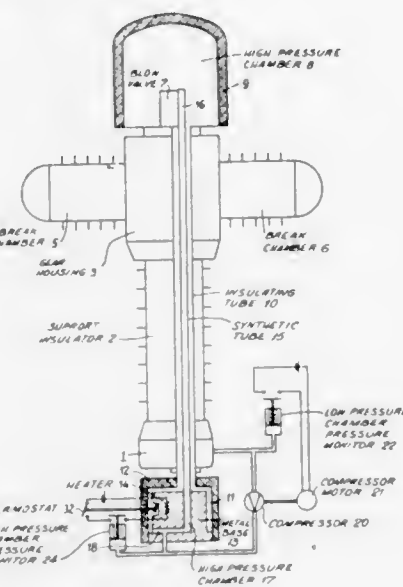
### 3,721,798 PRESSURE GAS SWITCH

Joachim Beierer, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany  
Filed Feb. 24, 1971, Ser. No. 118,354  
Claims priority, application Germany, March 3, 1970, P 20 10 690.5

Int. Cl. H05b 1/00

U.S. Cl. 219—209

6 Claims



The heater of a pressure gas switch is switched on and off by a regulating device which operates in accordance with the pressure of quencher gas in a closed gas cycle system. A decrease in the pressure switches the heater on and an increase in the pressure switches the heater off. The quencher gas is preferably sulphur hexafluoride.

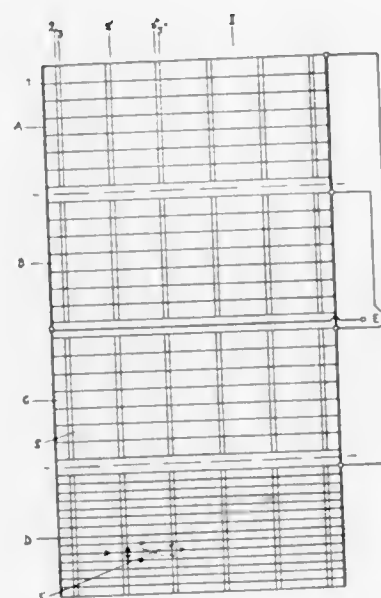
### 3,721,799 ELECTRIC HEATING SOURCE FOR SEATS AND MATTRESSES AND METHODS OF APPLICATION OF THE SAME

Ruben Carlstrom, Alstromersgaten 9, 44100 Alingsas, Sweden  
Filed Oct. 20, 1970, Ser. No. 82,345  
Claims priority, application Sweden, Oct. 22, 1969, 14440/69

Int. Cl. H05b 1/00

U.S. Cl. 219—212

4 Claims



The electric heating source of the invention is a fabric provided with parallelly interwoven groups of resistance wires transversely by parallelly interwoven groups of conducting wires, both kinds of wires thereby forming electrical contacts with each other. The resistance wires are interrupted, in the

fabric, to form current circuits in which the transversely interwoven wires are connected to conductive feeder wires which are connected to a suitable current supply.

### 3,721,800 ELECTRICAL HEATING FILM

Paul Elsler, 57 Exeter Rd., London, N.W. 2, England  
Division of Ser. No. 590,400, Oct. 28, 1966, Pat. No. 3,539,767, which is a division of Ser. No. 165,736, Jan. 12, 1962, Pat. No. 3,283,284. This application Oct. 26, 1970, Ser. No. 84,101  
Claims priority, application Great Britain, Jan. 20, 1961, 2,384/61

Int. Cl. H05b 1/00

U.S. Cl. 219—213

24 Claims



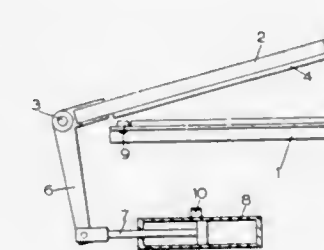
Space heating means and method having an electric resistance heating film comprising a meander pattern of conductive foil with terminals at least in part integral and of lower resistance than the pattern. The film may be disposed between two layers of which one is a floor or wall covering and the film being bonded to one of the layers and having at least one of the layers composed of a material supplied in roll form and laid in parallel adjacent lengths over a floor or wall surface and metallic strips connecting the heating film to a low voltage supply source.

### 3,721,801 AUTOMATIC SEALER CONTROL

Frederick Douglas Clavell Bate, 155 Barkerhouse Road, Nelson, England  
Continuation-in-part of application Ser. No. 611,420, Jan. 24, 1967. This application Aug. 26, 1969, Ser. No. 871,425  
Claims priority, application Great Britain, Jan. 22, 1966, 3,012/66  
Int. Cl. H05b 1/00

U.S. Cl. 219—243

14 Claims



Strip or sheet of plastic film is folded and the plies sealed together to form envelopes by a sealing head having an intermittently heated exposed sealing element. The duration of application of the sealing element to the film is automatically controlled according to the temperature of

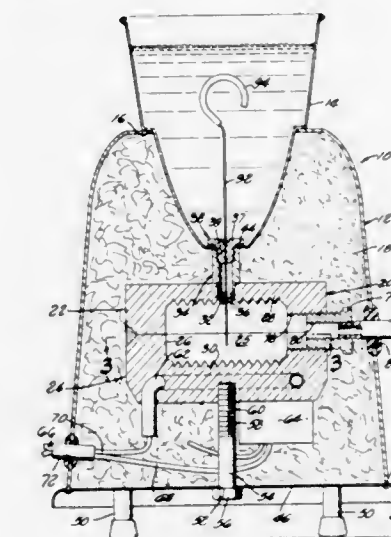
the sealing element, the sealing head being power operated to remove the sealing element from the film when the sealing element reaches a predetermined temperature.

### 3,721,802 STEAM GENERATOR

Ernest L. Chrisman, Downey, Calif., assignor to Nordic Cloud Corporation, El Monte, Calif.  
Filed Jan. 17, 1972, Ser. No. 218,232  
Int. Cl. F22b 1/28

U.S. Cl. 219—273

5 Claims



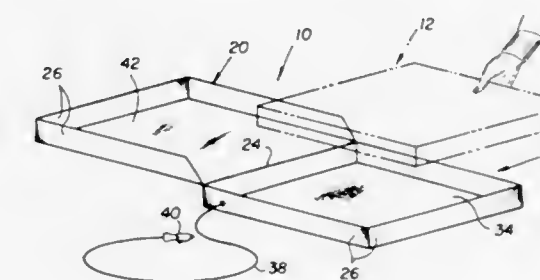
A portable, freestanding, fully automatic ancillary steam generator unit for use with sauna baths, steam rooms, or the like. The steam generator is disposed exteriorly of the sauna bath or steam room and comprises a housing, a body having an electrically heated, thermostatically controlled internal steam chamber disposed within and insulated from the housing, a water reservoir and a connector element for interconnecting the steam chamber and the water reservoir and for metering the flow of water to the steam chamber. The upper and lower walls of the steam chamber are provided with a plurality of uniformly spaced, generally V-shaped grooves for efficiently dispersing and vaporizing the water entering the steam chamber.

### 3,721,803 PIZZA PIE WARMING CARRIER

Alfred DiStefano, 606 Plainview Road, Plainview, N.Y.  
Filed March 16, 1971, Ser. No. 124,772  
Int. Cl. A21b 1/52; F27d 11/02

U.S. Cl. 219—387

4 Claims



A warming carrier for a cardboard boxed pizza pie including an electric heating source to maintain the elevated temperature of the pizza pie and also the vapor state of moisture within the box and formerly on the pizza pie, and a silver foil condensing surface adjacent the upper cardboard box wall to condense said vapor and contribute to causing absorbing contact of the same with said upper cardboard wall. As a consequence, the pie crust is prevented from becoming undesirably soggy and moisture laden.



### 3,721,804 APPARATUS FOR SEALING AND SHRINKING PLASTIC FILM

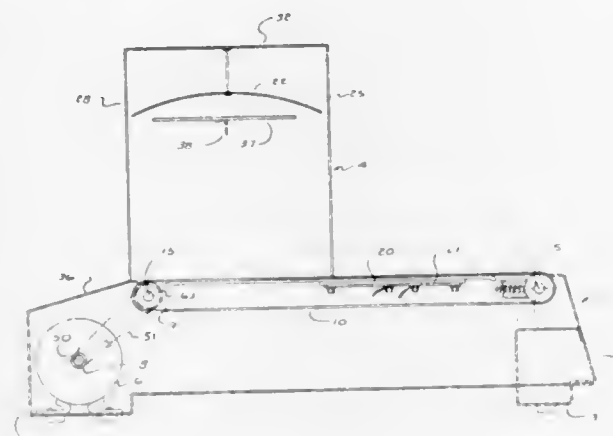
Rubin Feldman, Creve Coeur, Mo., assignor to Tsi, Inc., St. Louis, Mo.

Filed Dec. 16, 1970, Ser. No. 98,740

Int. Cl. B65b 53/02; F27b 9/10

U.S. Cl. 219—388

13 Claims



An apparatus for heating packages has two heating elements arranged to provide a high temperature environment for packages wrapped in heat shrinkable film. A first heating element seals the package. A second heating element is enclosed in a heat tunnel and positioned above and laterally displaced from the first element. Heat is directed downwardly by a reflector or by a reflector-fan combination. A belt conveyor carries packages over the first heating element and through the heat tunnel. The conveyor has a lengthwise protrusion along its interior surface, through the full length of the closed belt. Spring loaded rollers at each end of the conveyor have annular notches or channels the sides of which engage the protrusion and prevent belt slippage.

### 3,721,805 OVEN CONTROL

John Barratt, Newton-le-Willows, England, assignor to Simon-Vicars Limited, Earlestown, Newton-Le-Willows, England

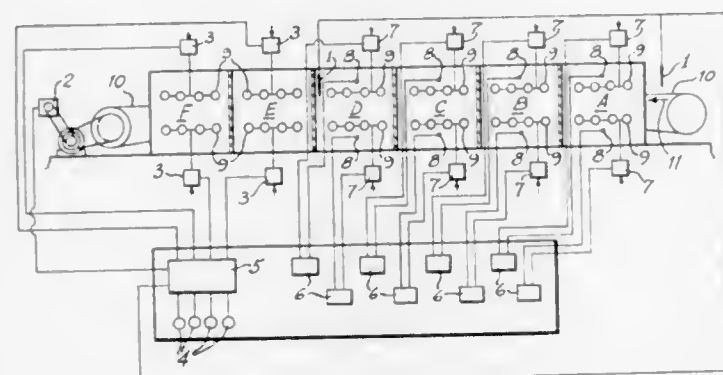
Filed Jan. 20, 1972, Ser. No. 219,453

Claims priority, application Great Britain, Feb. 11, 1971, 4494/71

Int. Cl. H05b 1/02

U.S. Cl. 219—492

12 Claims



A heat supply control means for a baker's oven through which products to be baked are carried from one end to the other on a travelling conveyor and which is divided into a plurality of zones, said heat supply control means comprising adjustable heat supply means in each zone, thermostatic temperature control means for controlling the heat input to all of said zones except one or more final zones at the downstream end of the oven, and means associated with said final zone or zones for controlling automatically the heat supply means

thereto such that the radiation produced therein is sufficient when products to be baked are passing therethrough to ensure required texture and color.

### 3,721,806 DIGITAL ENCODER FOR MECHANICAL COUNTERS

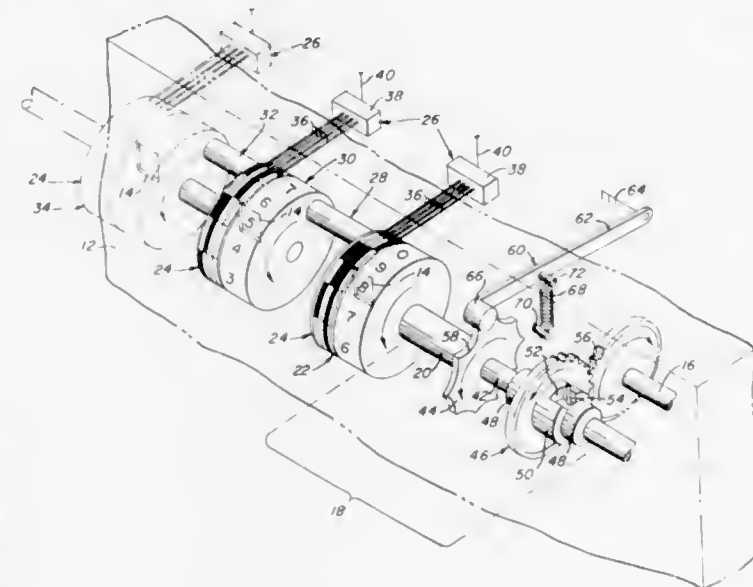
David C. Stothart, Cheswick, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Nov. 26, 1971, Ser. No. 202,446

Int. Cl. G06m 1/00; G06c 27/00; G06f 7/38

U.S. Cl. 235—61 PD

9 Claims



A supplemental read-out for a mechanical counter comprising fingers for sensing coded patterns on the numeral wheels and for transmitting electrical signals corresponding to the sensed coded pattern to remote electronic equipment. An incremental drive is also provided at the input end of the first counter wheel to eliminate errors which might arise from the wheel stopping between two numbers.

### 3,721,807

#### CARD GRADING MACHINE

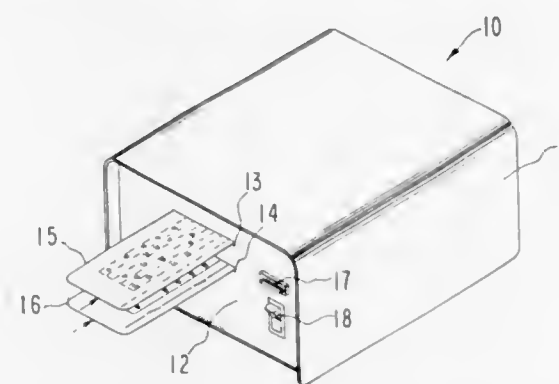
Daniel D. Miller, Sunnyvale, and Donald D. Miller, Saratoga, both of Calif., assignors to Miller Scientific Corporation, Los Gatos, Calif.

Filed Oct. 20, 1971, Ser. No. 190,732

Int. Cl. G06k 5/00; G09b 7/06

U.S. Cl. 235—61.6 E

10 Claims



Apparatus for grading optically readable answer cards wherein each card to be read is marked with optically readable marks in selected predetermined locations, the apparatus comparing a marked answer card with a correctly marked master card also having optically readable marks in the locations corresponding to the correct selection of predetermined locations on the answer card. A transport carries two arrays of photosensors for simultaneously optically reading both the master card and the answer card, and comparing the readings obtained thereby.

### 3,721,808 PNEUMATIC DOCUMENT CARD READER

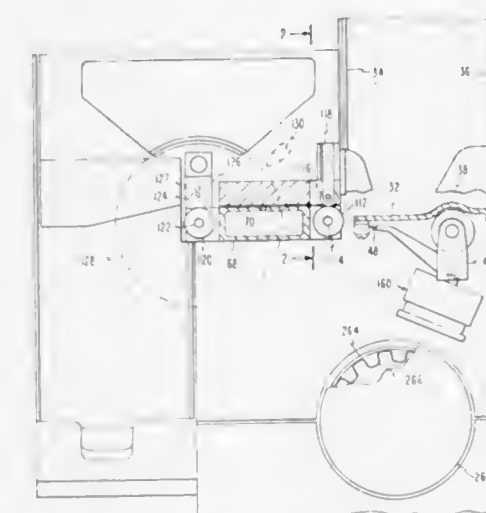
Roger F. Dimmick; Richard E. Lagergren; Robert F. Markley; Merlin J. Ricklets, and Walter S. Schaffer, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1971, Ser. No. 211,018

Int. Cl. G06k 7/02; B65h 1/06, 31/00

U.S. Cl. 235—61.11 J

13 Claims



A reader for document cards having a read station with a pneumatically actuated electric switch assembly which is easily removable from the reader by swinging the assembly upwardly out of detent position and then detaching the assembly from a multiple contact socket. The cards are fed to the read station from a hopper having document card pick rolls on its bottom which are moved into card picking position by a pneumatic actuator releasably held in a carrier from which the actuator may be easily removed for replacement. The pick rolls are carried by a swinging carrier in which the rolls are releasably held under spring pressure for easy replacement. The reader includes a stacker with a stacker full switch held by a pair of pins from which the switch may be detached for easy replacement.

### 3,721,809

#### AUTOMATIC THREAD COUNTER AND CONTROLLER FOR FABRIC PROCESSING APPARATUS

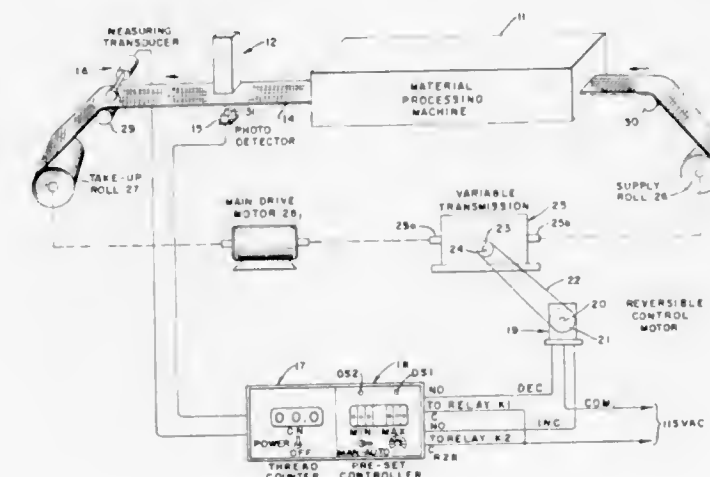
Charles F. Strandberg, Jr.; Robert C. Strandberg, both of Greensboro, and James M. Gee, Silver City, all of N.C., assignors to Strandberg Engineering Laboratories, Inc., Greensboro, N.C.

Filed April 5, 1971, Ser. No. 131,040

Int. Cl. G07c 3/10

U.S. Cl. 235—92 PD

7 Claims



Apparatus for counting threads in a moving fabric comprising a laser source of light radiations for direct penetration of

the fabric, a photo detector activated by the light radiations passing through the fabric for producing electrical signal variations caused by successive threads passing through the light radiations and a thread counter actuated by the electrical signal variations. A fabric length measuring transducer is provided to measure the fabric while the threads are being counted and to produce length related pulses which are used to control the thread counter so that the thread counter will indicate threads per unit length of fabric. Automatic control means is provided which will adjust the speed of a fabric supply roll relative to a fabric delivery roll in accordance with the thread count per unit length indicated by the thread counter in order to stretch or shrink the fabric and thereby adjust the threads per unit length of the fabric to be within a preselected minimum and maximum.

### 3,721,810

#### DISPLAY SYSTEM UTILIZING ONE OR MORE CONIC SECTIONS

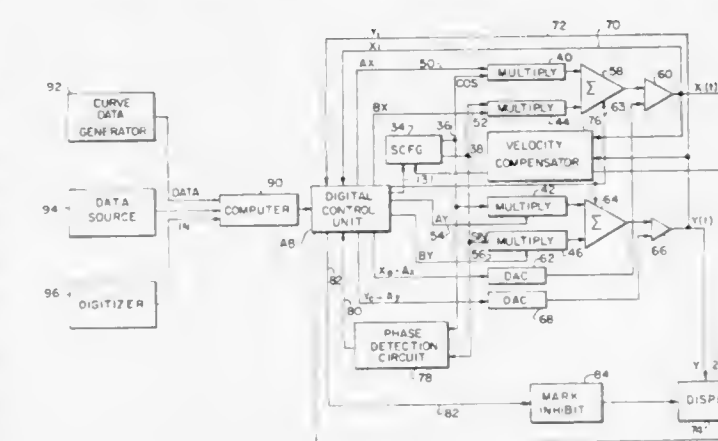
Luis F. Villalobos, Brookline; Allen A. Harano, Watertown, and Richard H. Breinlinger, Concord, all of Mass., assignors to Conographic Corporation, Cambridge, Mass.

Filed Jan. 13, 1971, Ser. No. 106,108

Int. Cl. G06g 7/48; H01j 29/52

U.S. Cl. 235—151

24 Claims



An electronic display system for producing a visual line image as a sequence of elliptical curve sections displayed under the control of efficiently generated orthogonal time varying signals. The orthogonal signals are generated as combinations of preferably quarter cycle sine and cosine function electrical signals specified by a minimum of easily calculated parameters which become control inputs to a signal generator. Digital control circuitry governs overall display operation. Means are provided to compensate for variations in the display intensity produced by variations in cathode-ray-tube writing speed.

### 3,721,811

#### APPARATUS FOR COMMANDING A DECELERATION IN NUMERICAL CONTROL SYSTEMS

Ian K. Taylor, and Maurice R. Jones, both of Biggleswade, England, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed April 29, 1971, Ser. No. 138,597

Int. Cl. G06f 15/46

U.S. Cl. 235—151.11

4 Claims

An apparatus for commanding deceleration of a driving mechanism at a point along a path permitting the driving mechanism to position a load at a predetermined end point in the minimum time. The driving mechanism is responsive to a plurality of pulses having a frequency defining velocity along the path. A circuit is provided having an input responsive to the plurality of pulses and producing an output signal as a function of the square of the input, i.e., path velocity. This signal is compared with a position signal representing the untraversed distance along the path. When the difference







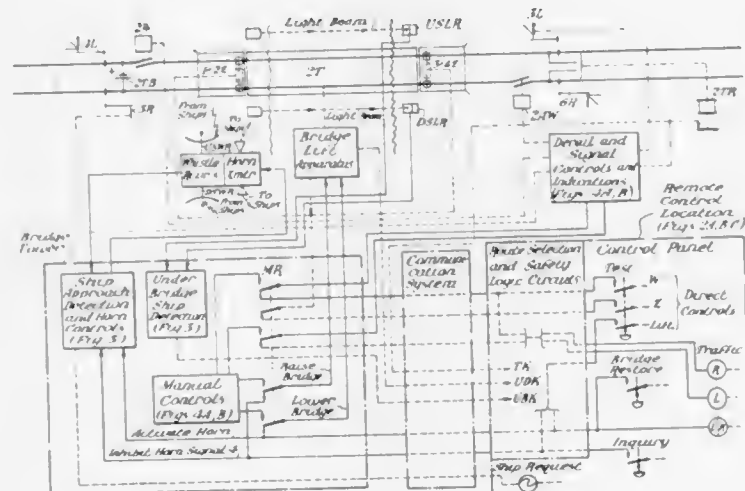
wardly convergent protrusions having light reducing upper surfaces which form a light reducing pattern on the upper surface of the reach directly above the lenticles, to reduce luminance at viewing angles near the nadir; the lenticular pattern also cuts off high angle luminance to complete the batwing pattern. In other embodiments the light reducing pattern is provided directly on a flat upper face of the reach. In other embodiments the pattern is positioned relative to the lenticles to provide different lighting patterns. In still other embodiments the upwardly convergent protrusions provide the principal or sole means for reducing luminance at low viewing angles.

3,721,819

**RAILROAD LIFT BRIDGE REMOTE CONTROL SYSTEM**  
Fred E. Samrok, Crafton, and William E. Higgins, Penn Hills Township, Allegheny County, both of Pa., assignors to Westinghouse Air Brake Company, Swissvale, Pa.  
Filed Aug. 4, 1971, Ser. No. 168,921  
Int. Cl. B611 23/04

U.S. Cl. 246—118

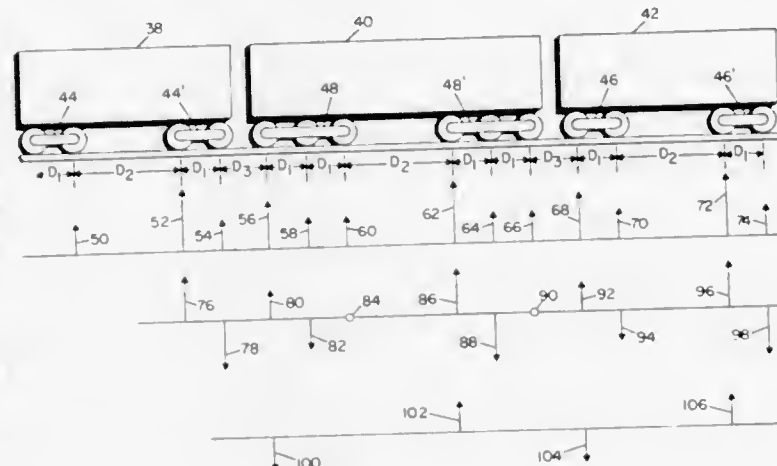
8 Claims



Apparatus at the lift bridge receives whistle signals from approaching ships and records requests for raising the bridge span to allow ship passage. A horn transmitter on the bridge automatically responds to ship requests to indicate whether or not span will raise, as determined by the response of the control system operator. In response to a received ship request indication, the remote control operator, if conditions allow, initiates a command function to raise the bridge span. Safety logic sequencing circuitry checks the condition of the railroad traffic control system and transmits the bridge raise command only if no rail traffic route across the bridge is established or occupied by a train and if safety devices, e.g., derails, are in their blocking positions. The bridge lift apparatus properly sequences the actions necessary to raise and lower the bridge, including rail unlock and locking and starting and stopping the span, when the corresponding command function is received. Remote operator selection of a rail traffic route across the bridge initiates the safety logic circuitry sequence to lower the bridge, if up, and to then establish derail and signal conditions for train movement. Under-bridge ship detectors prevent lowering the span upon a ship occupying that space. When span-seated and rails-locked indications are received and checked, the safety logic circuitry closes the derails and subsequently clears the proper signal for the desired train movement.

3,721,820  
**COMPUTING CAR LOCATIONS IN A TRAIN**  
Paul W. Caulier, Greenwood, and Donald W. Greene, Fishersville, both of Va., assignors to General Electric Co., Salem, Va.  
Continuation-in-part of Ser. No. 14,574, Feb. 26, 1970, Pat. No. 3,646,343. This application Nov. 17, 1971, Ser. No. 199,687  
Int. Cl. B611 1/16; G061 7/02  
U.S. Cl. 246—247

8 Claims

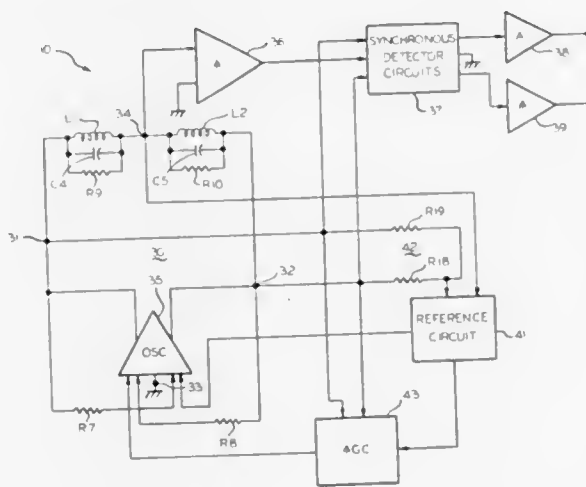


A novel method and apparatus is disclosed for measuring the successive distances between the wheels of cars in a train and processing said measurements to locate a given axle of a car, such as the first axle of a truck of a car or the first axle of the car.

3,721,821

**RAILWAY WHEEL SENSOR**  
Carl G. Blanyer, West Covina, Calif., assignor to Abex Corporation, New York, N.Y.  
Filed Dec. 14, 1970, Ser. No. 97,602  
Int. Cl. B611 13/04  
U.S. Cl. 246—249

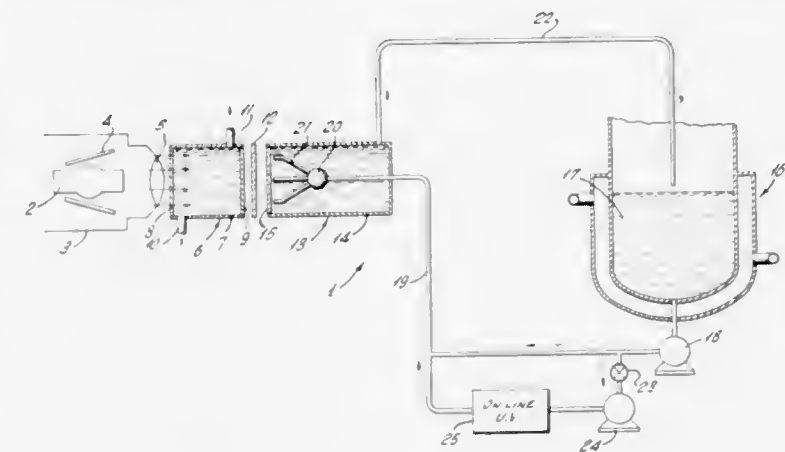
12 Claims



A railway wheel sensor, for detecting passage of a railway wheel, comprising two tuned pickup coils of large surface area having vertically oriented axes, spaced longitudinally of a railway rail with magnetic fields through which the wheel flange passes successively, the coils being connected in a bridge circuit excited by a high frequency signal, and a synchronous detector coupled to the bridge and to the excitation source, all mounted in a small, compact non-magnetic housing.

3,721,822  
**PHOTOCHEMICAL REACTOR**  
Arthur E. Klink, Lebanon, and Edward L. Paul, Fanwood, N.J., assignors to Merck & Co., Inc., Rahway, N.J.  
Filed Jan. 17, 1972, Ser. No. 218,401  
Int. Cl. G01n 21/26  
U.S. Cl. 250—43.5

7 Claims



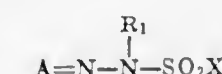
Impinging jet tubular photochemical reactor system.

3,721,823  
**COLOR RADIOGRAPHY**  
Jan August Van Lishout, Kontich, and Jan Jaeken, Hove, both of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium  
Filed Aug. 22, 1969, Ser. No. 852,236  
Claims priority, application Great Britain, Aug. 22, 1968, 40,246/68

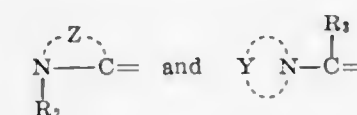
Int. Cl. G03c 7/00, 1/76  
U.S. Cl. 250—65 F

4 Claims

1. A method of producing a colored radiograph which comprises the steps of:  
1. image-wise exposing to directly or indirectly recordable penetrating radiation a photographic material comprising at least one silver halide emulsion layer containing silver chloride in an amount corresponding with 5 to 16 g of silver nitrate per sq. m and a colorless color coupler which forms an azomethine- or quinonimine dyestuff by coupling with an oxidized p-phenylene diamine type developing agent and a colorless hydrazone compound having the formula



wherein A has one of the structural formulas



R<sub>1</sub> is a hydrogen atom or an acyl radical,  
R<sub>2</sub> is an alkyl radical or an aryl radical,  
R<sub>3</sub> is a hydrogen atom, an amino radical, an alkyl radical, an alkylene radical, an aryl radical or a heterocyclic radical,  
X is a hydroxyl radical, an amino radical, an alkyl radical, an aryl radical, and a heterocyclic radical,  
Y represents the non-metallic atoms necessary to complete a nitrogen-containing heterocyclic nucleus, and  
Z represents the non-metallic atoms necessary to complete a heterocyclic nucleus containing five to six members, at least one of which is a nitrogen atom,  
2. color developing the exposed silver halide with a p-phenylene diamine type developing agent to produce in the exposed areas of said emulsion layer an image of said azomethine or quinonimine dyestuff, and

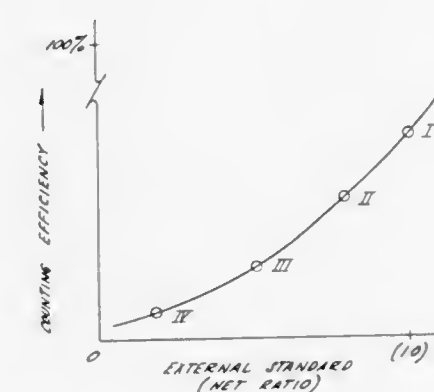
3. removing the silver metal produced during said development with an alkaline oxidizing bleaching solution effecting the oxidative coupling of said hydrazone compound with said colorless color coupler left in the unexposed areas, said color coupler and hydrazone compound being adapted upon such coupling to form a dye image of substantially contrasting color and opposite gradation to the first developed dye image.

3,721,824  
**APPARATUS AND METHOD FOR ADJUSTING GAIN OF PHOTOMULTIPLIER TYPE SCINTILLATION DETECTORS**

Stanley M. Bristol, Glen Ellyn, Ill., assignor to Packard Instrument Company, Inc., Downers Grove, Ill.  
Filed April 10, 1967, Ser. No. 629,462  
Int. Cl. G01t 1/20

U.S. Cl. 250—71.5 R

22 Claims



Photomultiplier type scintillation detectors are normalized, or adjusted to constant gain characteristics, independent of the high voltage applied to the photomultiplier. The normalized photomultiplier circuit is particularly useful in coincidence counting in liquid scintillation spectrometry, especially where the circuit is of the summation type. The inventive system has special application to apparatus for externally standardizing the spectrometer output to compensate for sample quench effects.

3,721,825  
**METHOD AND APPARATUS FOR ANALYSIS OF LIQUID RESIDUES USING NUCLEAR REACTIONS**

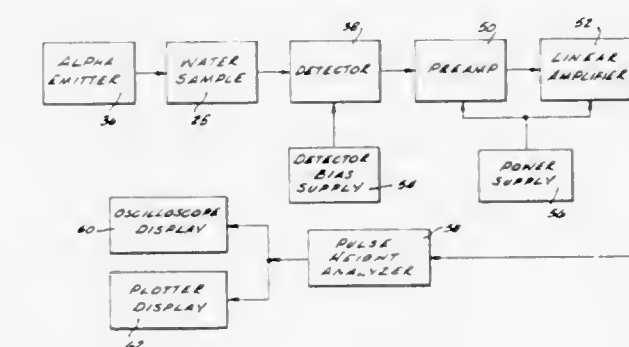
John Oscar Rasmussen, Jr., 207 Armory Street, Hamden, Conn.

Filed Dec. 3, 1970, Ser. No. 94,829

Int. Cl. G01t 1/16

U.S. Cl. 250—83.3 R

32 Claims



Herein described is the method and apparatus for irradiating a liquid residue sample with alpha particles and detecting the protons liberated from the nuclei of sample constituents. Pulse height energy analysis of detected protons provides characteristic signatures indicative of certain elements contained in the sample. The energy of the alpha particle source and the thickness of the sample are selected to reduce inter-

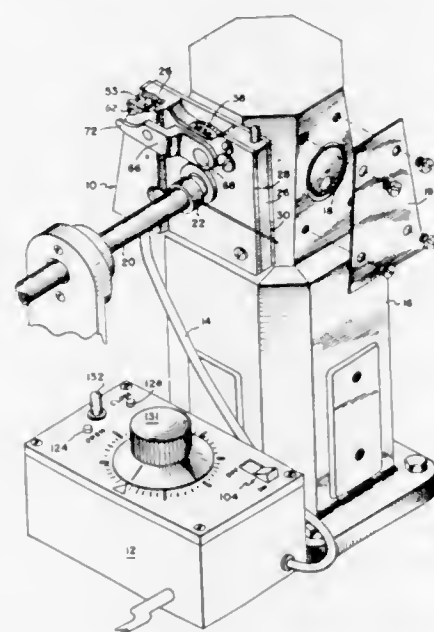


fering signatures. A tape transport mechanism incorporated into one preferred embodiment allows the retention of samples for subsequent additional testing and provides a permanent record. Means are provided for automatically performing the analysis, for controlling processing systems in response thereto and/or for telemetering the analysis data to a remotely located processing or record center.

### 3,721,826 FAIL-SAFE HIGH-ENERGY RADIATION SHUTTERING APPARATUS

Roy L. Thomas, Jr., Medway, Mass., assignor to Charles Supper Company, Incorporated, Natick, Mass.  
Filed Aug. 5, 1970, Ser. No. 61,292  
Int. Cl. G21f 5/04; H01j 35/16  
U.S. Cl. 250—105

16 Claims



Shuttering apparatus for controlling and signaling of the passage of high-energy radiation is disclosed as including a shutter containing a normally closed gate which is opened by energizing a solenoid actuator through a control circuit. The control circuit includes a novel interlock which prevents energization of the solenoid except when a beam-receiving means (a beam tunnel, for example) is properly interfaced with the shutter. An inerrant mechanical flag indicator is off-set from the gate and baffled in a novel manner to preclude escape of scattered radiation. The apparatus includes other safety features for maximizing user protection against accidental or inadvertent exposure to radiation.

### 3,721,827 ARRANGEMENT FOR AUTOMATICALLY FOCUSING AN OPTICAL INSTRUMENT

Gunter Reinheimer, Fellingshausen, Germany, assignor to Ernst Leitz, GmbH, Wetzlar, Germany  
Filed Jan. 17, 1972, Ser. No. 218,335  
Claims priority, application Germany, Jan. 22, 1971, P 21 02 922.1

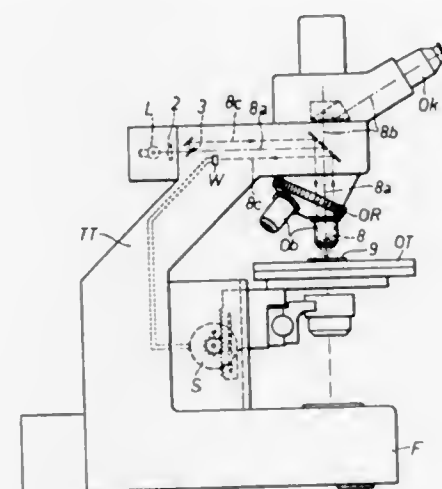
Int. Cl. G01j 1/20; G02b 7/04

U.S. Cl. 250—201

10 Claims

in an optical instrument for viewing an illuminated object by means of an objective lens first reflecting means are provided for so reflecting a bundle of invisible light rays out of the illuminating light that the invisible light again enters the illuminating light in only one half of its cross section. The invisible light is then reflected back from the object into the respective other half of the cross section of the illuminating light where second reflecting means are provided for reflecting the invisible light onto a differential photoelectric means. A

reference mark is arranged in the path of the invisible light before it is reflected from the object and an image of the reference mark is produced on the differential photoelectric means. A voltage is generated by the latter when the reference mark appears on one of the photoelectric elements constituting the differential photoelectric means, this being the case



whenever the object is not in focus. A setting mechanism is provided which is actuated by the generated voltage for varying the distance between the object and the objective lens sufficiently for bringing the image of the reference mark into focus again.

### 3,721,828 OPTICAL IMAGE SCANNER UTILIZING VARIABLE INDEX OF REFRACTION FIBER OPTICS

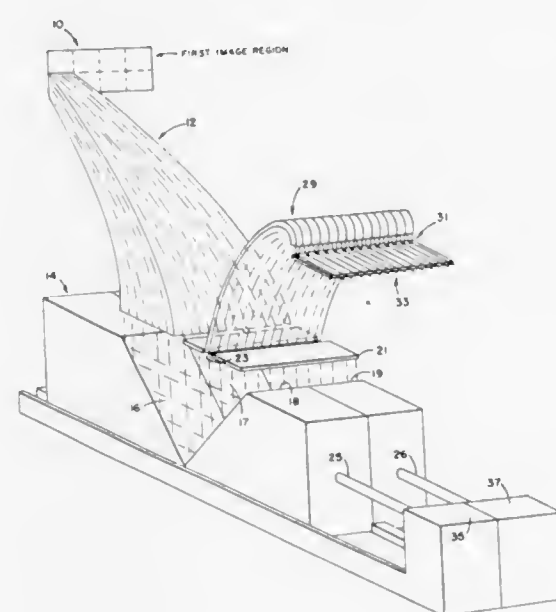
Jerry K. Parks, Los Altos Hills, Calif., assignor to The United States of America as represented by the Secretary of the Army

Filed Oct. 29, 1971, Ser. No. 193,812

Int. Cl. G02b 5/14; H01j 39/12

U.S. Cl. 250—220 R

2 Claims



An array of the fiber optics are used to collimate divergent rays emanating from an image to be scanned. Scanning is then implemented by moveable mirrors located in the collimated beam region presented by the fiber optics. A linear array of detectors is arranged to sense the collimated rays as they pass by due to movement of the mirror.

### 3,721,829 AUTOBALANCED DIODE BRIDGE SAMPLING GATE

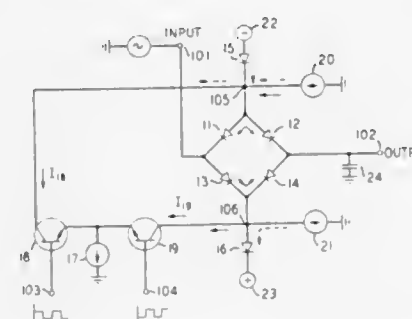
George Mead Benson, Matawan, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 23, 1971, Ser. No. 173,826

Int. Cl. H03k 17/00

U.S. Cl. 307—235

10 Claims



A diode bridge sampling gate includes a first feedback loop which automatically balances the gate drive current and thereby essentially eliminates any DC offset in the output. This first feedback loop comprises a dual output current source which supplies current to the control terminals and an operational amplifier which compares the gate bias voltages and uses the comparison to control the dual output current source in such a way as to balance these bias voltages. A second feedback loop may also be included, which maintains one of the gate bias currents at a constant value independent of nominal power supply variations. This reduces the sensitivity of the gate current balance to the tracking of the outputs of the dual current source.

### 3,721,830 PULSE DIP CARRIER SYSTEM USING AC DISTRIBUTION LINE

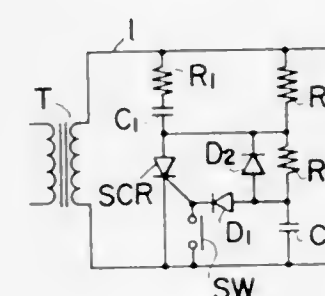
Hiroshi Otsu; Fumio Aoki; Shigeru Kawano, all of Chiyodaku, Tokyo; Setsuo Kikuta, and Masami Shikawa, both of Shinagawaku, Tokyo, all of Japan, assignors to The Tokyo Electric Power Co. Inc. and Osaki Electric Co. Ltd., Tokyo, Japan

Filed June 18, 1971, Ser. No. 154,435

Int. Cl. G08c 19/24

U.S. Cl. 307—3

5 Claims



A pulse dip carrier system comprises a series circuit having an electronic switch and a capacitor and being connected in parallel to an AC distribution line, and a phase shifter circuit for controlling the electronic switch by the phase shifter output. The electronic switch closes under the control of the phase shifter circuit when the phase of the line voltage of AC distribution line to a point of the zero instantaneous value thereof comes to a predetermined angle, a charging current flows in the capacitor when the electronic switch is closed whereby steep pulse dip is generated on the wave of the line voltage.

### 3,721,831 OPTICAL SECOND HARMONIC GENERATORS EMPLOYING THIOCYANATE CRYSTALS

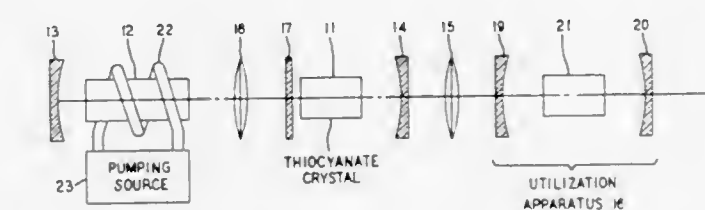
John George Bergman, Jr., Rumson; Glen Robert Crane, Scotch Plains, and James Hoffman McFee, Colts Neck, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 16, 1971, Ser. No. 163,321

Int. Cl. H02m 5/06

U.S. Cl. 307—88.3

2 Claims



The disclosed optical second harmonic generator uses a cadmium-mercury thiocyanate crystal or a zinc-mercury thiocyanate crystal. This device is advantageously pumped with a neodymium dielectric rod laser oscillating at 1.06 micrometers wavelength. The thiocyanate crystals possess about 30 percent larger nonlinear optical coefficient than the lithium iodate crystals employed in commercially available devices.

### 3,721,832 TIME DELAY AFTER DE-ENERGIZATION CIRCUIT

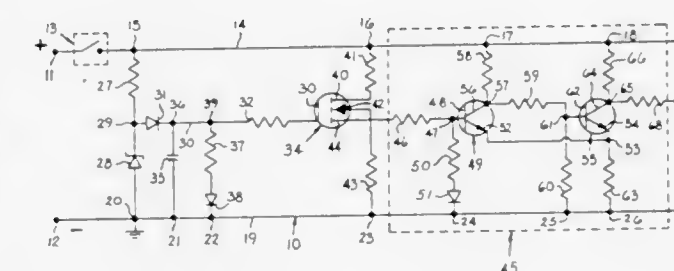
Art Lee, El Paso, Ill., assignor to General Electric Company, New York, N.Y.

Filed March 29, 1972, Ser. No. 239,282

Int. Cl. H03k 17/28

U.S. Cl. 307—141

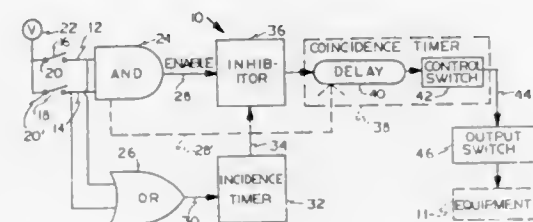
10 Claims



A timer circuit, adapted to provide a preselected time interval after loss of power to it to control reapplication of power to controlled means if the outage exceeds a predetermined interval, including a direct current power supply, resistor means connected across the power supply, a capacitor connected in circuit relationship with the power supply and resistor means whereby the rate of discharge of the capacitor is controlled by the resistor means, an enhancement mode field effect transistor connected in circuit relationship with the capacitor and a voltage level detector means such as to provide a linear output to the voltage level detector means corresponding to the charge existing on the capacitor, and wherein in accordance with one form of the invention the enhancement mode field effect transistor comprises a metal oxide semiconductor field effect transistor and the voltage level detector means comprises a Schmitt trigger circuit consisting of first and second transistors connected in circuit relationship with their associated resistors.

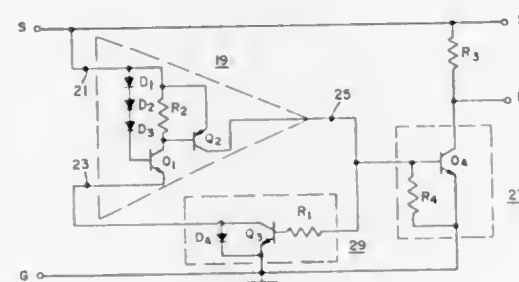


**3,721,833**  
**ELECTRONIC INCIDENT AND COINCIDENCE**  
**SAFETY CONTROL CIRCUIT**  
 George C. Kramer, Danbury, Conn., assignor to Branson Instruments, Incorporated, Stamford, Conn.  
 Filed Aug. 30, 1971, Ser. No. 175,927  
 Int. Cl. H01h 47/00; H03k 5/20  
 U.S. Cl. 307—232 7 Claims



An electronic safety control circuit is described wherein input signals for initiating the operation of equipment must occur within a predetermined time of one another. A pair of delay circuits are employed which are energized in response to switch closures. One of the delays is connected to delay equipment operation until the circuitry has decided whether the input signals occurred within the time period set by the other delay. A failure of the input signals to occur during the prescribed time prevents equipment operation.

**3,721,834**  
**STORED ENERGY REGULATING CIRCUIT**  
 Robert A. Hirschfeld, Cupertino, Calif., assignor to Lithic Systems, Inc., Cupertino, Calif.  
 Filed June 30, 1971, Ser. No. 158,378  
 Int. Cl. H03k 3/00  
 U.S. Cl. 307—235 R 3 Claims

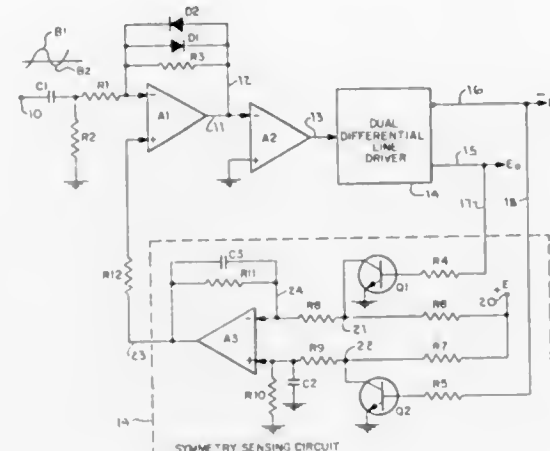


A three terminal electronic circuit having a negative resistance characteristic at its two input terminals that has application as an intermittently operated measuring circuit, an oscillator and other uses. A DC comparator circuit operates a power switch in series with a load in response to comparing the voltage at the input terminals with two distinct reference voltages, one reference voltage being utilized when the load power switch is off, and the other reference voltage being utilized when the load power switch is on. A load external of the circuit is connected between one of the input terminals and the circuit's third terminal. The load is operated from the input voltage to the circuit, thus requiring no separate power source for the load.

**3,721,835**  
**HARDLIMITER, AUTOMATIC SYMMETRY CIRCUIT**  
 William J. Hess, Owego, N.Y., assignor to The United States of America as represented by the Secretary of the Navy  
 Filed Jan. 5, 1972, Ser. No. 215,503  
 Int. Cl. H03k 5/08 4 Claims

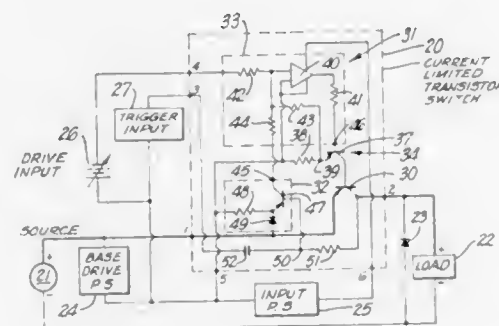
A hardlimiter having an automatic symmetry control circuit having an amplified input and a dual differential line driver producing

logic output with a symmetry sensing circuit in a negative feedback from the dual driven logic output to the amplifier input to convert output logic signals to a direct current (D.C.)



voltage of a polarity that is solely a function of the output symmetry to control the amplifier to maintain symmetry to logic signals in the output.

**3,721,836**  
**CURRENT LIMITED TRANSISTOR SWITCH**  
 Wally E. Rippel, 5781 Valley Oak Drive, Hollywood, Calif. 90068  
 Filed Nov. 24, 1971, Ser. No. 201,671  
 Int. Cl. H03k 17/00 22 Claims



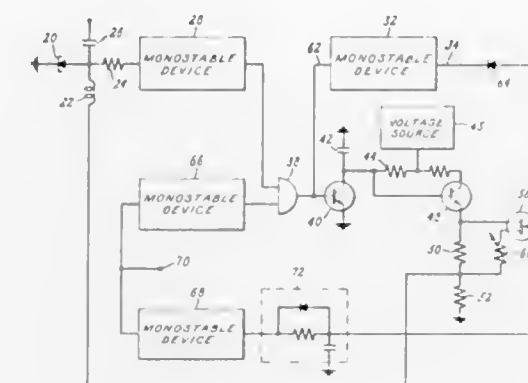
A current limited transistor switch providing switching action between a source and a load in response to turn-on and turn-off signals, and providing current threshold sensing for automatic switching to the off condition when desaturation occurs. Choppers, inverters and circuit breakers incorporating a current limited transistor switch.

**3,721,837**  
**TUNNEL DIODE SUPPLY VOLTAGE CONTROL**  
 Richard G. Trapani, Berwyn, and Benjamin Rolnick, Philadelphia, both of Pa., assignors to General Electric Company, New York, N.Y.  
 Filed July 6, 1971, Ser. No. 159,662  
 Int. Cl. H03k 17/00 1 Claim

Supply or biasing voltage is applied to tunnel diode through long-time-constant supply circuit from source voltage higher than turn-on value at which diode displays negative resistance. Output pulse which results when bias approaches turn-on voltage, at which diode shows negative resistance, triggers monostable circuit which loads supply circuit (e.g., by discharging capacitor of RC circuit) for predetermined period, reducing bias on diode by finite amount. Second

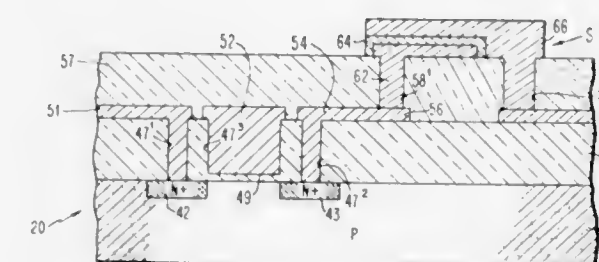
monostable circuit, of longer output duration, temporarily reduces bias on diode below turn-off potential at which diode

Each imaging FET element is sensed by pulsing its source or drain, following which its gate is pulsed to reblock the channel. Also, an integrated circuit version of the device, the



resumes positive resistance in order that diode may operate just below turn-on voltage, well above turn-off voltage.

**3,721,838**  
**REPAIRABLE SEMICONDUCTOR CIRCUIT ELEMENT**  
**AND METHOD OF MANUFACTURE**  
 Norman F. Brickman, and Leo B. Freeman, Jr., both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.  
 Filed Dec. 21, 1970, Ser. No. 100,077  
 Int. Cl. H01l 19/00 11 Claims



A monolithic device is fabricated to permit electrical alteration thereof, whereby a circuit element or group of circuit elements therein may be substituted for other elements. An electrically alterable bistable element, typically an amorphous chalcogenide or amorphous metal-oxide, is suitably installed in the monolithic device by processes compatible with conventional semiconductor processes. The bistable element is connected in the circuit of the device and adapted to be electrically programmed for substitution of a circuit element or groups of circuit elements for other elements. The ability of a monolithic device to be repaired increases yields in manufacturing, lowers cost and extends the lifetime of such devices.

**3,721,839**  
**SOLID STATE IMAGING DEVICE WITH FET SENSOR**  
 John Martin Shannon, Bosham, Chichester, Sussex, England, assignor to U.S. Philips Corporation, New York, N.Y.  
 Filed March 24, 1971, Ser. No. 127,596  
 Int. Cl. H01l 15/00, 11/14 18 Claims

A solid state imaging device is described. Junction FETs are employed as the sensors in a charge storage mode. In the non-illuminated condition, each FET has its channel blocked by a depletion region formed by pulsing the gate. Under illumination, the depletion region withdraws, opening up the channel.

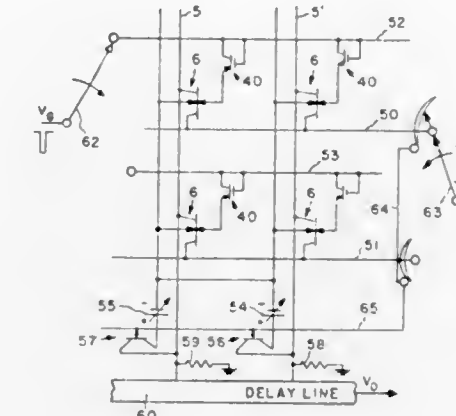
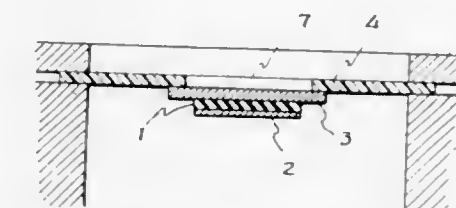


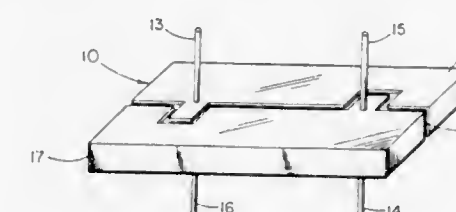
photo-JFETs having annular photo-gate regions and having a common substrate gate, the color response of the device being controlled by bias on the substrate gate.

**3,721,840**  
**SOUND GENERATOR**  
 Hayao Yamada, Kita-ku, Tokyo, Japan, assignor to Nittan Company, Limited, Tokyo, Japan  
 Filed Sept. 14, 1971, Ser. No. 180,397  
 Int. Cl. H04r 17/00 1 Claim



A sound generator having a relatively thin diaphragm and a piezoelectric disc element with electrodes bonded to opposing sides thereof adhered to one side of said diaphragm and means supporting the edge of said diaphragm.

**3,721,841**  
**CONTACT FOR PIEZOELECTRIC CRYSTALS**  
 Richard W. Wilson, Phoenix, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.  
 Filed June 16, 1971, Ser. No. 153,678  
 Int. Cl. H01v 7/00 7 Claims



There is disclosed a specialized composite contact for use with piezoelectric crystal frequency standards in which the contact area is minimized at the nodal points of the crystal so as to decrease damping of the crystal by the contacts and therefore increase its Q. The contacts are compatible with reflow soldering techniques thereby eliminating the compressive stress placed upon crystals by thermal compression bonding. Reflow solder is confined to the area of the contact by use of a patterned aluminum electrodes contacting the crystal. On the top of the aluminum electrodes are the composite contacts which are layered, with chromium being the layer next ad-



jacent the aluminum electrode followed by copper and then gold. These contact layers are deposited through a mask whose openings are positioned over the nodal points of the crystal and whose aperture sizes are limited such that contacts formed through this mask approach "point contact" characteristics. The reflow solder adheres only to the gold-copper outer portion of the contact and not to the aluminum metalization.

3,721,842

## MOVING COIL LINEAR MOTORS

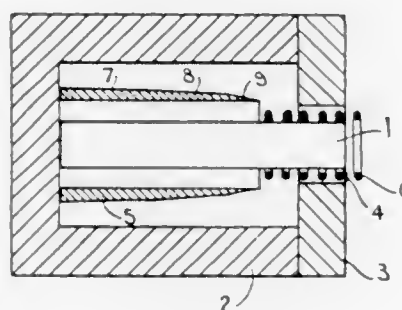
Timothy John Stevenson, Windsor, and Raymond Yardy, Yateley, near Camberley, both of England, assignors to International Computers Limited, London, England  
Filed March 9, 1972, Ser. No. 233,049

Claims priority, application Great Britain, March 18, 1971, 07,157/71

Int. Cl. H02k 41/02

U.S. Cl. 310-13

6 Claims



A linear motor is described consisting of a central pole piece disposed within a cylindrical pot magnet, the pot magnet having an end plate containing a central aperture into which the central pole piece projects to form an air gap. A magnet shield in the form of a tube is positioned coaxially with and spaced from the central pole piece and a coil is mounted for linear movement in a direction parallel to the axis of the pole piece in the air gap and in the space between the pole piece and the surrounding shield.

3,721,843

## RECTIFIER ASSEMBLY FOR BRUSHLESS EXCITATION SYSTEMS

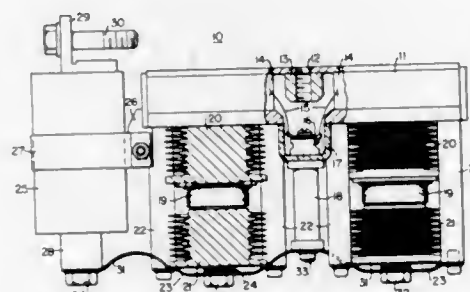
Andrew J. Spisak, Bethel Park, and Thayer L. Dillman, North Versailles, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 6, 1972, Ser. No. 232,085

Int. Cl. H02k 11/00

U.S. Cl. 310-68

12 Claims



In a brushless excitation system rectifier diodes, heat sinks, capacitors, fuses and other circuit components are assembled in a modular assembly and a plurality of modules are mounted on support wheels and connected in a rectifier circuit to form a rotating rectifier assembly.

3,721,844

## RELUCTANCE MOTORS

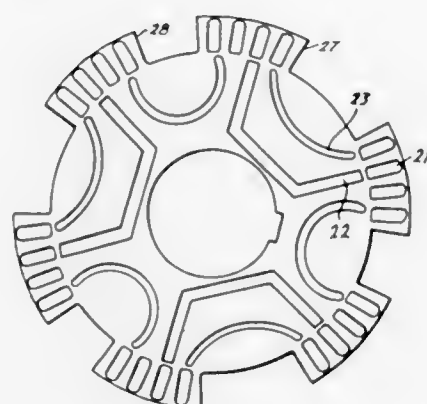
William Fong, Westbury-on-Trym, Bristol, England, assignor to National Research Development Corporation, London, England

Continuation of Ser. No. 832,663, June 12, 1969, abandoned. This application May 27, 1971, Ser. No. 147,604

Int. Cl. H02k 17/00

U.S. Cl. 310-166

7 Claims



The rotor of a reluctance motor has a squirrel cage winding and flux barriers which follow the paths of direct axis flux between alternate pairs of poles but lie athwart the paths of quadrature axis flux. The number of flux barriers is equal to half the number of poles for which the stator is wound, but there are not less than three flux barriers. The angles subtended at the central axis of the rotor between the ends of each flux barrier and between the ends of adjacent flux barriers are all equal to each other. In addition auxiliary flux barriers may be provided which are embraced by the main flux barriers or extend between the ends of adjacent flux barriers, or both. Also circumferential grooves may be provided either in sectors defined by the end of the main flux barriers or in sectors defined by the ends of adjacent flux barriers, or both.

3,721,845

## SODIUM VAPOR LAMP HAVING IMPROVED STARTING MEANS

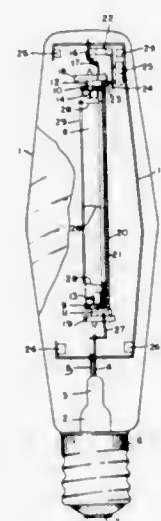
Sheppard Cohen, Danvers; John J. Gutta, Salem, and Donald A. Richardson, Beverly, all of Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed June 28, 1972, Ser. No. 267,097

Int. Cl. H01j 7/24

U.S. Cl. 313-15

5 Claims



The arc tube of a sodium vapor arc discharge lamp has an external electrical heater spaced from but in heat transfer relationship therewith. The heater is made of refractory metal wire and is coiled around an insulating supporting rod. One end of the heater is connected to a wire that is wrapped around the arc tube near the end thereof that is opposite said heater end.

3,721,846

## SODIUM VAPOR LAMP HAVING IMPROVED STARTING MEANS INCLUDING A HEATER

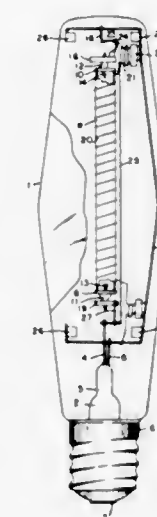
Sheppard Cohen, Danvers, Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed June 26, 1972, Ser. No. 266,294

Int. Cl. H01j 7/24

U.S. Cl. 313-15

2 Claims



The arc tube of a sodium vapor arc discharge lamp has an external heater in heat transfer relationship with the arc tube and extending about the length of the arc tube. The ends of the heater are electrically connected to electrodes at the respective opposite ends of the arc tube in order to reduce the starting voltage of the lamp.

3,721,848

## CAMERA TUBE HAVING PHOTOCONDUCTIVE LEAD MONOXIDE LAYER ON SILICON CARBIDE SIGNAL PLATE

Wilhelmus Franciscus Knippenberg, and Gerrit Verspul, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

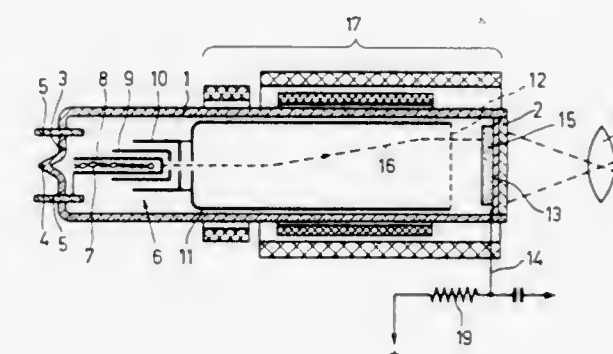
Filed Nov. 18, 1970, Ser. No. 90,493

Claims priority, application Netherlands, Dec. 19, 1969, 6919053

Int. Cl. H01j 29/45, 31/38

U.S. Cl. 313-65 A

2 Claims



In order to ensure satisfactory durability of signal windows for use in electron tubes comprising a transparent substrate covered by a radiation-sensitive layer, the contact surface of the substrate with said layer is rendered electrically conductive with the aid of conductive silicon carbide.

3,721,849

## DUAL PERSISTENCE SCREEN FOR A CATHODE RAY TUBE

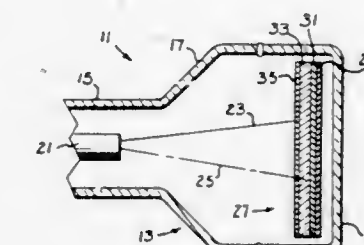
Anthony V. Gallaro, Auburn, N.Y., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed Jan. 7, 1971, Ser. No. 104,580

Int. Cl. H01j 29/18

U.S. Cl. 313-92

10 Claims



A plural-layer dual persistence screen is incorporated in a CRT having defined low and high velocity electron beams. A first layer of an optically excited long persistence phosphor is formed on a supporting surface. A second layer of electron responsive material is laid thereover to provide the aforementioned optical excitation. Each particle of the second layer is peripherally modified to effect a barrier therearound to limit excitation of the unmodified interior to energy of the high velocity beam. The second screen layer has a thickness to absorb the electron energy impinged thereon. A third layer of short persistence electron responsive phosphor is disposed over the second layer to be impinged and excited by the low velocity beam.

3,721,847

## APPARATUS FOR PRODUCING X-RAYS FROM AN ELECTRIC INSULATOR

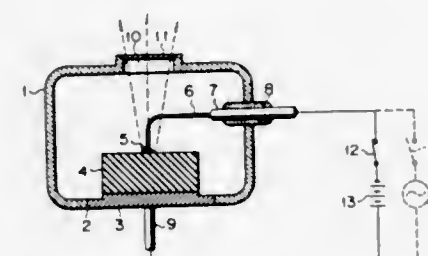
Michitaka Terasawa, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co. Ltd., Tokyo, Japan

Filed Nov. 1, 1971, Ser. No. 194,379

Int. Cl. H01j 35/08

U.S. Cl. 313-55

14 Claims



Apparatus for producing X-rays from an electric insulator. Two electrodes are disposed to contact the electric insulator. One electrode has a larger contact area with the insulator than that of the other. When a high D.C. or A.C. voltage is applied across the electrodes, the electric field becomes stronger in the portion of the insulator near the contact section with the small electrode, resulting in the production of X-rays from the vicinity of the contact section of the insulator with the small electrode.



### 3,721,850 ELECTRIC LAMPS

William Leslie Giller, The Spinning, Gravelly Hill, Caterham, England

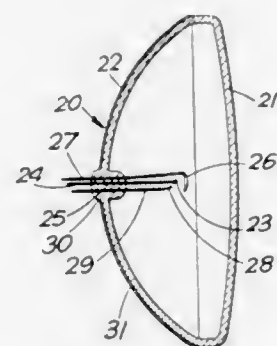
Filed Nov. 4, 1969, Ser. No. 873,982

Claims priority, application Great Britain, July 2, 1969, 33,378/69

Int. Cl. H01k 17/06, 17/10; F21v 11/16

U.S. Cl. 313-114

9 Claims



A lamp, particularly applicable as a vehicle headlamp, comprises a point source light at the focus of an ellipsoidal reflector. The beam is brought to a sharp focus outside the lamp at the second focus of the ellipsoid and a small screen, at or near this point will give a sharp cut-off to the beam or a sharply defined shadow. The ellipsoidal reflector is preferably formed by the envelope of a lamp having a tungsten ball as the light source.

### 3,721,851 COAXIAL FLASHLAMP

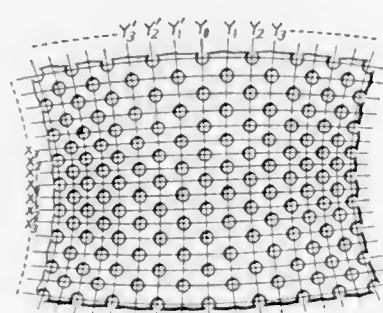
Harry L. Ceccon, 7 Bond Street, Boston, Mass., and Horace W. Furumoto, 14 Woodridge Road, Wellesley, Mass.

Filed Jan. 31, 1972, Ser. No. 222,241

Int. Cl. H01j 61/30

U.S. Cl. 313-201

7 Claims



A coaxial flashlamp having a radially outward optical output comprising outer and inner hollow, transparent casings sealed to define an enclosed volume therebetween with an ionizable medium contained in that volume, a first electrode communicating with the medium at a first axial location and a second electrode communicating with the medium at a spaced apart second axial location and connected to an electrically conductive terminal member disposed within the inner casing and extending the axial length of the flashlamp.

### 3,721,852 REFRACTORY METAL PHOSPHATE AND PHOSPHIDE COATINGS FOR REFRACTORY METAL LEADS

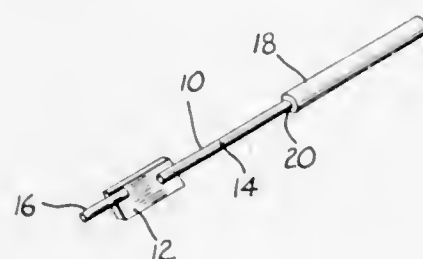
Vincent Chiola; James S. Smith, and Clarence D. Vanderpool, all of Towanda, Pa., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Division of Ser. No. 3,937, Jan. 19, 1970, Continuation-in-part of Ser. No. 647,106, June 19, 1967, abandoned. This application Jan. 12, 1972, Ser. No. 217,160

Int. Cl. H01j 5/46

U.S. Cl. 174-50.64

1 Claim



Lamps operating at high temperatures, and more particularly incandescent or arc lamps having sealed-in lead-in electrical conductors with improved service characteristics and longer service life are fabricated with a "coating" on the aforesaid leads comprising at least one of the following: a phosphate or phosphide of tungsten, or a phosphate or phosphide of molybdenum.

Illustrative of the results obtained upon service testing 400-W, 120-V quartz-iodine lamps, at operating temperatures of 500°-600°C, using

- A. untreated, uncoated, molybdenum electrode assemblies,
- B. platinum-clad, molybdenum electrode assemblies (exemplary of the prior-art techniques), and
- C. tungsten phosphate-coated molybdenum electrode assemblies,

are as follows:

- A. failed through oxidation and subsequent disintegration, with accompanying seal and lamp failure at 100 hours' operation,
- B. failed at approximately 150 hours of life testing,
- C. was still operating on a life test after 200 hours.

Processes for forming metal phosphides from metal phosphates and process for coating leads with refractory metal phosphates and phosphides are also disclosed.

### 3,721,853 SHADOW MASK HAVING APERTURES AT INTERSECTIONS OF BARREL-SHAPED AND PIN-CUSHION SHAPED LINES

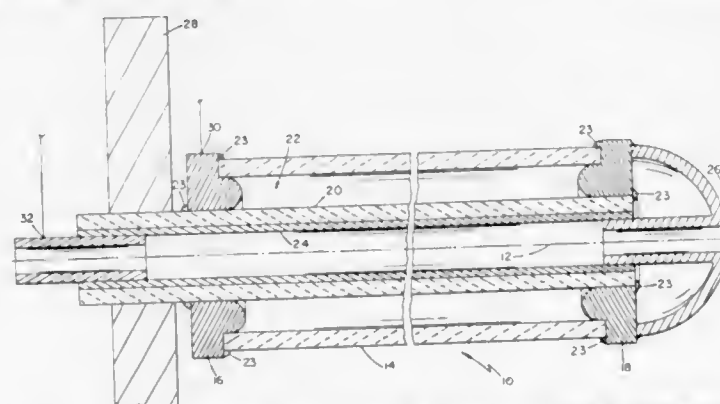
Yohsuke Naruse, Kimitake Utsunomiya, and Yuzo Fuse, Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of abandoned application Ser. No. 877,183, Nov. 17, 1969. This application Dec. 1, 1971, Ser. No. 203,600

Int. Cl. H01j 29/06, 31/20

U.S. Cl. 313-85 S

4 Claims



In a color cathode ray tube having a curved phosphor screen, an aperture shadow mask and electron beam gun

erating means for generating three in-line electron beams aligned in a horizontal direction, the apertures of the shadow mask are arranged in intersecting rows extending along barrel-shaped lines extending in the horizontal direction and along pin-cushion shaped lines extending in the vertical direction, an all of the rows are orthogonally related at each of the intersections thereof.

### 3,721,854

### CATHODE-RAY TUBE AND SYSTEM TO ELIMINATE ELECTRICAL DISCHARGES DURING INDEXING

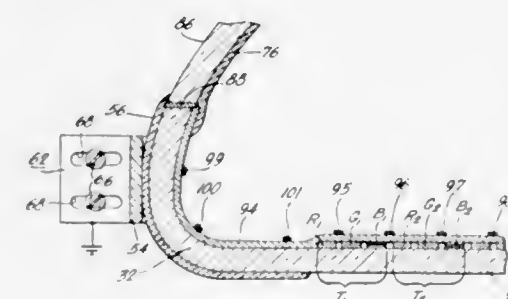
David E. Sunstein, 464 Conshohocken State Road, Bala-Cynwyd, Pa.

Filed Jan. 8, 1971, Ser. No. 105,047

Int. Cl. H01j 29/70

U.S. Cl. 315-21 C

14 Claims



In a beam-index type of cathode-ray tube for presenting a color image, in which a cathode-ray beam of high energy scans across a beam index structure located adjacent an insulating portion of the tube envelope, as for example in an odd half-harmonic color television index tube, it has been found that brief bursts of interference occur occasionally in the tube during use, which apparently are due to brief discharges in the tube near the front face, and which can upset the operation of the index control operation. The invention overcomes this difficulty by providing an electrically conductive coating in smooth intimate continuous contact with the exterior of the insulating portion of the tube adjacent at least one edge of the scanned area of the tube. When one or more starting index stripes are utilized along one edge of the scanned area, the coating is placed on the exterior of the tube close to this edge. The coating is maintained at a substantially fixed potential, usually ground potential.

### 3,721,855

### DISPLAY GENERATING MEANS CREATING ISOMETRIC PROJECTIONS OF A FAMILY OF CURVES

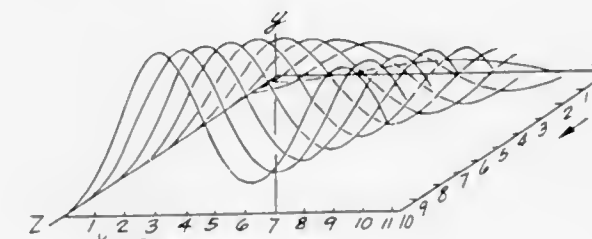
William Comley, Los Angeles, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Aug. 13, 1970, Ser. No. 63,361

Int. Cl. H01j 29/70

U.S. Cl. 315-22

13 Claims



Means for extending the ability of an analog or hybrid computer which allow solution of problems, and various predetermined displays of the solutions as functions of additional independent variables of the operator's choice. The means include a staircase generator for varying an independent variable for each computation of the problem and peak and level sensing

circuits so that a three-dimensional surface representing the solution to the problem may be displayed as a family of curves, as an isometric projection, as a cross-plot of a time history, as a cross-plot of positive or negative peaks, and as a conformal map.

### 3,721,856

### SWITCHING SYSTEM FOR PLURAL PROJECTION OF TRACES ON SCREEN OF SINGLE-BEAM CATHODE-RAY TUBE

Rudolf Dick, Eningen, Germany, assignor to Wandel u. Goltermann, Reutlingen, Germany

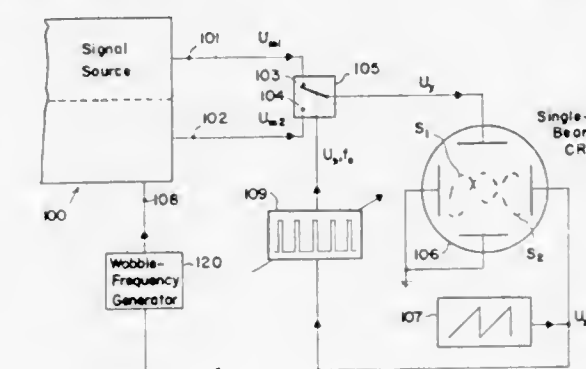
Filed Dec. 14, 1970, Ser. No. 97,751

Claims priority, application Germany, Dec. 15, 1969, P 19 62 773.7

Int. Cl. H01j 29/70

U.S. Cl. 315-25

10 Claims



Two or more signals to be visually displayed on the screen of a single-beam cathode-ray tube are alternately fed to the vertical deflection electrodes of that tube for periods of different duration to generate traces distinguishable from one another by their brightness and/or the length of their strokes. In the first instance, they are interrupted for different fractions of a sweep cycle. In the second case, each trace is triggered on for a whole number of such cycles.

### 3,721,857

### WAVEFORM GENERATING CIRCUIT

Peter Eduard Haefeli, Adliswil, Switzerland, assignor to RCA Corporation

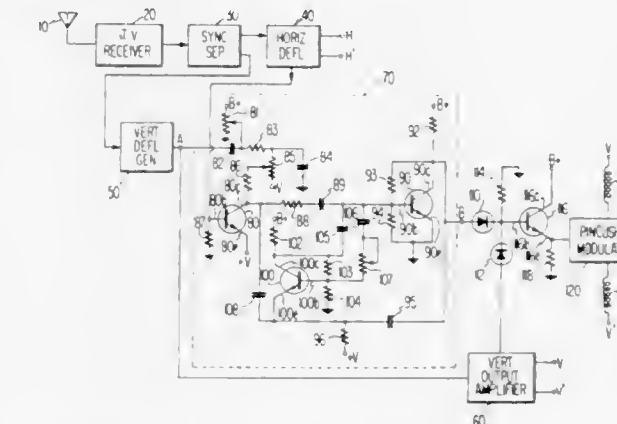
Filed Mar. 5, 1971, Ser. No. 121,401

Claims priority, application Great Britain, Mar. 11, 1970, 11,688/70

Int. Cl. H01j 29/70

U.S. Cl. 315-27 TD

14 Claims



Parabolic top and bottom pincushion correction signals are developed by applying a vertical sawtooth signal chopped at the horizontal deflection frequency to an amplifier. The resulting horizontal rate pulses are amplitude modulated by the vertical sawtooth signal and are converted into parabolic shaped signals in the amplifier by means of a feedback path from the output to the input of the amplifier which includes a double differentiat-



ing circuit. The output signals reverse polarity at the center of each vertical deflection interval as the polarity of the vertical deflection signal changes. These output signals can be applied to suitable pincushion modulation means for providing top and bottom pincushion correction for a wide angle television display.

3,721,858

**SIZE AND HIGH VOLTAGE STABILIZING CIRCUIT**  
Kunio Shimizu, Osaka, Japan, assignor to Sanyo Electric Co., Ltd., Tokyo, Japan

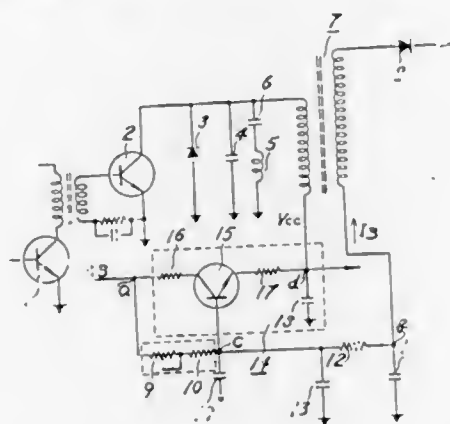
Filed Aug. 19, 1970, Ser. No. 64,987

Claims priority, application Japan, Aug. 19, 1969, 44/65519; April 20, 1970, 45/34003; April 20, 1970, 45/34004; April 20, 1970, 45/34005; April 20, 1970, 45/34006

Int. Cl. H01j 29/70

U.S. Cl. 315-29

22 Claims



A circuit for use in a color television receiver compensates for variations in the raster width resulting from the adjustment of the "Brightness" control and stabilizes the high voltage supply to reduce voltage variations. To this end, there is provided a control circuit for controlling the voltage to be applied to a horizontal output transistor and a detector means for detecting beam current. In alternative embodiments, there is also provided a shunt means for shunting a portion of the beam current.

3,721,859

**METAL OBJECT SENSOR, PARTICULARLY FOR RAILWAY WHEELS**

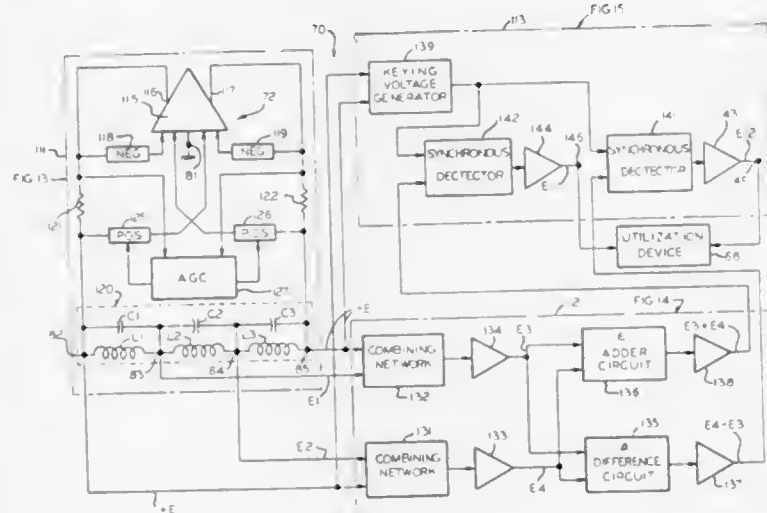
Carl G. Blanyer, Thousand Oaks, Calif., assignor to Abex Corporation, New York, N.Y.

Filed Nov. 29, 1971, Ser. No. 202,755

Int. Cl. B61 13/04, 11/08

U.S. Cl. 317-5

8 Claims



A sensor for sensing movement of a metal object, such as a railway wheel, along a given path, comprising three sensing

coils, all tuned to the same operating frequency, spaced along the path with their axes intersecting the path, and connected in series in three consecutive arms of a pentagon bridge. An oscillator, connected to the remaining two bridge arms, excites the coils at their operating frequency. A metal object moving along the path disturbs the fields of the coils in a sequence depending upon its direction of movement; the direction and velocity of the metal object are indicated in output signals derived by additively combining and synchronously detecting the signal voltages developed at the bridge terminals. In the preferred construction, the two end coils each include a few turns encompassing the central coil to reduce mutual coupling between adjacent coils.

3,721,860

**BLASTING MACHINE HAVING A MANUALLY OPERABLE PERMANENT MAGNET GENERATOR AND ANTI-DEMAGNETIZATION CIRCUIT**

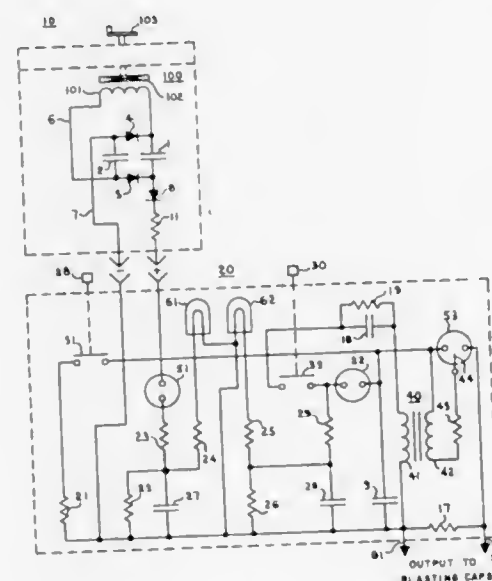
Earl M. Phinney, Oneonta, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed March 3, 1972, Ser. No. 231,699

Int. Cl. F23g 7/02

U.S. Cl. 317-80

21 Claims



A manually operable blasting machine for firing an explosive bridge wire device or the like. A hand-cranked permanent magnet alternator is manually operated to generate an alternating current which is first rectified and then stored in a capacitor to be discharged when sufficient energy is available to detonate an explosive bridge wire device or the like. The rectifying circuit is a unique voltage multiplier circuit that charges a plurality of capacitors in parallel on the positive half-cycle of the alternator and charges them in series on the negative half-cycle of the alternator. This novel arrangement of the capacitors in the rectifying circuit minimizes degmagnetization of the permanent magnet in the rotor of the alternator which is normally associated with hand-cranked blasting machines of this type.

3,721,861

**EQUALIZATION SYSTEM**

Sidney A. Corderman, Binghamton, N.Y., assignor to McIntosh Laboratory, Inc., Binghamton, N.Y.

Filed June 8, 1971, Ser. No. 151,123

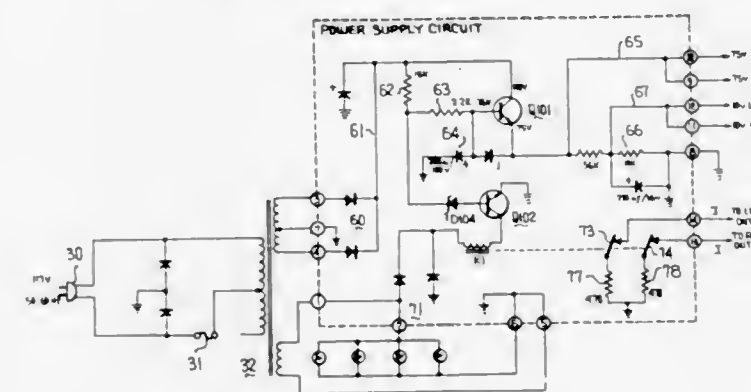
Int. Cl. H01h 47/18

U.S. Cl. 317-16

4 Claims

A loudspeaker system which includes a loudspeaker and a drive, the loudspeaker being in an enclosure having a Q of 0.5 or less at a frequency well within the audio band, resulting in rapid rolloff from a frequency well above resonance to about 20 Hz, where cut-off is provided for. The drive has voltage

compensation for the rolloff of the speaker, and the latter is directly driven by an amplifier which it sees as a voltage source. Cascaded environmental equalizing circuits are provided, which provide 0,  $\pm 2$  and  $\pm 4$  db of mid-frequency (4KC) and of high frequency (20KC) equalization, additional



to the low frequency voltage equalization, and the latter is adjustable. Provision is made for delayed application of audio signal to the loudspeakers in the system until voltages have stabilized, to avoid high level transient impulses to the speaker.

3,721,862

**ELECTRICAL APPARATUS INCLUDING A GROUND FAULT SENSOR**

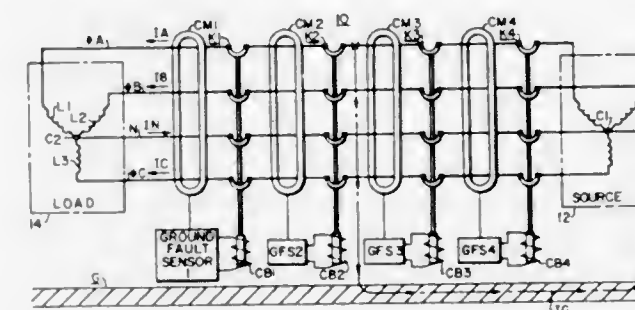
Michael B. Brennen, Pittsburgh, Pa., and Guido Watson, Marlowes, Hemel Hempstead, Herts, England, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 30, 1971, Ser. No. 175,880

Int. Cl. H01h 47/18

U.S. Cl. 317-18 D

5 Claims



A ground fault detecting system including a current monitor, a ground fault sensor and a circuit breaker. The ground fault sensor responds to the presence of ground fault current to actuate a circuit breaker to open the circuit in which the ground fault current is flowing. The ground fault sensor includes circuit elements which perform corresponding circuit functions such as time delay and reset. The ground fault sensor is adapted to provide an adjustable or variable time delay so that the circuit breaker to be tripped may be delayed in tripping through a wide range of time periods after the initial sensing of the ground fault current.

3,721,863

**SELECTIVE INTERCONNECTION MATRIX**

Pierre Hardouin, Asnières, and Michel Nicolas, Paris, both of France, assignors to La Telemecanique Electrique, Nanterre, Hauts de Seine, France

Filed June 22, 1971, Ser. No. 155,519

Claims priority, application France, June 22, 1970, 7022915

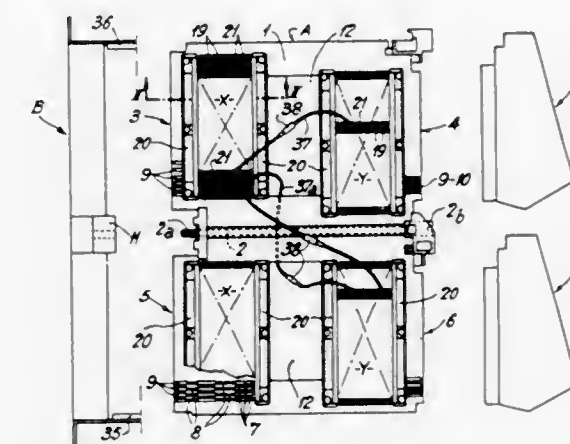
Int. Cl. H02b 1/02

U.S. Cl. 317-101 CE

12 Claims

A selective interconnections matrix is provided of reduced dimension compared with existing known arrangements, and

enabling sufficient interconnections to be made for practical application. It has been observed that a normal 100 matrix is usually employed for only 500 or so connections out of the



3,721,864

**ELECTRICAL PANELBOARD WITH STACKED BUS BARS AND MOUNTING PAN FORMED OF GROOVED BARS**

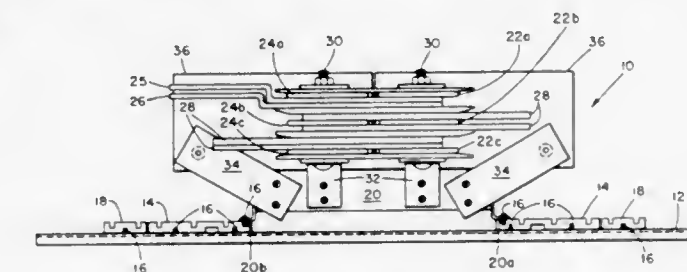
Gustave Rozenboom, Kokomo, Ind., assignor to Square D Company, Park Ridge, Ill.

Filed May 20, 1971, Ser. No. 145,269

Int. Cl. H02b 1/02

U.S. Cl. 317-119

10 Claims



An electrical panelboard having stacked elongated, flatwise aligned, flat bus bars and plug-in load-side connectors is provided with a mounting pan formed of flat, edgewise aligned extruded aluminum bars extending parallel to the bus bars in spaced relationship thereto edgewise thereof. Electric circuit breakers for use on the panelboard are provided with plug-on line terminal jaws for plugging on the bus bars and stab load terminals for plugging into the load-side connectors by movement of the circuit breakers parallel to the mounting pan toward the bus bars. Various combinations of two types of extruded bars are used to accommodate four different sizes of plug-in load-side connectors. The bars are longitudinally grooved to receive mounting screws for the plug-in load-side connectors anywhere along their length. Panelboards of various widths respectively accommodating circuit breakers of various sizes may be constructed by mounting various numbers of the grooved bars parallel to and at various distances respectively from each of a plurality of bus bar stacks.

3,721,865

**PLASTIC CASE POWER SUPPLY**

Leo C. Rademaker, and Ezra C. Hill, both of Fort Wayne, Ind., assignors to General Electric Company, Fort Wayne, Ind.

Filed Oct. 29, 1971, Ser. No. 193,935

Int. Cl. H02b 1/18; H01f 27/02

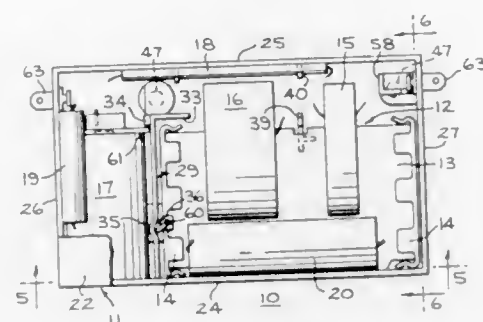
U.S. Cl. 317-120

10 Claims

A power supply includes a preformed case of electrically non-conductive material. Mounting bosses are integrally



formed in the case to provide mounts for the power supply and mounting surfaces for active components of the power supply.



Integral internal partitions and brackets mount various active components of the power in proper relationship in the case and provide electrical insulation where desired.

3,721,866

**ELECTRICAL TIME LOCK-OUT SYSTEM**

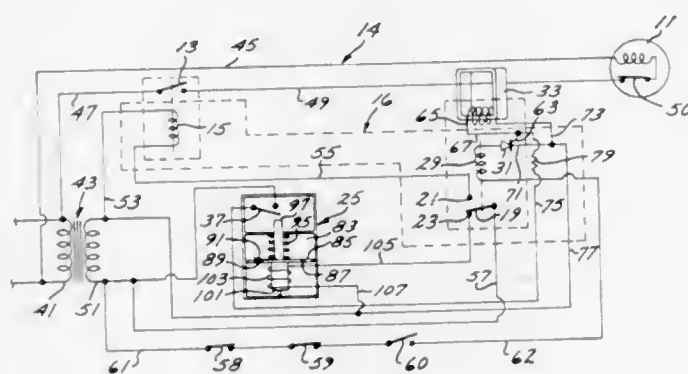
Harold A. McIntosh, South Pasadena, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Aug. 23, 1971, Ser. No. 173,905

Int. Cl. H01h 47/18; G05d 23/32

U.S. Cl. 317-141 R

14 Claims



A time lock-out system including an operator circuit having a normally open lock-out switch therein. A control circuit is provided which includes a holding switch that is responsive to the absence of an electrical signal to assume a first position and responsive to the presence of such electrical signal to assume a second position. Current sensing means is provided for sensing current in the operating circuit and is responsive to the current sensed to produce a triggering signal to hold the holding switch to its second position. A time delay device is connected with the holding switch and is responsive to an electrical signal in the control circuit to, after a selected time delay, produce a triggering signal to switch the holding switch to its second position. The control circuit connects the holding switch with the lock-out switch and time delay device to complete a circuit to the lock-out switch when the holding switch is in its second position to thereby close such lock-out switch and to, further, complete a circuit to the time delay device when the holding switch is in the first position whereby the lock-out switch will be closed as long as both the control and operator circuits are energized but will be opened any time current is discontinued in either the operator or control circuit and will remain open until the time delay device is re-energized for the pre-determined time delay.

**3,721,867**  
**TABLET-SHAPED SEMICONDUCTOR COMPONENT AND PROCESS FOR ITS MANUFACTURE**

Winfried Schierz, Roth, Germany, assignor to SEMIKRON Gesellschaft für Gleichrichterbau und Elektronik m.b.H., Nurnberg, Germany

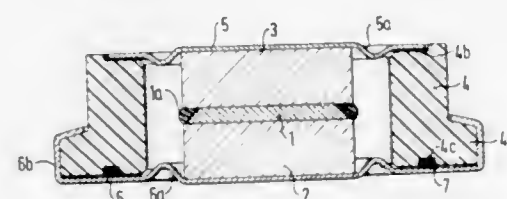
Filed March 25, 1971, Ser. No. 128,102

Claims priority, application Germany, March 25, 1970, P 20 14 289.6

Int. Cl. H01l 3/00, 5/00

U.S. Cl. 317-234 R

13 Claims



A semiconductor wafer is completely encapsulated between two metal parts contacting its opposite faces and serving as circuit contact areas. Peripherally surrounding the wafer is an insulating member to which the metal parts are sealed.

3,721,868

**SEMICONDUCTOR DEVICE WITH NOVEL LEAD ATTACHMENTS**

Edwin S. Smith, Jr., Camillus, N.Y., assignor to General Electric Company, Syracuse, N.Y.

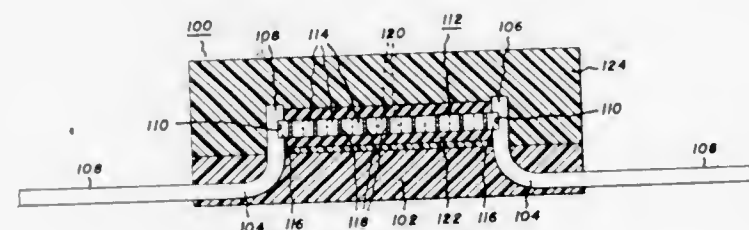
Continuation of Ser. No. 863,208, Oct. 2, 1969, abandoned.

This application Nov. 15, 1971, Ser. No. 198,583

Int. Cl. H01l 3/00, 5/00

U.S. Cl. 317-234 R

1 Claim



A header is associated with two leads mediate their ends to form upstanding pin portions. A semiconductive sub-assembly comprised of a stack of junction containing semiconductive elements together with end-most junction-less semiconductive attachment elements are bonded to the pin portions in spaced relation with the header. The semiconductive sub-assembly may be fitted into depressions in the pin portions and a bonding material used to further improve the ohmic connection therebetween. A metal filled settable plastic may be employed for this purpose. The bonding material has an application and setting temperature below the softening temperature of bonding material used to form ohmic interconnections between the elements of the semiconductive sub-assembly. A passivant and a plastic casement surround the semiconductive sub-assembly. In an alternate form, the leads and attachment elements of the semiconductive sub-assembly are associated with an insulative substrate while the junction containing semiconductive elements remain free of contact with the substrate.

**3,721,869**  
**FILTER CONTACT CONNECTOR ASSEMBLY WITH CONTACT PINS HAVING INTEGRALLY CONSTRUCTED CAPACITORS**

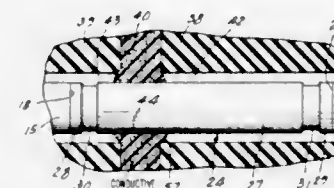
Alfred Paoli, Chicago, Ill., assignor to Harvey Hubbell Incorporated, Chicago, Ill.

Filed Nov. 22, 1971, Ser. No. 200,946

Int. Cl. H01g 1/00

U.S. Cl. 317-256

14 Claims



An electrical connector includes resiliently mounted contact pins having integrally constructed capacitors for shunting interference signals to ground by way of an electrically conductive resilient mounting member and the outer shell of the connector.

3,721,870

**CAPACITOR**

James Edge, Morpeth, England, assignor to Welwyn Electric Limited, Bedlington, Northumberland, England

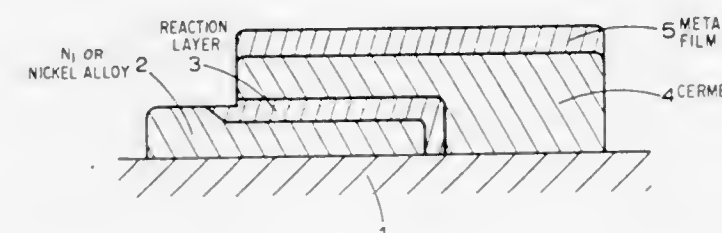
Continuation-in-part of Ser. No. 47,767, June 19, 1970,

abandoned. This application June 25, 1971, Ser. No. 156,700

Int. Cl. H01g 1/01

U.S. Cl. 317-258

9 Claims



The manufacture is described of capacitors having a very high capacitance value which is achieved by a very thin dielectric layer, said capacitors being constituted by (i) a layer of nickel or a nickel alloy, (ii) a layer of a cermet adapted to become electrically conductive and containing glass having a melting point less than that of layer (i), and (iii) a layer of a dielectric, said layer (iii) having been formed by chemical interaction of layer (i) with layer (ii) on firing to a temperature at which said interaction takes place, for a time sufficient to produce said layer (iii), the glass content of the cermet being at least 3 percent by weight but insufficient for the cermet itself to act as a dielectric.

3,721,871

**HIGH VOLTAGE MONOLITHIC CERAMIC CAPACITOR**

John B. Heron, 1518 Celia, Wichita Falls, Tex.

Filed Aug. 12, 1969, Ser. No. 849,474

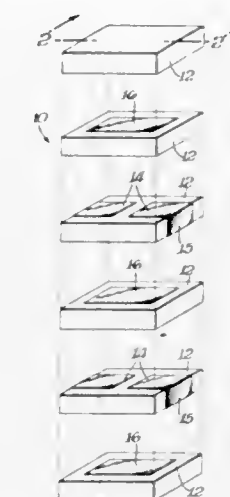
Int. Cl. H01g 1/00

U.S. Cl. 317-261

2 Claims

The possibility of shorting through potential failure paths at

high voltage in a monolithic ceramic capacitor is reduced by inclusion of floating electrodes alternately spaced between



sets of capacitor plates which are deposited on the same surface of ceramic layers in a ceramic stack.

3,721,872

**PROCESS AND APPARATUS FOR PRODUCING ELECTRIC FIELDS IN CLOSED ROOMS AND FOR INTENSIFYING FIELD EFFECTS WITHIN CONFINED SPACES**

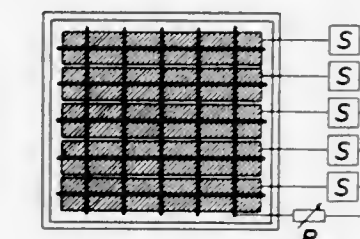
Ewald Adolf Sorg, Roggenstrasse 33, and Udo Gerhard Sommer, Schlosserstrasse 36, both of Stuttgart, Germany

Filed July 24, 1969, Ser. No. 844,411

Int. Cl. H02g 3/26

U.S. Cl. 317-262 AE

5 Claims



A process for producing, intensifying and varying electric fields within a confined space, comprising the steps of surrounding said space with conductive materials, such as metal, steel-reinforced concrete and other building materials incorporating electrically-conductive substances and being exposed to the effects of the weather, connecting conductive flexible elongated foil electrodes being insulated on both sides thereof with said conductive materials by application and gluing to or placing under walls, floors, ceilings and the like, and connecting said foils to at least one electric source to produce an electric field within said space, and an apparatus for producing, intensifying and varying electric fields within a confined space, comprising means to impart conductivity to the walls of said space; means to connect flexible elongated conductive electrode foils being insulated on both sides thereof with said means to impart conductivity; a voltage source to deliver power to said electrodes; means to connect the power delivery to said source; wherein said electrode being placed under the floor covering is so provided that the insulating covering layer of said electrode serves simultaneously as protective layer against mechanical damages, and that said floor covering adheres thereto in a manner such as to prevent slipping.



3,721,873

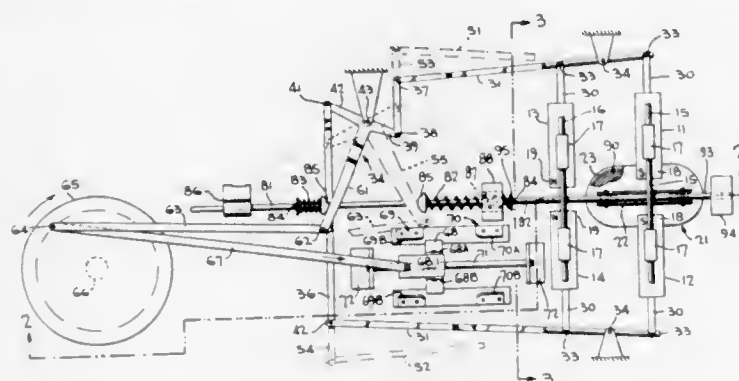
## RECIPROCATING MOTOR

George R. Vogel, 221-22 Hempstead Avenue, Queens Village, N.Y.

Filed March 14, 1972, Ser. No. 234,493  
Int. Cl. H02k 33/18

U.S. Cl. 318-128

11 Claims



An electric motive device includes two pairs of magnets, movable in pairs relative to each other. The magnets of each pair have pole faces positioned normally to cause the magnets of the respective pair to repel each other. The pole faces of each magnet are spaced to form an air gap through which magnetic flux flows between the pole faces of each magnet. A shuttle moves relative to the pairs of magnets into and out of the air gaps. The shuttle includes a magnetic core and a coil which is driven by a current source to enable the core to be saturated. The shuttle and magnets are interconnected with each other and a commutator by a lever arm system and a snap action device so that current is supplied only intermittently to the coil. When no current is supplied to the coil, the core provides a low reluctance path for fluxes of the magnets to enable the magnets to be drawn towards the shuttle. In response to movement of the magnets into close proximity with the shuttle, current is supplied to the coil, causing the core to become saturated and increase the reluctance thereof. Thereby, the adjacent pole faces of the magnets repel each other. The coil, when energized, functions as an electromagnet that is repelled from the air gap of one pair of magnets to the other pair of magnets.

3,721,874

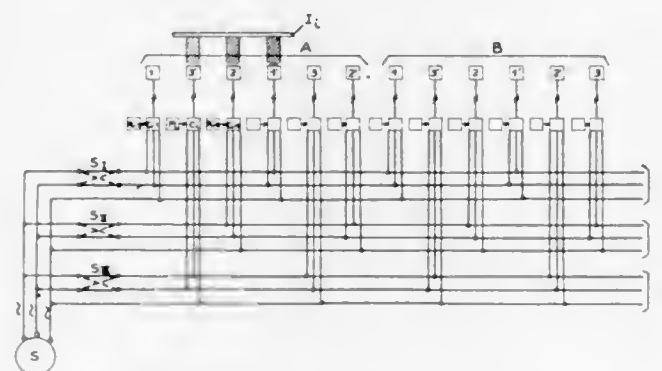
## LINEAR INDUCTION MOTOR PROPULSION SYSTEM

Yves Pelenc, 38 La Tronche, and Jacques Gatellet, 38 Grenoble, both of France, assignors to Merlin Gerin, 38 Grenoble, France

Filed Jan. 12, 1972, Ser. No. 217,198  
Int. Cl. H02p 7/36

U.S. Cl. 318-135

13 Claims



A linear induction motor propulsion device for propelling in synchronism a plurality of armatures along a plurality of polyphase energizable stator members. The phase sequence of the supply voltage of the different stator members is periodically inverted according to a predetermined program in such a

manner that the thrust characteristic wave form has attenuated leading and trailing edges.

3,721,875

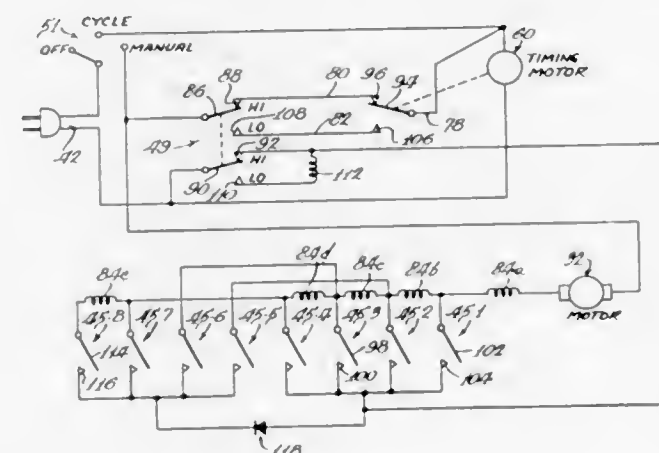
## DUAL CYCLE BLENDER CONTROL MEANS

John Edward Feldner, and William Joseph Collins, both of Milwaukee, Wis., assignors to Oster Corporation, Milwaukee, Wis.

Filed Oct. 6, 1971, Ser. No. 186,989  
Int. Cl. H02p 7/00

U.S. Cl. 318-245

10 Claims



A control means for a blender comprises a cam driven by a timing motor that has a plurality of camming surfaces which control the energization of the blender motor in an intermittent manner. The ON and OFF cycle times of the intermittently operated blender are automatically changed to correspond to the operating speed range of the blender.

3,721,876

## ELECTROMAGNETIC SELECTOR

Pierre Guldert, 74, rue Robert, 69 Lyon, France

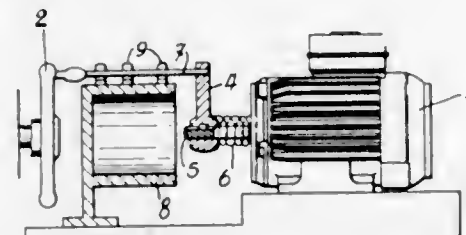
Filed July 30, 1971, Ser. No. 167,767

Claims priority, application France, July 31, 1970, 7029128

Int. Cl. G04c 23/44

U.S. Cl. 318-265

3 Claims



An electromagnetic selector comprising a series of retractable stops which may be operated by an electromagnet energized by an electric current controlled by a magnetic contact through which the current is fed through an interrupter connected directly to a source of electric current.

3,721,877

## TEXTILE YARN WINDING MACHINE WITH ANTI-PATTERNING DEVICE

Herman Werffeli, Horgen, Switzerland, assignor to Maschinenfabrik Schwelzer A.G., Horgen, Switzerland

Filed Apr. 19, 1972, Ser. No. 245,458

Claims priority, application Switzerland, Apr. 23, 1971, 5,977/71

Int. Cl. H02p 5/16

U.S. Cl. 318-318

9 Claims

To prevent undesirable patterning on the cone and to provide for slip between the yarn package and the grooved

3,721,879

## POWER CONTROL FOR PORTABLE ELECTRIC TOOL

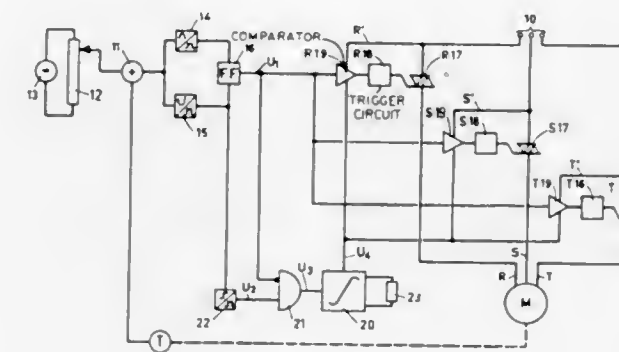
Lawrence G. Corey, Rockville, and John J. Opalenik, New Britain, both of Conn., assignors to Arrow-Hart, Inc., Hartford, Conn.

Filed July 2, 1965, Ser. No. 469,218

Int. Cl. H02p 5/12

U.S. Cl. 318-345

12 Claims



interrupts the power supply to the motor, the phasing of interruption with respect to the phase of supply current being controlled in dependence on the load of the motor.

3,721,878

## WINDSHIELD WIPER ARRANGEMENT

Paul Gumbert, Buhlertal, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

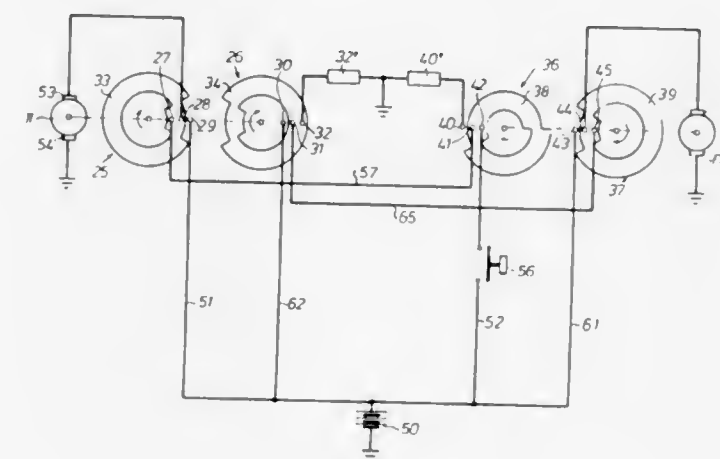
Filed June 15, 1972, Ser. No. 262,975

Claims priority, application Germany, June 26, 1971, P 21 31 900.6

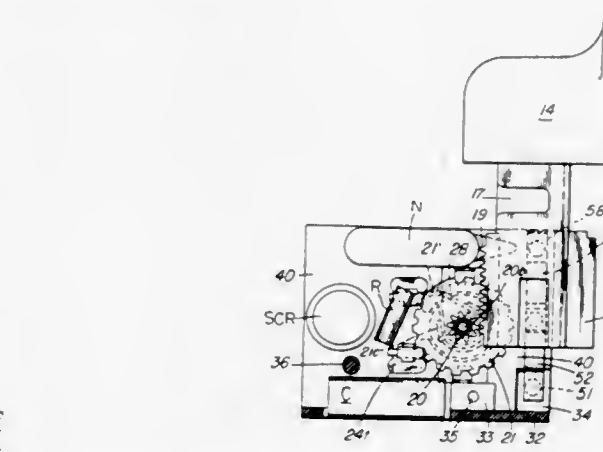
Int. Cl. B60s 1/08

U.S. Cl. 318-443

5 Claims



A first and second wiper are each pivotable between a starting position and a direction-reversing position. A first and a second motor each drive the respective wipers and are connected with one pole of the source of electrical energy. A first and second circuit connect said first motor with the other pole of said source, and a third and normally open fourth circuit connect said second motor with the other pole of said source. A first control switch assembly is interposed in said first and third circuit and is responsive to displacement of said first wiper to make and break said first and third circuit while the said first wiper is in and out of its starting position. An operator-controlled switch is interposed in said second circuit to make and break the latter at the will of an operator. A second control switch assembly is interposed in said fourth circuit while said first wiper is in its direction-reversing position thereof.



A trigger operated switch unit for incorporation within the housing of a portable electric motor powered tool has power control and by-pass switches and a rotary potentiometer all controlled and operated by movement of the trigger through cams and through a rack-and-pinion connection between the trigger and the shaft of the potentiometer, to control the speed of the motor via solid state elements and circuitry. The unit has two parallel plates one of which is metal and acts as a heat sink.

3,721,880

## REFRIGERANT COMPRESSOR MOTOR CONTROL

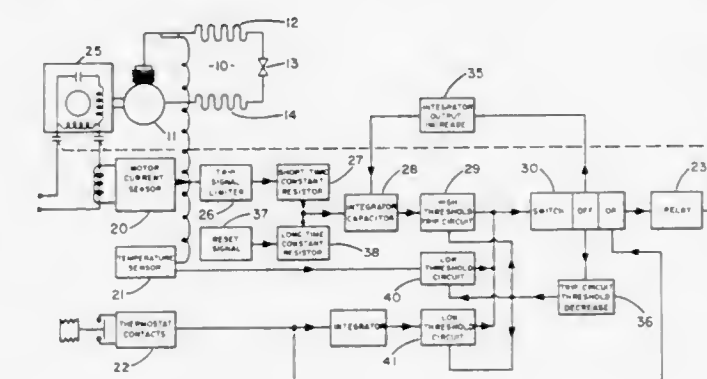
Donald E. Neill, Liverpool, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 12, 1971, Ser. No. 188,286

Int. Cl. H02h 7/08

U.S. Cl. 318-471

7 Claims



A refrigeration system having an electric motor driven reciprocating compressor is provided with a motor protection and control system. The motor protection and control system includes a motor current sensor for sensing motor current, a temperature sensor for sensing discharge gas temperature from the compressor and a thermostat for sensing room temperature. The signal provided from the current sensor is summed with an opposite polarity reset signal and integrated to provide an input signal to a first trip circuit. When the input to the first trip circuit exceeds a predetermined value, a solid state switch means deenergizes a relay which disconnects the motor from the line current source. The temperature sensor is connected to a second trip circuit which is also capable of de-energizing the relay and the motor in the event of an excessive temperature condition. The ther-



mostat is connected to a third trip circuit in a manner such that opening of the thermostat contacts de-energizes the solid state switch and relay. Closing the thermostat contacts passes a signal through the solid state switch means to energize the relay provided the switch has been reset to the conducting condition. Feedback means are provided responsive to the non-conducting condition of the switch to raise the output of the integration circuit and additional feedback means are provided responsive to the nonconducting condition of the switch to decrease the threshold of the trip circuits. The feedbacks provide a reset level for the system which is lower than the initial trip level and to impose a time delay associated with the first trip circuit on resetting the system after a trip due to opening the thermostat contacts.

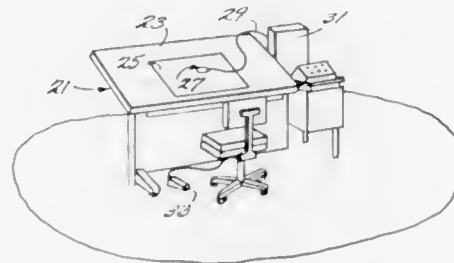
3,721,881

## LINE FOLLOWING APPARATUS

Jack W. Critser, Miachelville, Md., assignor to Instronics Ltd., Stittsville, Ontario, Canada  
Filed July 22, 1971, Ser. No. 165,291  
Int. Cl. G05b 19/36, 19/42

U.S. Cl. 318—568

11 Claims



Apparatus for providing the X and Y coordinates of selected points on a line as it is traced on a board by a manually movable sensor including an X coordinate radiation source comprising a first stretched wire running beneath the board parallel to the Y axis and a Y coordinate radiation source comprising a second stretched wire running beneath the board parallel to the X axis. Signals derived from the sensor are applied to X and Y servo motors for individually moving the first and second wires in order to track the sensor as it is manually moved.

3,721,882

## POSITIONING SYSTEM

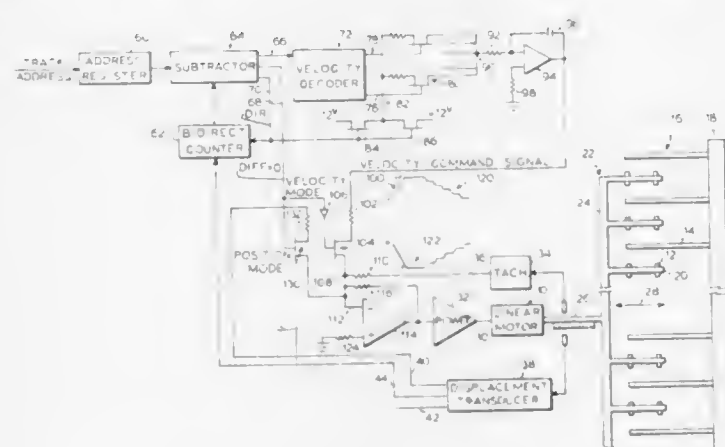
Clifford J. Helms, Woodland Hills, Calif., assignor to Sperry Rand Corporation, New York, N.Y.

Filed June 25, 1971, Ser. No. 156,767

Int. Cl. G05b 11/18

U.S. Cl. 318—594

8 Claims



A system useful in a magnetic disc storage unit for rapidly and accurately positioning a magnetic head over a selected disc track. The system includes a linear motor for driving a

carriage structure supporting a head carrying arm assembly. The motor is selectively energized by a control unit in response to new track command information provided thereto. The control unit includes a velocity transducer for yielding carriage velocity information and a displacement transducer for yielding track count information. A counter, responsive to said track count information, at all times stores a count representative of the actual head track position for comparison with the track command information. The difference between the actual head track position and command track position determines the magnitude of velocity command signal introduced into a velocity servo loop for driving the motor. As the difference decreases, the velocity command signal magnitude is reduced to progressively reduce motor velocity. When the difference reaches a predetermined small value (e.g., zero), the velocity command signal is reduced to zero and a position servo loop, responsive to information provided by the displacement transducer, is enabled to bring the carriage to rest in a position at which the error signal provided by the displacement transducer to the position servo loop is nulled.

3,721,883

## SERVO CONTROL CIRCUIT

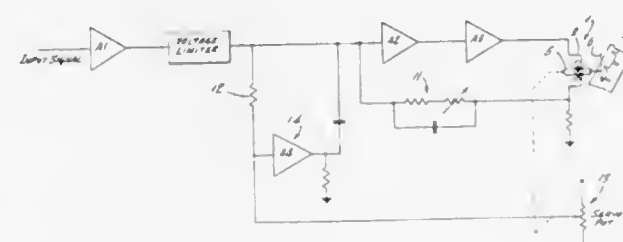
Chatland Whitmore, Ossining, and Gerald A. Richardson, Croton-on-Hudson, N.Y., assignors to Cambridge Instrument Company, Inc., Ossining, N.Y.

Filed June 30, 1971, Ser. No. 158,213

Int. Cl. G05b 5/01

U.S. Cl. 318—615

11 Claims



Servo control circuitry for controlling the movement of a recording pen including means for amplifying an input signal to drive the recording pen to respond linearly over a wide frequency and amplitude range of the input signal and damping the movement of the recording pen to prevent oscillation thereof.

3,721,884

## SINGLE TRANSISTOR OSCILLATOR BLASTING DEVICE

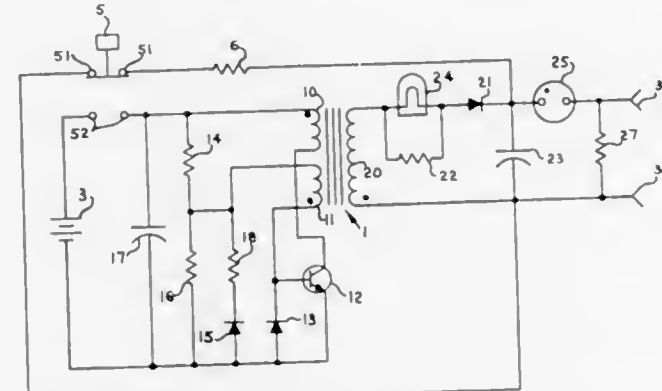
Kaushik H. Thakore, Sidney, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Nov. 23, 1971, Ser. No. 201,519

Int. Cl. H03k 3/30; H02m 3/22

U.S. Cl. 320—1

30 Claims



A blasting apparatus for firing an explosive bridge wire device or the like comprising a d.c. to d.c. converter circuit that utilizes only one transistor in the oscillator portion of the

circuit to transfer energy from a battery to a storage capacitor which is automatically discharged upon reaching a predetermined energy level. The circuit also includes a single switch which in the OFF position discharges the storage capacitor and in the ON position connects the battery to the primary winding of the transformer to charge the storage capacitor.

3,721,885

## BLASTING MACHINE WITH OVERVOLTAGE AND UNDERVOLTAGE PROTECTION FOR THE ENERGY STORAGE CAPACITOR

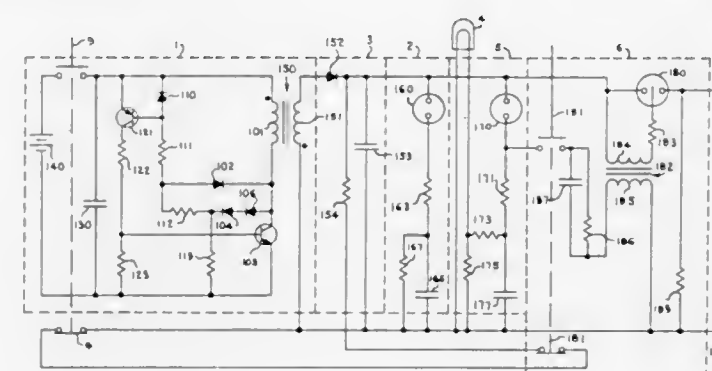
James E. McKeown, Sidney; Irving E. Linkroum, Hancock, and Earl M. Phinney, Oneonta, all of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Nov. 23, 1971, Ser. No. 201,525

Int. Cl. H03k 3/30; H02m 3/22

U.S. Cl. 320—1

8 Claims



An electrical system for firing an explosive bridge wire device or the like which includes a battery powered blocking oscillator to charge a storage capacitor, a circuit controlling the maximum energy to be contained in the storage capacitor, and a circuit that determines the minimum energy in the storage capacitor before the storage capacitor can be discharged into one or more explosive bridge wire devices or the like.

3,721,886

## BLASTING MACHINE WITH OVERVOLTAGE AND UNDERVOLTAGE PROTECTION FOR THE ENERGY STORAGE CAPACITOR

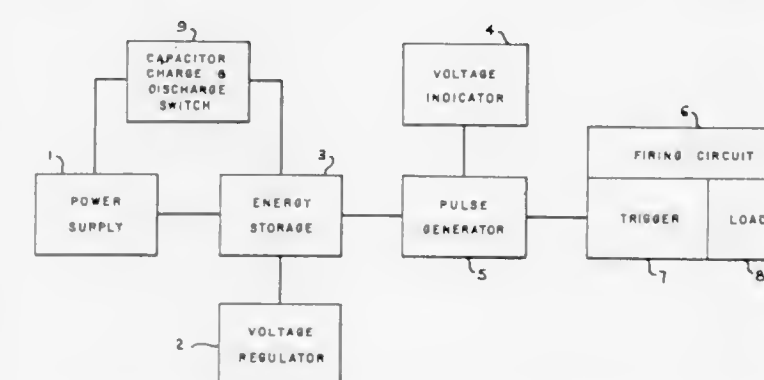
Earl M. Phinney, Oneonta, and Irving E. Linkroum, Hancock, both of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Nov. 23, 1971, Ser. No. 201,527

Int. Cl. H03k 3/30; H02m 3/22

U.S. Cl. 320—1

2 Claims



A blasting machine for firing an explosive bridge wire device or the like. The blasting machine includes a storage capacitor that is charged to an energy level within a predetermined range. The upper limit of the energy range is controlled by a two-electrode spark discharge device which operates as an upper voltage control and the lower limit of the energy

3,721,887

## BATTERY PROTECTION CIRCUIT

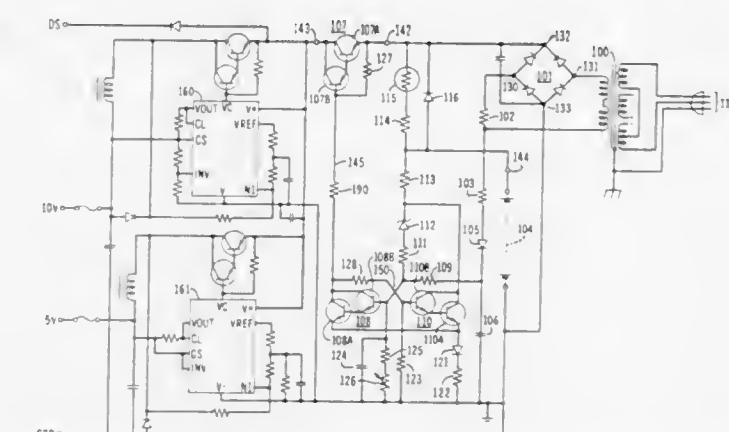
Charles Nickerson, Poulsbo, Wash., assignor to American Telephone and Telegraph Company, New York, N.Y.

Filed Nov. 24, 1971, Ser. No. 201,656

Int. Cl. H02j 9/00

U.S. Cl. 320—13

2 Claims



A protection circuit for an AC powered unregulated power supply having a rechargeable battery means comprising nickel-cadmium cells comprises a two-state circuit which is energized by the presence of AC power supplied to the unregulated power supply. The protection circuit is arranged to disconnect the load from the power supply in the event that AC power fails and the terminal voltage of the battery means falls below a predetermined minimum value. Furthermore, the load will not be picked up until AC power is restored.

3,721,888

## BATTERY CHARGING SYSTEMS FOR ROAD VEHICLES

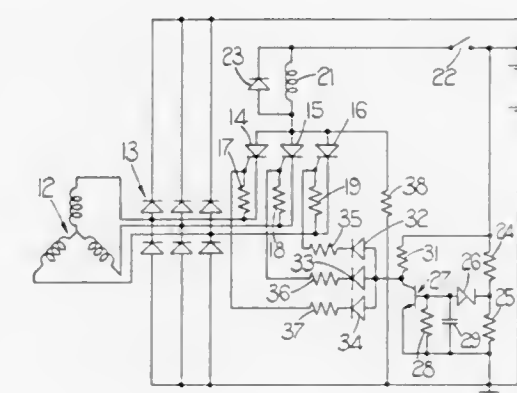
Maurice James Allport, Stourbridge, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed July 27, 1971, Ser. No. 166,439

Int. Cl. H02p 9/30

U.S. Cl. 320—64

3 Claims



A battery charging system for a road vehicle has a three-phase wound field alternator for charging the vehicle battery. There are three thyristors with their cathodes connected to the phase points of the alternator and their anodes connected to the positive battery terminals through the field winding of the alternator, an means sensitive to the battery voltage for providing gate current to the thyristors only when the battery voltage is below a predetermined value.



3,721,889

## LOAD SENSING CIRCUITS

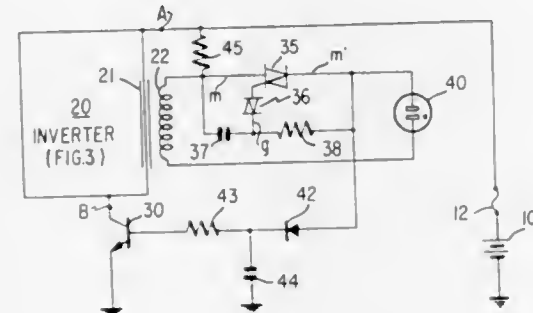
Jack Charles Sondermeyer, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed June 30, 1971, Ser. No. 158,452

Int. Cl. H02m 7/00; H02j 7/00; H05b 37/02

U.S. Cl. 321-8 R

4 Claims



In a circuit including an inverter adapted to provide power to a load, means are provided for sensing the absence of the load in the circuit whereupon inverter operation is inhibited.

3,721,890

## POWER SUPPLY FOR A.C. AND D.C. DRIVE

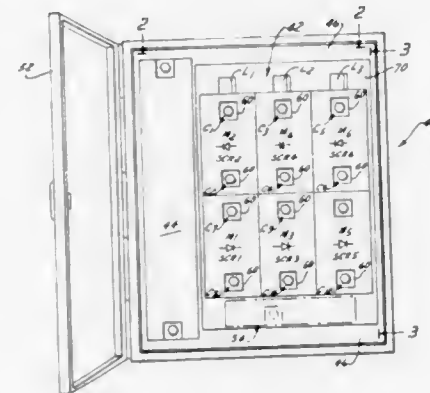
James P. Ettinger, and Christian S. Otteson, both of Ridgefield, Conn., assignors to Electric Regulator Corporation, Norwalk, Conn.

Filed March 27, 1972, Ser. No. 238,082

Int. Cl. H02m; H02b

U.S. Cl. 321-8 R

17 Claims



A power supply unit is disclosed including a modular power section which may be converted from D.C. to A.C. operation and vice versa merely by a change in bus bar configuration. The power modules are arranged side by side in two rows on a bus bar assembly on a back panel and comprise a silicon controlled rectifier clamped between a pair of electrically and thermally conductive plates. In the embodiment disclosed, the rectifiers in the top row are facing in one direction while the rectifiers in the bottom row are facing in the opposite direction. Means are provided on the back panel for mounting at least two different alternate bus bar assemblies, one of which is designed to connect the rectifiers in a first operative circuit arrangement for D.C. operation and the other of which is designed to connect the rectifiers in a second operative circuit arrangement for A.C. operation.

The modules are provided with a front panel having spaced apertures for access to the quick detachable captive nut assemblies used to mount the clamping plates on the bus bars. Those apertures also serve as a convenient gripping means for handling individual modules for repair or replacement.

3,721,891

## POWER NORMALIZED DEMODULATOR

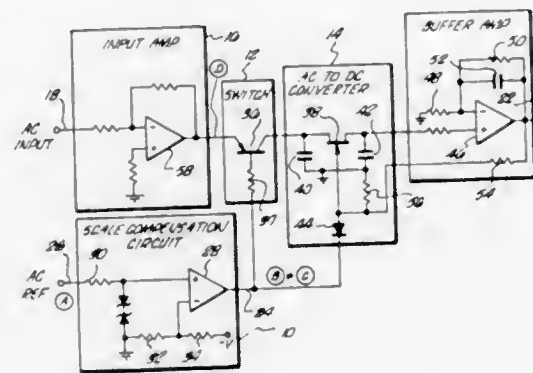
Adrian J. Moses, Newhall, Calif., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Apr. 13, 1972, Ser. No. 243,689

Int. Cl. H02m 7/20

U.S. Cl. 321-47

13 Claims



A power normalized demodulator circuit that compensates for scale factor changes in the accurate conversion of AC input signals to DC output signals, is disclosed. AC reference signals are applied to a scale compensation circuit that operates to provide pulsed control signals the pulse width of which is varied in accordance with amplitude changes of the AC reference signal which are attributable to scale factor changes. The pulsed control signal serves to control the time period during which a switching device is enabled. Controlling such time period permits control of the level of voltage applied as an input to an AC to DC converter circuit. The pulsed control signal also serves to control operation of the AC to DC converter circuit which includes another switching device that is cyclically rendered conductive by the pulsed control signal to permit the discharge of an input capacitor through the converter switching device to charge an output capacitor. The voltage to which the output capacitor is charged essentially constitutes the desired DC output signal. However, a buffer amplifier stage is employed to provide a high impedance for the converter and the provide a nominal gain.

3,721,892

## POWER RECTIFIER INCLUDING A BRIDGE RECTIFIER CIRCUIT

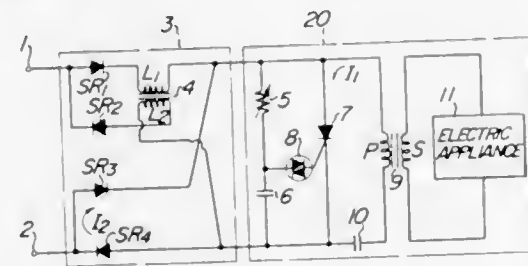
Masayuki Ohyama, and Taketumi Nakamizo, both of Toyonaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 12, 1972, Ser. No. 217,197

Int. Cl. H02m 7/06

U.S. Cl. 321-47

7 Claims



A power rectifier comprising a bridge rectifier circuit and a choke coil for supplying a rectified current to a load wherein said choke coil is divided into two portions respectively inserted in two arms of the bridge circuit to be connected to one terminal of an AC power source, and rectifier means inserted in the other two arms to be connected to the other terminal of the AC power source are utilized not only to flow the rectified current to the load, but also to discharge an energy stored in the load depending on its impedance.

3,721,893

## STABLE CURRENT REFERENCE CIRCUIT WITH BETA COMPENSATION

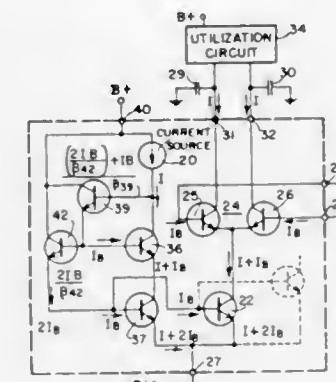
William F. Davis, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed May 30, 1972, Ser. No. 257,695

Int. Cl. G05f 1/58; H03k 1/12

U.S. Cl. 323-4

10 Claims



A monolithic integrated current reference system utilizes a single stable reference current source for controlling the operation currents of circuits formed as part of the integrated circuit. Variations of such operating currents with temperature due to variations in the beta of the transistors used in the system are compensated for by providing additional beta dependent current components to the system.

3,721,894

## REGULATOR CONTROL

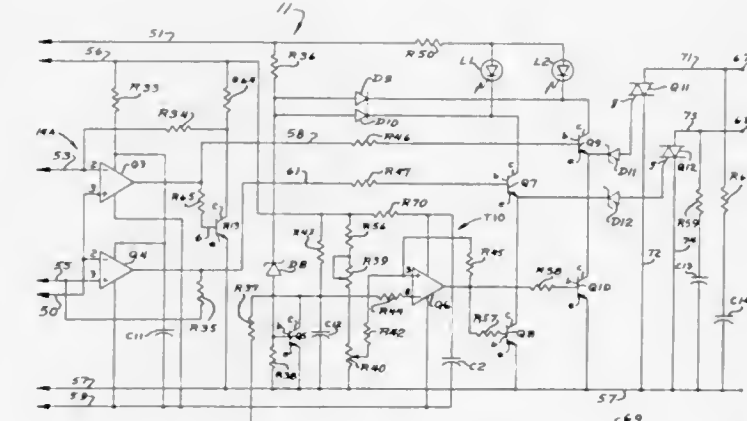
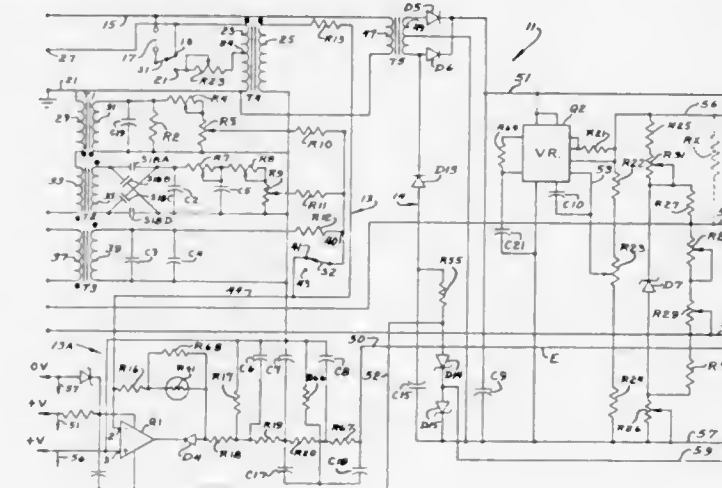
Robert W. Beckwith, 1002 Greenfield Lane, Mount Prospect, Ill.

Filed May 15, 1972, Ser. No. 253,425

Int. Cl. G05f 5/00; H01f 29/00

U.S. Cl. 323-20

35 Claims



A circuit is disclosed for providing control to a voltage regulator device for monitoring and regulating the voltage of an

electrical system. The line voltage, a voltage in phase with the input current and a voltage phase shifted relative to the input current are summed and the resultant D.C. voltage is compared with a voltage bandwidth circuit.

3,721,895

## CARRIER MEMBER FOR STEP SELECTORS IN TAP CHANGERS

Sivert Norman and Erik Hammar, Ludvika, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

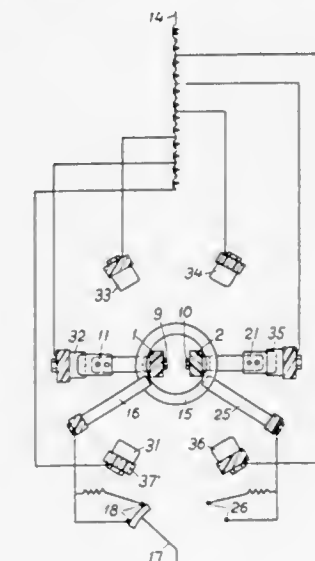
Filed June 9, 1972, Ser. No. 261,239

Claims priority, application Sweden, June 21, 1971, 8,013/71

Int. Cl. H02p 13/06; H01h 19/58

U.S. Cl. 323-43.5 R

2 Claims



A tap changer for transformers has step selectors and load connectors. The step selector has a center part provided with carrier members for movable connection contacts and slip rings for brushes. The carrier members are formed of two parallel rods of insulating material, both mounted to turn around the axis of the center part. Each rod carries a number of movable connecting contacts and a corresponding number of slip rings. The two rods are positioned inside the slip rings so that they can be pivoted stepwise in relation to each other through substantial angles.

3,721,896

## IMPROVED PHASE SENSITIVE EDDY CURRENT DEFECT DETECTOR UTILIZING FREQUENCY DOUBLING OF DETECTED SIGNAL PRIOR TO PHASE DETECTION

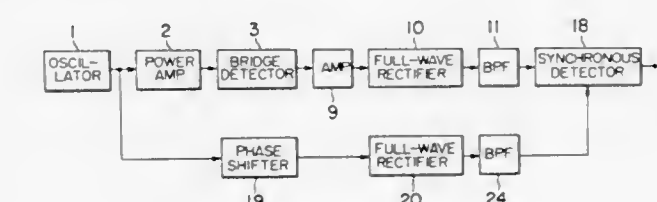
Toshihiro Mori, Kohoku-ku, Yokohama, and Seigo Ando, Kawasaki, both of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 23, 1971, Ser. No. 211,222

Int. Cl. G01r 33/12

U.S. Cl. 324-37

6 Claims

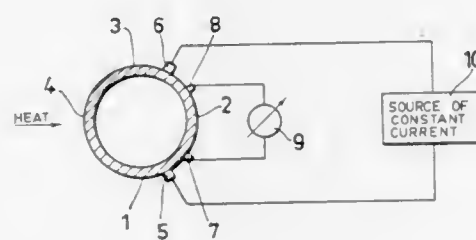


In an eddy current defect detector of the type wherein a bridge detector energized by an oscillator is used to convert the impedance variation of a detecting coil into an electrical signal in accordance with a defect of an object being examined, there is provided a frequency doubler for doubling



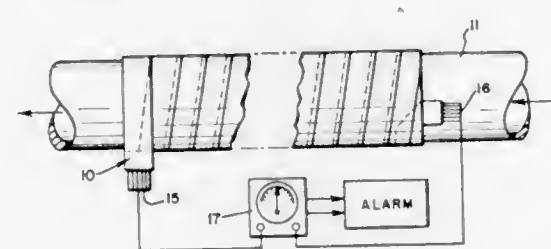
the frequency of the output from the bridge detector, means to shift the phase of the output of the oscillator by a predetermined angle and double the frequency thereby producing a reference phase signal, and means for synchronously rectifying the output from the frequency doubler by using the reference phase signal.

**3,721,897**  
**WALL THICKNESS AND TEMPERATURE MONITORING APPARATUS FOR BOILER TUBES**  
Gustaf Emanuel Edling, Stockholm, Sweden, assignor to Apparatkemiska AB AKA, Stockholm, Sweden  
Continuation of abandoned application Ser. No. 806,129, Mar. 11, 1969. This application May 7, 1971, Ser. No. 141,409  
Claims priority, application Sweden, Mar. 14, 1968, 3,352/68  
Int. Cl. G01r 27/14, 27/02  
U.S. Cl. 324—64 2 Claims



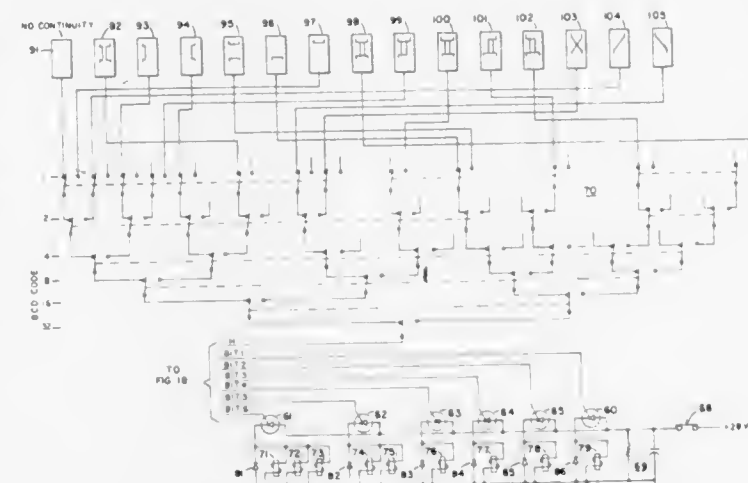
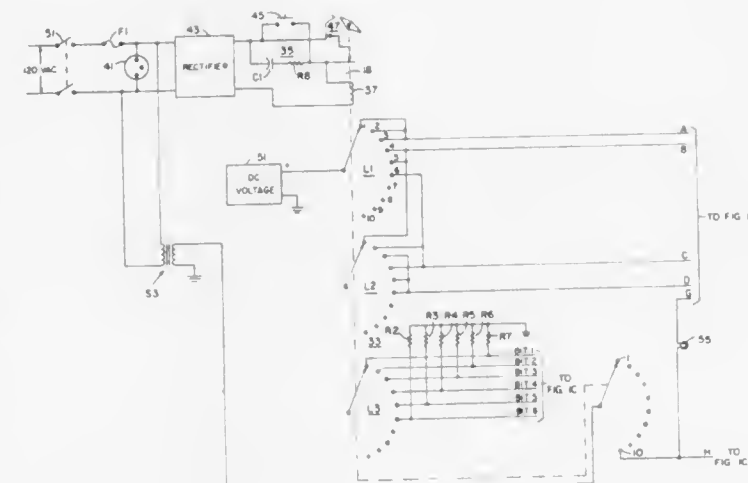
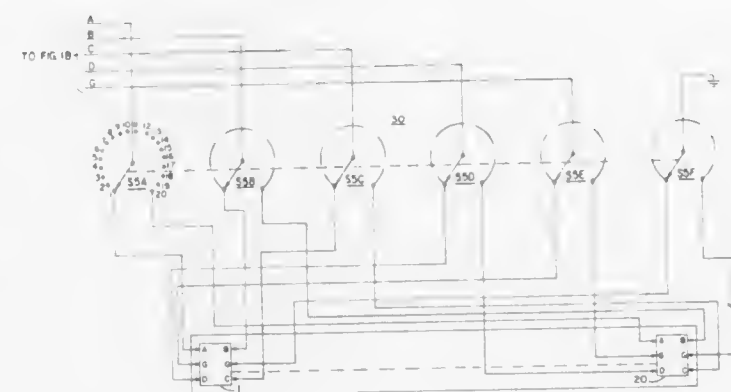
Continuous or intermittent examination of operating conditions and operational safety of the boiler tubes of a boiler, during operation of the boiler, is effected by providing an electric current through the wall material of a boiler tube and measuring the voltage drop between points on the boiler tube.

**3,721,898**  
**APPARATUS FOR DETECTING LEAKAGE FROM OR RUPTURE OF PIPES AND OTHER VESSELS CONTAINING FLUID UNDER PRESSURE**  
Paul Dragounis, 15 Karen Way, Summit, N.J., and Arthur Stirling Grimes, 148 Wicks Road, Commack, N.Y.  
Filed Dec. 4, 1968, Ser. No. 781,171  
Int. Cl. G01r 27/02; G01m 3/08  
U.S. Cl. 324—65 R 6 Claims



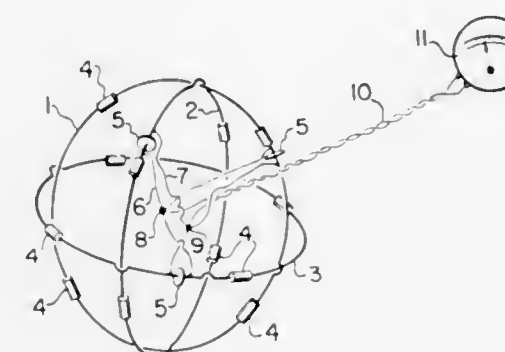
A frangible covering encircling the vessel in sealed relationship has insulated electrically conductive means, preferably a plurality of spaced wires, distributed over the area of the covering. A leak causes the fluid under pressure to rupture the covering, thereby increasing the resistance of the conductive means. A meter detects the change in resistance, and may set off an alarm. Tape containing insulated fine wires may be wound around the vessel with successive turns sealed together, and preferably adhered to the vessel.

**3,721,899**  
**CONTINUITY TEST AND INDICATING CIRCUIT**  
John T. Haywood, Burlington, N.C., assignor to The United States of America as represented by the Secretary of the Army  
Filed Oct. 6, 1971, Ser. No. 187,034  
Int. Cl. G01r 15/12, 31/02  
U.S. Cl. 324—73 R 1 Claim



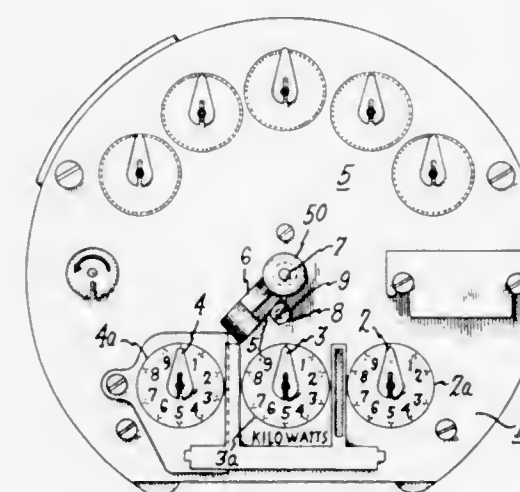
The circuitry of modules is checked by the use of a switching device which selectively connects all possible combinations of pairs of terminals of a selected module to a sensing circuit. The sensing circuit enables a selective SCR when there is continuity between the selective pairs of terminals. The enabled SCRs cause a further switching system to be programmed in a binary fashion whereby the switching system will power an indicator to visually show all the connections in the module.

**3,721,900**  
**MICROWAVE DETECTION INSTRUMENT AND ANTENNA THEREFOR**  
Charles Luther Andrews, Albany, N.Y., assignor to General Electric Company, Schenectady, N.Y.  
Filed April 15, 1971, Ser. No. 134,142  
Int. Cl. G01r 23/04  
U.S. Cl. 324—95 12 Claims



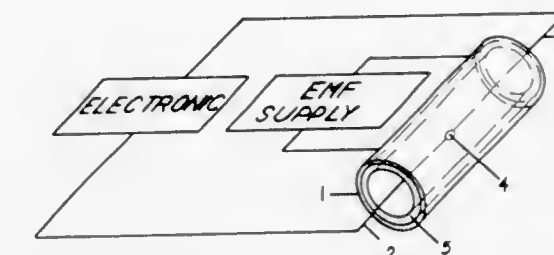
An instrument for detecting microwave energy over half a total solid angle in space and capable of measuring either plane or elliptically polarized waves in all directions employs an antenna having three geometrically and electrically symmetrical diode detector circuits connected in parallel to detect both electrical and magnetic fields, the sole source of power for the circuits being the microwaves detected, the total output current of the parallel circuits being supplied to a meter.

**3,721,901**  
**ZERO-RESET MECHANISM FOR AN INDICATING DEMAND REGISTER**  
Donald M. Ham, Rochester, N.H., assignor to General Electric Company  
Filed Aug. 24, 1971, Ser. No. 174,460  
Int. Cl. G01r 19/16  
U.S. Cl. 324—103 R 9 Claims



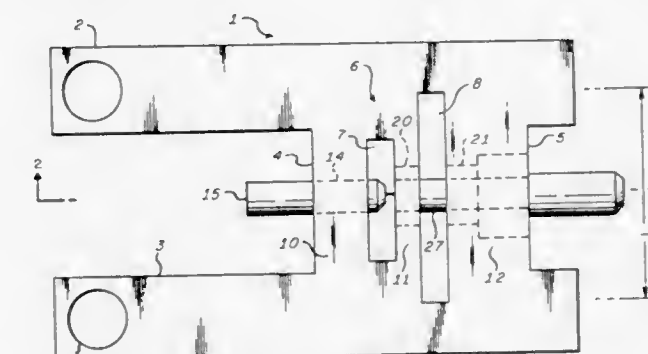
A zero-reset mechanism is provided for accurately and consistently resetting the rotatable indicating pointers of a dial register of a demand meter to zero. The reset mechanism includes a pre-loaded spring that cooperates with an adjustable stop member to return the indicating pointers of the dial register to their zero positions, after they have been manually driven in a down-scale direction past their zero indicating position.

**3,721,902**  
**THERMAL SENSING OF CURRENT CARRYING MEDIUMS**  
Warren C. Burks, 4186 Inglewood, Anaheim, Calif., and Jack G. Lawrence, 11242 Barclay Dr., Garden Grove, Calif.  
Filed March 10, 1970, Ser. No. 18,237  
Int. Cl. G01r 5/26; H02h 5/04  
U.S. Cl. 324—106 1 Claim



Thermal conditions of an electrical current carrying medium are made known by locating a thermal sensing device within the body structure of the current carrying medium.

**ERRATUM**  
For Class 324—43 R see:  
Patent No. 3,721,984  
**3,721,903**  
**HIGH FREQUENCY MIXER AND MODULAR REPLACEABLE ELEMENT THEREFOR**  
William B. Day, Dunedin, Fla., assignor to Sperry Rand Corporation, New York, N.Y.  
Filed Nov. 17, 1971, Ser. No. 199,704  
Int. Cl. H04b 1/26  
U.S. Cl. 325—445 7 Claims



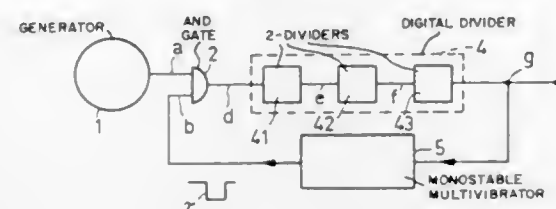
A high frequency diode microwave frequency converter or mixer has its active mixer diode element mounted in a wave guide slot in a replaceable module also including an output intermediate frequency transmission line. The module is clamped into position in a module holder having a passage coupling to the module wave guide slot and at the same time furnishing walls for a high frequency rejection resonant cavity slot cooperating with the intermediate frequency transmission line.

**3,721,904**  
**FREQUENCY DIVIDER**  
Leonardus Adrianus Johannes Verhoeven, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.  
Filed Feb. 22, 1971, Ser. No. 117,360  
Claims priority, application Netherlands, March 7, 1970, 7003278  
Int. Cl. H03k 23/24 5 Claims

A signal frequency is divided by a number  $m=n+j$  by means of an  $n$ -divider based, for example, on digital principles. The output pulses of the  $n$ -divider switch a monostable multivibrator.



for which blocks an AND-gate during  $j$ -pulses of the input signal. The input pulses have to pass the AND-gate so that the frequency is divided by  $(n+j)$ . If the  $n$ -divider consists of various dividing stages, phase transitions occur in the signal



between these dividing stages, which can be filtered out or avoided by the introduction of an auxiliary oscillator which is coupled to the first frequency by a phase-sensitive detector. The latter principle is applied in a PAL frequency divider.

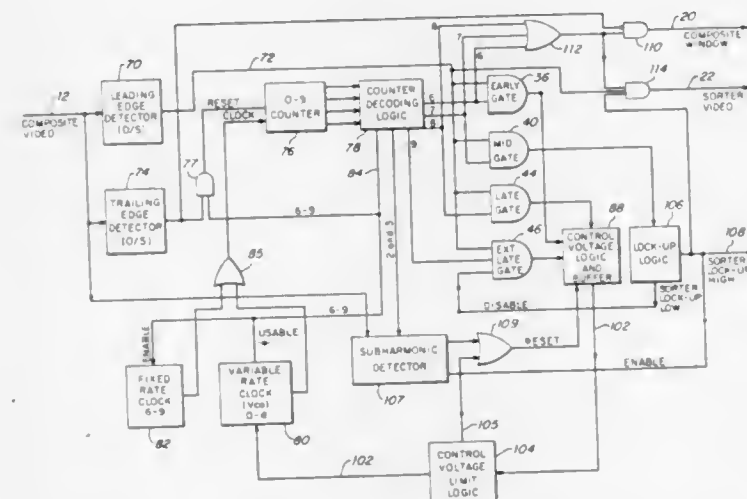
### 3,721,905 PULSE TRAIN SORTER

Walter C. Newman, Sunnyvale, and Andrew R. Cohen, Delmar, both of Calif., assignors to Itek Corporation, Lexington, Mass.

Filed Aug. 11, 1971, Ser. No. 172,339  
Int. Cl. H03k 5/20

U.S. Cl. 328-109

34 Claims



Apparatus for detecting and extracting individual signal video pulse trains from a composite video signal consisting of many individual signal video pulse trains. The apparatus includes a plurality of electronic channels each of which is capable of locking onto an individual signal video pulse train having a pulse repetition frequency (PRF) over a wide bandwidth. The first electronic channel locks up to the signal video pulse train having the highest PRF. After lock-on the channel gates that signal video pulse train out of the composite video signal, and directs the remaining composite video signal to the second electronic channel which locks onto the signal video pulse train having the second highest PRF, and gates that signal video pulse train out of the remaining composite video signal. The second channel then gates the then remaining composite video signal to the third electronic channel wherein the same operation is repeated, etc. Each electronic channel searches for a signal video pulse train which may have a PRF within a given range by utilizing gating circuitry which first attempts to gate a signal video pulse train with a high PRF and then in a continuous manner attempts to gate a signal video pulse train with a lower and lower PRF. Lock-on is indicated by the sequential passage through the gating circuitry of a series of video pulses with a particular PRF. After lock-on is indicated, the searching function is terminated for that particular electronic channel. The gating circuitry has early, mid, and late gating windows. The gating circuitry detects which gating window the signal video pulse train is passing through, and the

timing of the gating circuitry is then finely adjusted accordingly to gate the signal video pulse train through the mid gating window. In this manner the timing of the gating circuitry may be shifted slightly either forward or backward in time to center the signal video pulse train at the mid gating window.

### 3,721,906 CODED PULSE PAIR DETECTOR WITH IMPROVED DETECTION PROBABILITY

Michel Pierre Georges Geesen, and Andre Pierre Laganier, both of Boulogne, France, assignors to International Standard Electric Corporation, New York, N.Y.

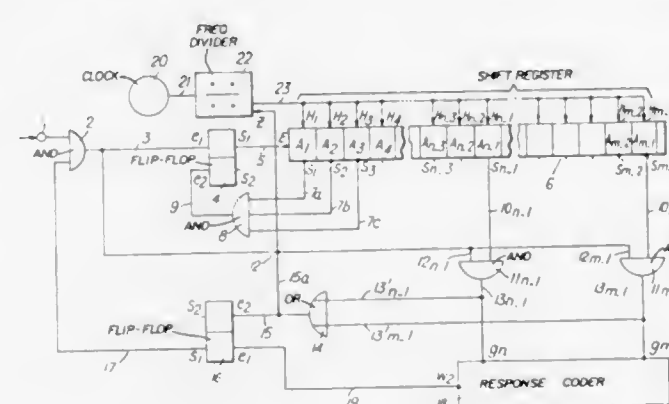
Filed June 15, 1970, Ser. No. 46,053

Claims priority, application France, June 13, 1969, 6919637

Int. Cl. H03k 5/20

U.S. Cl. 328-109

2 Claims



An improved decoder for IFF interrogations is provided to increase the average probability of detection. The first pulse of the pulse pair interrogation is stretched via logic circuitry to increase the probability of coincidence with the second pulse of the interrogation. This allows for a certain amount of variation or jitter in the timing of the incoming pulse pair.

### 3,721,907 DETECTION OF RANGE MARKS NEAREST THE CENTER OF A RANGE GATE

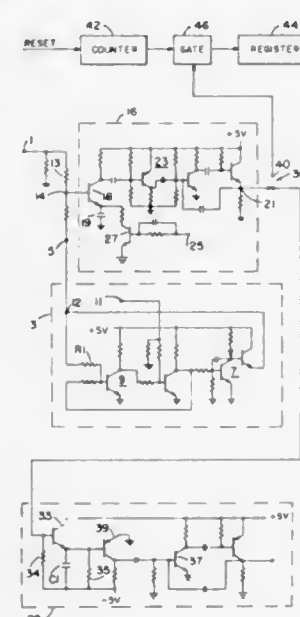
Robert E. Myer, Denville, N.J., assignor to Bell Telephone Laboratories Incorporated

Filed Nov. 5, 1971, Ser. No. 196,086

Int. Cl. H03k 5/18; G01s 9/12; H03k 4/20

U.S. Cl. 328-109

4 Claims



The range marks coming in are combined with a triangular ramp voltage waveform from a ramp generator. The ramp has

the same width as the range gate and its peak at the center of the gate. The largest amplitude of the combined range mark and triangular ramp is the range mark nearest to the center of the range gate. This is selected by a largest amplitude detector system.

### 3,721,908 PROGRAMMABLE TIMER FOR CONTROLLING THE INJECTION OF ADDITIVES TO A DRY CLEANING SOLVENT CHARGE

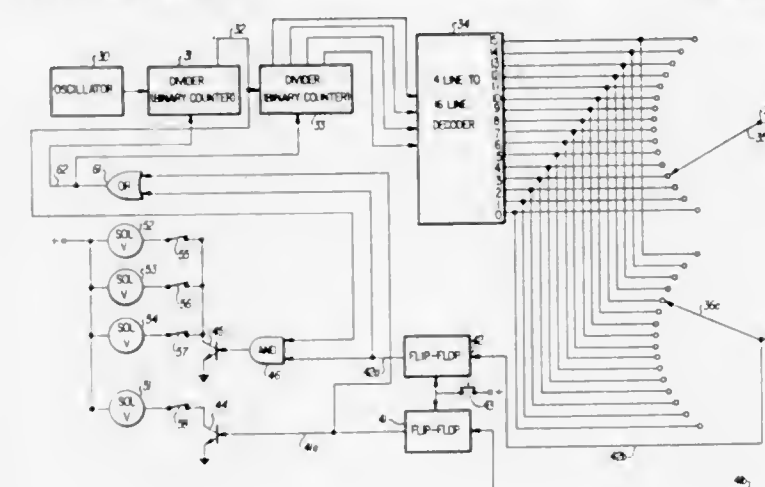
Ojars Jurjans, Camden, N.J., assignor to Jetronic Industries, Philadelphia, Pa.

Filed Aug. 25, 1971, Ser. No. 174,627

Int. Cl. G01r 29/02; H03k 5/00

U.S. Cl. 328-131

7 Claims



A programmable timer for controlling the proportional and volumetric addition of additives to a dry cleaning solvent charge, utilizes an oscillator, binary counter frequency dividers, and a four line to 16 line decoder to establish selective time reference intervals. Material feed control solenoid valves are controlled by flip-flop circuits. Materials feed is initiated by causing the flip-flop circuits to assume one stable state to energize the solenoid valves, and material feed is terminated by the decoder outputs, indicative of selected time intervals, causing the flip-flop circuits to assume the other stable state to deenergize the solenoid valves.

### 3,721,909 PHASE AND FREQUENCY COMPARATOR FOR SIGNALS UNAVAILABLE SIMULTANEOUSLY

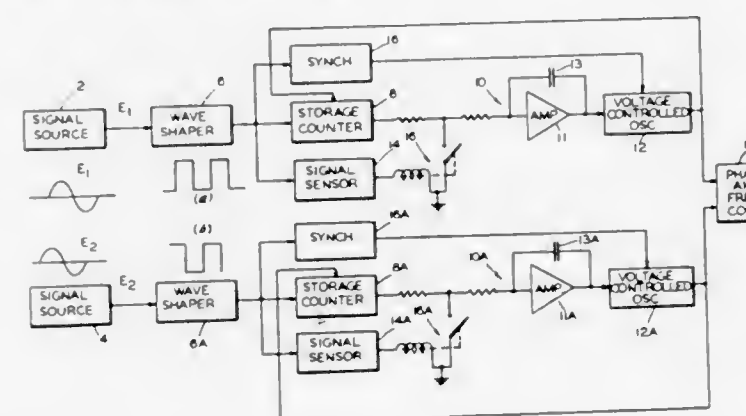
Ralph M. Pincus, Paramus, N.J., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Dec. 7, 1970, Ser. No. 95,786

Int. Cl. H03b 3/04

U.S. Cl. 328-133

7 Claims



A phase and frequency comparator for input signals unavailable simultaneously includes a channel for each of the signals, each channel having a wave shaper for providing a square wave corresponding to the signal, a storage counter

driven by the wave shaper and an oscillator driven by the storage counter and connected in feedback relation to the counter so that the counter output is zero when the oscillator frequency equals the square wave frequency, with means provided for thereupon rendering the oscillator output frequency constant. The oscillator output is synchronized by the input signal and since the oscillator output is steadily available a conventional phase and/or frequency comparison can be made.

### 3,721,910 PROCESS MONITORING AND CONTROL ARRANGEMENT

Ingo Wilmanns, Bruhl, and Alfred Barz, Lohmar, Germany, assignors to Leybold-Heraeus-Verwaltung GmbH, Cologne-Bayental, Germany

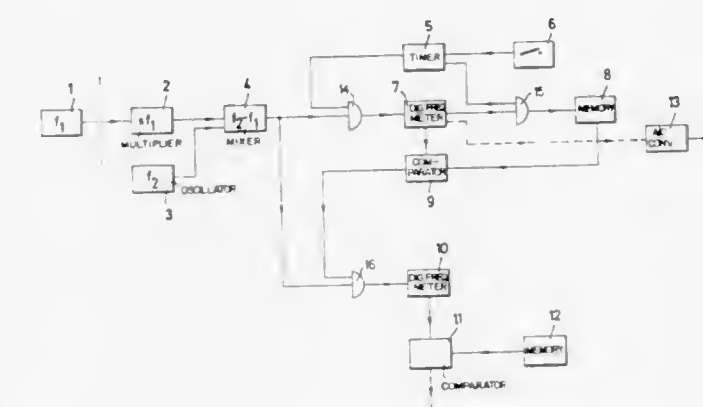
Filed Mar. 31, 1971, Ser. No. 129,816

Claims priority, application Germany, Apr. 3, 1970, P 20 15 957.3

Int. Cl. H03b 3/04

U.S. Cl. 328-141

8 Claims



A switching operation in a physical process is controlled by monitoring an actual value parameter of the process which is present in the form of a variable frequency signal. The frequency of the variable frequency signal is periodically measured within given measuring periods by means of a digital frequency meter and the value measured during the initial measuring period is compared with each of the values measured during the subsequent measuring periods. Whenever the difference between the two compared values reaches a predetermined value a control signal is initiated which may be utilized to control the switching operation of the process. According to a preferred embodiment of the invention the control signal is initiated whenever the subsequently measured value is at least equal to the initially stored value and is utilized to gate the variable frequency signal representative of the actual value parameter to a further digital frequency meter. The measured output value of this further digital frequency meter is then compared with a given fixed reference value to initiate a control signal for the switching operation of the process whenever the measured value is equal to or exceeds the fixed value.

### 3,721,911 TRIGGER CIRCUIT HAVING THE SAME LEVEL TURN ON AND TURNOFF THRESHOLDS

William Louis Aranguren, Sayreville, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Filed Sept. 23, 1971, Ser. No. 183,075

Int. Cl. H03k 5/20

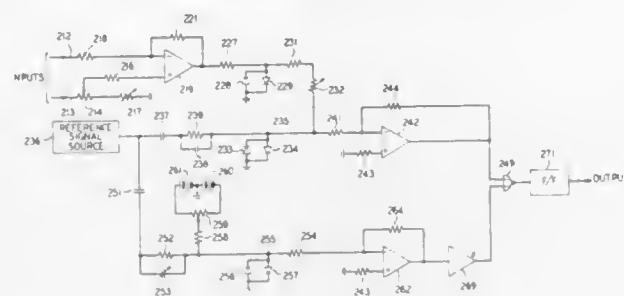
U.S. Cl. 328-146

3 Claims

A trigger circuit produces an output signal to indicate that the amplitude of a first input signal exceeds the amplitude of a second input signal. The two input signals are applied to a differential amplifier, which modulates the



pulse width of a reference signal in accordance with the difference between the two input signals by biasing a pair of oppositely poled diodes. The modulated signal is compared with the unmodulated reference signal by a logic gate to produce an output only when the modulated pulse

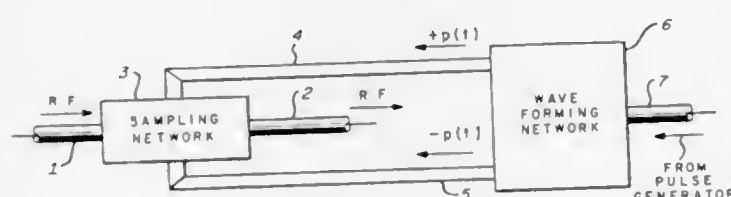


is not in coincidence with the unmodulated pulse. The output signal from the logic gate triggers a flip-flop circuit which divides by two to provide an output signal which indicates that the first input signal is greater than the second input signal.

**3,721,912**  
**SHORT TIME ELECTROMAGNETIC WAVE**  
**SIGNAL SAMPLING SYSTEM**  
Gerald F. Ross, Lexington, Mass., assignor to  
Sperry Rand Corporation  
Filed Apr. 19, 1971, Ser. No. 134,991  
Int. Cl. H03k 5/13

U.S. Cl. 328—151

13 Claims



An electromagnetic wave signal sampling system for taking wave samples of duration of the order of a nano-second is provided by employment of short-duration, equal and opposite, simultaneous sampling pulses derived within a novel transmission line wave forming network as balanced sampling signals for the operation of a novel balanced transmission line sampling network.

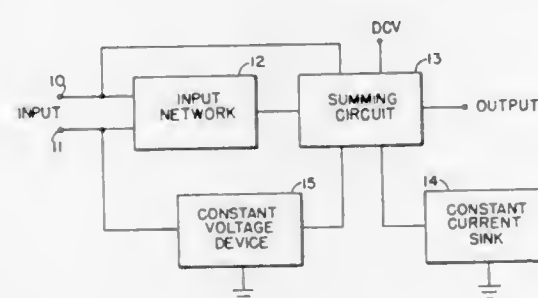
**3,721,913**  
**DC TO SUB-MICROSECOND FREQUENCY CHANGE**  
**DETECTOR**

Donald J. Theobald, LaJolla, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Sept. 2, 1971, Ser. No. 177,295  
Int. Cl. H04 27/22; H04k 9/00

U.S. Cl. 329—102

10 Claims



An input network phase shifts received signals by substantially 180° and also attenuates received signals as a function of

the frequency. A summing circuit receives the phase shifted signal as well as the unaltered received signal, to develop signals as a function of the instantaneous difference in amplitude between them. The summing circuit includes a constant current sink connecting it to ground and a constant voltage device connecting the low potential side of the summing circuit to the low potential side of the unaltered received signals as a reference. In its preferred embodiment the frequency change detector is capable of detecting such frequency changes within one cycle of the received signals for frequencies ranging from dc to the multi-MHz range.

**3,721,914**  
**DIFFERENTIAL AMPLIFIER HAVING BALANCED**  
**CURRENT FLOW**

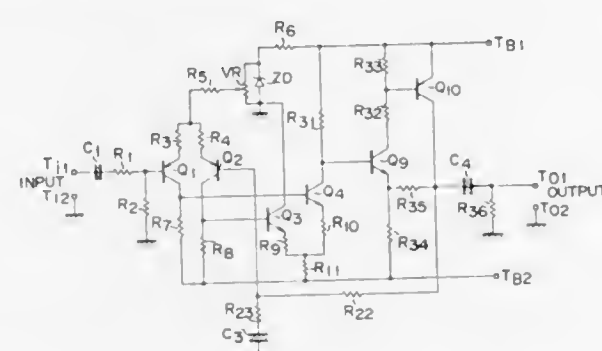
Hajime Nakamura, Kita Nishioji, Suginami-ku, Tokyo, Japan,  
assignor to Sansui Electric Co., Ltd., Tokyo, Japan  
Filed March 25, 1971, Ser. No. 128,083

Claims priority, application Japan, March 27, 1970,  
45/25461

Int. Cl. H03f 3/18, 3/68

U.S. Cl. 330—25

2 Claims



A two-stage differential amplifier wherein the supply of voltage and current to a first stage differential amplifier circuit is controlled and a direct current from the output side of a second stage differential amplifier circuit is fed back to said first stage circuit.

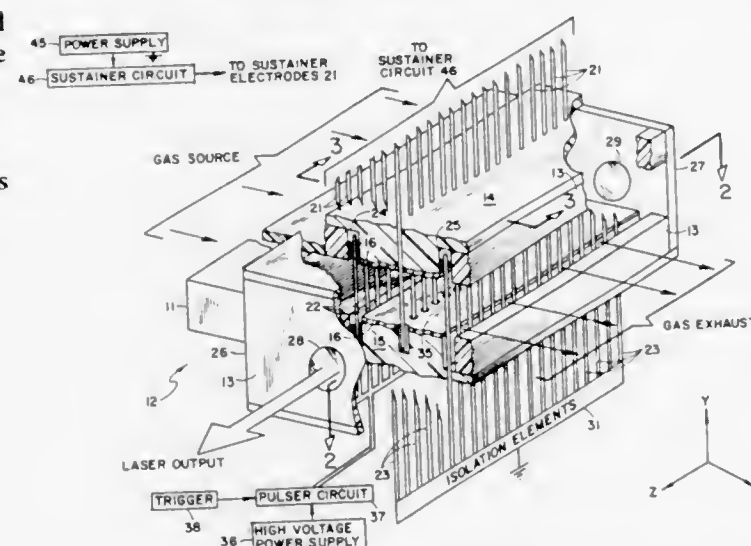
**3,721,915**  
**ELECTRICALLY EXCITED FLOWING GAS LASER AND**  
**METHOD OF OPERATION**

James P. Reilly, Lexington, Mass., assignor to Avco Corporation, Cincinnati, Ohio  
Continuation-in-part of Ser. No. 859,424, Sept. 19, 1969,  
abandoned. This application June 29, 1970, Ser. No. 50,933

Int. Cl. H01s 3/00

U.S. Cl. 331—94.5 PE

50 Claims



A method of and apparatus for producing spatially uniform discharges including producing laser action in a flowing gas by

electrical means using first means to create electrons and second means to maintain the optimum electron environment to produce lasing action.

Apparatus for and a method of producing spatially uniform discharges substantially throughout a large volume of gaseous medium by generating in an enclosure a substantially uniform density of free electrons in the medium and controlling the electron temperature of the free electrons to increase their average energy without substantially increasing their density that at a predetermined level and uniformity of both the density and temperature of the medium, a stable and uniform discharge is produced in the medium suitable for the intended use of the medium such as the generation and amplification of light waves by means of devices including gaseous media in which stimulated emission of radiation is provided by electrical means to create free electrons and maintain the optimum electron environment to produce lasing action, there being a particular relationship between the density of free electrons, gas pressure and gas velocity.

**3,721,916**  
**COLD CATHODE CONSTRUCTION FOR GASEOUS**  
**LASER**

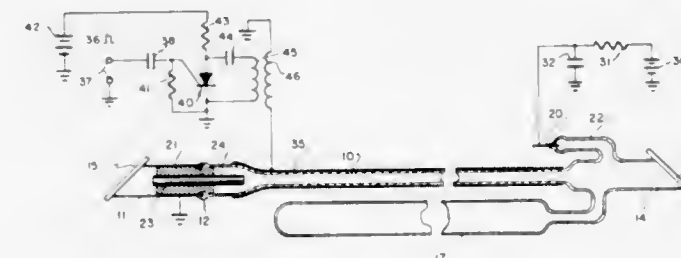
Robert S. Witte, Redondo Beach; C. Lee Dailey, Palos Verdes Estates; Milford J. Eck, Anaheim, and Walter H. Rutherford, Clearlake Highlands, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed April 28, 1971, Ser. No. 138,141

Int. Cl. H01s 3/09

U.S. Cl. 331—94.5

5 Claims



A gaseous laser of the type having a coaxial cold cathode constructed to minimize sputtering of the windows of the laser. The laser is preferably an argon or xenon-ion laser with an indium cathode disposed at one end of the insulating envelope and surrounding an insulating tube which extends in a direction toward the anode to minimize sputtering. Alternatively, both cathode and anode may consist of indium and may be disposed on the outside of the end portions of the laser envelope with the end portions extending beyond the electrodes and towards each other.

**3,721,917**  
**GAS-DISCHARGE DEVICES FOR OPTICAL PUMPING OF**  
**LASERS**

Nikolai Ivanovich Sereda, Zelengrad, korpus 503, kv. 18; Viktor Viktorovich Sysun, Zelengrad, korpus 707, kv. 71; Boris Vasilievich Skvortsov, Zelengrad, korpus 511, kv. 58; Viktor Davydovich Fisher, ulitsa Tuchkovskaya, 9, kv. 151, and Alexandr Vasilievich Tolstoshev, Inovokuznetsky pereulok, 10, kv. 18, all of Moscow, U.S.S.R.

Filed June 17, 1971, Ser. No. 153,972

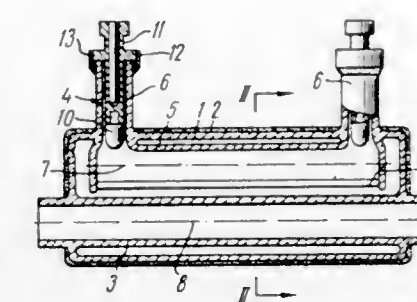
Int. Cl. H01s 3/09

U.S. Cl. 331—94.5

4 Claims

A gas-discharge device for optical pumping of lasers, in which a gas-filled chamber encloses an optically transparent laser-material holding tube and at least one optically transparent cylindrical discharge tube. This discharge tube is arranged inside the chamber so that the electrode assemblies

between which an electric discharge is initiated to produce a gas-discharge plasma are found inside the discharge tube

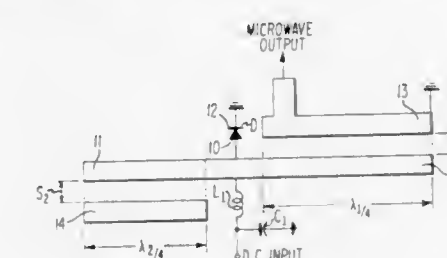


which has a slot to allow part of the plasma to spill over into the chamber.

**3,721,918**  
**NEGATIVE RESISTANCE SEMICONDUCTOR COU-**  
**PLED TRANSMISSION LINE APPARATUS**  
Arye Rosen, Elkins Park, Pa., and James Francis Reynolds, Hightstown, N.J., assignors to RCA Corporation  
Filed Feb. 24, 1972, Ser. No. 229,145  
Int. Cl. H03b 7/14

U.S. Cl. 331—96

8 Claims

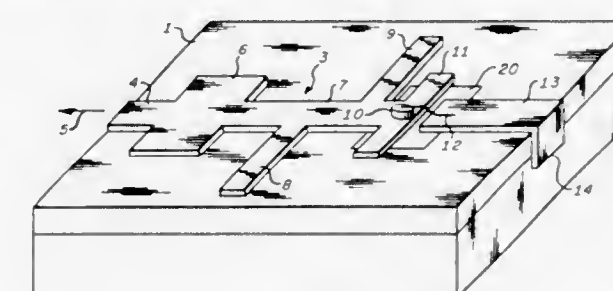


The boundary conditions for operating an avalanche diode in the anomalous mode are solved by coupling the diode between the center conductor and ground conductor of a first TEM mode transmission line. Center conductors of additional TEM mode transmission lines, providing different electrical parameters, are capacitively coupled to different sections of the center conductor of the first TEM mode transmission line.

**3,721,919**  
**HIGH EFFICIENCY MODE PLANAR MICROCIRCUIT**  
**HIGH FREQUENCY SIGNAL GENERATOR**  
Martin I. Grace, Framingham, Mass., assignor to Sperry Rand Corporation, New York, N.Y.  
Filed March 13, 1972, Ser. No. 234,177  
Int. Cl. H03b 7/14

U.S. Cl. 331—96

9 Claims



An active high-efficiency-mode semiconductor diode is coupled for the generation of oscillating high frequency electromagnetic fields in a planar transmission line network, the apparatus taking the form of a single port, high frequency oscillator device. Oscillations are sustained by time delayed triggering phenomenon within the TRAPATT semiconductor diode.

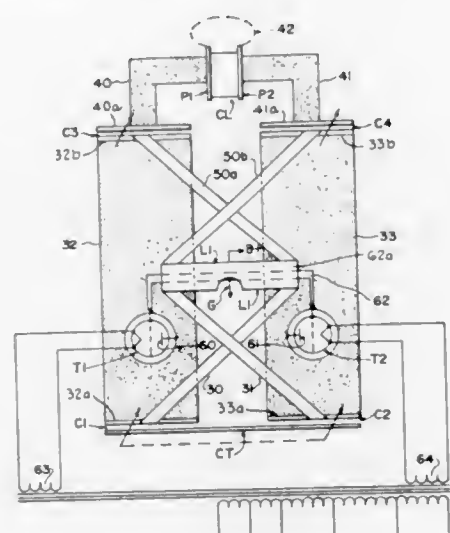


3,721,920

**SELF-EXCITED COMPOSITE CAPACITANCE AND INTERLOCKING INDUCTANCE OSCILLATOR**  
 Julius W. Mann, 9132 De Koven Drive, S.W., Tacoma, Wash.  
 Filed June 1, 1971, Ser. No. 148,578  
 Int. Cl. H03b 5/18

U.S. Cl. 331-168

3 Claims

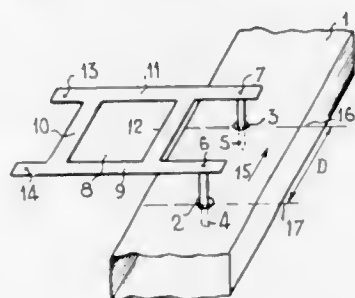


A self-excited, self-tuning and self-loading generator in which the load electrode is an inherent part of the capacity and inductance of the generator tank circuit. The generator is automatically, instantly and steplessly self-tuning with respect to wide variations in load characteristics. A maximum power input to the load is maintained by the generator and this is in proportion to changes in the loss factor of the load. A composite or interlocked inductance is used for the load electrode and the tank circuit. Series coupling condensers are used in the load circuit and leads from these coupling condensers are crossed and their terminals are connected to the composite inductance thus interlocking the composite inductance with the load circuit. This is why I term the composite inductance an interlocked inductance.

3,721,921

**WAVEGUIDE DIRECTIONAL COUPLER**  
 Michel Lamy, and Jacques Billard, both of Paris, France, assignors to Thomson-CSF, Paris, France  
 Filed Oct. 6, 1971, Ser. No. 187,110  
 Claims priority, application France, Oct. 13, 1970, 7036927  
 Int. Cl. H01p 5/12, 5/14, 3/08  
 U.S. Cl. 333-10

1 Claim



A directional coupler for a waveguide comprises two probes penetrating into the waveguide and separated by an interval equal to a quarter of the wavelength corresponding, in the guide, to the operating frequency. The two probes are connected to two ports of a square hybrid, the length of the side of which is equal to a quarter of the wavelength corresponding, in the hybrid, to the above-mentioned frequency. The square hybrid may be detached from the waveguide either through making the probes integral with the hybrid, or through making them the extensions of coaxial jacks integral with the guide, the hybrid being then provided with two mating plugs.

3,721,922

**COMPOSITE DIGITAL LOGIC MICROWAVE PHASE SHIFTER**

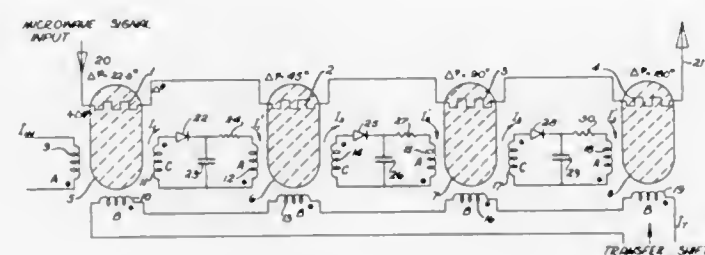
Donald W. Boensel, La Canada, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 2, 1970, Ser. No. 94,510

Int. Cl. H01p 1/32

U.S. Cl. 333-24.1

6 Claims



A microwave phase shifter comprising a strip transmission or meander line associated with a ferrimagnetic toroid or ferrimagnetic substrate divided into discrete operative regions. These discrete operative regions form the magnetic memory elements of a digital logic function. The device thus operates as a digitally controlled phase shifter in which the ferrimagnetic elements serve the dual purpose of operating on the digital control code signals as memory elements, while simultaneously effecting stage-by-stage phase shift of the microwave energy in the said meander line or strip-line.

3,721,923

**COMPRISING A SLAB OF SEMICONDUCTOR MATERIAL**

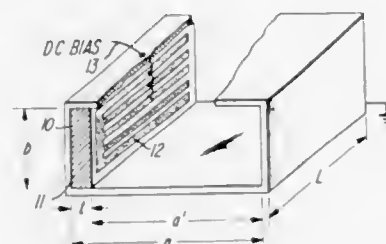
Sidney Gray, Rockhill; Burton Joshua Levin, Cherry Hill, and David Joseph Miller, Brigantine, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 6, 1971, Ser. No. 169,692

Int. Cl. H01p 1/18

U.S. Cl. 333-31 A

8 Claims



A slab of semiconductive material is positioned inside a rectangular waveguide transmission line to electrically change the phase shift within a waveguide. The slab is provided with two electrodes to which a D.C. bias signal is applied; the bias signal varies the conductivity of the semiconductor material to produce the desired phase shift by changing the effective dimensions of the waveguide.

3,721,924

**VARIABLE DELAY LINE UTILIZING ONE PART REFLECTION TYPE AMPLIFIER**

Bertrand Edward Berson, Trenton, and Chainulu Lakshminar-simha Upadhyayula, Cranbury, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed May 19, 1971, Ser. No. 144,878

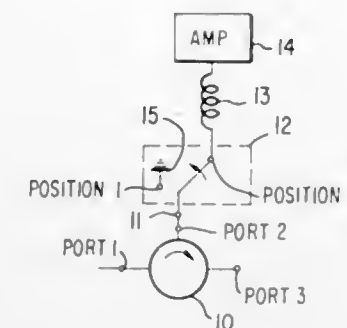
Int. Cl. H01p 1/18

U.S. Cl. 333-31 R

5 Claims

A microwave delay line includes a first path of negligible delay time, a second path providing a predetermined delay

time determined by a delay line section terminated by a one port reflection type amplifier, and a control for selectively keys any one of which may be depressed to engage and operate an underlying tuning element. The door, including the



feeding a microwave signal over one of the paths. A signal can be held in the delay line section of the second path to thereby impart a desired delay to that signal.

3,721,925

**SOUND SIGNAL DELAY DEVICE**

Noboru Tsuchiya, Kanagawa-ken, and Hirotake Kawakami, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

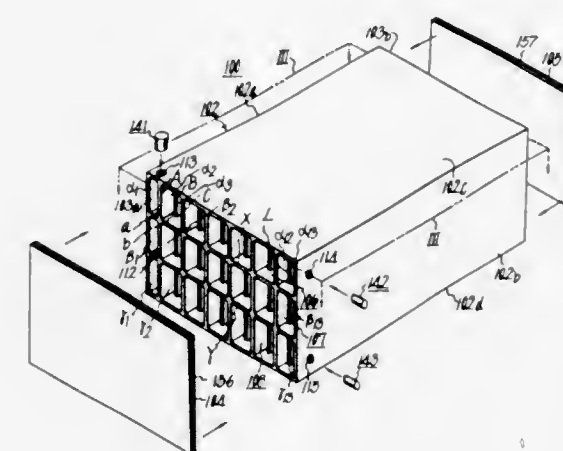
Filed May 21, 1971, Ser. No. 145,823

Claims priority, application Japan, May 21, 1970, 45/49633

Int. Cl. H03h 7/30

U.S. Cl. 333-30

4 Claims



A sound signal delay device having an airtight box, a plurality of partition walls forming a meandering channel in said box, a loudspeaker mounted on said box, and a microphone mounted on said box in spaced relation to said loudspeaker, whereby a sound produced by said loudspeaker is picked up as a delayed sound signal by the microphone.

3,721,926

**KEY-OPERATED TELEVISION CHANNEL SELECTOR**

Arthur Berenbaum, Holland, and Robert M. McDonough, Philadelphia, both of Pa., assignors to Philco-Ford, Philadelphia, Pa.

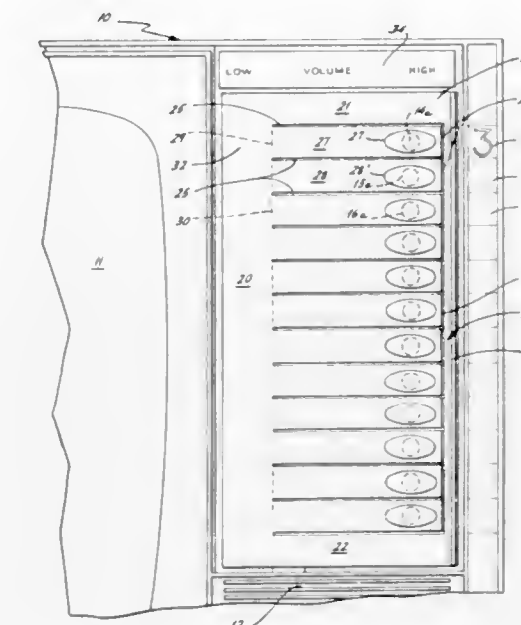
Filed April 1, 1971, Ser. No. 130,336

Int. Cl. H03j 5/08; H04b 1/08; H01h 3/12

U.S. Cl. 334-7

2 Claims

Television receiving apparatus including a presettable tuner having a plurality of plunger-actuated, frequency-determining, elements with which the operator can select desired VHF and UHF stations. The actuating elements are normally concealed behind a control panel door, and the door is so constructed that portions thereof define a plurality of deflectable



keys, may be moved to open position to accommodate presetting of desired frequency channels.

3,721,927

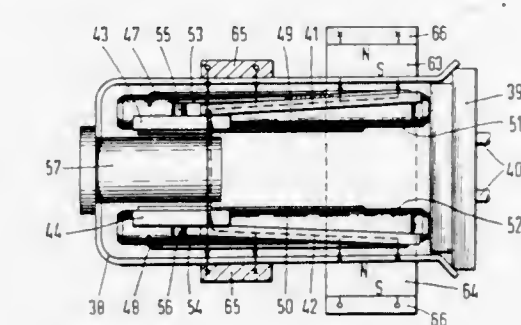
**BISTABLE POLARIZED ELECTROMAGNETIC RELAY**  
 Gundakar Braumann; Helmut Stocker, and Dieter Hillenbrand, all of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed July 30, 1971, Ser. No. 167,567

Int. Cl. H01h 5/22

U.S. Cl. 335-179

20 Claims



A bistable electromagnetic relay is disclosed including two movable armatures whose free ends occupy one of two stable states. The armatures cooperate with stationary counter poles to define air gaps. Permanent magnets including a flux return path longitudinal to the armature, through the air gaps and a magnetic core and a flux guide bow hold the armature stable in one of the no-current stable states. A field winding having a separate flux return path diagonal to the longitudinal permanent magnetic field in the region of the air gap is excited to change the state of the relay armatures.

3,721,928

**CURRENT MONITORING APPARATUS**

Carlos E. Buonavita, San Gabriel, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed April 29, 1971, Ser. No. 138,554

Int. Cl. H01h 9/00

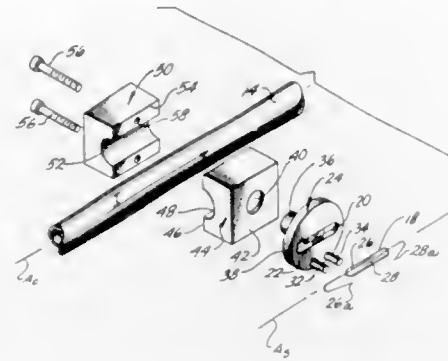
U.S. Cl. 335-204

5 Claims

A method and apparatus is disclosed for detecting when the current flowing through a current carrying member reaches a predetermined magnitude. Switch means responsive to the magnetic field about the member is mounted adjacent the current carrying member. Additionally, adjustable means are in-



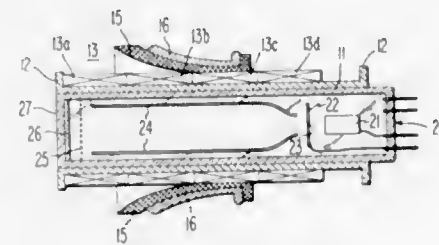
cluded for selectively varying the sensitivity of the switch means to the magnetic field in order to control the sensitivity



astigmatism which underconverges the electron beams along the vertical deflection axis such that the beams are substantially converged at all points on a scanned raster of the picture tube. The desired convergence characteristics are achieved by winding the vertical and horizontal coil conductors such that the conductor distribution in each quadrant of a cross-section of the yoke is least in a region between 25° and 45° measured from the vertical deflection axis of the yoke.

**3,721,931**  
**ELECTROMAGNETIC FOCUSING AND DEFLECTION ASSEMBLY FOR CATHODE RAY TUBES**  
James Hugh Wharton, Indianapolis, Ind., assignor to RCA Corporation  
Filed July 6, 1971, Ser. No. 159,810  
Int. Cl. H01f 5/00

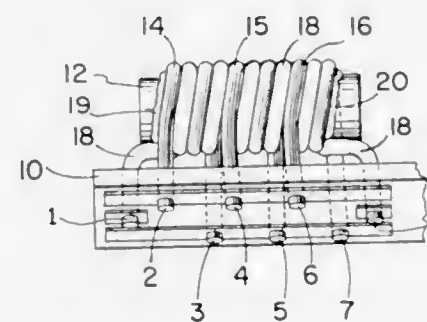
U.S. Cl. 335-213 11 Claims



A deflection coil assembly for an image conversion tube such as a vidicon has the active field producing conductors flared away from the central longitudinal axis of the vidicon at the end adapted to be closest to the target electrode. A focusing coil assembly which may be disposed coaxially inside of the deflection coil assembly provides a nonuniform magnetic field which in conjunction with the deflection field enables operation of the tube with minimum aberrations such as astigmatism and minimum beam landing error.

**3,721,932**  
**BROADBAND RADIO FREQUENCY FERRITE TRANSFORMER PROVIDING CLOSE COUPLING**  
Gary N. Fiersten, Skokie, and Paul H. Jacobs, Schaumburg, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.  
Continuation of Ser. No. 15,619, March 2, 1970, abandoned.  
This application Sept. 14, 1971, Ser. No. 180,515  
Int. Cl. H01f 27/30

U.S. Cl. 336-65 2 Claims



A broadband radio frequency transformer for use in the frequency range from 25 to 175 megahertz includes closely coupled windings on a ferrite rod providing low leakage inductance. A plurality of primary coils and a single continuous secondary coil are provided, with each primary coil bifilar wound with a portion of the secondary coil. The number of turns in the secondary coil is equal to the total number of turns in all the primary coils, or may be up to 50% greater than the total number of turns in the primary coils. The primary coils are connected in parallel to provide a step-up transformer having an impedance ratio related to the ratio of the number of turns in each primary coil to the number of turns in the

Magnetic reed switches are mounted side-by-side in a switching array operable from a moving magnet and located in a channel of conductive material and magnetic members to provide electromagnetic and electrostatic shielding and a magnetic bridge member is used to inactivate selected ones of the switches.

**3,721,930**  
**DEFLECTION YOKE FOR USE WITH IN-LINE ELECTRON GUNS**  
William Henry Barkow, Pennsauken, and Josef Gross, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.  
Filed Jan. 14, 1972, Ser. No. 217,768  
Int. Cl. H01f 7/00

U.S. Cl. 335-213 6 Claims

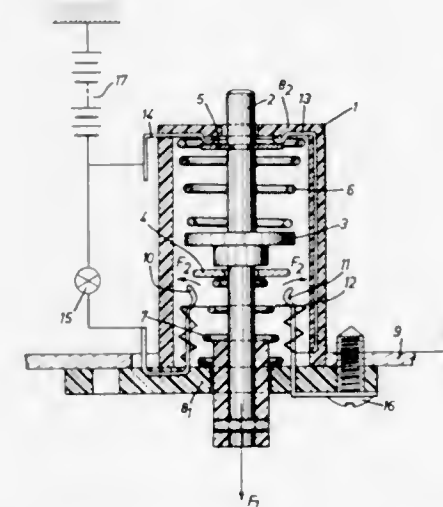


A deflection yoke for a television picture tube utilizing coplanar horizontal in-line electron guns includes vertical and horizontal coil windings selected for producing positive vertical isotropic astigmatism and negative horizontal isotropic

secondary coil. The single coil can be used as the primary winding and the plurality of coils connected in parallel as the secondary winding for an impedance step-down transformer.

**3,721,933**  
**DELAYED-OPENING SWITCHES FOR VEHICLES INTERIOR LIGHTING**  
Francois Peroy, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt and Automobiles Peugeot, Paris, France  
Filed Aug. 5, 1971, Ser. No. 169,179  
Claims priority, application France, Aug. 18, 1970, 30286  
Int. Cl. H01h 71/16

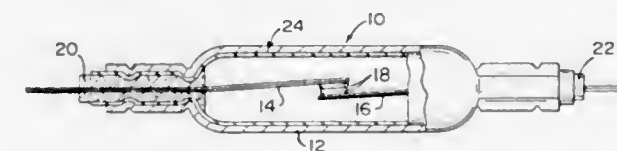
U.S. Cl. 337-66 4 Claims



This door-jamb switch for controlling the interior lighting of a motor vehicle comprises a pair of bimetallic strips having contact-shaped ends and surrounded by a heating wire; these strips interposed in the lighting circuit through which the heating wire is energized are adapted when cold to retain and when hot to release a metal sliding contact washer constantly urged in the release direction by a spring and retained between said strips by a control rod when the latter is not depressed by the door in its closed position. A metal disk rigid with said rod is adapted to close the supply circuit of said heating wire when the control rod is depressed by the door. This switch introduces a delay-action in the switching-off of the lighting device after completion of the door closing movement.

**3,721,934**  
**THERMOSTAT HAVING POSITIVE INSULATING LINER**  
Alton R. Wells, 4573 W. Tradewinds Avenue, Lauderdale-by-the-Sea, Fla.  
Filed Aug. 31, 1971, Ser. No. 176,661  
Int. Cl. H01h 45/02

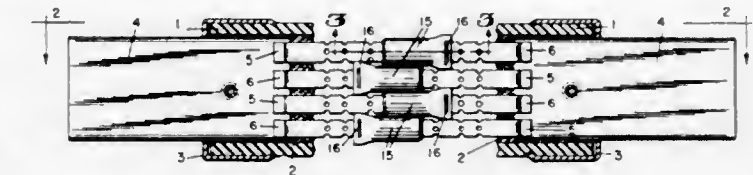
U.S. Cl. 337-112 6 Claims



A thermal control or protector having a conductive casing with two bi-metal arms extending as cantilevers into the casing from the ends thereof. The bi-metal arms have insulating sleeves therearound and a continuous insulating liner is provided that extends the length of the casing adjacent the wall thereof and protrudes beyond the ends of the casing for positive insulation thereof.

**3,721,935**  
**HIGH CURRENT-CARRYING-CAPACITY DUAL ELEMENT FUSE**  
Frederick J. Kozacka, South Hampton, N.H., assignor to The Chase-Shawmut Company, Newburyport, Mass.  
Filed July 7, 1971, Ser. No. 160,379  
Int. Cl. H01h 85/04

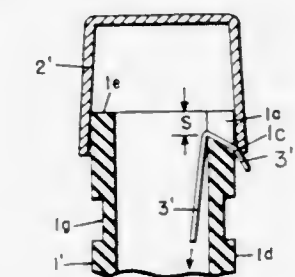
U.S. Cl. 337-164 7 Claims



A dual element fuse intended to carry large currents is provided with a plurality of fuse links for interrupting major fault currents, a spring biased solder joint overload current interrupting switching device being interposed in each of said plurality of fuse links. The overload current interrupting devices are arranged in two spaced planes parallel to the plane defined by the two blade contacts of the fuse. Each of the overload current switching devices includes a fixed terminal and movable terminal both enclosed in a sub-casing of electric insulating material, separating the aforementioned terminals from a body of pulverulent arc-quenching filler. The terminals are arranged in a pattern tending to maximize the spacing between furlurites resulting from backburn of fuse links beyond the sub-casings incident to interruption of overload currents the interruption of which is relatively onerous.

**3,721,936**  
**CARTRIDGE FUSE HAVING BLOWN FUSE INDICATOR**  
Richard A. Belcher, Hampton Falls, N.H., assignor to The Chase-Shawmut Company, Newburyport, Mass.  
Filed March 29, 1972, Ser. No. 239,090  
Int. Cl. H01h 85/30

U.S. Cl. 337-241 5 Claims



A cartridge fuse is provided with a blown fuse indicator spring-biased to an indicating position and normally held in its non-indicating position by means of a restraining wire. The fuse includes effective mechanical means rather than a solder joint for precluding undesired slippage of the restraining wire. To achieve this end the tubular casing of the fuse is provided with a substantially transverse opening, and the restraining wire is threaded through said opening and forms a loop firmly anchoring the end of the restraining wire formed into the loop and clamped by the lateral surface of a ferrule against the outer surface of the casing of the fuse.

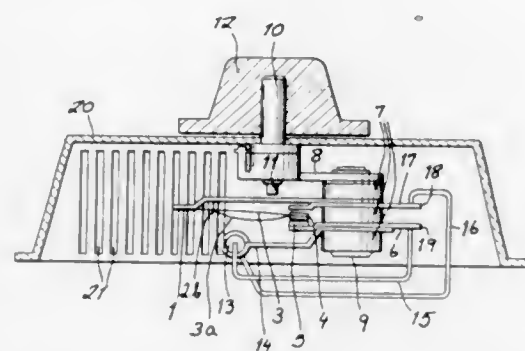
**3,721,937**  
**ELECTRIC TEMPERATURE REGULATOR**  
Peter Schuller, Wilhelm-Raabe-weg 4A, 3006 Grossburgwedel, Germany  
Continuation-in-part of Ser. No. 736,087, June 11, 1968, Pat. No. 3,525,222. This application June 8, 1970, Ser. No. 44,530  
Int. Cl. H01h 37/52

U.S. Cl. 337-335 3 Claims

A thermostat for a refrigerator has a pair of substantially parallel bimetallic elements exposed to the atmosphere of the



refrigerator compartment and adapted to bend in opposite directions on temperature variation. Attached to the free end of one of the strips is an elongated element which carries a contact engageable with a fixed contact to close a circuit that operates the refrigerator compressor. Extending between the



free end of the other strip and the movable contact is a leaf spring. Both of the free ends move in opposite directions with one of these free ends traversing a line extending from the other free end to the movable contact, thereby forming a toggle linkage for snapping the contacts open and closed, depending on the direction of temperature change.

3,721,938

#### CADMIUM TELLURIDE DEVICES WITH NON-DIFFUSING CONTACTS

Gerald Entine, Newton; Franklin H. Cocks, Waltham, and Carl Rice Mitchell, Watertown, all of Mass., assignors to Tyco Laboratories Incorporated, Waltham, Mass.

Filed Dec. 23, 1971, Ser. No. 211,723

Int. Cl. H01c 7/08

U.S. Cl. 338—15

6 Claims

A method of providing non-diffusing contacts for cadmium telluride semiconductor devices, notably photodetectors. The contacts consist of iridium applied by sputtering and are low resistance, but also photosensitive at 400°C.

3,721,939

#### ELECTRICAL CONNECTOR

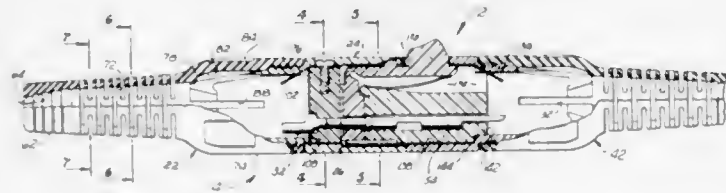
Edward C. Paugh, Hacienda Heights, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed July 6, 1971, Ser. No. 159,841

Int. Cl. H01r 3/06

U.S. Cl. 339—14 R

2 Claims



An electrical connector assembly is formed of a pair of concentric members with the outer concentric member being internally threaded at its front end and inwardly tapered towards its rear end. The inner concentric member is externally threaded for mating with the outer member. Upon threadably mating of the concentric members, the inner member is radially compressible at one end for securing the inner member to an electrical conductor. Moreover, step-sized collets, which are removable, are provided at the rear inner surface of the outer member so as to accommodate various diameter electrical conductors. Grounding shell members may be mounted in the connectors with mating of the connectors causing an electrical interconnection between the grounding shells.

3,721,940

#### CONNECTOR FOR MULTI-CONDUCTOR TAPE CABLE

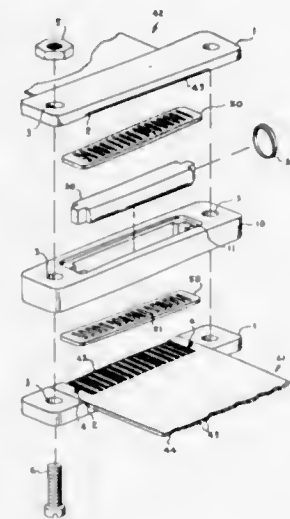
Donald E. Michel; LeRoy W. Fairbairn, and James E. Cook, all of Sidney, N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Sept. 15, 1971, Ser. No. 180,801

Int. Cl. H01r 13/36, 13/54; H05k 1/04

U.S. Cl. 339—17 F

16 Claims



An electrical connector for making solderless contact between two flat multiple-conductor electrical cables. The connector includes a plurality of ring shaped electrical conductors mounted on a shaft within the connector housing. The ring shaped electrical conductors are arranged in the same spaced relationship as the conductors in the tape cable and when the tape cables are inserted into the housing they connect each of the conductors of the first cable in electrical circuit relationship to the electrical conductors of the second cable. In one embodiment, the shaft is rotatable so that should an oxide build up between the ring contacts and the electrical conductors of the tape cable, the electrical contacts may be rotated in contact with the tape conductors to clean the surface of oxide and reduce the resistivity between the contacting surfaces.

3,721,941

#### MULTIPLE SOCKET CONNECTOR APPARATUS

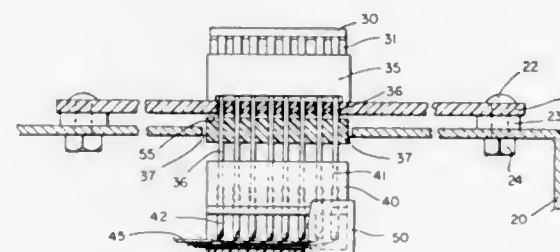
William L. Wisser, Ambler, Pa., assignor to Narco Scientific Industries, Inc., Fort Washington, Pa.

Filed Nov. 3, 1971, Ser. No. 195,208

Int. Cl. H05k 1/02

U.S. Cl. 339—17 CF

3 Claims



A multiple socket connector, for integrally connecting multiple points on a printed circuit board through a chassis to a system harness. An integrated circuit is connected to a wire wrap type printed circuit socket, the pins of which connect to and extend through the printed circuit board, and which also extend through a chassis opening and connect to a mating dual-in-line IC socket. The output leads of the IC socket are connected to the system harness. A spacer may be provided between the two sockets to insulate the wire wrap leads from the chassis.

3,721,942

#### LOCK PLATE FOR HIGH VOLTAGE BUSHINGS WITH REMOVABLE CONNECTORS

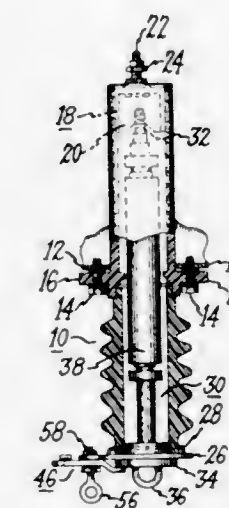
Gerard V. Conway, Pittsfield, Mass., assignor to General Electric Company

Filed Dec. 3, 1971, Ser. No. 204,560

Int. Cl. H01r 13/54

U.S. Cl. 339—75 R

7 Claims



A high voltage bushing for electrical apparatus, such as transformers. The bushing is hollow and has provisions for receiving either a fuse connector or a solid connector. A lock plate is provided which mounts on the terminal plate of the bushing and prevents withdrawal of the connector while the lock plate is attached to the terminal plate. The lock plate is provided with an eyebolt connector for attaching to the terminal plate. Slots are also provided in the lock plate or connecting one or more high voltage cable leads thereto.

3,721,943

#### ELECTRICAL CONNECTING DEVICE

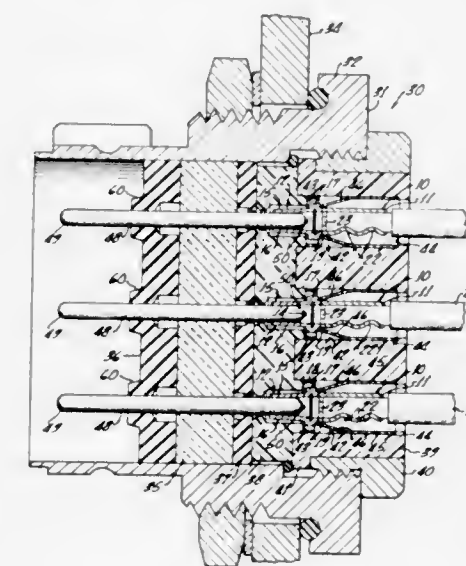
Maurice D. Curr, Idyllwild, Calif., assignor to The Deutsch Company, Electronic Components Division, Banning, Calif.

Filed Jan. 21, 1969, Ser. No. 792,704

Int. Cl. H01r 13/52

U.S. Cl. 339—94 M

3 Claims



This invention includes a socket contact of sheet metal, which is formed to a tubular configuration from a flat piece having a malleable portion at one end and a resilient portion at the other. The malleable portion is crimped to an adjoining wire, while the resilient portion provides a spring force for gripping a mating pin. The latter element may be permanently mounted in the connector and extend through a sealing member such as rubber or glass. The pin extends outwardly

for insertion into the socket contact of an adjoining connector section.

3,721,944

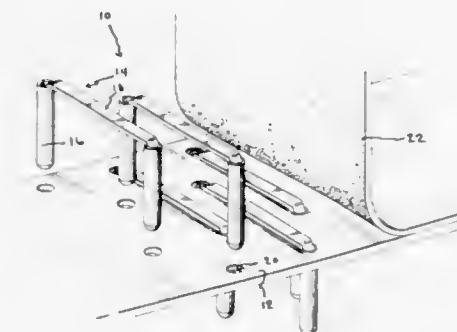
#### FLEXIBLE STRIP FOR ELECTRICAL CONNECTORS OR THE LIKE

Charles Harry Weidler, Lancaster, Pa., assignor to AMP Incorporated, Harrisburg, Pa.  
Continuation of abandoned application Ser. No. 748,551, July 29, 1968. This application Dec. 4, 1970, Ser. No. 95,334

Int. Cl. H01r 31/08

U.S. Cl. 339—19

4 Claims



An electrical interconnection strip comprising a first layer of insulating material, a plurality of pin members extending through the first layer, and a second layer of insulating material adhesively connected or otherwise secured to the first layer and securing the pin members to the strip.

3,721,945

#### INTEGRATED WIRE TERMINATION SYSTEM WITH INTEGRAL RETAINER

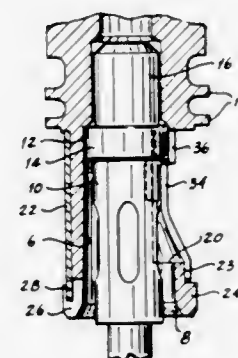
Harold W. Hults, New Berlin, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Sept. 9, 1971, Ser. No. 179,109

Int. Cl. H01r 13/54

U.S. Cl. 339—74 R

8 Claims

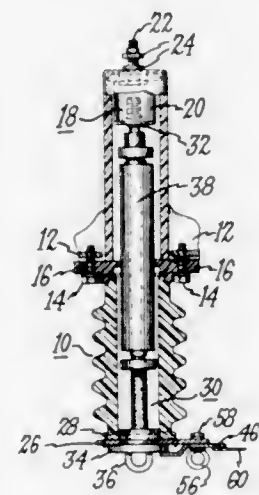


A connector socket of the integrated wire termination system (IWTS) type adapted to receive any one of a plurality of different types of "standard" terminal (connector) pins, having tips of different lengths, inserted therein by a split-sleeve tool. The socket includes an integral retainer formed thereon for engaging the annular shoulder of the terminal pin to lock it in electrically conducting relation therewithin. This integral retainer is a split spring sleeve that has been sheared to provide a generally U-shaped cut across the split. The socket has an aperture in one side. This split sleeve is placed around the apertured section, and the split and sheared side is formed into such aperture to form a catch for engaging the annular shoulder of the terminal pin. Insertion of a split-sleeve release tool from the rear allows release of the terminal pin for disconnection.



**3,721,946**  
**HIGH VOLTAGE BUSHING WITH REMOVABLE CONNECTOR AND LOCKING PLATE**  
 Henry Hucko and Henry T. Lusignan, Pittsfield, Mass., assignors to General Electric Company  
 Filed Dec. 2, 1971, Ser. No. 204,095  
 Int. Cl. H01r 13/54  
 U.S. Cl. 339—75 R

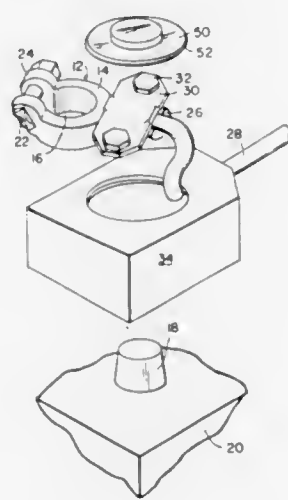
7 Claims



A high voltage bushing for electrical apparatus such as a transformer. The bushing is hollow and has provisions for receiving either a fuse connector or a solid connector. A locking plate is provided which mounts on the terminal plate of the bushing and engages the connector, preventing withdrawal of such connector while the locking plate is attached to the terminal plate.

**3,721,947**  
**BATTERY TERMINAL GUARD**  
 Edward L. Robin, 115 Glacier Circle, Vacaville, Calif.  
 Filed July 13, 1972, Ser. No. 271,632  
 Int. Cl. H01r 11/26  
 U.S. Cl. 339—116 R

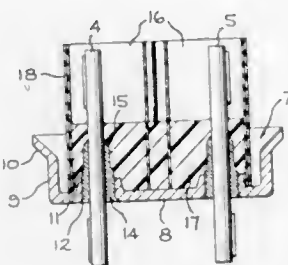
5 Claims



A protective device for preventing the corrosion or sulfation of a cable connector on the battery terminal includes a flexible casing that fits snugly around the connector and the base of the terminal and an upper opening forming the seat for a rigid, circular top cover element that gives the casing an air tight seal when installed in the casing.

**3,721,948**  
**TERMINAL ASSEMBLY**  
 George W. Brandt, and Joe T. Hague, both of Tyler, Tex., assignors to General Electric Company, Louisville, Ky.  
 Filed March 2, 1972, Ser. No. 231,179  
 Int. Cl. H01b 17/26  
 U.S. Cl. 339—176 R

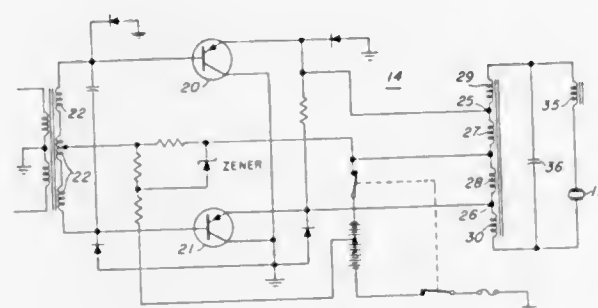
6 Claims



An electric terminal assembly, particularly for hermetic compressors, comprising a plurality of conductor pins extending through a metal body member and secured thereto by glass-to-metal seals is provided with sleeves of insulating material surrounding the pins and a body of resinous material anchoring the sleeves to the body member and covering the glass seals.

**3,721,949**  
**ECHO REPEATER TARGET**  
 William C. Hubbard, Lemon Grove; Keith E. Geren, and Warren A. Sauer, both of San Diego, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy  
 Filed Sept. 30, 1964, Ser. No. 400,608  
 Int. Cl. H04b 11/00  
 U.S. Cl. 340—3 E

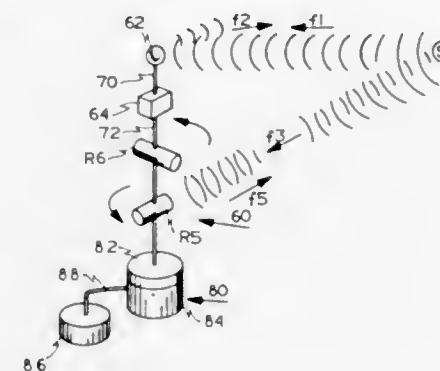
3 Claims



1. In combination in a system for driving a transducer with a predetermined capacity between terminals;  
 an amplifier;  
 a source of a relatively broad band of frequencies for driving said amplifier;  
 an inductance with terminals connected across the output of said amplifier;  
 the impedance between said terminals being matched to the output impedance of said amplifier for the optimum transfer of power;  
 a parallel tuned circuit comprising a first tuning element coupled across said inductance to parallel tune said inductance to any frequency F within said band;  
 a series tuned circuit comprising a tuning element connected in series with said transducer, said element being of predetermined reactance to series tune said transducer to said frequency F;  
 said series tuned circuit being coupled across said parallel tuned circuit so that the sign of the reactances of the series and the parallel circuits vary complementarily at frequencies above and below said frequency F.

**3,721,950**  
**RESPONSIVE NAVIGATION BEACON**  
 Stig. W. Jorgensen, Hollis, N.H., and Wayne A. Kearsley, Chelmsford, Mass., assignors to Sanders Associates, Inc., Nashua, N.H.  
 Filed Aug. 13, 1969, Ser. No. 866,406  
 Int. Cl. G01s 3/00  
 U.S. Cl. 340—3 E

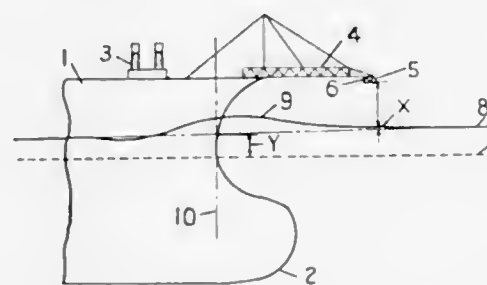
4 Claims



A navigation beacon is provided which does not emit a continuous signal. Instead, it has a pair of responsive devices rotating at different angular velocities related in the ratio 2:1. The responsive devices may be either passive reflectors or active transponders, and the signal may be subsonic, sonic, or supersonic acoustic energy, or infrared, visible, ultraviolet or microwave radiation or combinations of any of these forms of energy. In any case, an observer having any bearing relative to the beacon will receive two distinct responses from the pair of reflectors or transponders. The time interval between these two responses will be a calculable function of that bearing. In addition, the interval between interrogation and response will be a calculable function of the observer's range from the beacon. Various refinements may be added to make the beacon easier to locate for friendly forces, or to make it difficult for enemy forces to locate. The beacon can even be turned off entirely except when activated by a predetermined command and the command can be in coded form to prevent activation by an enemy.

**3,721,951**  
**NAVIGATIONAL INSTRUMENTS FOR SHIPS**  
 Archibald McIntyre Ferguson, Cardross, Scotland, assignor to The University Court of the University of Glasgow, Glasgow, Scotland  
 Filed Sept. 9, 1970, Ser. No. 70,828  
 Claims priority, application Great Britain, Sept. 16, 1969, 45,475/69  
 Int. Cl. G01s 9/66  
 U.S. Cl. 340—3

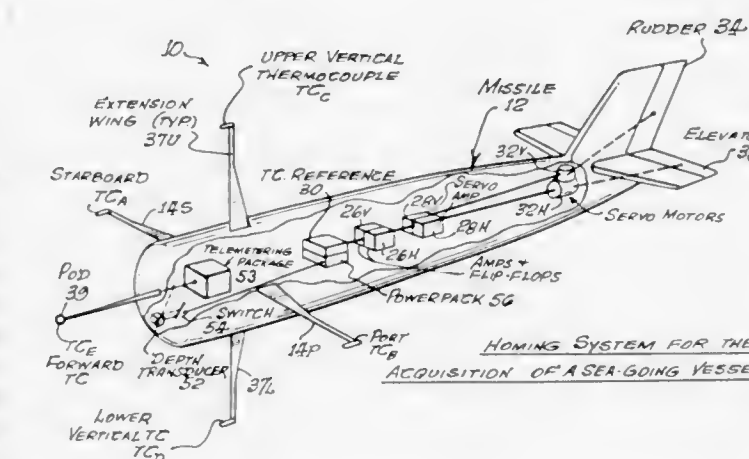
13 Claims



A navigational instrument for a ship incorporates an echo device arranged to measure the distance from a fixed part of the ship to the surface of the water at a point in advance of the ship. It includes a clinometer device arranged to measure the angle of fore and aft inclination of the ship from its static position and feed a corresponding signal to a computer together with the signal from the echo device. Indicating means receive the output from the computer which is in the form of an indication of the amount of the depression of the selected part of the ship and show such indication as a visual signal. The instrument may also incorporate a hog and sag clinometer providing a measure of any hog and sag present in the ship the output of said clinometer being also fed to the computer for correction of the output signal. The instrument may also incorporate means for feeding to the computer a signal which indicates the speed of the ship.

**3,721,952**  
**HOMING SYSTEM FOR THE ACQUISITION OF A SEA-GOING TARGET VEHICLE BY DETECTION OF ITS WAKE**  
 Joseph P. Strapp, 1840 Deserta Drive, Glendora, Calif.  
 Filed April 29, 1971, Ser. No. 138,538  
 Int. Cl. F42b 19/01  
 U.S. Cl. 340—4 R

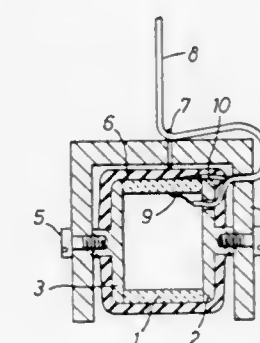
9 Claims



An underwater missile homing system, comprising: two pairs of test thermocouple (TC) junctions, means for mounting one pair of TC junctions on the missile so that they extend laterally therefrom in opposite directions, and means for mounting the other pair of TC junctions on the missile so that they extend vertically therefrom in opposite directions. Guidance means are provided on the missile for guiding the missile in a horizontal direction and in a vertical direction. Means are also provided responsive to signals obtained from the TC junctions for controlling the guidance means, whereby said missile will home in on a sea-going vehicle, in azimuth and elevation, which emits heat in its wake.

**3,721,953**  
**IMPROVEMENTS RELATING TO HYDROPHONES**  
 Derek J. Bennett, Bedford, Nova Scotia, Canada, assignor to EMI Limited, Middlesex, England  
 Filed April 22, 1970, Ser. No. 30,924  
 Claims priority, application Great Britain, April 22, 1969, 20,373/69  
 Int. Cl. H04r 17/00  
 U.S. Cl. 340—8 S

3 Claims



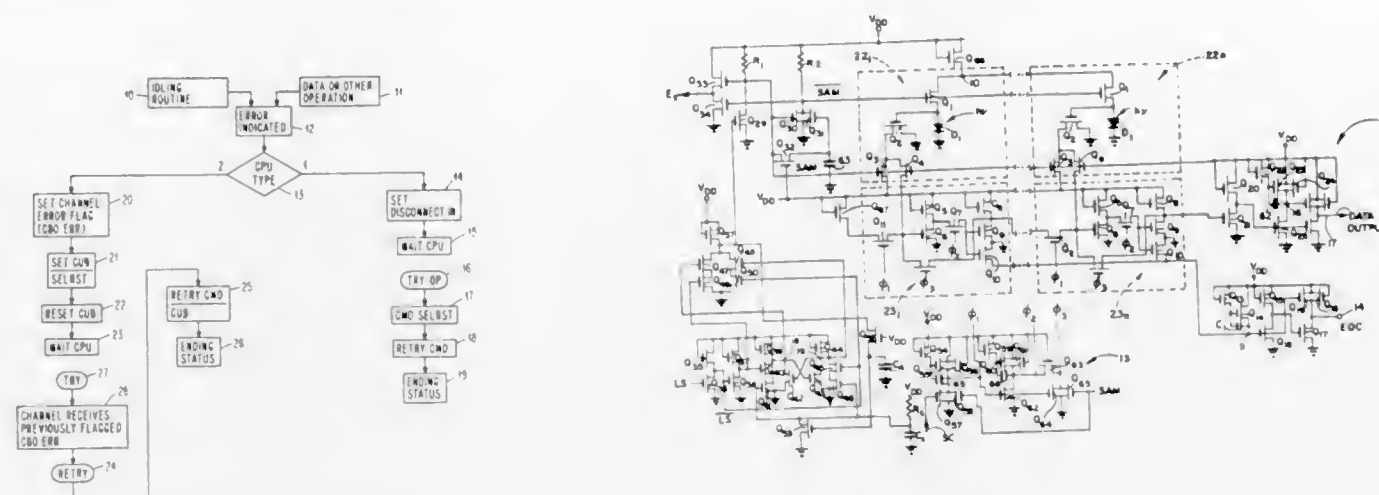
A hydrophone adapted to be suspended underwater by means of a cable, which preferably carries electrical leads as





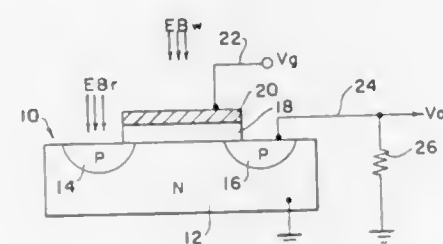


The peripheral subsystem detects the type of data processing system to which it is attached and adjusts its operational procedures for emulating the operation of a Type 2 data processing system to the operational capabilities of the Type 1



data processing system without internal changes within the data processing system. The peripheral subsystem is further adapted to operate in a degraded mode with a data processing system of either type when the situation demands it.

**3,721,962**  
**BEAM ACCESSED MOS MEMORY WITH BEAM READING, WRITING, AND ERASING**  
John E. Foster and Tuh-Kai Koo, Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio  
Filed Aug. 3, 1970, Ser. No. 60,572  
Int. Cl. G11c 7/00, 11/40, 11/26  
U.S. Cl. 340—173 CR 24 Claims

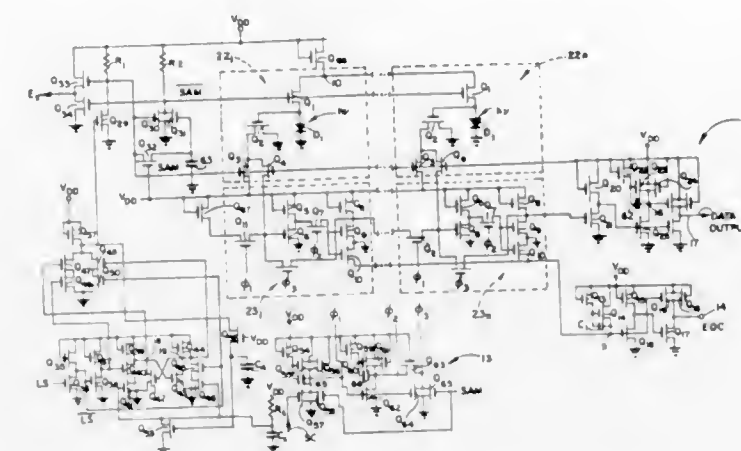


There is described a beam accessed metal oxide semiconductor memory into which binary information can be written and stored and from which that information can be read or erased. The writing, reading, or erasing is accomplished by causing an electron beam of either a high or a low intensity to scan across the gate or drain electrodes of the memory elements while simultaneously applying either a read, a write, or an erase voltage to the gate electrode thereof. There is also described means for controlling the beam position in a self-clocking manner. This is accomplished by providing metal indexing strips along the path which the beam travels and then counting the pulses created in the strips as the beam scans thereacross.

**3,721,963**  
**PHOTON TO DIGITAL CONVERTER USING PHOTON FLUX INTEGRATION**  
Fredrick B. Jenne, Huntington Beach, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.  
Filed March 13, 1972, Ser. No. 234,050  
Int. Cl. G11c 13/04  
U.S. Cl. 340—173 LM 10 Claims

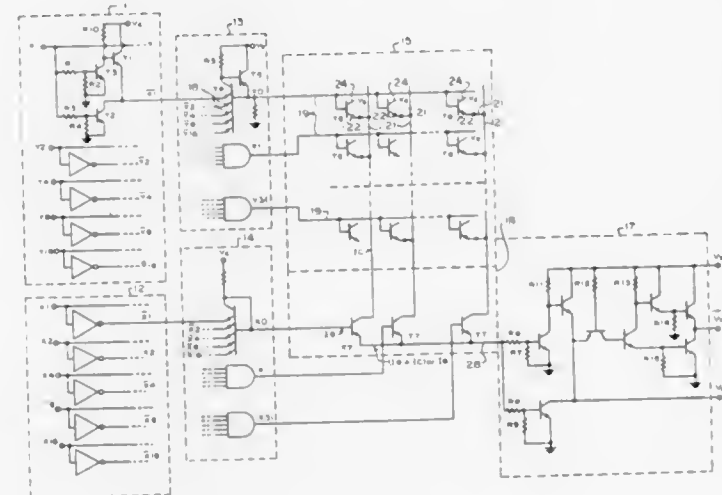
Output voltage levels on precharged photo-diodes receiving light inputs are sampled after a period of time sufficient to permit photon flux integration. The sampled voltage levels are converted into digital signals representing digital data of either

a true or false logic state. The data signals are stored in a multibit shift register until called for or until the next sampling interval. When all the data represented by the light inputs have



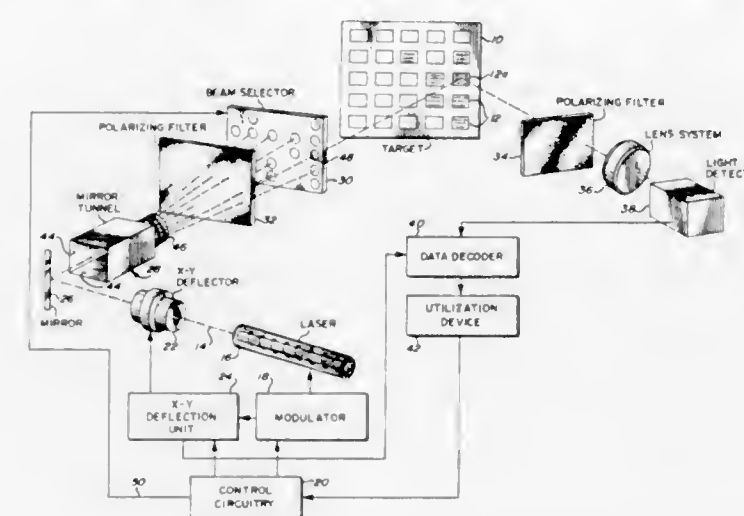
been processed through the shift register to an output, the shift register is set to a predetermined condition and the process is interrupted.

**3,721,964**  
**INTEGRATED CIRCUIT READ ONLY MEMORY BIT ORGANIZED IN COINCIDENT SELECT STRUCTURE**  
John C. Barrett, Sunnyvale; Arndt B. Bergh; John E. Price, both of Palo Alto, all of Calif., and Tomas Hornak, United Kingdom, assignors to Hewlett-Packard Company, Palo Alto, Calif.  
Filed Feb. 18, 1970, Ser. No. 12,262  
Int. Cl. G11c 7/00, 11/40, 17/00  
U.S. Cl. 340—173 SP 7 Claims



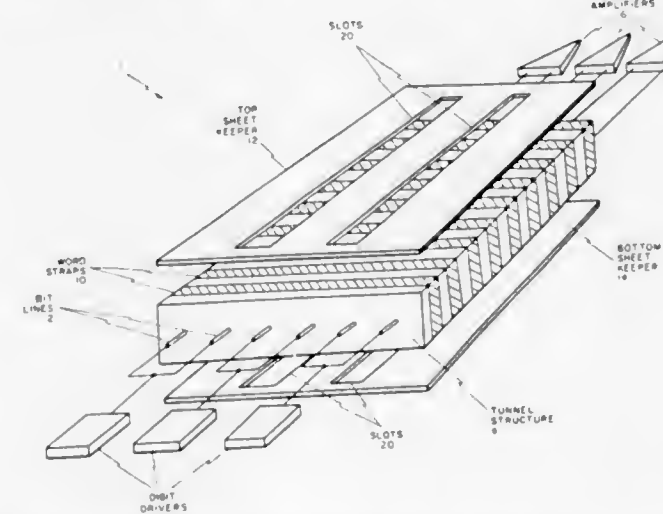
An integrated circuit read only memory fabricated on a single semiconductor chip, the memory cell array being arranged with orthogonal sets of access lines providing coincident selection of unidirectional current devices, for example, base-emitter diodes, at the junctions of the access lines. The memory cells are read by detecting the presence or absence of current flow through one or more selected cells. One set of access lines is formed by base diffusion stripes spaced apart in a common-collector isolation well. The orthogonal set of access lines is formed by metal lines overlying the base stripes and the individual emitters diffused in the base stripes at the points of intersection with the metal lines. Programming of the bit pattern is accomplished by contacts between the emitters and the metal lines at selected cross-over points. An improved inverter circuit is provided in the memory array access circuitry.

**3,721,965**  
**APPARATUS FOR FORMING A MULTIPLE IMAGE LASER OPTICAL MEMORY**  
Albert M. Morgan-Voyce, Oklahoma City, Okla., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.  
Filed Nov. 22, 1971, Ser. No. 201,600  
Int. Cl. G11c 11/14  
U.S. Cl. 340—174 YC 6 Claims



A modulated laser beam having a uniplanar, two direction deflection is directed to a mirror tunnel. The mirror tunnel divides the single laser beam into multiple laser beams. The multiple laser beams are polarized and a beam selector permits only one raster scan from the multiple images of the mirror tunnel to reach the memory film target. The Curie-point recording method forms the information onto the film. For reading information from the target, the laser beam is deflected, multiplied and selected as for writing. Reflected light from a spot on the target exhibits a clockwise or counter-clockwise change in the polarization angle depending on the binary state of the magnetic field. The Kerr-effect polarization change is passed through a polarization filter which permits one state of the magnetic field to be passed and blocks the second state of the magnetic field. The light passing through the polarizing filter is collected by a lens and detected by a light detector such as a photocell. The output of the light detector is directed to a utilization device for use therein.

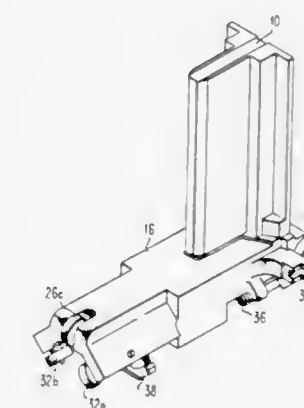
**3,721,966**  
**PLATED WIRE STACK WITH MINIMIZED INTER-BIT COUPLING**  
Joseph P. McNamara, 51 Ft. Meadow Dr., Hudson, and Thomas G. Bair, 32 Juniper Brook Rd., Northborough, both of Mass.  
Filed Oct. 20, 1971, Ser. No. 190,841  
Int. Cl. G11c 5/02, 11/04, 11/14  
U.S. Cl. 340—174 BC 1 Claim



A plated wire memory stack includes parallel bit lines and a plurality of conductors perpendicular to the bit lines for carry-

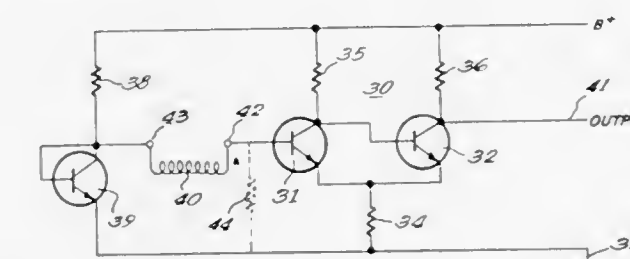
ing "word" currents. Permalloy "keeper" layers used to shape the word drive fields have a plurality of slots therein which are parallel to the bit lines to minimize inter-bit coupling.

**3,721,967**  
**HEAD CARRIAGE ASSEMBLY FOR MAGNETIC DISK STORAGE DRIVE**  
Ralph A. Englert, Monte Sereno, Ronald F. Fasano, Los Gatos, and Darrell D. Palmer, San Jose, all of Calif., assignors to International Business Machine Corporation, Armonk, N.Y.  
Filed Aug. 2, 1971, Ser. No. 168,238  
Int. Cl. G11b 21/08  
U.S. Cl. 340—174.1 C 7 Claims



A carriage assembly useful with a head accessing mechanism in a magnetic disk storage system includes a base having parallel guide rails disposed in a triangular type configuration. The rails cooperate with a carriage body having a first set of bearings for riding on the top surface of the guide rails, and additional angled bearings that engage corresponding angled portions of the guide rails inboard of the periphery of the base. At least one of the angled bearings is spring loaded. The configuration is symmetrical about a vertical plane that is coincident with the direction of the axis along which the accessing mechanism travels.

**3,721,968**  
**MAGNETIC PICKUP**  
Gordon E. Gee, Deerfield, Ill., assignor to Electro Corporation, Sarasota, Fla.  
Continuation of Ser. No. 875,983, Nov. 12, 1969, abandoned.  
This application Feb. 2, 1972, Ser. No. 222,735  
Int. Cl. G08b 21/00  
U.S. Cl. 340—195 8 Claims



A magnetic pickup having an electronic switch circuit incorporated in the sensing unit to generate a high level digital signal, improving the signal form and the signal-to-noise ratio. The switch has an input transistor with a base bias circuit including a diode having a characteristic comparable with that of the base emitter junction of the input transistor, to stabilize the bias and the sensitivity of the switch. In one form of the invention, the emitter coupling element of the transistorized switching circuit has a constant voltage independent of the supply potential, enabling the use of one circuit over a range of operating voltages.



3,721,969

**DATA COMMUNICATING SYSTEM HAVING MEANS FOR SENSING DIFFERENCE BETWEEN REFERENCE AND DATA SIGNALS**

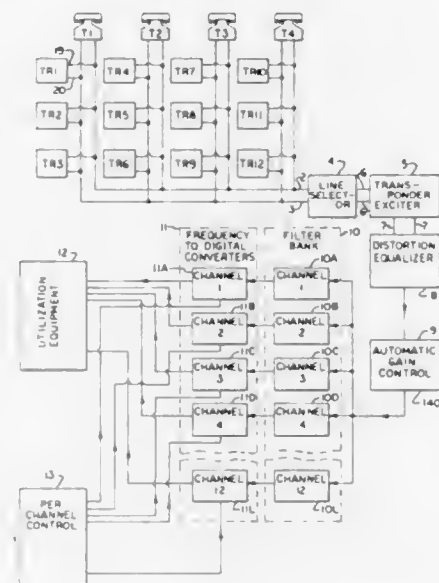
Victor E. Stewart, Jr., South Milwaukee, Wis., assignor to McGraw-Edison Company, South Milwaukee, Wis.

Filed Feb. 22, 1971, Ser. No. 117,293

Int. Cl. G08c 19/16

U.S. Cl. 340-207

8 Claims



A data gathering system, particularly adapted for communicating of meter reading data over telephone lines, comprising data reading means, encoding means and coded data transmitting transponder means located at a remote location such as a subscriber's home; and centrally located control means, transponder exciting means, decoding means, and utilization means. The system has a data transmission scheme using an extended baud, multilevel frequency signal system wherein values are represented by frequency differences relative to a reference frequency and the decoding apparatus adjusts in response to the reference frequency signal to compensate for transponder variations or long term drift.

3,721,970

**ALKALI METAL LEAK DETECTOR**

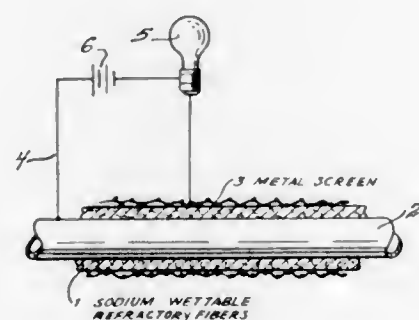
Hubert R. Niemoth, Elmhurst, Ill., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed Oct. 6, 1971, Ser. No. 187,043

Int. Cl. G08b 21/00

U.S. Cl. 340-242

7 Claims



A layer of refractory fiber insulation such as a felt sheet consisting essentially of aluminum silicate fibers is placed between two layers of conducting material, such as steel screens which are connected in an electrical circuit to a detecting device, such as an electric light. This device is a leak detector in which a drop of liquid sodium, potassium or other alkali metal will short out the screens and give a signal on the detecting device.

3,721,971

**MATERIAL LEVEL INDICATOR FOR BINS OR OTHER RECEPTACLES**

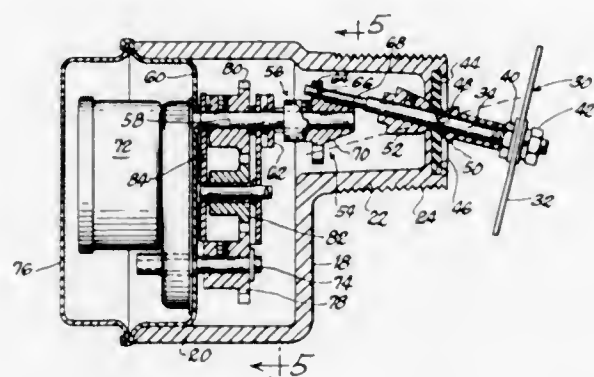
George E. Gruber, Port Sanilac, Mich., assignor to Monitor Mfg., Inc., Minden City, Mich.

Filed March 22, 1971, Ser. No. 126,446

Int. Cl. G08b 23/00

U.S. Cl. 340-246

10 Claims



The indicator comprises a motor-driven probe which is oscillated or otherwise moved relative to the material in a bin or other receptacle. The motor rotates a first gear, while the probe is operated by a mechanism driven by a second gear. An intermediate gear meshes with the first and second gears and is mounted on a swingable carriage pivoted about the axis of one of the other gears. When the probe engages the rising material, the movement of the probe is impeded. The resulting torque reaction causes swinging movement of the carriage against the biasing force of a spring. The carriage thereby operates a switch which can be employed to actuate an alarm, stop the motor, stop the flow of material into the bin, or perform other control functions. The probe is swingably supported by a flexible diaphragm which also acts as a seal.

3,721,972

**ULTRASONIC BURGLAR ALARM SYSTEM**

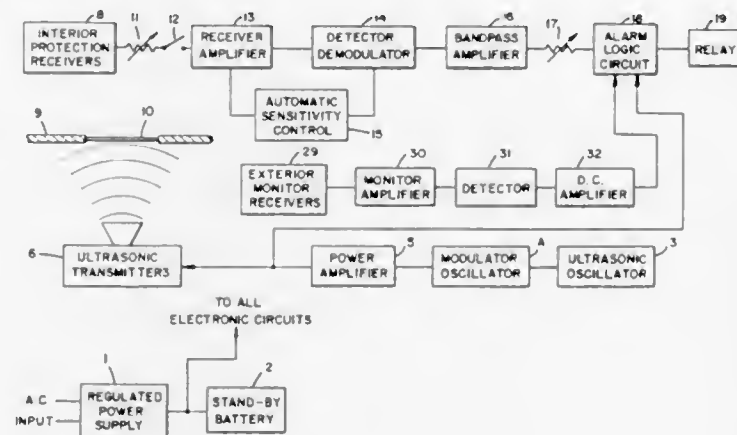
Albert L. Hermans, c/o Seaboard Electric, 2255 Bancroft Ave., San Leandro, Calif.

Filed Feb. 22, 1972, Ser. No. 228,138

Int. Cl. G08b 13/16

U.S. Cl. 340-276

10 Claims



An ultrasonic burglar alarm system employing one or more transmitters on the exterior of the protected enclosure, and one receiver in the interior of the enclosure. An ultrasonic sound transmission path can exist, but normally it is not completed because of the intervening walls and closed doors and windows of the enclosure. Upon opening of any door or window, or any breaching of the walls, the sound transmission path is completed from exterior to interior, the received sound is detected, and an alarm is given. A supervisory circuit em-

ploying exterior receivers is also used, so that if an attempt is made to muffle any exterior transmitter or impair any exterior receiver, an alarm is given.

3,721,973

**SPEED MONITORING APPARATUS**

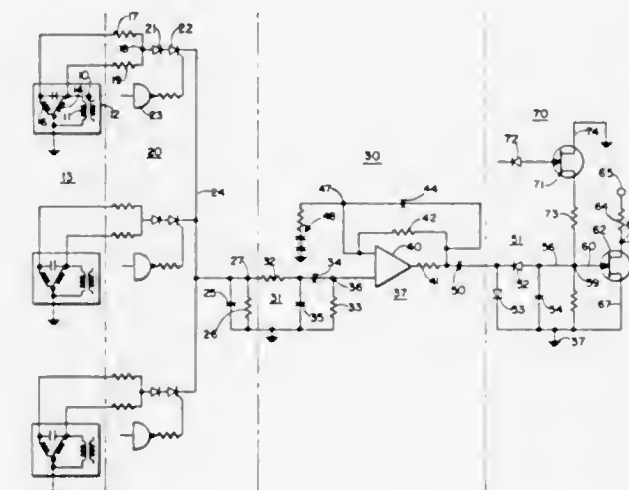
Gerald C. Sundbert, Huron, S. Dak., and Eugene T. Swenson, Minneapolis, Minn., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed Dec. 15, 1969, Ser. No. 885,032

Int. Cl. G08b 21/00

U.S. Cl. 340-263

7 Claims



The arrangement provides a novel method of selectively monitoring the hunt frequency of the synchronous spin motors of several gyros to determine the proper operation of the selected gyro. Two signals are used from each gyro for such monitoring action: (1) the phased winding voltage, and (2) the spin motor excitation voltage, of the split phase or two phase motor that drives the gyro rotor. Summing of the phased winding voltage and the excitation voltage for the line winding produces an amplitude modulated carrier wave, modulated proportional to the hunt phase shift of the rotor. The resultant modulation envelope is detected, filtered, band pass amplified and thereafter converted to a threshold logic voltage for an indication that the gyro spin motors are at synchronous speed.

3,721,974

**MESSAGE DISPLAY SYSTEM AND PICTORIAL PROGRAMMER THEREFOR**

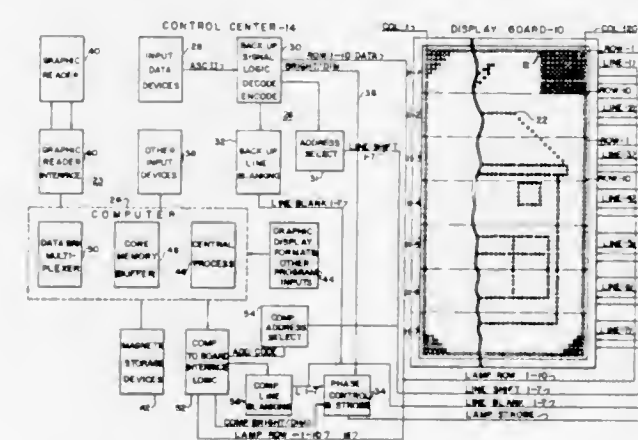
Richard M. Jenifer, Chicago, Robert A. Payne, Des Plaines, and Frank L. Sobchak, Chicago, Ill., assignors to Stewart-Warner Corporation, Chicago, Ill.

Filed May 13, 1971, Ser. No. 143,023

Int. Cl. G09f 9/32

U.S. Cl. 340-339

2 Claims



A message display system in which alpha numeric messages and pictorial or graphic representations are formed. A display board formed of a matrix of display elements

such as lamps is controlled by means of digital signals. While the alpha numeric messages are read into the system by well known input means, the pictorial representations are formed by a unique device which optically views a drawing or printed picture and creates digital signals which are processed to display the drawing or printed picture on the display board or stored for subsequent display.

3,721,975

**HIGH SPEED ANALOG-TO-DIGITAL CONVERTER**

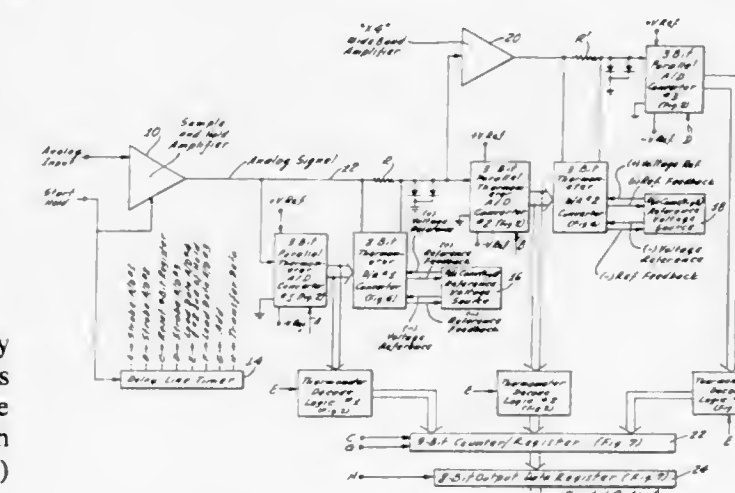
John D. Brinkman, Pine Brook; Ronald Y. Paradise, Hillsdale, and Robert S. Prill, Parsippany, all of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Oct. 7, 1971, Ser. No. 187,247

Int. Cl. H03k 13/02

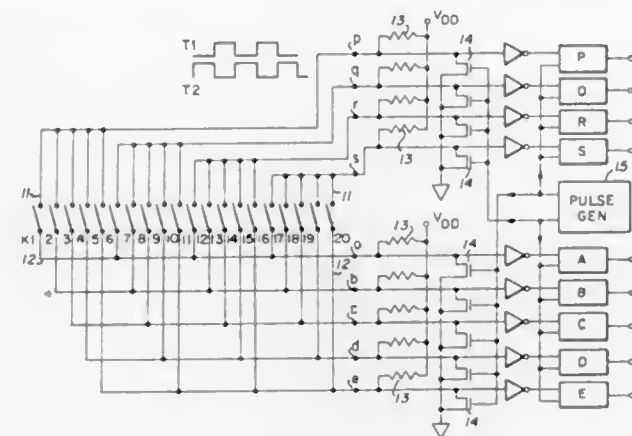
U.S. Cl. 340-347 AD

6 Claims





of the matrix to determine the condition of the key switches and storage means are provided for producing a binary output



indicating the open-closed condition of the switches. A decoding matrix fully decodes the output of the encoding logic matrix.

3,721,977

## IMAGE BEAM LOCK-ON DETECTOR

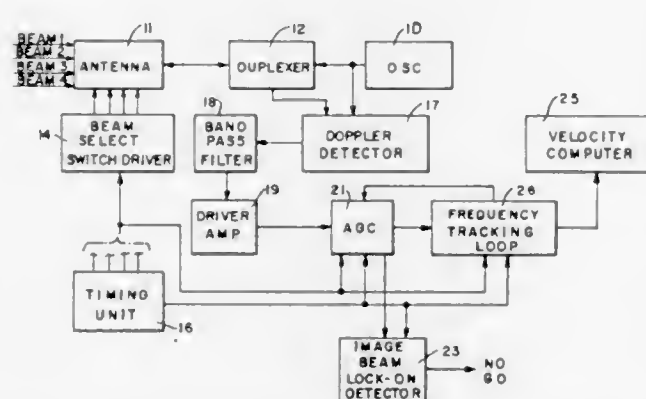
Ernest F. Darboven, Katonah, N.Y., assignor to The Singer Company, Little Falls, N.J.

Filed Aug. 26, 1971, Ser. No. 175,269

Int. Cl. G01s 9/48

U.S. Cl. 343-7 A

13 Claims



In an airborne doppler velocity sensor employing a fixed antenna with selectable multiple beams, a system is provided for detecting when a frequency tracking loop has locked onto signals from an unsuppressed image beam corresponding to a non-selected beam. An automatic gain control (AGC) signal is provided representative of the relative power levels of frequency signals in each beam tracked by the loop. The AGC signal is continuously fed to a module which maintains a reference voltage at a value indicative of the maximum power being received from all of the beams. If the difference between the reference voltage and a signal representing the minimum value of the AGC signal exceeds a threshold set by a comparator, a "no-go" signal is produced warning that the tracking loop has locked onto a spurious signal and velocity computations are therefore unreliable.

3,721,978

## ADAPTIVE RADAR CLUTTER REJECTION

John G. Doggett, Jr., Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Nov. 19, 1968, Ser. No. 776,908

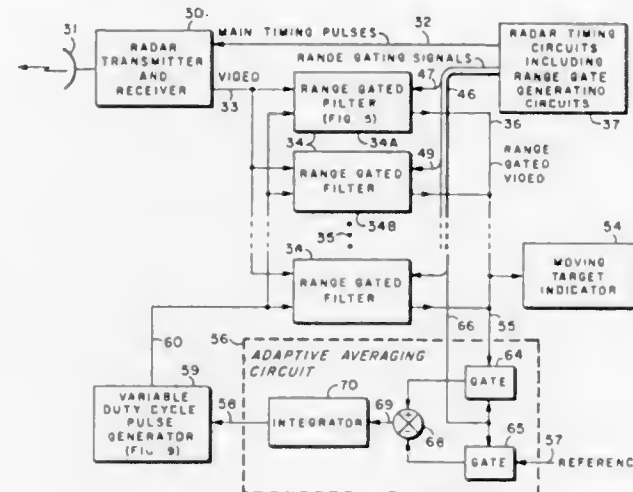
Int. Cl. G01s 9/42

U.S. Cl. 343-7 A

7 Claims

A control loop in a radar receiver is jointly responsive to range gated video and a reference potential to establish a filter control signal. A plurality of range gated filters are responsive to the filter control signal to adjust the frequency response in a

manner such that clutter is rejected yet the maximum frequency bandwidth is dynamically provided for moving target detection for varying clutter conditions. Each range gated filter has a filter element which is switchable such that the effective electrical properties of the element vary in accordance with the switching to thereby effect a change in the frequency



characteristics of the filter. The switching rate is much higher than the pulse repetitive frequency of the radar such that the switching rate does not interfere with signals being processed through the filter. In one embodiment, a variable duty cycle pulse generator having a fixed frequency is utilized to effect control over the frequency characteristics of a filter.

3,721,979

## DETECTION IN A MULTIPLE-TARGET ENVIRONMENT

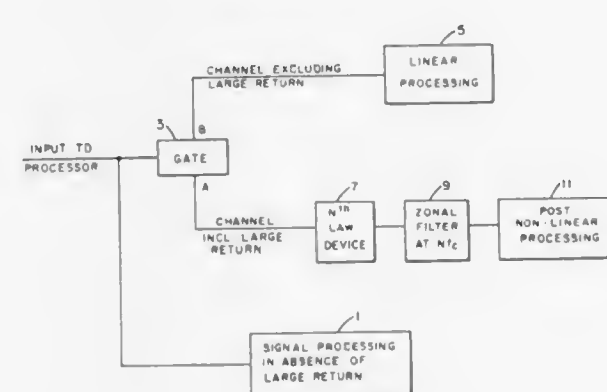
Hugh W. Gouldthorpe, Cazenovia, N.Y., assignor to the United States of America as represented by the Secretary of the Army

Filed Sept. 10, 1971, Ser. No. 179,381

Int. Cl. G01s 9/02

U.S. Cl. 343-7 A

2 Claims



A radar processor is divided into parallel channels for processing of the radar input information. One channel is a regular channel in which signals not having a large return therein are processed. Two other channels have their input therein controlled by a gate means which allows the radar returns only during the time a large signal return is present to be fed into one channel and allowing the remaining returns to enter into the other channel. In the channel in which the large signal return is allowed to be processed, an Nth law device and a zonal filter provide for enhancement of small returns which are included along with the large return. In this way the small returns can also be processed.

3,721,980

## GATED RANGE SEARCH RADAR

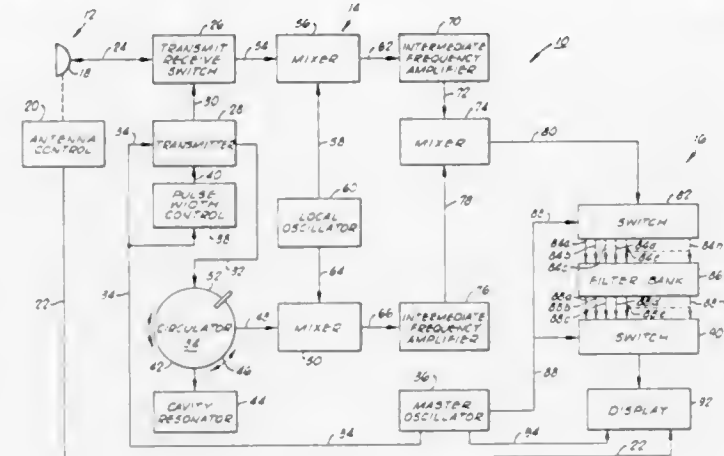
George K. Oister, 1109 Southeast 11th Street, Edmond, Okla.

Filed Sept. 23, 1971, Ser. No. 183,083

Int. Cl. G01s 9/44

U.S. Cl. 343-9

11 Claims



Radar apparatus particularly adapted for weather and search operations wherein reflected pulse energy is effectively time gated and separately filtered and processed for output display indication. The apparatus transmits relatively low power output energy in directive propagation and reflected energy is then mixed with a coherent signal to derive time-displaced doppler frequency electrical signals representative of energy returned. The time-displaced doppler frequency signals are then processed as resolution cells lying within a predetermined different energy time-displacement range, and doppler energy from each resolution cell is processed separately through characteristic filtering networks which provide individual data output for display in accordance with coordinates or parameters as derived from antenna scan information and energy travel times for the plurality of resolution cells.

3,721,981

## PULSE RADAR RANGING

Robert Allard, and John Lawton Clarke, both of Malvern, England, assignors to Minister of Aviation Supply in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

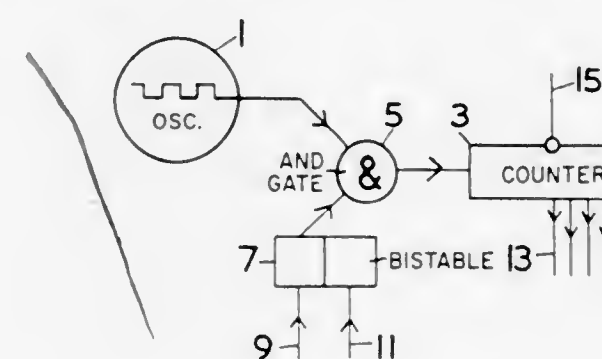
Filed Nov. 17, 1970, Ser. No. 90,394

Claims priority, application Great Britain, Nov. 19, 1969, 56,555/69

Int. Cl. G01s 9/12

U.S. Cl. 343-13 R

6 Claims



A radar ranging system for calculating the time interval between transmitted and received pulses or vice versa by means of a pulse generator, means for causing the transmitter to transmit a pulse at a time which is random compared with the pulse generator output, means for admitting pulses from the pulse generator to a counter for a plurality  $m$  of time intervals and means for dividing the output of the counter by  $m$ .

3,721,982

## ABSORBER FOR ELECTROMAGNETIC RADIATION

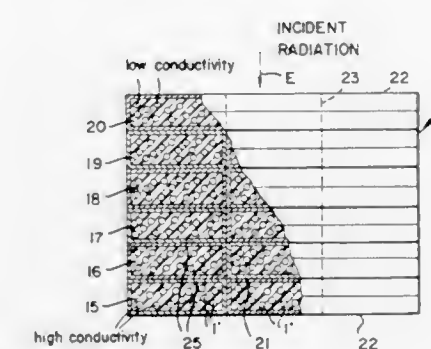
Ludwig Wesch, Heidelberg, Germany, assignor to Fa. Grunzweig & Hartman AG., Ludwigshafen am Rhine, Germany

Filed Nov. 10, 1970, Ser. No. 88,425

Int. Cl. H01q 17/00

U.S. Cl. 343-18 A

12 Claims



A body designed to absorb electromagnetic radiation in the UHF, SHF and EHF includes a multiplicity of closely juxtaposed spheres, whose diameters lie between about 0.1 and 5 times the wavelength of that radiation, imbedded in a polymeric matrix and/or lodged in cavities of a cellular supporting structure. Each sphere has a nonconductive, preferably highly porous spherical core coated with one or more layers of radiation-responsive (electrically conductive and/or magnetically permeable) material each advantageously overlain by a protective dielectric coating. The conductivity and/or permeability of the coatings of successive strata of spheres may progressively diminish in the direction of propagation, toward the source of radiation, to approach the conditions of ambient air or free space.

3,721,983

## SIGNAL BALLOON

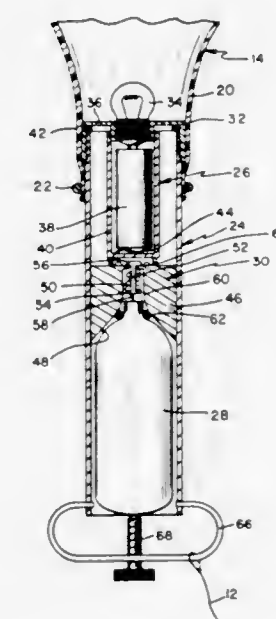
Osborn Sherer, Box 134, Stratham, N.H.

Filed June 8, 1970, Ser. No. 44,153

Int. Cl. G01s 9/02; G01w 1/08

U.S. Cl. 343-18 B

2 Claims



A signal balloon is provided for use by hunters, boatmen and the like to attract searchers when the hunter or boatman is lost or in distress. A brightly colored translucent balloon containing radar reflective material is attached to a cannister containing a battery and bulb for illuminating the balloon from inside and is formed with a charging chamber to receive a cylinder of helium and operating through a valve by which the balloon may be inflated. A line is attached to the casing for holding or anchoring inflated balloon.



3,721,984

**MAGNETOMETER EMPLOYING MAGNETICALLY SUSPENDED BODY**

Jorge G. Codina, Hartsdale, N.Y., assignor to Gravimetrics Incorporated, Washington, D.C.

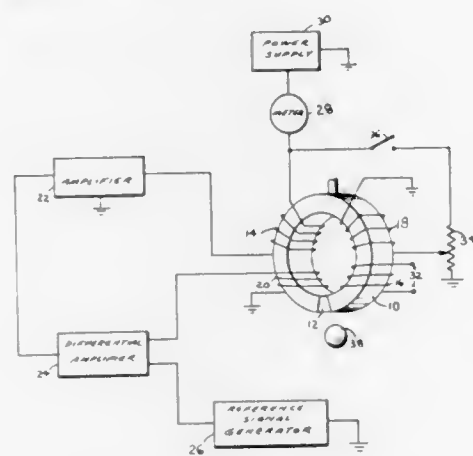
Continuation of Ser. No. 831,280, June 5, 1969, abandoned.

This application July 12, 1971, Ser. No. 161,894

Int. Cl. G01r 33/02

U.S. Cl. 324-43 R

10 Claims



A levitational magnetic field suspends a magnetic body in space and when shielded from the earth's magnetic field, its upward pull and the pull of gravity are equal and opposite and the body is suspended. When unshielded, the electromagnet is additionally exposed to the earth's magnetic field as well as to the levitational field and the body remains suspended. In both cases, an electrical signal dependent upon the intensity of the levitational field is produced. The difference between the value of this signal when the electromagnet is shielded and when the electromagnet is not shielded provides a measure of the intensity of the earth's magnetic field.

3,721,985

**NAVIGATIONAL SYSTEM**

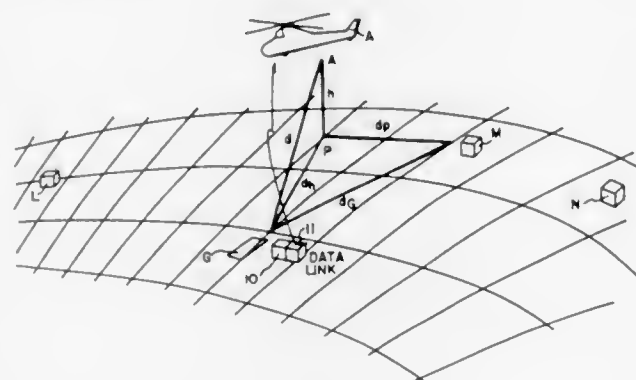
Thomas E. Perfit, Grand Rapids, Mich., assignor to Lear Siegler, Inc., Grand Rapids, Mich.

Filed June 22, 1970, Ser. No. 48,409

Int. Cl. G01s 1/24

U.S. Cl. 343-103

23 Claims



Loran navigational signals are received at a destination and at dirigible craft traveling towards that destination. The time differences between signals received at the destination are calculated. Upon receipt of a signal from a master station, these time differences at the destination are signaled to the craft by a data link or slave signal. The craft also receives the signal from the master station. The relative positions of the destination and the craft are determined in accordance with Loran navigation techniques. This position information is then utilized, along with the time difference information transmitted to the craft simultaneously with the master signal by the data link or slave signal, and the slant range between the craft and the

destination is then computed. Altitude of the craft is then computed, as by triangulation. The slant range rate is determined by measuring the Doppler shift in the frequency of the data link or slave signal.

3,721,986

**RANGE MEASURING SYSTEM**

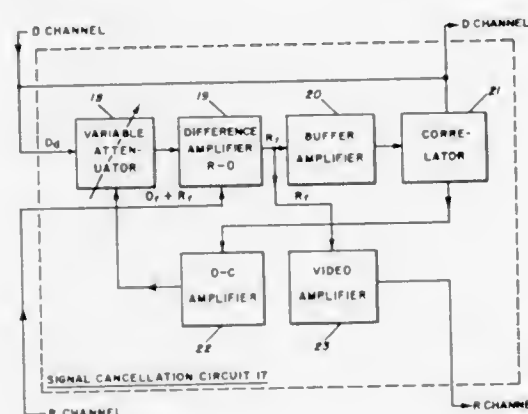
Stanley I. Kramer, Brightwaters, N.Y., assignor to Fairchild Industries, Inc. Germantown, Md.

Filed April 21, 1960, Ser. No. 23,849

Int. Cl. G01s 11/00

U.S. Cl. 343-112

7 Claims



1. In a system for determining the range between two objects, one of the objects radiating electromagnetic wave energy having distinguishable characteristics which arrives at the other object by way of a direct path and a reflected path wherein it is reflected off of a surface, an apparatus comprising a direct channel and a reflected channel, both said direct and said reflected channels receiving direct and reflected waves by way of the two paths, variable means responsive to one of said direct and reflected channels for making the direct wave on said direct channel substantially equal in amplitude to the direct wave on said reflected channel, subtracting means responsive to said variable means and to the other of said channels which provides an output representative of the difference between the direct wave on said direct channel and the direct wave on said reflected channel, and correlator means responsive to said subtracting means and to said direct channel for providing a signal representative of the amplitude of said output, the signal from said correlator means being connected to actuate said variable means.

3,721,987

**SIGNAL TAPERING AT RECEIVER**

Charles William Earp, London, and Martin Brandon, Harlow, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

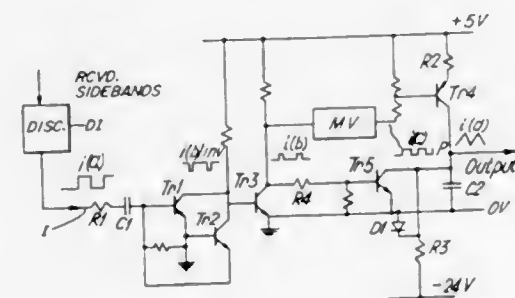
Filed July 28, 1971, Ser. No. 166,853

Claims priority, application Great Britain, Aug. 5, 1970, 37,729/70

Int. Cl. G01s 3/54

U.S. Cl. 343-113 DE

4 Claims



This invention relates to a receiver in which the received signal is tapered in synchronism with the motion of a swept an-

tenna at the transmitter. A triangular waveform, having twice the repetition frequency of a square wave emerging from an F.M. discriminator, is generated.

3,721,988

**LEAKY WAVE GUIDE PLANAR ARRAY ANTENNA**

Leonard Schwartz, Scarsdale; Donald Z. Blau, City Island, and Edward Chin, New York, all of N.Y., assignors to The Singer Company, Little Falls, N.J.

Filed Aug. 16, 1971, Ser. No. 171,900

Int. Cl. H01g 13/00

U.S. Cl. 343-756

11 Claims



A planar array antenna for producing four squinted beams required for an airborne Doppler navigation system is disclosed. The antenna includes a pair of slotted feed rectangular wave guides arranged to permit input energy to be applied at any one of four ports. Interconnecting and coupled to the feed wave guides by means of slots in the feed wave guides is a radiating member which includes a leaky grid structure through which radiates beam-forming electromagnetic energy. The antenna is a symmetrical structure and the four beam positions, or for the case of a lobe switched antenna system, the four beam sets, are symmetrically located with respect to the vertical axis of symmetry of the array.

3,721,989

**CROSS LOOP ANTENNA**

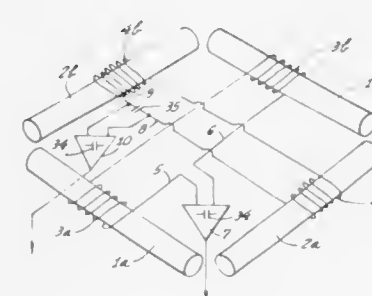
Albert V. Christensen, Hawthorne, Calif., assignor to Northrop Corporation, Los Angeles, Calif.

Filed June 30, 1971, Ser. No. 158,291

Int. Cl. H01q 7/08

U.S. Cl. 343-701

7 Claims



Two orthogonal arrays of ferrite cores wound and connected in series. The arrays are insulated from each other to provide predictable inductance. The arrays preferably form a square inside of which a low-noise amplifier is connected directly to each array, the amplifiers forming a built-in part of the antenna assembly. A design for a small, narrow-band 10 KHz to 14 KHz antenna is described, having a large effective height.

908 O.G.—29

3,721,990

**PHYSICALLY SMALL COMBINED LOOP AND DIPOLE ALL CHANNEL TELEVISION ANTENNA SYSTEM**

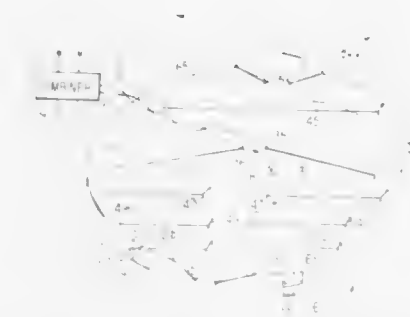
John James Gibson, Princeton, and Donald William Peterson, Maple Shade, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 27, 1971, Ser. No. 212,431

Int. Cl. H01q 21/00

U.S. Cl. 343-726

12 Claims



A low cost, physically small, all channel television antenna system is provided for reception in high signal strength areas. The antenna is characterized by a loop having a pair of separated gaps, one of which is a feed gap and the other an impedance termination gap for operating as a directional reception antenna at the low and high VHF television frequency bands. Inboard the loop is placed a television band UHF dipole antenna. The input terminals of the dipole antenna and the feed terminal of the loop antenna are each coupled to a combiner with a single output from the combiner.

3,721,991

**LASER LINE PRINTER**

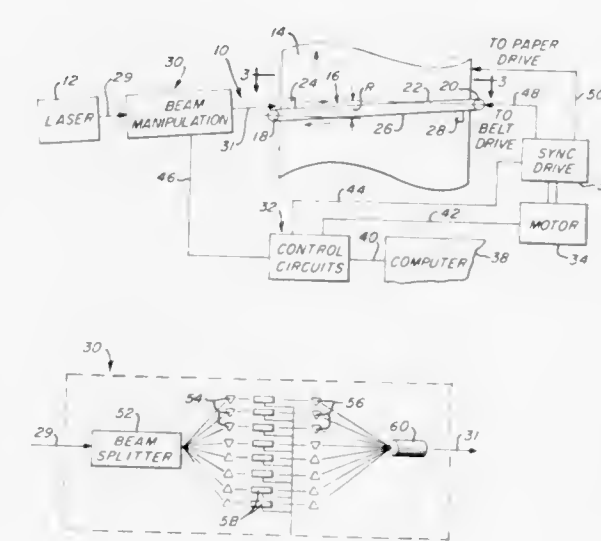
R. Kaufman, and Daniel R. Strick, both of Pittsburgh, Pa., assignors to Craig R. Kaufman, Lois J. Kaufman, Irving R. Kaufman, Benjamin M. Wedner, Daniel R. Strick, all of Pittsburgh, Pa., part interest to each

Filed July 8, 1971, Ser. No. 160,752

Int. Cl. G05k 15/02

U.S. Cl. 346-108

5 Claims



A general purpose printer, particularly suitable for use as an output device for a computer, wherein the paper moves continuously, is disclosed. A belt having an inclined top run carries a mirror in front of the paper. The data to be printed is carried on and is made to operate an array of small laser beams directed at the mirror. By synchronization of paper motion, belt motion, and laser beam operation, straight lines of the data are generated on the moving paper by the continuously moving mirror carrying belt.



# DESIGNS

MARCH 20, 1973

226,511  
CHAIR

Milton Stern, 1631 Walnut Ave., Wilmette, Ill. 60091  
Filed June 14, 1971, Ser. No. 153,147  
Term of patent 14 years  
Int. Cl. D6—02  
U.S. Cl. D6—68



226,512  
CASCADE TYPE MERCHANDISING RACK

John F. Gray, N. Old Barrington Road,  
Barrington, Ill. 60010  
Filed Aug. 12, 1971, Ser. No. 171,406  
Term of patent 14 years  
Int. Cl. D6—04  
U.S. Cl. D6—190



226,513  
BEDSIDE RAIL  
Morton I. Thomas, Monroe, N.Y.  
(125 South St., Passaic, N.J. 07055)  
Filed Aug. 5, 1971, Ser. No. 169,597  
Term of patent 14 years  
Int. Cl. D6—06  
U.S. Cl. D6—198



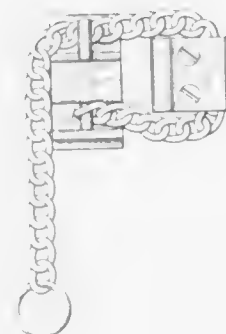
226,514  
GRASS CUTTING SHEARS

Edward Albert Rogers, London, England, assignor to  
Wilkinson Sword Limited, London, England  
Filed Feb. 19, 1971, Ser. No. 117,184  
Claims priority, application Great Britain Aug. 29, 1970  
Term of patent 14 years  
Int. Cl. D8—01  
U.S. Cl. D8—5



226,515  
SLIDING DOOR CHAIN GUARD

Louis G. Bobrowski, Berlin, Conn., assignor to The  
Stanley Works, New Britain, Conn.  
Filed Sept. 8, 1971, Ser. No. 178,853  
Term of patent 14 years  
Int. Cl. D8—07  
U.S. Cl. D8—131



MARCH 20, 1973

U. S. PATENT OFFICE

777

226,516  
ESCUTCHEON PLATE WITH PUSHBUTTON  
FOR DOORBELLS

Lawrence P. Mellyn, Gloucester, R.I., assignor to  
General Electric Company  
Filed Mar. 27, 1972, Ser. No. 238,746  
Term of patent 14 years  
Int. Cl. D8—09  
U.S. Cl. D8—181



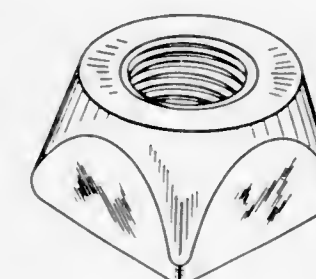
226,517  
ESCUTCHEON PLATE WITH PUSHBUTTON  
FOR DOORBELLS

Lawrence P. Mellyn, Gloucester, R.I., assignor to  
General Electric Company  
Filed Mar. 27, 1972, Ser. No. 238,747  
Term of patent 14 years  
Int. Cl. D8—09  
U.S. Cl. D8—181

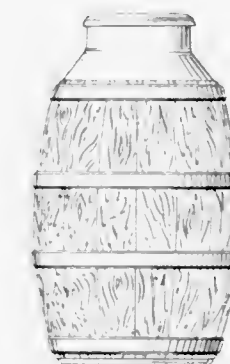


226,518  
NUT

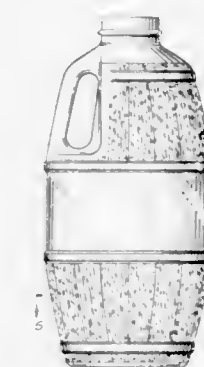
Richard H. Wetherill, Morton, and Anton T. Gregg, East  
Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria,  
Ill.  
Filed Dec. 21, 1970, Ser. No. 26,589  
Term of patent 14 years  
Int. Cl. D8—08  
U.S. Cl. D8—273



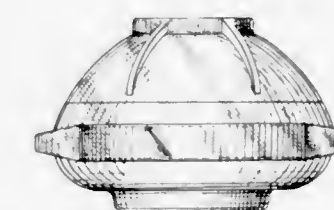
226,519  
BOTTLE  
Howard Cooper, Suite 7707, 175 E. Delaware,  
Chicago, Ill. 60611  
Filed Jan. 8, 1971, Ser. No. 105,143  
Term of patent 14 years  
Int. Cl. D9—01  
U.S. Cl. D9—28



226,520  
BOTTLE  
Howard Cooper, Suite 7707, 175 E. Delaware,  
Chicago, Ill. 60611  
Filed Nov. 18, 1971, Ser. No. 200,282  
Term of patent 14 years  
Int. Cl. D9—01  
U.S. Cl. D9—39



226,521  
COMBINED BOTTLE AND CLOSURE THEREFOR  
Nathan B. Lerner, Chicago, Ill., assignor to W. Braun  
Company, Chicago, Ill.  
Filed Oct. 20, 1971, Ser. No. 191,153  
Term of patent 7 years  
Int. Cl. D9—01  
U.S. Cl. D9—118

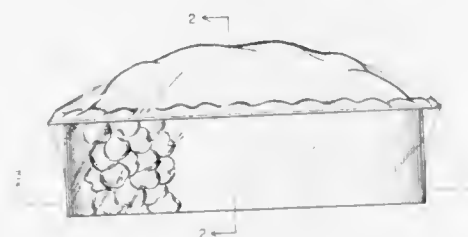




226,522  
PACKAGED PIE

Peter C. Dendrinios, Traverse City, Mich., assignor to  
Chef Pierre, Inc., Traverse City, Mich.  
Filed Oct. 15, 1970, Ser. No. 25,510  
Term of patent 14 years  
Int. Cl. D9—03

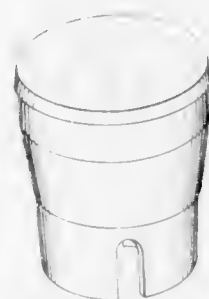
U.S. Cl. D9—193



226,523  
UNDERGROUND FLOW CONTROL VALVE ACCESS  
HOUSING AND COMBINED COVER AND BASE  
THEREFOR

John H. Thornton, Sr., Sheboygan, Wis., assignor to  
Ametek, Inc., Sheboygan, Wis.  
Filed Apr. 1, 1971, Ser. No. 130,184  
Term of patent 14 years  
Int. Cl. D25—99

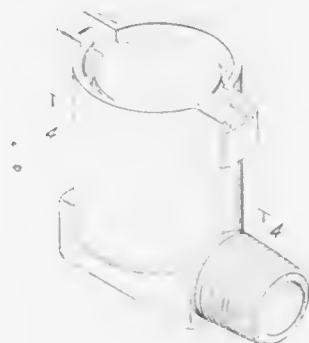
U.S. Cl. D13—1 R



226,524  
PRESSURE RELIEF VALVE

Frederick J. Brindisi, Rochester, N.Y., assignor to  
Qualitrol Corporation, Fairport, N.Y.  
Filed Mar. 16, 1971, Ser. No. 124,999  
Term of patent 14 years  
Int. Cl. D23—01

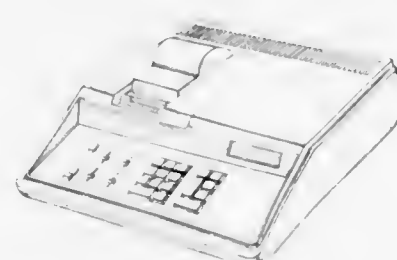
U.S. Cl. D23—19



226,525  
ELECTRONIC CALCULATING MACHINE

Shigetoshi Hazama, Osaka, Japan, assignor to Sharp  
Kabushiki Kaisha (Sharp Corporation) Osaka, Japan  
Filed Feb. 8, 1971, Ser. No. 113,804  
Claims priority, application Japan Aug. 14, 1970  
Term of patent 14 years  
Int. Cl. D14—02

U.S. Cl. D26—5 C



226,526  
GOLF PUTTER HEAD

Edward L. Cicero, 52—62 66th St.,  
Maspeth, N.Y. 11378  
Filed Oct. 27, 1970, Ser. No. 25,685  
Term of patent 14 years  
Int. Cl. D21—02

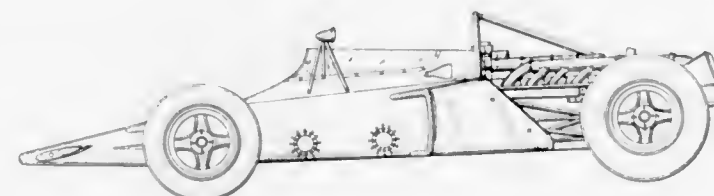
U.S. Cl. D34—5



226,527  
MODEL RACING CAR

Gordon Leonard Coppuck, Camberley, England, assignor  
to Bruce McLaren Motor Racing Limited, Colnbrook,  
Buckinghamshire, England  
Filed July 20, 1971, Ser. No. 164,482  
Claims priority, application Great Britain Jan. 21, 1971  
Term of patent 7 years  
Int. Cl. D21—01

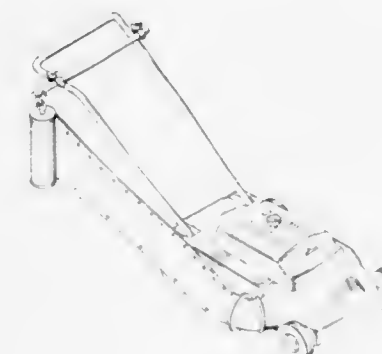
U.S. Cl. D34—15



226,528  
COMBINED LAWN MOWER AND GRASS  
CATCHER

Clifford E. Cressy, 7006 Indianapolis Blvd.,  
Hammond, Ind. 46324  
Filed Oct. 13, 1971, Ser. No. 189,071  
Term of patent 14 years  
Int. Cl. D15—03

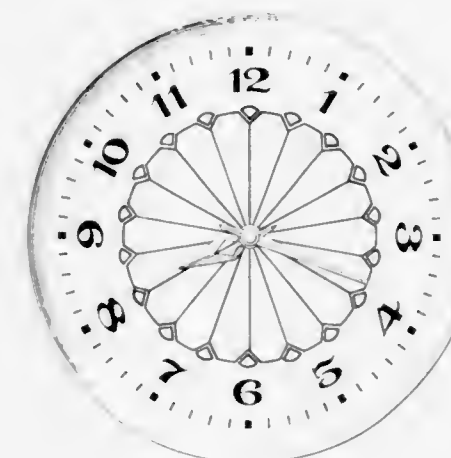
U.S. Cl. D40—1 B



226,529  
CLOCK OR SIMILAR ARTICLE

Theodore G. Daher, Stratford, Conn., assignor to  
General Electric Company  
Filed June 10, 1971, Ser. No. 152,004  
Term of patent 3 1/2 years  
Int. Cl. D10—01

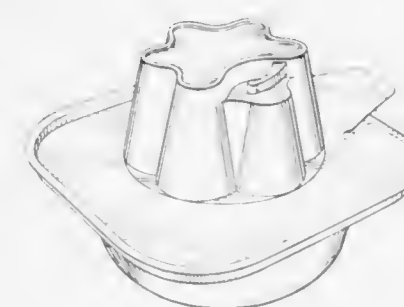
U.S. Cl. D42—7



226,530  
MOLD FOR COMESTIBLES OR SIMILAR ARTICLES

Daniel Carasso, Paris, France, assignor to Compagnie  
Gervais-Danone, Courbevoie, France  
Filed Jan. 29, 1971, Ser. No. 111,168  
Claims priority, application France Dec. 8, 1970  
Term of patent 14 years  
Int. Cl. D7—04

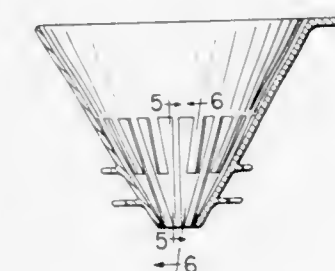
U.S. Cl. D44—1 L



226,531  
FILTER DRIP ADAPTER FOR COFFEE MAKER

Glenn B. Beckman, Corning, N.Y., assignor to Corning  
Glass Works, Corning, N.Y.  
Filed Mar. 19, 1971, Ser. No. 126,399  
Term of patent 14 years  
Int. Cl. D7—04

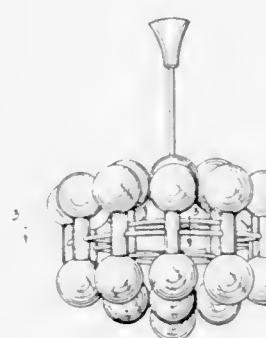
U.S. Cl. D44—26 B



226,532  
CHANDELIER

Motoko Ishii, Tokyo, Japan, assignor to Yamagiwa  
Electric Company, Ltd., Tokyo, Japan  
Filed Apr. 13, 1971, Ser. No. 133,770  
Term of patent 14 years  
Int. Cl. D26—05

U.S. Cl. D48—3



226,533  
LAMP

Richard C. Porter, 22325 Nancy,  
Southfield, Mich. 48075  
Filed June 9, 1971, Ser. No. 151,623  
Term of patent 14 years  
Int. Cl. D26—05

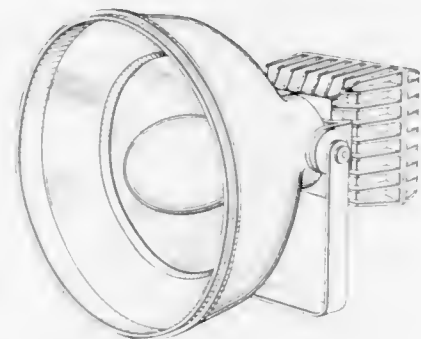
U.S. Cl. D48—20





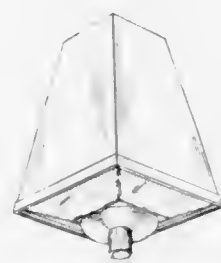
226,534  
FLOODLIGHT

Eldon L. Anderson, Jr., Fletcher, N.C., assignor to  
General Electric Company  
Filed Sept. 17, 1971, Ser. No. 181,657  
Term of patent 14 years  
Int. Cl. D26—03  
U.S. Cl. D48—20 K



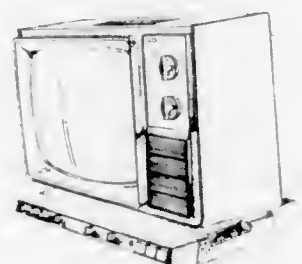
226,535  
LUMINAIRE

Eldon L. Anderson, Jr., Fletcher, N.C., assignor to  
General Electric Company  
Filed Oct. 15, 1971, Ser. No. 189,801  
Term of patent 14 years  
Int. Cl. D26—03  
U.S. Cl. D48—31

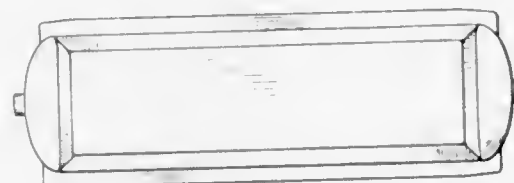


226,536  
TELEVISION RECEIVER

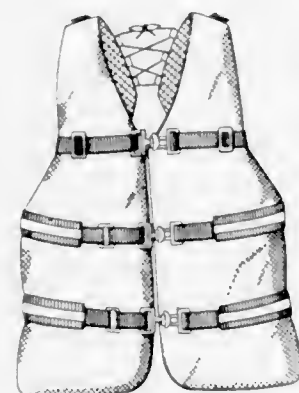
Masaharu Katayama and Noriyuki Arai, Saijo, Japan,  
assignors to Matsushita Electric Industrial Co., Ltd.,  
Osaka, Japan  
Filed Dec. 30, 1970, Ser. No. 26,707  
Claims priority, application Japan July 9, 1970  
Term of patent 14 years  
Int. Cl. D14—03  
U.S. Cl. D56—4



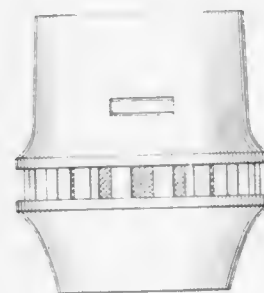
226,537  
FREIGHT CAR BODY  
Jack Hickman, 5766 Fair Oaks,  
Carmichael, Calif. 95608  
Filed Mar. 1, 1971, Ser. No. 119,995  
Term of patent 14 years  
Int. Cl. D12—03  
U.S. Cl. D66—1



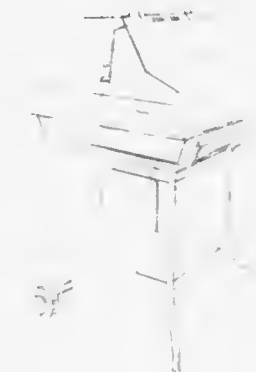
226,538  
WATER SKI VEST  
Leonard P. Frieder, Jr., Waverly, Pa., assignor to Gentex  
Corporation, New York, N.Y.  
Filed June 9, 1971, Ser. No. 151,617  
Term of patent 14 years  
Int. Cl. D2—02  
U.S. Cl. D71—1 HH



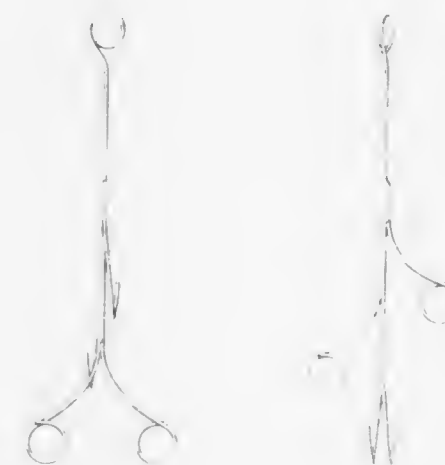
226,539  
FIRE DETECTOR  
Duane D. Pearsall, Morrison, Colo., assignor to  
Statitrol Corporation, Lakewood, Colo.  
Filed July 19, 1971, Ser. No. 164,213  
Term of patent 14 years  
Int. Cl. D29—02  
U.S. Cl. D72—1 R



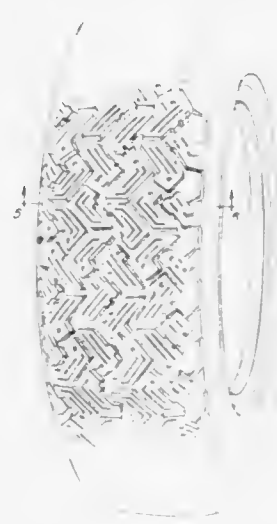
226,540  
BARBECUE GRILL AND OVEN UNIT AND  
STAND THEREFOR  
Charles D. Dushek, Lisle, Ill., assignor to Sears,  
Roebuck and Co., Chicago, Ill.  
Filed May 19, 1971, Ser. No. 145,121  
Term of patent 14 years  
Int. Cl. D7—02  
U.S. Cl. D81—10 E



226,541  
HANGER RACK FOR INTRAVENOUS BOTTLES  
John W. Pryor, 5753 Desert View,  
La Jolla, Calif. 92037  
Filed Mar. 19, 1971, Ser. No. 126,381  
Term of patent 14 years  
Int. Cl. D24—02; D8—03  
U.S. Cl. D83—1 B



226,542  
TIRE  
Mario Mezzanotte, Milan, Italy, assignor to Industrie  
Pirelli S.p.A., Milan, Italy  
Filed May 18, 1971, Ser. No. 144,712  
Claims priority, application Italy Nov. 18, 1970  
Term of patent 14 years  
Int. Cl. D12—15  
U.S. Cl. D90—20



226,543  
TIRE  
Patrick S. Neale, Mogadore, Ohio, assignor to  
Goodyear Tire & Rubber Company, Akron, Ohio  
Filed July 23, 1971, Ser. No. 165,881  
Term of patent 14 years  
Int. Cl. D12—15  
U.S. Cl. D90—20 R





# LIST OF PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 20<sup>TH</sup> DAY OF MARCH, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A-T-O Inc.: *See*—  
Wallick, Paul C., 3,721,129.
- A/S Spilka: *See*—  
Kvasnes, Harald, 3,721,044.
- AB Hagglund & Soner: *See*—  
Andersson, Bjorn Axel Henning, 3,721,476.
- Abbate, Franklin W.; and Farrissey, William J., Jr., to Upjohn Company, The. Piperazinyl ethyl carbamates. 3,721,674, Cl. 260-268.00r.
- Abbott, Thomas I., to Eastman Kodak Company. Mordant vehicle for color image transfer receivers. 3,721,558, Cl. 96-29.00d.
- Abe, Takeo: *See*—  
Okuma, Kiwamu; and Abe, Takeo, 3,721,538.
- Abex Cooration: *See*—  
Blanyer, Carl G., 3,721,821.
- Abex Corporation: *See*—  
Blanyer, Carl G., 3,721,859.
- Aboif, Joseph A., to International Business Machines Corporation. Method for diffusing zinc into a semiconductor substrate without winging. 3,721,589, Cl. 148-188.000.
- Abrams, Arthur B. Vehicle wind tunnel. 3,721,466, Cl. 296-1.00s.
- A.C.E. Machinery Limited: *See*—  
Hall, Richard John; and Shalders, Alan John, 3,721,319.
- Ackermann u. Schmitt KG: *See*—  
Csaki, Joachim, 3,721,142.
- Adams, James William; and Hoftiezer, Henry Wilbert, to American Can Company. Builder for phosphate-free detergent compositions. 3,721,627, Cl. 252-89.000.
- Addis, Kenneth J., to Deering Milliken Research Corporation. Method and apparatus for securing a continuous thread on a support surface. 3,721,599, Cl. 156-394.000.
- Adler, Ralph Michael. Marine refrigeration, freezing and cool storage systems. 3,721,104, Cl. 62-240.000.
- Aerostatic Limited: *See*—  
Dee, William C., 3,721,480.
- Agfa-Gevaert Aktiengesellschaft: *See*—  
Szostak, Roland; Hartwig, Karl; Maurischat, Gunter; Schnell, Gunter; and Vossnacke, Jurgen, 3,721,209.
- Agfa-Gevaert N.V.: *See*—  
De Haes, Louis Maria; Gevers, Hugo Karel; and VanHeertum, Johannes Josephus, 3,721,559.
- Heugebaert, Frans Clement; and Brinckman, Eric Maria, 3,721,560.
- Van Lishout, Jan August; and Jaeken, Jan, 3,721,823.
- Agnew, Boyd F. Clean air system for hospital operating rooms. 3,721,067, Cl. 55-97.000.
- Ahlen, Karl Gustav, to S.R.M. Hydromekanik, AB. Hydrodynamic torque converters. 3,721,090, Cl. 60-362.000.
- Ahlstone, Arthur G., to Vetco Offshore Industries, Inc. Marine riser liner apparatus and methods of installing such apparatus. 3,721,292, Cl. 166-500.
- Ahlstone, Arthur G.; and Larralde, Edward, to Vetco Offshore Industries, Inc. Compensating and sensing apparatus for well bore drilling vessels. 3,721,293, Cl. 166-500.
- Aisin Seiki Company Limited: *See*—  
Kawase, Toshiharu; and Awakura, Yukio, 3,721,475.
- Aisin Seiki Kabushiki Kaisha: *See*—  
Ono, Takeshi; Hirayama, Takashi; and Yamamoto, Kimihiko, 3,721,205.
- Akazome, Giichi: *See*—  
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- Aktiengesellschaft Brown, Boveri & Cie: *See*—  
Wehrli, Robert, 3,721,787.
- Albert, Aristide A., to United Aircraft Corporation. Helicopter floating stabilator control system. 3,721,404, Cl. 244-17.190.
- Albrecht, Rudolf: *See*—  
Rufer, Clemens; Albrecht, Rudolf; Kessler, Hans-Joachim; and Schroder, Eberhard, 3,721,668.
- Alelio, Gaetano F. D. Reactive hydroxyalkyl-onium catalysts for synthesis of polyoxazolidones. 3,721,650, Cl. 260-47.0ep.
- Alessio, Dino, to H.G. Enterprises. Heel and ankle protector. 3,721,237, Cl. 128-149.000.
- Alexander, Robert Warren: *See*—  
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- Alfa Romeo S.p.A.: *See*—  
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- Alfs, Helmut: *See*—  
List, Ferdinand; Dodt, Johann; and Alfs, Helmut, 3,721,708.
- Allard, Robert; and Clarke, John Lawton, to United Kingdom of Great Britain and Northern Ireland, Minister of Aviation Supply in Her Britannic Majesty's Government of the. Pulse radar ranging. 3,721,981, Cl. 343-13.00r.
- Allen, William R. Flicker toy. 3,721,037, Cl. 46-62.000.
- Allied Gear and Machine Co., Inc.: *See*—  
Jacobsen, John C.; and Wilson, John S., 3,721,188.
- Allis-Chalmers Corporation: *See*—  
Boone, Jerry C., 3,721,333.
- Rogers, George W., 3,721,474.
- Allison, Rudolph L.; and Lindstrand, Gary L., to MTL, Incorporated. Machine for sealing balloons and the like. 3,720,991, Cl. 29-211.00d.
- Allmanna Svenska Elektriska Aktiebolaget: *See*—  
Malm, Assar; and Fransson, Jan-Erik, 3,720,998.
- Norman, Sivert; and Hammar, Erik, 3,721,895.
- Allport, Maurice James, to Lucas, Joseph, (Industries) Limited. Battery charging systems for road vehicles. 3,721,888, Cl. 320-64.000.
- Allten, Alfred G.; and Semel, Frederick J., to Wood, Alan, Steel Company. Low carbon, niobium and aluminum containing steel sheets and plates and process. 3,721,587, Cl. 148-36.000.
- Alongi, John R.: *See*—  
Elders, Gerald W.; Schneider, Thomas E.; and Alongi, John R., 3,721,094.
- Alt, Anton: *See*—  
Buhrer, Erwin; and Alt, Anton, 3,721,432.
- Altec-Sopitec S.A.: *See*—  
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- Aluminium Suisse S.A.: *See*—  
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- Aluminum Company of America: *See*—  
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- Ambrosius, Willem L. B.: *See*—  
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- Amco Wire Products Corporation: *See*—  
Jaffee, Robert D.; and Olson, Ralph B., 3,721,349.
- Ameliotex, Inc.: *See*—  
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- American Can Company: *See*—  
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- Meyers, George Leroy, 3,721,380.
- Saunders, William Thomas, 3,721,365.
- Watt, William Russell, 3,721,616.
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- American Home Products Corporation: *See*—  
Wendt, Gerhard R.; Ledig, Kurt W.; and Oliver, Donald W., 3,721,688.
- American Novawood Corporation, The: *See*—  
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- American Optical Corporation: *See*—  
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- American Telephone and Telegraph Company: *See*—  
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- American Velcro, Inc.: *See*—  
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- AMP Incorporated: *See*—  
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- Ampex Corporation: *See*—  
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- Amsted Industries Incorporated: *See*—  
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- Kraus, Michael Henry, Jr., 3,721,323.
- Tack, Carl E.; and Rodgers, Loyal J., 3,721,482.
- Anderka, Gerold, to Rapidograph, Inc. Drawing template. 3,721,011, Cl. 33-174.00b.
- Anderson, Bernard Joseph, to General Electric Company. Split-nut blade locking assembly. 3,721,506, Cl. 416-215.000.
- Anderson, Charles E. Toboggan tow-bar. 3,721,454, Cl. 280-24.000.
- Anderson Electric Corporation: *See*—  
Sequist, James J., 3,721,748.
- Anderson, Theodore D.; and Harms, William J., to Gardner-Denver Company. Linear antifriction bearing. 3,721,478, Cl. 308-6.00c.
- Andersson, Bjorn Axel Henning, to AB Hagglund & Soner. Track chain for tracked vehicles. 3,721,476, Cl. 305-35.00r.
- Ando, Seigo: *See*—  
Mori, Toshihiro; and Ando, Seigo, 3,721,896.
- Andrews, Charles Luther, to General Electric Company. Microwave detection instrument and antenna therefor. 3,721,900, Cl. 324-95.000.



Anspacher, William B., to United States of America, Navy. Rotating surveillance vehicle. 3,721,410, Cl. 244-314.000.  
 Aoki, Fumio: *See—*  
 Oishi, Hiroshi; Aoki, Fumio; Kawano, Shigeru; Kikuta, Setsuo; and Shirakawa, Masami, 3,721,830.  
 Apparatkemiska AB AKA: *See—*  
 Edling, Gustaf Emanuel, 3,721,897.  
 Applegate, Lindsay M. Lift control for rail car. 3,721,198, Cl. 104-23.00r.  
 Applegate, Robert D., to Driall Driers, Inc. Chemical applicator for grain. 3,721,179, Cl. 99-487.000.  
 Aranguren, William Louis, to Bell Telephone Laboratories, Incorporated. Trigger circuit having the same level turn on and turn off thresholds. 3,721,911, Cl. 328-146.000.  
 Arasaki, Seitetsu: *See—*  
 Yamamoto, Hisao; Inaba, Shigeho; Arasaki, Seitetsu; Aruyama, Isamu; Takahashi, Kei; Saito, Chiharu; and Sakai, Shigeru, 3,721,671.  
 Arikawa, Masayasu; Kano, Motomi; and Okuda, Naoki, to Kobe Steel, Ltd. Welding process and plural layered backing material. 3,721,797, Cl. 219-137.000.  
 Arneson, Edwin L., to Federal Paper Board Company, Inc. Bottle carrier package. 3,721,338, Cl. 206-65.00e.  
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 Arrow-Hart, Inc.: *See—*  
 Corey, Lawrence G.; and Opalenik, John J., 3,721,879.  
 Artamonov, Viktor Leonidovich: *See—*  
 Paton, Boris Evgenievich; Medovar, Izrailevich Boris; Latash, Jury Vadimovich; Chekotilo, Leonty Vasilievich; Baglai, Vitaly Mikhailovich; Artamonov, Viktor Leonidovich; Garkaljuk, Rodimir Ivanovich; Timchenko, Viktor Anatolievich; Malichekno, Evgeny Fedorovich; Stupak, Leonid Mikhailovich; and Dubinsky, Rudolf Solomonovich, 3,721,286.  
 Aruyama, Isamu: *See—*  
 Yamamoto, Hisao; Inaba, Shigeho; Arasaki, Seitetsu; Aruyama, Isamu; Takahashi, Kei; Saito, Chiharu; and Sakai, Shigeru, 3,721,671.  
 Asahi Kasei Kogyo Kabushiki Kaisha: *See—*  
 Nakajima, Hitoshi; Chono, Masazumi; Taguchi, Masayoshi; Sakurai, Tokio; and Matsuo, Noriak, 3,721,705.  
 Asakura, Osamu: *See—*  
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 Ask, Clifford W., Sr.: *See—*  
 Marino, Amadeo D.; and Ask, Clifford W., Sr., 3,721,537.  
 Associated Ideas International, Inc.: *See—*  
 Deckert, Albert V., Jr.; and Brinkmann, Frederick J., 3,721,096.  
 Ates Componenti Elettronici S.p.A.: *See—*  
 Del Zotto, Giorgio, 3,721,224.  
 Atkinson, Cyril John, to International Computers Limited. Web feeding apparatus. 3,721,377, Cl. 226-74.000.  
 Atkinson, Everett J.; Sager, James R.; and Bensch, Alan C., to Owens-Illinois, Inc. Method and apparatus for monitoring surface coatings. 3,721,501, Cl. 356-201.000.  
 Atlas Chemical Industries, Inc.: *See—*  
 Ranauto, Humbert J., 3,721,633.  
 Attwood, Warren R.; Henry, Herbert J.; and Rebentisch, Hugo E., Jr., to Unistrut Corporation. Post adapter. 3,721,463, Cl. 287-20.300.  
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 Austin, Timothy K., to Container Corporation of America. Display device. 3,721,029, Cl. 40-124.100.  
 Automation Industries, Inc.: *See—*  
 Jeffras, Nathaniel B., 3,721,118.  
 Automobiles Peugeot: *See—*  
 Peroy, Francois, 3,721,933.  
 Avco Corporation: *See—*  
 Reilly, James P., 3,721,915.  
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 Awakura, Yukio: *See—*  
 Kawase, Toshiharu; and Awakura, Yukio, 3,721,475.  
 Ayella, Robert J., to United States Catheter and Instrument Corporation. Spring guide washer. 3,721,252, Cl. 134-122.000.  
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 Bacher, Charles. Laminated trimmer for high pressure laminated materials. 3,721,157, Cl. 90-18.000.  
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 Becker, Richard W.; and Dappen, Glen M., to Eastman Kodak Company. Diffusion transfer reception elements film units and processes therefor. 3,721,555, Cl. 96-29.00d.  
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- Bovio, Robert J., to GTE Sylvania Incorporated. Cold trap. 3,721,100, Cl. 62-55.500.
- Bowen, Charlie L. Wood lathe. 3,721,279, Cl. 142-1.000.
- Boyles, Robert L.; and Polonsky, Samuel, to General Electric Company. Digital clock. 3,721,087, Cl. 58-125.00e.
- Brachet, Alain; and Lannou, Louis, to Electricite de France (Service National). Method for detecting steam leakage in a heat exchanger having circulation tubes surrounded by liquid sodium and devices for the application of said method. 3,721,116, Cl. 73-40000.
- Bramley, Arthur. Light scanning by interference grating and method. 3,721,486, Cl. 350-6.000.
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- Brennen, Michael B.; and Watson, Guido, to Westinghouse Electric Corporation. Electrical apparatus including a ground fault sensor. 3,721,862, Cl. 317-18.00d.
- Bressler, Marcus N.; and Sebelish, Norman C., to Gulf & Western Industries, Inc. Quick-opening manway closure. 3,721,363, Cl. 220-32.000.
- Brick, Julius H.; and Olschewski, Wilfred. Temperature-volume controlled mixing valve. 3,721,386, Cl. 236-12.00a.
- Brickman, Norman F.; and Freeman, Leo B., Jr., to International Business Machines Corporation. Repairable semiconductor circuit element and method of manufacture. 3,721,838, Cl. 307-303.000.
- Bridges, Thomas F.; Knight, George R., Jr.; and Mertl, Ivan, to McMullen, John J., Associates, Inc. Double wall corrugated Ing Tank. 3,721,362, Cl. 220-9.01g.
- Briggs, Angelis R.; and Maxwell, Thomas J., to Du Pont de Nemours, E. I., and Company. Process for preparing powder blends. 3,721,725, Cl. 264-6.000.
- Briley, George C.; Shepherd, James J.; and Lyons, Thomas A., to Cluett, Peabody & Co., Inc., mesne. Ammonia effluent recovery and liquefaction from textile treating zone. 3,721,097, Cl. 62-11.000.
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- Buescher, William E., to GTE Sylvania Incorporated. Method of improving adherence of emissive material in thermionic cathodes. 3,720,985, Cl. 29-25.170.
- Buhrer, Erwin; and Alt, Anton, to Fischer, Georg, Aktiengesellschaft. Apparatus for reception and discharge of liquid metal. 3,721,432, Cl. 266-38.000.
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- Burns, Howard M. Manual dexterity game. 3,721,440, Cl. 273-1.00r.
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- Burroughs Corporation: *See—*
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- Burton, Dennis Ernest; Newbold, Geoffrey Tattersall; Percival, Albert; Lambie, Alan James; and Sencial, Ian Robert. 2-Trifluoromethyl- or 2-pentafluoroethylbenzimidazole compounds. 3,721,678, Cl. 260-309.200.
- Burwell, Stanley J., to Lyons Industries, Inc. Tire grinding feed device. 3,721,392, Cl. 241-301.000.
- Bussienne, Christian Edmond, to Constructions Mills-K. Device for mounting rollers on a runway. 3,721,326, Cl. 193-35.00r.
- Butler, Tony W., Jr. Tower with rotated cooling assembly. 3,721,290, Cl. 165-85.000.
- Bystranyk, Wasyl; and Sarkozy, Francis A., to Emhart Corporation. Molten glass gob distribution system. 3,721,544, Cl. 65-207.000.
- Cabot Corporation: *See—*
- Belknap, Louis S., 3,721,731.
- Cain, Maurice Edward; Knight, Geoffrey Thomas; Gazeley, Keith Frederick; and Lewis, Peter McHigh, to Natural Rubber Producers' Research Association. Treatment of rubber. 3,721,659, Cl. 260-83.300.
- Calgon Corporation: *See—*
- Clapham, Thomas Miller, 3,721,072.
- Cambridge Instrument Company, Inc.: *See—*
- Whitemore, Chatland; and Richardson, Gerald A., 3,721,883.
- Campbell, Andrew J. Pair of surgical scissors. 3,721,245, Cl. 128-318.000.
- Campbell, James W., to Wetoma Corporation. Discharge unit for panel cutting apparatus. 3,721,140, Cl. 143-157.000.
- Campbell, Mahlon E.: *See—*
- McConnell, Bobby D.; Lavik, Melvin T.; and Campbell, Mahlon E., 3,721,625.
- Campbell, Raymond L., Jr.: *See—*
- Tinch, David H.; Campbell, Raymond L., Jr.; Eliahou, Elie S.; and Schmidt, Arthur W., 3,721,960.
- Campbell, Robert W., to Phillips Petroleum Company. Polyamide fibers from mixture of bis-(p-aminocyclohexy) methane and 4,4'-methylene dianiline. 3,721,653, Cl. 260-78.00r.
- Canadian Cane Equipment Ltd.: *See—*
- Miller, Robert Boothe; and Laurie, C. Keith, 3,721,567.

- Canadian Patents and Development Limited: *See—*
- Miller, Donald G., 3,721,013.
- Cannady, William P.: *See—*
- Chapman, Charles C.; Cannady, William P.; and Van Pool, Joe, 3,721,720.
- Cannon Kabushiki Kaisha: *See—*
- Ogiso, Mitsutoshi, 3,721,167.
- Canon Inc.: *See—*
- Nagashima, Shinichiro; and Tsuchiya, Kaichi, 3,721,554.
- Cantarano, Costantino Marcus. Method of producing electrographic image from original provided with a conductivity pattern. 3,721,551, Cl. 96-1.00r.
- Cantarutti, Armindo, to NRM Corporation. Tire building machine. 3,721,600, Cl. 156-401.000.
- Cantebury Tales, Inc.: *See—*
- Macioge, Frank Anthony; and Ingersoll, Henry Grant, 3,721,484.
- Carlisle Corporation: *See—*
- Ford, Charles R.; and Percifield, Edward K., 3,721,117.
- Carlstrom, Ruben. Electric heating source for seats and mattresses and methods of application of the same. 3,721,799, Cl. 219-212.000.
- Carolina Steel and Wire Corporation: *See—*
- Rauscher, David Albert; and Alexander, Robert Warren, 3,721,277.
- Carrier Corporation: *See—*
- Neill, Donald E., 3,721,880.
- Carson, John Robert, to McNeil Laboratories, Inc. 5-Aroyl-2-( $\beta$ -hydroxyethyl)-1-loweralkyl-pyrroles. 3,721,680, Cl. 260-326.50j.
- Case, J. I., Company: *See—*
- Kulhavy, Joseph T., 3,721,162.
- Cash, William D.; and Weiner, Murray, to Ciba-Geigy Corporation. Treatment and prophylaxis of thrombovascular diseases with 2-imidazolone derivatives. 3,721,738, Cl. 424-273.000.
- Caswell, John: *See—*
- Gray, R. Flanagan; Caswell, John; and Muller, William G., 3,721,403.
- Caterpillar Tractor Company: *See—*
- Farmer, Charles G.; and Loyd, Calvin D., 3,720,993.
- Caton, Ronald Morris: *See—*
- Hill, Harold Taylor; and Caton, Ronald Morris, 3,721,163.
- Catterall, John Mason: *See—*
- Beidel, Robert Gary; Burns, Thomas Victor; and Catterall, John Mason, 3,721,770.
- Caulier, Paul W.; and Greene, Donald W., to General Electric Co. Computing car locations in a train. 3,721,820, Cl. 246-247.000.
- Cautilli, Philip A.: *See—*
- Makower, Samuel J.; Cautilli, Philip A.; and Dickstein, Jack, 3,721,636.
- Cavanagh, Ronald Patrick; and Wright, Allan Richard, to Northern Electric Company Limited. Dispensing packages. 3,721,382, Cl. 229-52.00b.
- Ceccon, Harry L.; and Furumoto, Horace W. Coaxial flashlamp. 3,721,851, Cl. 313-201.000.
- Cecil, Olin B.: *See—*
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- Cenco Medical/Health Supply Corporation: *See—*
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- Centuri Engineering Company, Inc.: *See—*
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- Ceramic Engineering Limited: *See—*
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- Chaintron, Gerard, to Rhone-Poulenc S.A. Process for the separation of lactic acid from water and nitric acid by rapid preevaporation and distillation. 3,721,610, Cl. 203-77.000.
- Challacombe, Robert D. Method for cleaning wells. 3,721,297, Cl. 166-299.000.
- Chandler Evans Inc.: *See—*
- Likavec, Paul F., 3,721,453.
- Chaney, Donal W., to Harsco Corporation. Stationary refuse packer and associated container apparatus. 3,721,182, Cl. 100-35.000.
- Chapkovich, John Steven, Jr.; and Lee, David Ernest, to United Aircraft Corporation. Universally movable mounting mechanism with locking and unlocking provisions and wherein the unlocking provisions are operable in accordance. 3,721,415, Cl. 248-214.000.
- Chapman, Charles C.; Cannady, William P.; and Van Pool, Joe, to Phillips Petroleum Company. Purification of HF catalyst in alkylation process. 3,721,720, Cl. 260-683.480.
- Chase-Shawmut Company, The: *See—*
- Belcher, Richard A., 3,721,936.
- Kozacka, Frederick J., 3,721,935.
- Chekotilo, Leonty Vasilievich: *See—*
- Paton, Boris Evgenievich; Medovar, Izrailevich Boris; Latash, Jury Vadimovich; Chekotilo, Leonty Vasilievich; Baglai, Vitaly Mikhailovich; Artamonov, Viktor Leonidovich; Garkaljuk, Rodimir Ivanovich; Timchenko, Viktor Anatolievich; Malichekno, Evgeny Fedorovich; Stupak, Leonid Mikhailovich; and Dubinsky, Rudolf Solomonovich, 3,721,286.
- Chelminski, Stephen V., to Bolt Associates, Inc. Controllable force method and system of driving piles. 3,721,095, Cl. 61-53.500.
- Chemerda, John M.: *See—*
- Reinhold, Donald F.; Slettinger, Meyer; and Chemerda, John M., 3,721,697.
- Chemische Werke Huels, A.G.: *See—*
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- Chemische Werke Huels Aktiengesellschaft: *See—*
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- Chenot, Louis A., to Fife Corporation. Roller device with improved hub construction. 3,721,481, Cl. 308-20.000.
- Chevron Research Company: *See—*
- Singer, Malcolm Scott, 3,721,679.
- Straus, Alan E.; Sweeney, William A.; House, Ralph; and Sharman, Samuel H., 3,721,707.
- Chiappulini, Ruggero: *See—*
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- Chicago Swimming Pool Manufacturing Inc.: *See—*
- Thomson, David P., 3,720,964.
- Chierici, Osvaldo Frank; and Smith, James Thomas, to Holland Company. Hydraulic and resilient cushioned railway car draft appliance. 3,721,351, Cl. 213-8.000.
- Childree, Herman I.; and Trawick, Stewart I., 50% to Sabine Manufacturing, Inc. and 50% to Howe-Baker Engineers, Inc. Hot box for asphalt. 3,721,226, Cl. 126-343.50a.
- Chin, Edward: *See—*
- Schwartz, Leonard; Blau, Donald Z.; and Chin, Edward, 3,721,988.
- Chiola, Vincent; Smith, James S.; and Vanderpool, Clarence D., to Sylvania Electric Products, Inc. Refractory metal phosphate and phosphide coatings for refractory metal leads. 3,721,852, Cl. 174-50.640.
- Choate, Luther J.; and Click, Gaylon T., to Petro-Tex Chemical Corporation. Oriented polybutene-1 tubing. 3,721,269, Cl. 138-119.000.
- Chomerics, Inc.: *See—*
- Seeger, Richard E., Jr.; and Lynn, William J., 3,721,778.
- Chono, Masazumi: *See—*
- Nakajima, Hitoshi; Chono, Masazumi; Taguchi, Masayoshi; Sakurai, Tokio; and Matsuo, Noriaki, 3,721,705.
- Choshi, Yasuo: *See—*
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- Chrisman, Ernest L., to Nordic Cloud Corporation. Steam generator. 3,721,802, Cl. 219-273.000.
- Christensen, Albert V., to Northrop Corporation. Cross loop antenna. 3,721,989, Cl. 343-701.000.
- Christian, Donald K.; and Minchey, Jerry M., to Piedmont Engineering and Machine Company, Inc. Tensionless variable feed system for a traveling strip. 3,721,376, Cl. 226-42.000.
- Chudgar, Anil H., to Imperial-Eastman Corporation. Hose construction. 3,721,271, Cl. 138-141.000.
- Chupp, John P.: *See—*
- Darlington, Walter A.; and Chupp, John P., 3,721,737.
- Ciba-Geigy AG: *See—*
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- Ciba-Geigy Corporation: *See—*
- Cash, William D.; and Weiner, Murray, 3,721,738.
- Schindler, Walter; and Zust, Armin, 3,721,739.
- Schlumbom, Peter; and Gordon, David A., 3,721,654.
- Schlumbom, Peter; and Gordon, David A., 3,721,655.
- Traber, Walter; Hambock, Heinz; and Weiss, Anton Georg, 3,721,699.
- Cicci, George B.: *See—*
- Scarnato, Thomas J.; Peacock, Peter J.; Cicci, George B.; Krage, Paul W.; and Kowalik, John J., 3,721,073.
- Ciecior, Heinrich; and Herbold, Peter, to Singer Company, The, mesne. Sewing machine and an adapter for changing the elevation thereof. 3,721,206, Cl. 112-258.000.
- Cincinnati Milacron Inc.: *See—*
- Ma, Carlton Y. W.; and Peter, John W., 3,721,512.
- Taylor, Ian K.; and Jones, Maurice R., 3,721,811.
- Cinelli, Ermanno: *See—*
- Paret, Giancarlo; and Cinelli, Ermanno, 3,721,620.
- Cities Service Company: *See—*
- Miller, Clarence O.; Welch, Floyd; and McAlister, Charles G. (said Miller assor. to), 3,721,632.
- Olechowski, Jerome Robert, 3,721,660.
- Versnel, John, 3,721,634.
- Clabburn, Robin James Thomas, to Rachem Corporation. Heat recoverable articles. 3,721,749, Cl. 174-88.00r.
- Clairol Incorporated: *See—*
- Walter, Henry J.; and Levine, Harvey, 3,721,250.
- Clapham, Thomas Miller, to Calgon Corporation. Bonded activated carbon air filter. 3,721,072, Cl. 55-387.000.
- Clapp, Malcolm: *See—*
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- Clark Equipment Company: *See—*
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- Williamson, William A., 3,721,357.
- Clark, Robert L.: *See—*
- Witzel, Bruce E.; Shen, Tsung-Ying; Graham, Patricia M.; Clark, Robert L.; and Pessolano, Arsenio A., 3,721,676.
- Clarke, James A., to Fairchild Industries, Inc. Aircraft canopy separation system. 3,721,407, Cl. 244-121.000.
- Clarke, John Lawton: *See—*
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- Clarkson, W. J., Limited: *See—*
- Dodsworth, Alfred Manston Heeley, 3,721,202.
- Classen, Franz; and Parrot, Jean-Marc, to Erste Deutsche Floatglas GmbH & Co. OHG. Float glass apparatus with means for inserting wire. 3,721,543, Cl. 65-146.000.
- Clegg, Michael Ward: *See—*



- Corbett, William George; and Clegg, Michael Ward, 3,721,298.  
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Cluett, Peabody & Co., Inc., *mesne: See—*  
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Coal Industry (Patents) Limited: *See—*  
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Coffin, Stewart T. Assembly puzzle. 3,721,448, Cl. 273-160.000.  
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Cohen, Howard. Orthodontic bracket. 3,721,005, Cl. 32-14.00a.  
Cohen, Sheppard, to GTE Sylvania Incorporated. Sodium vapor lamp having improved starting means including a heater. 3,721,846, Cl. 313-15.000.  
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Colburn, Lyle W., to Dow Chemical Company. The Bonding metal laminae with thermoplastic film. 3,721,597, Cl. 156-309.000.  
Collie, Stafford D., to Phillips Petroleum Company. Readily openable foamed polymer container. 3,721,360, Cl. 215-32.000.  
Collins, Paul R. Fish hook remover. 3,721,034, Cl. 43-53.500.  
Collins Radio Company: *See—*  
George, Robert A., 3,721,959.  
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Columbia Broadcasting System, Inc.: *See—*  
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Comley, William, to McDonnell Douglas Corporation. Display generating means creating isometric projections of a family of curves. 3,721,855, Cl. 315-22.000.  
Commissariat à l'Energie Atomique: *See—*  
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Goudreau, Noel G., 3,721,416.  
Condon, Richard D.; Gill, Harry A.; Noonan, David J.; and Paul, Gerard T., to Perkin-Elmer Corporation. The. Analytical instrument system. 3,721,813, Cl. 235-151.350.  
Conographic Corporation: *See—*  
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Conseiller, Yvon G. M.; and Fontaine, Gerrard J., to Rhone-Poulenc S.A. Process for the nitrosylation of organic compounds. 3,721,669, Cl. 260-248.500.  
Consiglio Nazionale delle Ricerche: *See—*  
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Constructions Mills-K: *See—*  
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Container Corporation of America: *See—*  
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Conway, Gerard V., to General Electric Company. Lock plate for high voltage bushings with removable connectors. 3,721,942, Cl. 339-75.00r.  
Cook, Donald L.; and Hansen, Douglas R. Toy figure with mechanism for flowing air. 3,721,039, Cl. 46-116.000.  
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Cook, Robert L. Means for supporting tools. 3,721,348, Cl. 211-60.00r.  
Cooper, Jerry W.; Williams, Leland E.; Haley, John S.; and Ensley, Rufus N., to Dayco Corporation. Endless track. 3,721,477, Cl. 305-38.000.  
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Corbett, William George; and Clegg, Michael Ward. Permafrost oil-production method. 3,721,298, Cl. 166-302.000.  
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Coughlin, Donald W. Combination shut-off check and pressure surge relief valve. 3,721,264, Cl. 137-596.200.  
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Craig, Philip V. C., to Telemation, Inc. Color television encoder modulator. 3,721,755, Cl. 178-5.40r.  
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Cranston, Benjamin Howell. Explosive bonding of workpieces to manufacture a capacitor. 3,720,986, Cl. 29-25.420.  
Crawford, Donald G.; and Nack, Michael R., to FMC Corporation. Article timing and feeding mechanism. 3,721,330, Cl. 198-34.000.  
Crisafulli, Angelo J. Vertically adjustable centrifugal pump for use in manholes. 3,721,504, Cl. 415-74.000.  
Crisfino, Daniel P. Rotary cutter apparatus for roofing material. 3,721,470, Cl. 299-39.000.  
Crisser, Jack W., to Instronics Ltd. Line following apparatus. 3,721,881, Cl. 318-568.000.  
Croissette, Joseph R. Marcel, to Northern Electric Company, Limited. Method and apparatus for strand winding and reeling. 3,721,393, Cl. 242-25.00a.  
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Crook, John Michael, to Crook, Benjamin, & Sons Limited. Method of making inflatable balls. 3,721,591, Cl. 156-93.000.  
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Cryogenic Technology Inc.: *See—*  
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Cunningham, Eldon R., to General Electric Company. Resilient motor mounting arrangement. 3,721,411, Cl. 248-26.000.  
Curr, Maurice D., to Deutsch Company Electronic Components Division, The. Electrical connecting device. 3,721,943, Cl. 339-94.00m.  
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Darboven, Ernest F., to Singer Company. The. Image beam lock-on detector. 3,721,977, Cl. 343-7.00a.  
Dargent, Bruno M., to Hamilton Watch Company. Solid state watch incorporating large-scale integrated circuits. 3,721,084, Cl. 58-50.00r.  
Darlington, Walter A.; and Chupp, John P., to Monsanto Company. 2,5'-Dihalo-3-tert alkyl-5-nitrosalicylanilides for combatting lepidoptera cheiving larval. 3,721,737, Cl. 424-230.000.  
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- Dawson, Jack C.: *See—*  
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De Boer, Henri G. J.: *See—*  
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De Haes, Louis Maria; Gevers, Hugo Karel; and VanHeertum, Johannes Josephus, to Agfa-Gevaert N.V. Photographic material for the preparation of printing plates. 3,721,559, Cl. 96-33.000.  
De Santis, Michael J.; Page, Robert H.; and Rakowsky, Edward L., to Singer Company, The, *mesne: See—*  
Electro-fluidic signal converter. 3,721,257, Cl. 137-828.000.  
De Werdt, Reinier, to U.S. Philips Corporation. Etching method employing an etching mask while suppressing underetching. 3,721,592, Cl. 156-11.000.  
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Dee, William C., to Aerostatic Limited. Gas bearing assembly. 3,721,480, Cl. 308-9.000.  
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Del Zotto, Giorgio, to Ates Componenti Elettronici S.p.A. Ignition circuit for spark plugs of internal-combustion engine. 3,721,224, Cl. 123-148.00r.  
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Laridon, Urbain Leopold; Delzenne, Gerard Albert; and Peeters, Hugo Karel, 3,721,566.  
Denkowski, Walter J., to Philadelphia Gear Corporation. Anti-backlash screw jack. 3,721,133, Cl. 74-441.000.  
Deremiah, John F.; and Montgomery, Delmar L. Apparatus for supplying coolant liquid for refrigeration coils. 3,721,258, Cl. 137-111.000.  
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Dewey, David B., Jr.; and Schofield, Norman W., to General Dynamics Corporation. Reinforced wall structure. 3,721,058, Cl. 52-251.000.  
Dexter, Martin, to Geigy Chemical Corporation. Esters of (dialkyl-4-hydroxy-phenyl)malonic acid and related compounds. 3,721,704, Cl. 260-473.00s.  
Di Stefano, Alfred. Pizza pie warming carrier. 3,721,803, Cl. 219-387.000.  
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Dick, Rudolf, to Golterman, Wandel u. Switching system for plural projection of traces on screen of single-beam cathode-ray tube. 3,721,856, Cl. 315-25.000.  
Dickakian, Ghazi Mourad, to Esso Research and Engineering Company. Method of preparing high softening point thermoplastics. 3,721,658, Cl. 260-82.000.  
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Dimond, Harold L. Teaching aid. 3,721,151, Cl. 84-398.000.  
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Dolveck, Gilbert, to Aluminium Suisse S.A. Dispensing container. 3,721,371, Cl. 222-386.500.  
Dominguez-Burguette, Mario, to Minnesota Mining and Manufacturing Company. Phthalen-fluorane semiconductive polymers. 3,721,649, Cl. 260-47.00c.  
Domres, Franklin W. Pulp cutting and loading machine. 3,721,143, Cl. 143-46.00r.  
Donaldson, Fred A. Speed control system for motor vehicles. 3,721,309, Cl. 180-105.00r.  
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Dragoumis, Paul; and Grimes, Arthur Stirling. Apparatus for detecting leakage from or rupture of pipes and other vessels containing fluid under pressure. 3,721,898, Cl. 324-65.00r.  
Drake, Gene F. Fluid separation and method and apparatus for forming same. 3,721,596, Cl. 156-181.000.  
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Drew, William G. Lid unscrewable having rotationally reciprocating gate. 3,721,328, Cl. 198-29.000.  
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Dunlea, John V., Jr. Method of disposing bulk rubbish. 3,721,183, Cl. 100-39.000.  
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- Earp, Charles William; and Brandon, Martin, to International Standard Electric Corporation. Signal tapering at receiver. 3,721,987, Cl. 343-113.0de.
- Eastman Kodak Company: *See—*  
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- Edge, James, to Welwyn Electric Limited. Capacitor. 3,721,870, Cl. 317-258.000.
- Edling, Gustaf Emanuel, to Apparatkemiska AB AKA. Wall thickness and temperature monitoring apparatus for boiler tubes. 3,721,897, Cl. 324-64.000.
- Edstrom, Gene H.; Elwell, Russell M.; and Irwin, John W., to International Business Machines Corporation. Data processing subsystems. 3,721,961, Cl. 340-172.500.
- Eggert, Horst: *See—*  
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- Ehrig, Bodo; Muller, Erwin; and Mott, Ludwig, to Bayer Aktiengesellschaft. Radiation-crosslinkable polymers prepared from olefinically unsaturated monomers and vinylene carbonyl monomers. 3,721,648, Cl. 260-47.00a.
- Eisenwerke Kaiserslautern GmbH: *See—*  
Gehlen, Hermann Walter; Hartmann, Karl; and Thieme, Gerhard, 3,720,980.
- Eisler, Paul. Electrical heating film. 3,721,800, Cl. 219-213.000.
- Elders, Gerald W.; Schneider, Thomas E.; and Alongi, John R., to Pin-Set Corporation. Apparatus for and method of setting pins in mine roofs. 3,721,094, Cl. 61-45.00b.
- Electric Regulator Corporation: *See—*  
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- Elks, Joseph; Phillips, Gordon Hanley; and May, Peter John, to Glaxo Laboratories Limited. 3-Keto- $\Delta^4$ -9a-halo-1'-oxygenated-16-methyl or methylene-17 $\beta$ -acyloxy-20-keto-21-halo-pregnanes. 3,721,687, Cl. 260-397.450.
- Elmaleh, Leonard R., to Scheiner, Solly. Manual suction corettage instruments. 3,721,244, Cl. 128-304.000.
- Elwell, Russell M.: *See—*  
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- Enenkel, Hans Joachim: *See—*  
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- Englert, Ralph A.; Fasano, Ronald F.; and Palmer, Darrell D., to International Business Machines Corporation. Head carriage assembly for magnetic disk storage drive. 3,721,967, Cl. 340-174.10c.
- Ennis, George Thomas. Vehicle wrap-around cleaning apparatus. 3,720,972, Cl. 15-21.00d.
- Ensley, Rufus N.: *See—*  
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- Entine, Gerald; Coeks, Franklin H.; and Mitchell, Carl Rice, to Tyco Laboratories Incorporated. Cadmium telluride devices with non-diffusing contacts. 3,721,938, Cl. 338-15.000.
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- Erickson, Dennis E., to Clark Equipment Company. Combined battery case, counterweight and overhead guard. 3,721,353, Cl. 214-38.00a.
- Erich, Giora; and Lerner, Marc. Multiport valve with rotatable cover. 3,721,268, Cl. 137-625.460.
- Erste Deutsche Floatglas GmbH & Co. OHG: *See—*  
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- ESB Incorporated: *See—*  
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- Ettinger, James P.; and Otteson, Christian S., to Electric Regulator Corporation. Power supply for A.C. and D.C. drive. 3,721,890, Cl. 321-8.00r.
- Ettlinger, Adrian B., to Columbia Broadcasting System, Inc. Method and apparatus for automatically editing television information. 3,721,757, Cl. 178-6.60a.
- Etzbach, Volker: *See—*  
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- Evans, Morton I.: *See—*  
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- Ewald, William P.; and Metzger, Lenard M., to Eastman Kodak Company. Optical-to-electrical signal transducer apparatus. 3,721,761, Cl. 178-7.880.
- Fa. Grunzweig & Hartmann AG: *See—*  
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- Fabriques de Produits Chimiques de Tham et de Mulhouse: *See—*  
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- Fackler, Chester M.; and Lenderking, David H., to International Business Machines Corporation. Record medium driving arrangements for sound transducing apparatus. 3,721,451, Cl. 274-4.00j.
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- Fairchild Industries, Inc.: *See—*  
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- Falterman, Charles W.; Griffith, William J.; and Fletcher, Perry L., to United States of America, Navy. Underwater repeating shotgun. 3,721,031, Cl. 42-1.001.
- Farber, Sheldon; and Wright, Arthur John, to National Cash Register Company. The Mark forming record materials and process for their use. 3,721,576, Cl. 117-36.200.
- Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*  
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- Fein, Marvin Michael; and Roderick, John James, to Dart Industries, Inc. Metal halide-ester reaction process and compositions. 3,721,693, Cl. 260-448.00r.
- Feldman, Rubin, to Tsi, Inc. Apparatus for sealing and shrinking plastic film. 3,721,804, Cl. 219-388.000.
- Feldner, John Edward; and Collins, William Joseph, to Oster Corporation. Dual cycle blender control means. 3,721,875, Cl. 318-245.000.
- Fellows, Charles T.; and Hermann, Stanley R., to National Cash Register Company. The Transfer medium for producing scratch and smudge resistant marks and a process for making the same. 3,721,635, Cl. 260-28.50a.
- Fenton, Donald M., to Union Oil Company of California. Decomposition of carbonates to form aldehydes. 3,721,714, Cl. 260-601.000r.
- Fenton, Donald M., to Union Oil Company of California. Alkylation of condensed ring arylols. 3,721,715, Cl. 260-624.00c.
- Ferguson, Archibald McIntyre, to University Court of the University of Glasgow, The. Navigational instruments for ships. 3,721,951, Cl. 340-3.000.
- Fernald, Herbert B.; Hillier, Donald E., Jr.; Hughes, Charles F., Jr.; and Strausser, John R., to Gulf Research & Development Company. Process for converting ethylene to normal alpha olefins. 3,721,719, Cl. 260-683.15d.
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- Fierfort, Claude, to Schlumberger Technology Corporation. Methods and apparatus for investigating multiphase well fluids. 3,721,121, Cl. 73-155.000.
- Fierstien, Gary N.; and Jacobs, Paul H., to Motorola, Inc. Broadband radio frequency ferrite transformer providing close coupling. 3,721,932, Cl. 336-65.000.
- Fife Corporation: *See—*  
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- Finn, Robert K.; and Tannahill, Alex L. Process for the bio-oxidation of nitrogen deficient waste materials. 3,721,622, Cl. 210-11.000.
- Fisch, Richard; and Newman, Norman, to Minnesota Mining and Manufacturing Company. Process for treating waste effluent. 3,721,624, Cl. 210-47.000.
- Fisch, Richard S.; Newman, Norman St. Paul; and Bexell, Joel L., to Minnesota Mining and Manufacturing Company. Photographic developer concentrate. 3,721,563, Cl. 96-66.100.
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- Fitzgerald, Maurice J., to Polaroid Corporation. Polymeric binders for photographic emulsions. 3,721,565, Cl. 96-114.000.
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- Fletcher, Robert W., to Standard Oil Company. Stackable containers. 3,721,367, Cl. 220-97.00c.
- Plumm, Paul T., to Robertshaw Controls Company. Digital clock and method of operation and making the same. 3,721,086, Cl. 58-125.00c.
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- Folz, Sylvester D., to Upjohn Company. The Anthelmintic method and formulations employing phenylhydrazones derivatives. 3,721,740, Cl. 424-327.000.
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- Fong, William, to National Research Development Corporation. Reluctance motors. 3,721,844, Cl. 310-166.000.
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- Fontanel, Andre; and Grau, Gerard, to Institut Francais du Petrole des Carburants et Lubrifiants. Method for surfaces exploration adapted in particular to seismic prospecting and device therefor. 3,721,954, Cl. 340-15.5tc.
- Ford, Brian; and Clapp, Malcolm, to British Aircraft Corporation (A.T.) Limited, mesne. Sighting means for missiles. 3,721,420, Cl. 244-3.110.
- Ford, Charles R.; and Percifield, Edward K., to Carlisle Corporation. Method and apparatus for detecting leaks in pneumatic wheels. 3,721,117, Cl. 73-40.700.
- Ford, Clyde G.: *See—*  
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- Forg, Wolfgang; and Dupont, Peter, to Linde Aktiengesellschaft. Cooling by mixing gaseous streams. 3,721,098, Cl. 62-17.000.
- Forg, Wolfgang; and Etzbach, Volker, to Linde Aktiengesellschaft. Fractional condensation of natural gas. 3,721,099, Cl. 62-29.000.
- Fork, Frank W., to Robertson, H. H., Company. Bottomless sub-assembly for producing an underfloor electrical cable trench. 3,721,051, Cl. 52-173.000.
- Foroulis, Zisis Andrew; and Hopkinson, Brian Eric, to Esso Research and Engineering Company. Inhibition of corrosion in hot carbonate carbon dioxide removal units. 3,721,526, Cl. 21-2.700.
- Foster, John E.; and Koo, Tuh-Kai, to National Cash Register Company. The Beam accessed MOS memory with beam reading, writing, and erasing. 3,721,962, Cl. 340-173.00r.
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- Frank, Eugene P. Marker and tracking arm. 3,721,008, Cl. 33-41.00e.
- Franklin, John Warrender, to Total (Power Hydraulics) Limited. Lift trucks. 3,721,318, Cl. 187-9.000.
- Franks, Buyl A., to Lowrance Electronics, Inc. Device for indicating the temperature and depth of water. 3,721,124, Cl. 73-344.000.
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- Fraser, Douglas S.; and Bender, Charles E., to Cenco Medical/Health Supply Corporation. Egg cutter. 3,721,181, Cl. 99-576.000.
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- Fremery, Max; Hover, Hermann; and Schwarzlose, Gert, to Union Rheinische Braunkohlen Kraftstaff Aktiengesellschaft. Process for the production of hydroquinone. 3,721,615, Cl. 204-73.00r.
- French, Alfred W.; and Starrett, Forest J., Jr., to French Oil Mill Machinery Company. Mechanical screw press. 3,721,184, Cl. 100-117.000.
- French, John Lischer; Kessler, Kenneth Quentin; Funk, Welker W.; Pierrot, Victor Charles, III; and Hiseler, Stanley Robert, to Deere & Company. Self-propelled tree delimeter. 3,721,280, Cl. 144-2.00z.
- French Oil Mill Machinery Company: *See—*  
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- Frostad, Lars, to Rockwell Manufacturing Company. Movable blade guard and mounting for portable circular saws. 3,721,141, Cl. 143-159.00h.
- Frungel, Frank; and Lohse, Horst, to Impulsphysik GmbH. Capping shutter with explosive charge of carbon powder. 3,721,172, Cl. 95-53.000.
- Fugitt, Ronald Bruce, to United States of America, Navy. Instrument for measuring the depolarization of backscattered light. 3,721,500, Cl. 356-118.000.
- Fujii, Mitsuharu: *See—*  
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- Fujii, Takayoshi: *See—*  
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- Fujimoto, Sakae; Kato, Saburo; Koizumi, Masami; and Sue, Takaji, said Koizumi and said Sue assors, to Kabushiki Kaisha. Device for transferring magnetic signals from a master sheet to magnetic sheets. 3,721,775, Cl. 179-100.20e.
- Fujino, Masahiko; and Hatanaka, Chitoshi, to Takeda Chemical Industries, Ltd. Method for producing an active carboxylic acid ester. 3,721,662, Cl. 260-112.500.
- Fujitsu Limited: *See—*  
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- Fukui, Saburo: *See—*  
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- Furrow, Richard H.: *See—*  
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- Furumoto, Horace W.: *See—*  
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- Fuse, Yuzo: *See—*  
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- G-P Industries, Inc.: *See—*  
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- Gabriel, Ralph Parton; and Kinross, Rupert Ivor, to Communications Patents Limited. Electrical switch devices. 3,721,929, Cl. 335-206.000.
- GAF Corporation: *See—*  
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- Gaines, Lewis H.: *See—*  
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- Galen, Martin P.: *See—*  
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- Gallaro, Anthony V., to GTE Sylvania Incorporated. Dual persistence screen for a cathode ray tube. 3,721,849, Cl. 313-92.000.
- Gallay, Jean-Jacques; deceased (by Gallay, Marielle; administratrix); Helary, Jean-Louis; and Jurien de la Graviere, Marcel, said Helary and said Jurien de la Graviere assor, to Commissariat a l'Energie Atomique. Preparation of metal ingots from the corresponding metal oxides. 3,721,549, Cl. 75-84.100.
- Gallay, Marielle: *See—*  
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Garcea, Giampaolo, to Alfa Romeo S.p.A. Variator for the setting of the camshafts of an internal combustion engine. 3,721,220, Cl. 123-90.150.  
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- Hays, Robert G.; and Rhee, Chongkook, to Motorola, Inc. Etch stop for koh anisotropic etch. 3,721,593, Cl. 156-17.000.
- Haywood, John T., to United States of America, Army. Continuity test and indicating circuit. 3,721,899, Cl. 324-73.00r.
- Heidel, Klaus, to Chemische Werke Huls Aktiengesellschaft. Storable photosensitized polyester molding. 3,721,723, Cl. 260-865.000.
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- Helms, Clifford J., to Sperry Rand Corporation, mesne. Positioning system. 3,721,882, Cl. 318-594.000.
- Helms, John D.; and Cecil, Olin B., to Texas Instruments, Incorporated. Low volume deposition reactor. 3,721,210, Cl. 118-48.000.
- Henkel & Cie. GmbH: *See—*
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- Hermans, Albert L. Ultrasonic burglar alarm system. 3,721,972, Cl. 340-276.000.
- Heron, John B. High voltage monolithic ceramic capacitor. 3,721,871, Cl. 317-261.000.
- Hess, William J., to United States of America, Navy. Hardlimiter, automatic symmetry circuit. 3,721,835, Cl. 307-237.000.
- Hesterman, Dennis: *See—*
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- Hesterman, Dennis; and Greth, Lewis E., said Greth assor. to Hesterman, Dennis. Male urinary incontinence device. 3,721,243, Cl. 128-295.000.
- Heth, Sherman C., to Jacobsen Manufacturing Company. Mower for mowing around an object. 3,721,074, Cl. 56-10.400.
- Hetzer, Frederick C.: *See—*
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- Heugebaert, Frans Clement; and Brinckman, Eric Maria, to Agfa-Gevaert N.V. Photothermographic material containing a photosensitive metal oxide semiconductor or benzophenone and a free metal generating alkanolamine. 3,721,560, Cl. 96-48.0hd.
- Hewlett-Packard Company: *See—*
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- Heya, Satoshi: *See—*
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- Hill, Ezra C.: *See—*
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- Hino, Hazime; Nakamura, Tsutomu; and Takahashi, Nobuo. Apparatus for the manufacture of crimped bulky filaments. 3,720,983, Cl. 28-1.400.
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- Hirschfeld, Robert A., to Lithic Systems, Inc. Storage energy regulating circuit. 3,721,834, Cl. 307-235.00r.
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- Hoch, Rene Gerard; and Jumelle, Louis Francois, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Silencer or muffler for the composite nozzle of an aircraft jet engine. 3,721,314, Cl. 181-33.0hc.
- Hodge, Abram L.; and Fedock, Michael P., to Republic Steel Corporation. Treatment of iron-containing particles. 3,721,548, Cl. 75-25.000.
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- Hoffland, Joseph V., to FMC Corporation. Three-way valve. 3,721,265, Cl. 137-625.470.
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- Hoffman, Rickie R.; and Hoffman, Roland F. Pitch raising and lowering device for guitars. 3,721,150, Cl. 84-313.000.
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- Holman, Leonard; and Timms, Richard H., to Rohr Corporation. Jet engine to air inlet duct flexible joint aircraft. 3,721,460, Cl. 285-175.000.
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- Howles, Clement Roger, to Aluminum Company of America. Method of continuously casting plate with texture surface. 3,721,287, Cl. 164-73.000.
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- Hubbell, Harvey, Incorporated: *See—*
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- Hucko, Henry; and Lusignan, Henry T., to General Electric Company. High voltage bushing with removable connector and locking plate. 3,721,946, Cl. 339-75.00r.
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- Huron Products Company: *See—*
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- Jasinski, Raymond J.; and Gaines, Lewis H., to Tyco Laboratories, Inc. Method of removing water from lithium batteries. 3,721,586, Cl. 136-175.000.
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- Jenifer, Richard M.; Payne, Robert A.; and Sobchak, Frank L., to Stewart-Warner Corporation. Message display system and pictorial programmer therefor. 3,721,974, Cl. 340-339.000.
- Jenne, Fredrick B., to North American Rockwell Corporation. Photon to digital converter using photon flux integration. 3,721,963, Cl. 340-173.01m.
- Jerchow, Lewis A., to Pioneer Industries; division of SOS Consolidated Inc. Drywall door frame. 3,721,055, Cl. 52-217.000.
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- Jones, Gerald Cedric; and Leek, Herbert Bentley, to Saunders Valve Company Limited. Seat assembly for ball valves. 3,721,425, Cl. 251-174.000.
- Jones, Gordon Kenneth, to Humphreys & Glasgow Limited. Process for the production of metals. 3,721,611, Cl. 204-1.00r.
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- List, Ferdinand; Dodi, Johann; and Alfs, Helmut, to Chemische Werke Huels, A.G. Process for the preparation of o-phthalic acid. 3,721,708, Cl. 260-524.00r.
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- MacKinnon, Malcolm Lain K.; and Syltebo, Bjarne E., to Boeing Company, The. Exit nozzle assemblies for gas turbine power plants. 3,721,389, Cl. 239-265.190.
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- Mazac, Frank P.; and Fitzsimons, Alan R., to San/Bar Corporation. Ground start adapter unit. 3,721,768, Cl. 179-16.00F.
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- Morrison, Abraham; and Hetzer, Frederick C., to United Aircraft Corporation. Crossover tube construction. 3,721,089, Cl. 60-39.320.
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- Mosler Safe Company, The: *See—*  
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- Moss, Philip Hotchkiss; and Cuscureida, Michael, to Jefferson Chemical Company, Inc. Starch based polyether polyols. 3,721,665, Cl. 260-233.30r.
- Mostecky, Jiri: *See—*  
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- Motorola, Inc.: *See—*  
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- Mott-Smith, Lewis Morton, to Mandrel Industries, Inc. Marine seismic source employing the water-hammer effect. 3,721,311, Cl. 181-50h.
- Mroz, Walter. Backlash-proof fishing reel. 3,721,399, Cl. 242-84.51r.
- MTL, Incorporated: *See—*  
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- Mueller, Albrecht; Osieka, Hans; and Pommer, Ernst-Heinrich, to Badische Anilin & Soda-Fabrik Aktiengesellschaft. Substituted benzanilides. 3,721,709, Cl. 260-558.00d.
- Mueller, Helmut; and Purcell, Lawrence N. Sealed and grounded electric motor housing. 3,721,071, Cl. 55-360.000.
- Mugele, Kurt, to Siemens Aktiengesellschaft. Liquid-ring pump with control valves. 3,721,508, Cl. 417-68.000.
- Muller, Albert, to Tesa S. A. Internal micrometer. 3,721,012, Cl. 33-178.00r.
- Muller, Erwin: *See—*  
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- Muller, William G.: *See—*  
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- Muller-Calgan, Helmut; Unger, Richard; and Enekel, Hans Joachim, to Merck Patent Gesellschaft mit beschränkter Haftung. Spiro cyclohexane-1,9-thioxanthenes. 3,721,672, Cl. 260-268.0pc.
- Munzner, Gerald Johannes, to VEB Vereinigte Baumwollspinnereien und Zwirnereien. Process for making textured threads without twist recovery or untwisting. 3,721,082, Cl. 57-157.0ts.
- Murai, Koichi; Akazome, Giichi; Choshi, Yasuo; Kobayashi, Toshiaki; and Tsuji, Atsuo, to New Japan Chemical Company Limited. Manufacture of benzylidene sorbitols. 3,721,682, Cl. 260-340.700.
- Murphy, G. W., Industries, Inc.: *See—*  
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- Musser, Lester W., Jr.: *See—*  
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- Mustain, Lewis B., to Mosler Safe Company, The. Method of checking card file activity. 3,721,343, Cl. 209-110.500.
- Myer, Robert E., to Bell Telephone Laboratories, Incorporated. Detection of range marks nearest the center of a range gate. 3,721,907, Cl. 328-109.000.
- Myers, Julia S.; and Wilber, Paul F. Quick detachable button. 3,720,982, Cl. 24-104.000.
- Myers, Robert T. Anesthetic gas exhaust system. 3,721,239, Cl. 128-188.000.
- Nack, Michael R.: *See—*  
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- Nagai, Akio: *See—*  
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- Nagai, Kazuo: *See—*  
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- Nagashima, Shinichiro; and Tsuchiya, Kaichi, to Canon Inc. Organic photoconductive materials formed by condensing photoconductive and dyestuff reactant. 3,721,554, Cl. 96-1.500.
- Nagy, Stanley S.: *See—*  
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- Nahn, Helmut; and Siedel, Water; deceased (by Siedel, Helene Elise; heiress), to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Phenoxyalkane-carboxylic acids, salts and esters thereof. 3,721,703, Cl. 260-471.00r.
- Naito, Fumio: *See—*  
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- Nakabara, Mitsue. Base for whetstone. 3,721,049, Cl. 51-211.00r.
- Nakajima, Hitoshi; Chono, Masazumi; Taguchi, Masayoshi; Sakurai, Tokio; and Matsuo, Noriaki, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for producing methacrylic acid or its esters. 3,721,705, Cl. 260-486.00d.
- Nakamizo, Takefumi: *See—*  
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- Nakamura, Akitoshi: *See—*  
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- Nakamura, Hajime, to Sansui Electric Co., Ltd. Differential amplifier having balanced current flow. 3,721,914, Cl. 330-25.000.
- Nakamura, Tsutomu: *See—*  
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- Nalco Chemical Company: *See—*  
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- Napoli, Ruby. Board game apparatus. 3,721,443, Cl. 273-135.0aa.
- Narbais-Jaureguy, Jean Raymond. Navigating and landing device for aircraft. 3,721,499, Cl. 356-152.000.
- Narco Scientific Industries, Inc.: *See—*  
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- Narodny, Leo; and Sharpe, Louis E., to Kollsman Instrument Corporation. Synthesized hologram for an artificial optical template. 3,721,498, Cl. 356-109.00m.
- Naruse, Yohsuke; Usunomiya, Kimake; and Fuse, Yuzo, to Sony Corporation. Shadow mask having apertures at intersections of barrel-shaped and pin-cushion shaped lines. 3,721,853, Cl. 313-85.00s.
- National Cash Register Company, The: *See—*



- Farber, Sheldon; and Wright, Arthur John, 3,721,576.  
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 Nelson, Bobby H., to Vetco Offshore Industries, Inc. Underwater pipe connection apparatus. 3,721,294, Cl. 166-600.  
 Nelson, Stanley E. Toothbrushes. 3,720,975, Cl. 15-167.00r.  
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 Niems, Lee H. Apparatus for cooling particles. 3,721,017, Cl. 34-167.000.  
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 Okada, Masashi, to Nippondenso Kabushiki Kaisha. Internal combustion engine exhaust gas controlling device. 3,721,221, Cl. 123-97.00b.  
 Okamoto, Noriaki; Wakabe, Teruo; and Nozawa, Kazuo, to Sony Corporation. Method of making a magnetic head. 3,721,000, Cl. 29-603.000.  
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 Phinney, Earl M.; and Linkroum, Irving E., to Bendix Corporation, The. Blasting machine with overvoltage and undervoltage protection for the energy storage capacitor. 3,721,886, Cl. 320-1.000.  
 Picard, Karl Heinz; and Eggert, Horst, to Siemens Aktiengesellschaft. Pressure switch device having a pressure-dependent circuit for a compressor. 3,721,785, Cl. 200-148.00b.  
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- Pielkenrood-Vinitex N.V.: *See—*  
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- Pieuchard, Guy; Flamand, Jean; and Labeyrie, Antoine, to JOBIN-YvON. Optical diffraction grating scanner device. 3,721,487, Cl. 350-7.000.
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- Porter, James M., to Trane Company. The. High pressure multiple pump for absorption refrigeration machine. 3,721,109, Cl. 62-476.000.
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- Ramond, Pierre A., to Regie Nationale des Usines Renault. Gear cutting methods. 3,720,989, Cl. 29-159.200.
- Ranaut, Humbert J., to Atlas Chemical Industries, Inc. Aqueous built liquid detergents containing alkyl glycosides. 3,721,633, Cl. 252-527.000.
- Rand, Sidney, to Commonwealth of Puerto Rico, Government of the. Machine for polishing masonry floors. 3,721,048, Cl. 51-174.000.
- Randau, Helmut Klaus; and Taphorn, Bodo Egon, to Volkswagenwerk Aktiengesellschaft. Distributor. 3,721,223, Cl. 123-102.000.
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- Rasmussen, John Oscar, Jr. Method and apparatus for analysis of liquid residues using nuclear reactions. 3,721,825, Cl. 250-83.30r.
- Rasnick, William H.; and Steger, Philip J., to United States of America, Atomic Energy Commission. Gas bearing and method of making same. 3,721,479, Cl. 308-9.000.
- Rauscher, David Albert; and Alexander, Robert Warren, to Carolina Steel and Wire Corporation. Method and apparatus for splicing jacketed cable. 3,721,277, Cl. 140-111.000.
- Rawlings, John H., to Questor Corporation. Football helmet. 3,720,955, Cl. 2-3.00r.
- Raynes, Burt F.; Kanatsiz, Necati; and Ottele, Robert E., to Rohr Industries Inc. Materials handling system. 3,721,354, Cl. 214-38.00d.
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- Redinger, Volker, to Hellerich, Robert, K. G. Eutingen. Process and apparatus for making polygonal spectacle glass rims. 3,721,275, Cl. 140-88.000.
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- Reinhard, Paul, to Teppichfabrik Melchnau AG. Method and apparatus for fabricating pile goods. 3,721,372, Cl. 223-30.000.
- Reinheimer, Gunter, to Leitz, Ernst, G.m.b.H. Arrangement for automatically focussing an optical instrument. 3,721,827, Cl. 250-201.000.
- Reinhold, Donald F.; Slettinger, Meyer; and Chemerda, John M., to Merck & Co., Inc. Resolution of DL- $\alpha$ -lower alkanoylamino- $\alpha$ -(benzyl) propionitriles. 3,721,697, Cl. 260-465.00d.
- Reiser, Hans Joachim, to Kabel- und Metallwerke Gutehoffnungshütte Aktiengesellschaft. Apparatus for uncoiling wire from a spool. 3,721,394, Cl. 242-254.00r.
- Remke, Marvin A., to Phillips Petroleum Company. Controlling apparatus and method. 3,721,253, Cl. 137-3.000.
- Renskers, John O., to Coilcraft, Inc. Dual in-line package. 3,721,747, Cl. 174-52.0pe.
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- Ries, Gordon E. Light unit. 3,721,814, Cl. 240-10.00r.
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- Ristow, Harold E. Dial indicator gage. 3,721,010, Cl. 33-172.00r.
- Roberson, Elbert Belmont, Jr., to Du Pont de Nemours, E. I., and Company. Multi-end knit-deknit process. 3,720,984, Cl. 28-72.160.
- Roberts, Franklin B.; and Groom, James S., to Package Machinery Company. Web feed mechanism for wrapping machines. 3,721,375, Cl. 225-96.000.
- Roberts, John T., to Grace, W. R., & Co. Bag packaging system. 3,721,062, Cl. 53-385.000.
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- Robin, Edward L. Battery terminal guard. 3,721,947, Cl. 339-116.00r.
- Robinson, La Roy E.; and Peltz, Leslie J., to Continental Machines, Inc. Automatic control for return motion of cutoff saw head. 3,721,139, Cl. 83-63.000.
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- Rosan, Jose, Sr.; and Rosan, Jose, Jr., said Rosan, Jose, Jr., assor to Rosan Engineering Corporation. Method of making a stud fastener assembly with integral lock ring. 3,720,969, Cl. 10-27.000.
- Rosen, Arye; and Reynolds, James Francis, to RCA Corporation. Negative resistance semiconductor coupled transmission line apparatus. 3,721,918, Cl. 331-96.000.
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- Rutten, Pierre L., to Compagnie Nationale d'Aménagement de la Région du Bas-Rhône Languedoc. Device for automatically driving an irrigation installation. 3,721,254, Cl. 137-78.000.
- Ryan, Merle E.; and Stremel, William D., to Bendix Corporation. The. Crush dressing control mechanism. 3,721,047, Cl. 51-165.780.
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- Saller, Erik; and Trechock, Jack, to FMC Corporation. Fluidizing devices for fluid beds, with in-process cleaning. 3,721,608, Cl. 202-241.000.
- Samrok, Fred E.; and Higgins, William E., to Westinghouse Air Brake Company. Railroad lift bridge remote control system. 3,721,819, Cl. 246-118.000.
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- Van Doorne, Guy Camille, to Labofina S.A. Process for the improvement of the constitution of soils. 3,721,043, Cl. 47-58.000.
- Van Leeuwen, Gerrit Hendrik. Anti-microbial compositions containing histaminase. 3,721,733, Cl. 424-94.000.
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- Vogel, George R. Reciprocating motor. 3,721,873, Cl. 318-128.000.
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- Watt, William Russell, to American Can Company. Photopolymerizable epoxy systems containing cyclic amide gelation inhibitors. 3,721,617, Cl. 204-159.110.
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- Weiberg, Rudiger, to Maschinenfabrik August Herbolt. Stripping machine. 3,721,075, Cl. 56-13.500.
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- Zuech, Ernest A.: *See*—  
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- Zust, Armin: *See*—  
Schindler, Walter; and Zust, Armin, 3,721,739.
- Zysman, Milton. Spring upholstery cushioning. 3,720,966, Cl. 5-353.000.



# LIST OF REISSUE PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 20TH DAY OF MARCH, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Alexander, William L.: See—  
Fain, Jacob M., and McDonnell. Re. 27,601.  
Beckmann, Rolf E. V.: See—  
Stewart, John K., and Beckmann. Re. 27,604.  
Canron Ltd.: See—  
Stewart, John K., and Beckmann. Re. 27,604.  
Carrier Corp.: See—  
Stankavich, Anthony J. Re. 27,603.  
Elde, Melvin O., to United Control Corp. Amplifier with float-  
ing input. Re. 27,602, 3-20-73, Cl. 33—24.  
Fain, Jacob M., and E. McDonnell, to William L. Alexander,  
William G. Mulligan, and Foster Dee Snell, trustees for the  
stockholders of Twenty-Nine West Fifteenth Street Corp.  
Novel water-repellent compositions. Re. 27,601, 3-20-73, Cl.  
260—2 S.  
Laney, Nell M. Vehicular towed camping trailer. Re. 27,605,  
3-20-73, Cl. 290—23 R.  
McDonnell, Edward: See—  
Fain, Jacob M., and McDonnell. Re. 27,601.  
Mulligan, William G.: See—  
Fain, Jacob M., and McDonnell. Re. 27,601.  
Snell, Foster Dee: See—  
Fain, Jacob M., and McDonnell. Re. 27,601.  
Stankavich, Anthony J., to Carrier Corp. Process of Produc-  
ing an electrical resistor. Re. 27,603, 3-20-73, Cl. 117—227.  
Stewart, John K., and R. E. V. Beckmann, to Canron Ltd.  
Workhead positioning means. Re. 27,604, 3-20-73, Cl.  
104—12.  
Twenty-Nine West Fifteenth Street Corp.: See—  
Fain, Jacob M., and McDonnell. Re. 27,601.  
United Control Corp.: See—  
Elde, Melvin O. Re. 27,602.  
Ametek, Inc.: See—  
Thornton, John H., Sr. 226,523.  
Anderson, Eldon L., Jr., to General Electric Co. Floodlight.  
226,534, 3-20-73, Cl. D48—20 K.  
Anderson, Eldon L., Jr., to General Electric Co. Luminaire.  
226,535, 3-20-73, Cl. D48—31.  
Arai, Noriyuki: See—  
Katayama, Masaharu, and Arai. 226,536.  
Beckman, Glenn B., to Corning Glass Works. Filter drip  
adaptor for coffee maker. 226,531, 3-20-73, Cl. D44—26 B.  
Bobrowski, Louis G., to The Stanley Works. Sliding door chain  
guard. 226,515, 3-20-73, Cl. D8—131.  
Braun, W. Co.: See—  
Lerner, Nathan B. 226,521.  
Brindisi, Frederick J., to Qualitrol Corp. Pressure relief valve.  
226,524, 3-20-73, Cl. D23—19.  
Carasso, Daniel, to Compagnie Gervais-Danone. Mold for co-  
mestibles or similar article. 226,530, 3-20-73, Cl. D44—1 L.  
Caterpillar Tractor Co.: See—  
Wetherill, Richard H., and Gregg. 226,518.  
Chef Pierre, Inc.: See—  
Dendrinos, Peter C. 226,522.  
Cleere, Edward L. Golf putter head. 226,526, 3-20-73, Cl.  
D34—5.  
Compagnie Gervais-Danone: See—  
Carasso, Daniel. 226,430.  
Cooper, Howard, Bottle. 226,519, 3-20-73, Cl. D9—28.  
Cooper, Howard, Bottle. 226,520, 3-20-73, Cl. D9—39.  
Coppuck, Gordon L., to Bruce McLaren Motor Racing Ltd.  
Model racing car. 226,527, 3-20-73, Cl. D34—15.  
Corning Glass Works: See—  
Beckman, Glenn B. 226,531.  
Cressy, Clifford E. Combined lawn mower and grass catcher.  
226,528, 3-20-73, Cl. D40—1 B.  
Daher, Theodore G., to General Electric Co. Clock or similar  
article. 226,529, 3-20-73, Cl. D42—7.  
Dendrinos, Peter C., to Chef Pierre, Inc. Packaged pie. 226-  
522, 3-20-73, Cl. D9—193.  
Dushek, Charles D., to Sears, Roebuck and Co. Barbecue grill  
and oven unit and stand therefor. 226,540, 3-20-73, Cl.  
D81—10 E.  
Frieder, Leonard P., Jr., to Gentex Corp. Water ski vest. 226-  
538, 3-20-73, Cl. D71—1 HIL.  
General Electric Co.: See—  
Anderson, Eldon L., Jr. 226,534.  
Anderson, Eldon L., Jr. 226,535.  
Daher, Theodore G. 226,529.  
Mellyn, Lawrence P. 226,516.  
Mellyn, Lawrence P. 226,517.  
Gentex Corp.: See—  
Frieder, Leonard P., Jr. 226,538.  
Goodyear Tire & Rubber Co., The: See—  
Neale, Patrick S. 226,543.  
Gray, John F. Cascade type merchandising rack. 226,512,  
3-20-73, Cl. D6—190.  
Gregg, Anton T.: See—  
Wetherill, Richard H., and Gregg. 226,518.  
Hazama, Shigetoshi, to Sharp Kabushiki Kaisha (Sharp  
Corp.). Electronic calculating machine. 226,525, 3-20-73,  
Cl. D26—5 C.  
Hickman, Jack. Freight car body. 226,537, 3-20-73, Cl.  
D66—1.  
Industrie Pirelli S.p.A.: See—  
Mezzanotte, Mario. 226,542.  
Ishii, Motoko, to Yamaguchi Electric Co. Ltd. Chandelier. 226-  
532, 3-20-73, Cl. D48—3.  
Katayama, Masaharu, and N. Arai, to Matsushita Electric In-  
dustrial Co., Ltd. Television receiver. 226,536, 3-20-73, Cl.  
D50—4.  
Lerner, Nathan B., to W. Braun Co. Combined bottle and  
closure therefor. 226,521, 3-10-73, Cl. D9—118.  
Matsushita Electric Industrial Co., Ltd.: See—  
Katayama, Masaharu, and Arai. 226,536.  
McLaren, Bruce, Motor Racing Ltd.: See—  
Coppuck, Gordon L. 226,527.  
Mellyn, Lawrence P., to General Electric Co. Escutcheon plate  
with push button for door bells. 226,516, 3-20-73, Cl.  
D8—181.  
Mellyn, Lawrence P., to General Electric Co. Escutcheon plate  
with push button for door bells. 226,517, 3-20-73, Cl.  
D8—181.  
Mezzanotte, Mario, to Industrie Pirelli S.p.A. Tire. 226,542,  
3-20-73, Cl. D90—20.  
Neale, Patrick S., to The Goodyear Tire & Rubber Co. Tire.  
226,543, 3-20-73, Cl. D90—20 R.  
Pearsall, Duane D., to Statitrol Corp. Fire detector. 226,539,  
3-20-73, Cl. D72—1 R.  
Porter, Richard C. Lamp. 226,533, 3-20-73, Cl. D48—20.  
Pryor, John W. Hanger rack for intravenous bottles. 226,541,  
3-20-73, Cl. D83—1 B.  
Qualitrol Corp.: See—  
Brindisi, Frederick J. 226,524.  
Rogers, Edward A., to Wilkinson Sword Ltd. Grass cutting  
shears. 226,514, 3-20-73, Cl. D8—5.  
Sears, Roebuck and Co.: See—  
Dushek, Charles D. 226,540.  
Sharp Kabushiki Kaisha (Sharp Corp.): See—  
Hazama, Shigetoshi. 226,525.  
Stanley Works, The: See—  
Bobrowski, Louis G. 226,515.  
Statitrol Corp.: See—  
Pearsall, Duane D. 226,539.  
Stern, Milton. Chair. 226,511, 3-20-73, Cl. D6—68.  
Thomas, Morton I. Bedside rail. 226,513, 3-20-73, Cl.  
D6—108.  
Thornton, John H., Sr., to Ametek, Inc. Underground flow  
control valve access housing and combined cover and base  
therefor. 226,523, 3-20-73, Cl. D13—1 R.  
Wetherill, Richard H., and A. T. Gregg, to Caterpillar Tractor  
Co. Nut. 226,518, 3-20-73, Cl. D8—273.  
Wilkinson Sword Ltd.: See—  
Rogers, Edward A. 226,514.  
Yamaguchi Electric Co. Ltd.: See—  
Ishii, Motoko. 226,532.

# CLASSIFICATION OF PATENTS

ISSUED MARCH 20, 1973

NOTE.—First number, class; second number, subclass; third number, patent number

3R	CLASS 2	360	3,721,071	394	3,721,132	386	3,721,178	2,05R	3,721,231
8	3,720,955	14A	3,721,005	441	3,721,133	487	3,721,179	2,1B	3,721,230
114	3,720,956	40R	3,721,006	586	3,721,134	571	3,721,180	24R	3,721,232
146	3,720,957	CLASS 33	3,721,073	761	3,721,135	576	3,721,181	132D	3,721,234
	3,720,958	1SD	3,721,007	856	3,721,136	CLASS 100		142.2	3,721,235
1	3,720,959	41E	3,721,008	10.4	3,721,074	35	3,721,182	145A	3,721,236
		87	3,721,009	13.5	3,721,075	39	3,721,183	149	3,721,237
		172R	3,721,010	14.9	3,721,076	117	3,721,184	188	3,721,238
		174B	3,721,011	15.6	3,721,077	25	3,721,185	208	3,721,239
52	3,720,961	178R	3,721,012	202	3,721,078	30	3,721,186	221	3,721,240
167	3,720,962	CLASS 34	3,721,013	305	3,721,079	84.1	3,721,187	287	3,721,241
172.19	3,720,964	1	3,721,014	364	3,721,080	208R	3,721,188	297	3,721,242
		10	3,721,016	CLASS 57	3,721,081	9.51	3,721,189	359	3,721,243
259R	3,720,960	125	3,721,016	34R	3,721,081	90B	3,721,137	375	3,721,244
327B	3,720,965	133	3,721,015	58.95	3,721,070	CLASS 83		382MV	3,721,245
353	3,720,966	167	3,721,017	157TS	3,721,082	63	3,721,139	16	3,721,190
		168	3,721,018	CLASS 58	3,721,083	102	3,721,140	20	3,721,191
19	3,721,522	CLASS 35	3,721,019	3	3,721,084	478	3,721,141	24HC	3,721,192
169	3,721,524	1	3,721,019	50R	3,721,084	478	3,721,141	34.5	3,721,193
196	3,721,523	35B	3,721,021	58	3,721,085	646	3,721,143	42C	3,721,194
		35H	3,721,020	125C	3,721,086	685	3,721,144	79	3,721,195
1T	3,720,967	77	3,721,022	125E	3,721,087	697	3,721,142	89	3,721,196
CLASS 10		CLASS 36	3,721,023	39.28R	3,721,088	732	3,721,145	95	3,721,197
11A	3,720,968	2.5AL	3,721,023	39.32	3,721,089	795	3,721,146	CLASS 104	
27	3,720,969	4	3,721,024	54.5H	3,721,091	CLASS 84		12	Re. 27,604
		CLASS 37	3,721,025	267	3,721,093	186WP	3,721,147	23R	3,721,198
114.6	3,720,970	43E	3,721,025	362	3,721,090	189	3,721,148	CLASS 105	
146C	3,720,971	CLASS 38	3,721,026	362	3,721,090	197	3,721,149	366A	3,721,199
		75	3,721,026	CLASS 61	3,721,094	313	3,721,150	369B	3,721,200
9	3,721,743	10R	3,721,027	53.5	3,721,095	398	3,721,151	CLASS 106	
25	3,721,744	22	3,721,027	66	3,721,096	453	3,721,152	74	3,721,574
		CLASS 15	3,721,029	11	3,721,097	11	3,721,153	213	3,721,575
21D	3,720,972	155	3,721,030	11	3,721,097	CLASS 89		49.5	3,721,201
88	3,720,973	CLASS 42	3,721,031	17	3,721,098	1.87	3,721,155	CLASS 112	
144R	3,720,974	1L	3,721,031	29	3,721,099	36K	3,721,156	121.15	3,721,202
167R	3,720,975	1R	3,721,032	48	3,721,102	CLASS 90		121.26	3,721,203
244A	3,720,976	CLASS 43	3,721,033	55.5	3,721,100	18	3,721,157	218R	3,721,204
321	3,720,977	17.6	3,721,033	56	3,721,101	CLASS 91		254	3,721,205
		53.5	3,721,034	73	3,721,103	35	3,721,158	258	3,721,206
42	3,720,978	289	3,721,105	240	3,721,104	418	3,721,159	CLASS 114	
150	3,720,979	CLASS 46	3,721,035	289	3,721,105	426	3,721,160	.5R	3,721,207
		43	3,721,036	297	3,721,106	486	3,721,161	CLASS 115	
32	3,720,980	62	3,721,037	298	3,721,107	CLASS 92		6.1	3,721,208
45	3,720,981	93	3,721,038	476	3,721,109	128	3,721,162	CLASS 117	
		116	3,721,039	CLASS 64	3,721,110	158	3,721,163	36.2	3,721,576
2	3,721,525	119	3,721,040	17A	3,721,110	CLASS 95		46CG	3,721,577
2.7	3,721,526	223	3,721,042	CLASS 65	3,721,111	1R	3,721,164	92	3,721,578
56	3,721,527	CLASS 23	3,721,043	4	3,721,537	4.5R	3,721,165	93.31	3,721,579
230B	3,721,528	58	3,721,043	7	3,721,538	10CT	3,721,166	118	3,721,580
259.5	3,721,529	193	3,721,536	19	3,721,539	10C	3,721,167	137	3,721,581
285	3,721,530	CLASS 48	3,721,537	27	3,721,540	11L	3,721,168	139.5CO	3,721,582
288M	3,721,531	146	3,721,543	60	3,721,541	12	3,721,170	212	3,721,584
289	3,721,532	CLASS 49	3,721,544	169	3,721,542	13	3,721,171	215	3,721,583
337	3,721,533	207	3,721,544	207	3,721,544	85	3,721,172	227	Re. 27,603
		261	3,721,545	CLASS 51	3,721,545	95	3,721,174	CLASS 118	
104	3,720,982	35	3,721,046	CLASS 66	3,721,111	1R	3,721,164	2	3,721,209
		118	3,721,047	CLASS 70	3,721,112	1.4	3,721,553	48	3,721,210
1.4	3,720,983	174	3,721,048	39	3,721,112	1.5	3,721,552	405	3,721,211
72.16	3,720,984	211R	3,721,049	46	3,721,113	3	3,721,554	CLASS 119	
		CLASS 52	3,721,050	231	3,721,114	28	3,721,557	5	3,721,212
25.17	3,720,985	28	3,721,051	9	3,721,115	29D	3,721,558	17	3,721,213
25.42	3,720,986	79	3,721,052	40	3,721,116	33	3,721,559	22	3,721,214
148.4R	3,720,987	82	3,721,053	40.7	3,721,117	48HD	3,721,560	28	3,721,215
157.3R	3,720,988	115	3,721,054	67.8	3,721,118	61M	3,721,561	106	3,721,216
159.2	3,720,989	173	3,721,051	95	3,721,119	66.1	3,721,563	379	3,721,217
182	3,720,990	217	3,721,055	117.3	3,721,120	111	3,721,564	8.13	3,721,218
195	3,721,534	251	3,721,058	152	3,721,122	114	3,721,565	32EA	3,721,219
199	3,721,535	750	3,721,059	155	3,721,121	115R	3,721,566	90.15	3,721,220
211D	3,720,991	124B	3,721,060	171	3,721,122	CLASS 99		97B	3,721,221
430	3,720,992	135	3,721,061	194E	3,721,123	2ND	3,721,567	102	3,721,224
470.3	3,720,993	385	3,721,062	344	3,721,124	80B	3,721,568	148E	3,721,224
477.7	3,720,994	390	3,721,063	368.3	3,721,125	98	3,721,569	120	3,721,225
482	3,720,995	CLASS 55	3,721,064	388R	3,721,126	123	3,721,570	343.5A	3,721,226
527.1	3,720,996	62	3,721,065	406	3,721,127	139	3,721,571	CLASS 127	
583	3,720,997	71	3,721,066	432R	3,721,128	197	3,721,572	60	3,721,585
587	3,720,999	86	3,721,067	CLASS 74	3,721,130	233.12	3,721,573	CLASS 128	
597	3,720,998	87	3,721,068	393	3,721,131	331	3,721,177	2A	3,721,229
603	3,721,000	319	3,721,069					2R	3,721,228
612	3,721,001							2V	3,721,227
628	3,721,002								
	3,721,003								
228	3,721,004								



## CLASSIFICATION OF PATENTS

583	3,721,602	70.19	3,721,794	387	3,721,803	71.5R	3,721,824	566AC	3,721,711	CLASS 308	
13	CLASS 157	35R	CLASS 193	388	3,721,804	83.3R	3,721,825	570R	3,721,712	6C	3,721,478
166	3,721,284	35R	3,721,326	492	3,721,805	105	3,721,826	590	3,721,713	9	3,721,479
92	CLASS 160	28R	CLASS 195	9LG	3,721,362	201	3,721,827	601R	3,721,714	20	3,721,480
10	3,721,285	31R	3,721,604	32	3,721,363	220R	3,721,828	624C	3,721,715	72	3,721,481
92	CLASS 161	62	3,721,605	41	3,721,364	11	3,721,421	666P	3,721,716	196	3,721,483
52	3,721,603	103.5C	3,721,607	47	3,721,365	28	3,721,422	683D	3,721,717	9.1	3,721,840
73	CLASS 164	97C	3,721,367	82R	3,721,366	100	3,721,423	683.15D	3,721,718	9.4	3,721,841
83	3,721,287	107	3,721,327	97C	3,721,367	144	3,721,424	683.48	3,721,719	13	3,721,842
80	3,721,288	29	3,721,328	115	3,721,368	174	3,721,425	865	3,721,723	68	3,721,843
85	CLASS 165	33R	3,721,329	67	3,721,369	12	3,721,625	880R	3,721,724	166	3,721,844
158	3,721,289	34	3,721,330	385	3,721,370	62.9	3,721,628	23A	3,721,428	245	3,721,484
5	3,721,290	66	3,721,331	386.5	3,721,371	81	3,721,626	123	3,721,429	330	3,721,485
6	CLASS 166	94	3,721,332	30	3,721,372	89	3,721,627	142	3,721,430	15	3,721,845
88	3,721,292	119	3,721,333	301.4S	3,721,630	105	3,721,629	6	3,721,725	55	3,721,846
295	3,721,293	218	3,721,334	408	3,721,631	408	3,721,632	249	3,721,726	65A	3,721,847
299	3,721,294	5R	3,721,778	442	3,721,633	442	3,721,633	3R	3,721,431	855	3,721,848
302	3,721,295	16C	3,721,779	52	3,721,373	52	3,721,374	38	3,721,432	92	3,721,849
31P	3,721,296	46	3,721,781	42	3,721,376	167	3,721,426	140	3,721,433	114	3,721,850
31R	3,721,300	47	3,721,780	42	3,721,376	191	3,721,427	21C	3,721,854	201	3,721,851
61	3,721,301	84R	3,721,783	74	3,721,377	25	3,721,601	21C	3,721,854	22	3,721,855
450	3,721,302	86R	3,721,784	119	3,721,378	2.5FP	3,721,634	22	3,721,855	27TD	3,721,857
492	3,721,303	148B	3,721,785	39	3,721,379	18PF	3,721,639	29	3,721,858	16	3,721,861
2	CLASS 173	150A	3,721,788	15	3,721,380	28.5A	3,721,635	70	3,721,436	5	3,721,859
20	3,721,304	166R	3,721,789	23R	3,721,381	29.4R	3,721,651	70.3	3,721,437	18D	3,721,862
19	3,721,305	167R	3,721,791	52B	3,721,382	29.6R	3,721,638	71	3,721,438	80	3,721,860
35MS	3,721,745	170A	3,721,790	63	3,721,383	29.6M	3,721,637	83R	3,721,439	101CE	3,721,863
48	3,721,746	230	3,721,609	4R	3,721,384	31.2N	3,721,640	1R	3,721,440	119	3,721,864
50.64	3,721,752	241	3,721,608	61PD	3,721,806	33.4EP	3,721,641	97	3,721,441	120	3,721,865
52PE	3,721,747	77	3,721,610	61.11J	3,721,808	40R	3,721,642	101	3,721,442	141R	3,721,866
73R	3,721,748	1R	3,721,611	61.6E	3,721,807	41A	3,721,644	135AA	3,721,443	234R	3,721,867
88R	3,721,749	15	3,721,612	92PD	3,721,809	45.7R	3,721,647	138R	3,721,444	256	3,721,869
135	3,721,750	29	3,721,613	151	3,721,810	45.8N	3,721,645	142A	3,721,445	258	3,721,870
228	3,721,306	38C	3,721,614	151.11	3,721,811	47UA	3,721,648	157R	3,721,446	261	3,721,871
372	3,721,307	73R	3,721,615	151.35	3,721,813	47C	3,721,649	160	3,721,448	262AE	3,721,872
5.4CD	3,721,754	159.11	3,721,616	156	3,721,812	77.5AA	3,721,656	186E	3,721,447	128	3,721,873
5.4ST	3,721,752	197	3,721,617	12A	3,721,386	78P	3,721,652	1A	3,721,449	135	3,721,874
5.4P	3,721,751	272	3,721,619	230	3,721,388	78R	3,721,653	3	3,721,450	245	3,721,875
5.4R	3,721,753	48.5	3,721,335	265.19	3,721,389	78.5T	3,721,654	4J	3,721,451	265	3,721,876
6	3,721,755	56AB	3,721,336	416.4	3,721,387	80.72	3,721,657	9	3,721,452	318	3,721,877
6.6A	3,721,757	65E	3,721,337	585	3,721,390	82	3,721,658	30	3,721,453	345	3,721,879
7.2	3,721,758	65R	3,721,338	10R	3,721,814	83.3R	3,721,659	24	3,721,454	443	3,721,878
7.8	3,721,759	317	3,721,620	64	3,721,815	85.3	3,721,721	94	3,721,455	568	3,721,881
58R	3,721,763	74R	3,721,340	73BC	3,721,817	94.8	3,721,661	112A	3,721,457	594	3,721,882
1N	3,721,764	106R	3,721,341	106R	3,721,818	112.5	3,721,662	150AE	3,721,456	615	3,721,883
6R	3,721,765	80.5	3,721,342	293	3,721,391	210R	3,721,663	150.5	3,721,458	1	3,721,884
15AS	3,721,767	107	3,721,345	301	3,721,392	211.5R	3,721,664	154.5R	3,721,459	13	3,721,885
15BT	3,721,766	110.5	3,721,343	240A	3,721,667	233.3D	3,721,666	415R	3,721,461	64	3,721,888
16F	3,721,768	11	3,721,622	240J	3,721,668	240A	3,721,667	175	3,721,460	8R	3,721,889
18AD	3,721,769	22	3,721,621	248AS	3,721,670	240J	3,721,668	20.3	3,721,463	119	3,721,890
27D	3,721,770	23	3,721,623	248.5	3,721,669	248.5	3,721,671	1.5	3,721,464	47	3,721,891
41A	3,721,771	47	3,721,624	256.4Q	3,721,672	256.4Q	3,721,672	64R	3,721,465	4	3,721,893
100.2MD	3,721,774	104	3,721,344	268PC	3,721,673	268PC	3,721,673	1S	3,721,466	20	3,721,894
100.2D	3,721,772	121	3,721,346	268H	3,721,674	268H	3,721,674	23R	Re.27.605	43.5R	3,721,895
100.2E	3,721,775	519	3,721,347	268R	3,721,675	268R	3,721,675	28M	3,721,467	37	3,721,896
100.2T	3,721,776	60T	3,721,348	296R	3,721,676	296R	3,721,676	84K	3,721,468	43R	3,721,898
170.2	3,721,777	126	3,721,349	309.2	3,721,678	309.2	3,721,678	23MD	3,721,469	64	3,721,897
5R	3,721,308	55	3,721,350	309.7	3,721,679	309.7	3,721,679	39	3,721,470	65R	3,721,898
105R	3,721,309	121	3,721,407	326.5J	3,721,680	326.5J	3,721,680	55	3,721,471	73R	3,721,899
111	3,721,310	126	3,721,351	332.3R	3,721,681	332.3R	3,721,681	31	3,721,472	95	3,721,900
CLASS 181	3,721,311	127	3,721,352	340.7	3,721,682	340.7	3,721,682	6C	3,721,473	103R	3,721,901
5H	3,721,312	128	3,721,353	346.4	3,721,683	346.4	3,721,683	21F	3,721,474	106	3,721,902
5R	3,721,313	129	3,721,354	365	3,721,684	365	3,721,684	35R	3,721,476	445	3,721,903
31R	3,721,314	130	3,721,355	397.4	3,721,685	397.4	3,721,685	38	3,721,477	39	3,721,904
33HC	3,721,314	131	3,721,356	397.5	3,721,686	397.5	3,721,686	21F	3,721,475	109	3,721,905
15	3,721,315	132	3,721,357	429.2	3,721,687	429.2	3,721,687	35R	3,721,476	131	3,721,907
181	3,721,316	133	3,721,358	429.5	3,721,688	429.5	3,721,688	38	3,721,477	141	3,721,909
39	3,721,317	134	3,721,359	429.7	3,721,689	429.7	3,721,689	3	3,721,830	146	3,721,910
9	3,721,318	135	3,721,360	463	3,721,690	463	3,721,690	88.3	3,721,831	151	3,721,912
61	3,721,319	136	3,721,361	465D	3,721,691	465D	3,721,691	141	3,721,832	102	3,721,913
1C	3,721,320	137	3,721,362	471A	3,721,692	471A	3,721,692	235R	3,721,833	25	Re.27.602
72.6	3,721,321	138	3,721,363	471C	3,721,693	471C	3,721,693	235	3,721,834	24	3,721,914
196P	3,721,322	139	3,721,364	471R	3,721,694	471R	3,721,694	237	3,721,835	94.5	3,721,915
206R	3,721,323	140	3,721,365	473S	3,721,695	473S	3,721,695	253	3,721,836		
48.91	3,721,324	141	3,721,366	486D	3,721,696	486D	3,721,696	286	3,721,837		
67A	3,721,325	142	3,721,367	501.12	3,721,704	501.12	3,721,704	303	3,721,838		
		143	3,721,368	524R	3,721,705	524R	3,721,705	304	3,721,839		
		144	3,721,369	558D	3,721,706	558D	3,721,706				
		145	3,721,370	562R	3,721,707	562R	3,721,707				
		146	3,721,371		3,721,708		3,721,708				
		147	3,721,372		3,721,709		3,721,709				
		148	3,721,373		3,721,710		3,721,710				
		149	3,721,374								
		150	3,721,375								
		151	3,721,376								
		152	3,721,377								
		153	3,721,378								
		154	3,721,379								
		155	3,721,380								
		156	3,721,381								
		157	3,721,382								
		158	3,721,383								
		159	3,721,384								
		160	3,721,385								
		161	3,721,386								
		162	3,721,387								
		163	3,721,388								
		164	3,721,389								
		165	3,721,390								
		166	3,721,391					</			



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1 : 3,721,065	3,721,246	3,721,815	3,721,674	3,721,176	19 : 3,721,160
3,721,310	3,721,264	3,721,817	3,721,737	3,721,180	3,721,162
3,721,430	3,721,292	3,721,821	3,721,738	3,721,199	3,721,350
3,721,748	3,721,293	3,721,828	3,721,764	3,721,200	3,721,359
4 : 3,720,960	3,721,297	3,721,834	3,721,792	3,721,239	20 : 3,721,025
3,720,997	3,721,317	3,721,836	3,721,797	3,721,280	3,721,237
3,721,193	3,721,320	3,721,855	3,721,813	3,721,295	21 : 3,721,015
3,721,588	3,721,321	3,721,859	3,721,825	3,721,303	3,721,032
3,721,593	3,721,331	3,721,866	3,721,833	3,721,334	3,721,335
3,721,746	3,721,348	3,721,882	3,721,899	3,721,337	22 : 3,721,096
3,721,841	3,721,354	3,721,891	3,721,900	3,721,349	3,721,126
3,721,893	3,721,370	3,721,902	3,721,984	3,721,351	3,721,632
3,721,978	3,721,399	3,721,905	3,721,113	3,721,401	23 : 3,720,981
3,721,329	3,721,409	3,721,913	3,721,243	3,721,404	3,721,344
3,720,956	3,721,412	3,721,916	3,721,312	3,721,414	24 : 3,721,190
3,720,961	3,721,434	3,721,922	3,721,316	3,721,416	3,721,252
3,720,962	3,721,441	3,721,928	3,721,633	3,721,419	3,721,392
3,720,967	3,721,442	3,721,939	3,721,725	3,721,424	3,721,405
3,720,969	3,721,445	3,721,943	3,721,436	3,721,436	3,721,410
3,721,002	3,721,452	3,721,947	3,721,438	3,721,438	3,721,429
3,721,008	3,721,456	3,721,949	3,721,450	3,721,450	3,721,470
3,721,010	3,721,458	3,721,952	3,721,474	3,721,474	3,721,590
3,721,024	3,721,460	3,721,956	3,721,482	3,721,482	3,721,881
3,721,029	3,721,466	3,721,963	3,721,747	3,721,747	25 : 3,720,992
3,721,031	3,721,494	3,721,964	3,721,766	3,721,766	3,721,001
3,721,035	3,721,496	3,721,967	3,721,769	3,721,769	3,721,021
3,721,036	3,721,497	3,721,972	3,721,779	3,721,779	3,721,061
3,721,037	3,721,500	3,721,976	3,721,780	3,721,780	3,721,087
3,721,039	3,721,505	3,721,989	3,721,824	3,721,824	3,721,100
3,721,040	3,721,511	3,721,304	3,721,832	3,721,832	3,721,101
3,721,041	3,721,516	3,721,728	3,721,869	3,721,869	3,721,169
3,721,042	3,721,532	3,721,730	3,721,894	3,721,894	3,721,170
3,721,044	3,721,532	3,721,730	3,721,932	3,721,932	3,721,174
3,721,048	3,721,585	3,721,789	3,721,968	3,721,968	3,721,183
3,721,058	3,721,613	3,721,961	3,721,970	3,721,970	3,721,212
3,721,067	3,721,644	3,721,060	3,721,974	3,721,974	3,721,233
3,721,069	3,721,657	3,721,086	3,721,990	3,721,990	3,721,313
3,721,092	3,721,679	3,721,089	3,721,117	3,721,117	3,721,361
3,721,118	3,721,694	3,721,095	3,721,179	3,721,179	3,721,375
3,721,129	3,721,695	3,721,131	3,721,247	3,721,247	3,721,379
3,721,130	3,721,707	3,721,250	3,721,248	3,721,248	3,721,400
3,721,132	3,721,714	3,721,325	3,721,323	3,721,323	3,721,448
3,721,145	3,721,715	3,721,336	3,721,411	3,721,411	3,721,491
3,721,148	3,721,715	3,721,339	3,721,461	3,721,461	3,721,506
3,721,187	3,721,765	3,721,387	3,721,506	3,721,506	3,721,509
3,721,192	3,721,768	3,721,404	3,721,580	3,721,580	3,721,528
3,721,201	3,721,772	3,721,415	3,721,641	3,721,641	3,721,537
3,721,207	3,721,773	3,721,507	3,721,650	3,721,650	3,721,562
3,721,225	3,721,784	3,721,535	3,721,691	3,721,691	3,721,565
3,721,235	3,721,802	3,721,544	3,721,071	3,721,071	3,721,586
3,721,238	3,721,807	3,721,608	3,721,073	3,721,073	3,721,586
3,721,245	3,721,812	3,721,652	3,721,094	3,721,094	3,721,645
			3,721,105	3,721,105	

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3,721,731	31	3,721,260		3,721,924		3,721,861		3,721,720		3,721,203
3,721,778		3,721,267		3,721,930		3,721,868		3,721,965		3,721,479
3,721,810		3,721,309		3,721,955		3,721,873		3,721,980	48	3,720,959
3,721,826		3,721,332		3,721,957		3,721,880		3,721,123	41	3,721,097
3,721,845	32	3,721,009		3,721,975		3,721,883		3,721,146		3,721,120
3,721,846		3,721,457		3,721,990		3,721,884		3,721,258		3,721,140
3,721,851	33	3,721,328		3,721,059	35	3,721,885		3,721,374		3,721,173
3,721,912		3,721,423		3,721,455		3,721,886		3,720,972	42	3,721,210
3,721,915		3,721,468		Re.27,603	36	3,721,900		3,720,982		3,721,226
3,721,919		3,721,901		3,720,975		3,721,940		3,720,985		3,721,230
3,721,938		3,721,935		3,720,978		3,721,977		3,721,051		3,721,269
3,721,942		3,721,936		3,721,005		3,721,979		3,721,053		3,721,290
3,721,946		3,721,950		3,721,007		3,721,984		3,721,072		3,721,294
3,721,966		3,721,983		3,721,019		3,721,986		3,721,084		3,721,305
3,720,970	26	3,720,958	34	3,721,026		3,721,988		3,721,110		3,721,306
3,720,974		3,720,986		3,721,030	37	Re.27,605		3,721,119		3,721,307
3,721,018		3,721,022		3,721,050		3,721,107		3,721,125		3,721,311
3,721,027		3,721,055		3,721,056		3,721,273		3,721,133		3,721,366
3,721,033		3,721,175		3,721,064		3,721,274		3,721,157		3,721,451
3,721,034		3,721,216		3,721,066		3,721,279		3,721,204		3,721,574
3,721,080		3,721,228		3,721,104		3,721,477		3,721,227		3,721,618
3,721,115		3,721,229		3,721,112		3,721,809		3,721,242		3,721,665
3,721,135		3,721,231		3,721,141		3,721,899		3,721,287		3,721,745
3,721,143		3,721,232		3,721,149		3,721,150		3,721,358		3,721,756
3,721,191		3,721,234		3,721,171	39	3,721,004		3,721,363		3,721,871
3,721,256		3,721,240		3,721,181		3,721,006		3,721,369		3,721,948
3,721,283		3,721,249		3,721,198		3,721,047		3,721,403		3,721,959
3,721,300		3,721,257		3,721,208		3,721,151		3,721,417	49	3,721,960
3,721,308		3,721,268		3,721,244		3,721,152		3,721,443		3,721,573
3,721,353		3,721,338		3,721,282		3,721,178		3,721,472		3,721,584
3,721,357		3,721,352		3,721,285		3,721,182		3,721,483		3,721,755
3,721,453		3,721,368		3,721,324		3,721,184		3,721,490	50	3,721,373
3,721,454		3,721,446		3,721,362		3,721,196		3,721,518	51	3,720,973
3,721,463		3,721,465		3,721,386		3,721,301		3,721,520		3,721,093
3,721,478		3,721,471		3,721,396		3,721,343		3,721,568		3,721,215
3,721,503		3,721,485		3,721,407		3,721,355		3,721,582		3,721,272
3,721,510		3,721,521		3,721,433		3,721,384		3,721,587		3,721,408
3,721,563		3,721,526		3,721,444		3,721,440		3,721,594		3,721,486
3,721,577		3,721,548		3,721,449		3,721,459		3,721,595		3,721,579
3,721,597		3,721,553		3,721,493		3,721,473		3,721,604		3,721,820
3,721,624		3,721,570		3,721,498		3,721,489		3,721,623		3,721,958
3,721,629		3,721,575		3,721,513		3,721,501		3,721,630	53	Re.27,602
3,721,677		3,721,601		3,721,514		3,721,512		3,721,636		3,721,102
3,721,740		3,721,616		3,721,523		3,721,519		3,721,680		3,721,128
3,721,742		3,721,617		3,721,534		3,721,536		3,721,688		3,721,281
3,721,795		3,721,621		3,721,541		3,721,540		3,721,719		3,721,389
3,721,971		3,721,634		3,721,552		3,721,542		3,721,722		3,721,406
3,721,985		3,721,637		3,721,555		3,721,545		3,721,727		3,721,887
3,721,106	27	3,721,647		3,721,556		3,721,547		3,721,790		3,721,920
3,721,137		3,721,660		3,721,558		3,721,561		3,721,806	54	3,720,963
3,721,139		3,721,663		3,721,569		3,721,576		3,721,819		3,721,365
3,721,195		3,721,664		3,721,571		3,721,596		3,721,837		3,721,837
3,721,265		3,721,676		3,721,572		3,721,598		3,721,843	55	3,721,054
3,721,381		3,721,684		3,721,583		3,721,600		3,721,852		3,721,074
3,721,413		3,721,693		3,721,589		3,721,625		3,721,854		3,721,076
3,721,649		3,721,697		3,721,622		3,721,635		3,721,862		3,721,078
3,721,781		3,721,698		3,721,654		3,721,642		3,721,918		3,721,079
3,721,808		3,721,701		3,721,655		3,721,712		3,721,926		3,721,108
3,721,188	28	3,721,710		3,721,670		3,721,724		3,721,941		3,721,109
3,720,955	29	3,721,711		3,721,702		3,721,762		3,721,944		3,721,134
3,721,103		3,721,763		3,721,704		3,721,770		3,721,991		3,721,189
3,721,194		3,721,767		3,721,717		3,721,783		3,721,048		3,721,271
3,721,197		3,721,777		3,721,726		3,721,816		3,721,299	43	3,721,296
3,721,218		3,721,822		3,721,734		3,721,962		Re.27,604	45	3,721,330
3,721,241		3,721,829		3,721,750	40	3,720,976		3,721,062		3,721,380
3,721,263		3,721,831		3,721,757		3,721,124		3,721,277		3,721,447
3,721,360		3,721,889		3,721,760		3,721,253		3,721,277		3,721,467
3,721,439		3,721,898		3,721,761		3,721,481		3,721,599		3,721,627
3,721,804		3,721,907		3,721,803		3,721,529		3,721,259	46	3,721,875
3,721,818		3,721,908		3,721,835		3,721,578		3,721,973		3,721,945
3,721,315	30	3,721,909		3,721,838		3,721,619		3,721,016	47	3,721,969
3,721,333		3,721,911		3,721,849		3,721,653				



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## PATENT OFFICE NOTICES

### Legal Journals

[37 CFR Parts 1, 2]

#### Withdrawal of Proposed Rule Making Regarding Placing of Announcements

Under date of May 11, 1972, 37 FR 9488 (FR Doc. 72-7160), notice of proposed rule making was given concerning a proposed revision of §§ 1.345(b) and 2.14(b) of Title 37 of the Code of Federal Regulations. The purpose of the proposed revision was to permit persons practicing before the Patent Office to place in legal journals announcements of their availability to act as consultants to or as associates of other lawyers in patent or trademark practice. After careful consideration of all of the comments received on the proposed revision, it has been determined that the proposed revision will not be made at this time and, accordingly, the notice of proposed rule making is canceled and withdrawn.

Dated: Jan. 29, 1973.

ROBERT GOTTSCHALK,  
Commissioner of Patents.

Approved: Jan. 29, 1973.

RICHARD O. SIMPSON,  
Acting Assistant Secretary for  
Science and Technology.

[FR Doc. 73-3097; Filed 2-15-73; 8:45 am]

Published in 38 F.R. 32; Feb. 16, 1973

### Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

906,827, E. G. Staude, FEED DEVICE FOR FLEXIBLE BOX MAKING MACHINES; 3,285,602, P.H. Hartel, RECORD CARD FEED MECHANISM; 3,588,095, Ward, Ward and Bachmann, SUCTION TABLE SYSTEM FOR FEEDING OF WARPED SHEETS, filed July 20, 1972, D.C.N.J. (Camden), Doc. C-1256-72, *The Ward Machinery Company v. The Langston Company*.

2,678,625, Hall and Telehmann, RESONANT SOUND SIGNAL DEVICE, filed in U.S. Court of Appeals, Sixth Circuit, Doc. 71-1518-19, *Clyde M. Noll and S. Joseph Fortunato, as trustees v. the O. M. Scott & Sons Company*. Claim in issue is invalid, and judgment of the District Court should be affirmed for the reasons set forth in the opinion of Judge Kinneary, Sept. 27, 1972.

2,772,509, C. L. Vadnais, ATTACHMENTS FOR FISHING LINES, filed Oct. 2, 1972, D.C. Oreg. (Portland), Doc. 72-827, *Water Gremlin Company v. Maxwell Mfg. Co.*

2,811,940, N. Marforio, LOOPER CONTROL FOR SEWING MACHINES, filed Aug. 13, 1971, D.C., N.D. Ga. (Atlanta), Doc. 15508, *S.p.A. Virginio Rimoldi & Co. v. Sunbrand Corporation and Wilcox & Gibbs, Inc.* Consent dismissal under Rule 41(a) (1) (H), Sept. 11, 1972.

2,841,124, H. S. Ackerman, MIDGET GAS FIRED HOT WATER BOILER; 3,320,933, J. F. Baler, GAS FIRED HOT WATER BOILER, filed Apr. 12, 1972, D.C.N.J. (Newark), Doc. 656-72, *Automation Industries, Inc. et al. v. John F. Baier et al.* Stipulation of dismissal, May 23, 1972.

2,984,841, N. E. Wilson, TOILET BOWL DEODORIZERS AND HOLDERS THEREFOR, filed Sept. 21, 1972, D.C., S.D. Ind. (Evansville), Doc. EV 72-C-72, *The Puro Co., Inc. v. E. Bierhaus & Sons, Inc. et al.*

3,029,291, A. J. Dietzler, METHOD FOR MAKING ALKYLIDENE BIS (DIBROMOPHENOLS), filed Oct. 16, 1972, D.C. Del. (Wilmington), Doc. 4486, *The Dow Chemical Corporation v. Great Lakes Chemical Corporation*.

3,051,777, J. H. Lemelson, MAGNETIC RECORDING SYSTEMS, filed Sept. 28, 1972, D.C., N.D. Ill. (Chicago), Doc. 72-2425, *Jerome H. Lemelson v. Ampex Corporation*.

3,061,332, L. S. Goulden, CARGO TRANSPORT ASSEMBLY, filed Sept. 3, 1971, D.C., M.D. Ala. (Montgomery), Doc. 1174-S, *Leo S. Goulden v. Dorsey Trailers, Inc.* Upon consider-

ation of stipulation of parties for dismissal, order entered Sept. 28, 1972, dismissing case with prejudice, Oct. 5, 1972.

3,091,912, Stoddard and Seem, METHOD OF PROCESSING STRETCH YARN AND YARNS PRODUCED THEREBY, filed Oct. 12, 1972, D.C., S.D. Fla. (Miami), Doc. 72-1630-C-JE, *Lex-Tex Ltd., Inc. v. Richard J. Traub*.

3,103,666, A. R. Bone, TAG ATTACHING APPARATUS, filed Sept. 8, 1972, D.C. Hawaii (Honolulu), Doc. C-72-3642, *Dennison Mfg. Co. v. Halmac, Inc. et al.* Adjudged patent owned by plaintiff, valid and infringed by defendants. Plaintiff granted permanent injunction prohibiting defendants from infringing on same, Oct. 13, 1972.

3,110,905, T. M. Rhodes, TUFTED PILE FABRIC COMPRISING A FLAT WOVEN SYNTHETIC PLASTIC BACKING, filed Sept. 29, 1972, D.C. Md. (Baltimore), Doc. 72-1014-K, *Burlington Industries, Inc. v. Enjay Chemical Company, Inc.*

3,151,503, Keller and Keller, TRANSMISSION SYSTEM; 3,231,117, Melroe and Keller, TRACTOR VEHICLE AND DRIVE THEREFOR; D. 195,254, Keller, Keller and Melroe, SELF-PROPELLED LOADER, filed Oct. 10, 1972, D.C., W.D. Mich. (Kalamazoo), Doc. K107-72CA-S, *Clark Equipment Co. v. Louis J. Keller and Cyril N. Keller*.

3,166,854, Packer and Benedetto, PLEAT-MARKING DEVICE; 3,306,603, D. F. Ziers, HOLDING APPARATUS FOR SHEET MATERIAL, filed Sept. 20, 1972, D.C., W.D. Okla. (Oklahoma City), Doc. 72-661-C, *Lighttron Corp. v. George Callas*.

3,174,076, M. A. Michalski, ELECTRICAL SYSTEM FOR DISCHARGE DEVICE UTILIZING RESONANT CIRCUIT TO PROVIDE CONSTANT CURRENT OUTPUT; 3,309,566, same, ELECTRICAL SYSTEM FOR GAS DISCHARGE LAMP; 3,309,567, Flieder and Michalski, PULSE DISCHARGE LAMP CIRCUIT, filed Aug. 2, 1972, D.C., S.D.N.Y., Doc. 72-C-3282, *Berkey Photo, Inc. v. Klimsch-Kepco, Inc.*

3,206,028, Brauchla and Ruminsky, VIBRATORY SIZING APPARATUS, filed June 16, 1972, D.C., S.D. W. Va. (Huntington), Doc. 3003, *R. Lee Fraser v. Continental Realty Corp. et al.* Memorandum order; not infringed. Action dismissed, Sept. 22, 1972.

3,209,066, W. H. Toomey et al., PRINTED CIRCUIT WITH INTEGRAL WELDING TUBELETS; 3,256,586, R. R. Douglas et al., WELDED CIRCUIT BOARD TECHNIQUE; 3,345,741, W. G. Reimann, WELDABLE PRINTED CIRCUIT BOARD TECHNIQUES; 3,434,208, W. H. Toomey et al., CIRCUIT ASSEMBLY PROCESS; 3,469,019, W. G. Reimann, WELDABLE PRINTED CIRCUIT BOARD, filed June 1, 1972, D.C., United States Court of Claims, Doc. 232-72, *William H. Toomey et al. v. The United States*.

3,231,117. (See 3,151,503.)

3,239,145, A. D. Russo, DISPENSING CONTAINER FOR AIR TREATING GEL, filed July 31, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72-1748 AAH, *Blue Cross Laboratories v. Airwick Industries, Inc.*

3,256,586. (See 3,209,066.)

3,282,469, A. W. Skonberg, HEATED DISPENSING APPARATUS, filed Oct. 4, 1972, D.C., S.D. Ind. (Evansville), Doc. NA 72-C-51, *Albert W. Skonberg v. Whirlpool Corporation*.

3,285,602. (See 906,827.)

3,294,082, J. W. Norris, SERPENTINE-TYPE HEAT EXCHANGE ASSEMBLY, filed Sept. 29, 1972, D.C., E.D. Ill. (Danville), Doc. CV 72-196-D, *Lennox Industries v. Lear Siegler, Inc.*

3,298,550, B. D. Schlitz, HAYSTACK TRANSPORTING DEVICE, filed July 15, 1968, D.C. S. Dak. (Sioux Falls), Doc. C-68-10N, *Farmhand, Inc. v. Russell O. Craven, doing business as Craven Welding Co.* Decision entered Mar. 29, 1971, by Judge Axel J. Beck, Aberdeen, S. Dak. in favor of the defendant. Judgment was appealed and reversed for new trial. Mandate entered Apr. 7, 1972.

3,306,603. (See 3,166,854.)

3,309,566. (See 3,174,076.)

3,309,567. (See 3,174,076.)

3,320,933. (See 2,841,124.)

MARCH 27, 1973

U. S. PATENT OFFICE

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3,341,247, W. W. Martinmaas, TRACTOR CAB, filed Oct. 14, 1969, D.C. S. Dak. (Sioux Falls), Doc. C-69-150S, *Donald F. Johnson, doing business as Johnson Tractor Cab Company v. Werner W. Martinmaas, Koehn Mfg., Inc., Lange Mfg., Inc., and Comfort Equipment Company*. Case Dismissed as to defendants Koehn Mfg. and Comfort Equipment Company. No decision rendered or judgment entered as to remaining defendants, Oct. 11, 1972.

3,345,741. (See 3,209,066.)

3,390,533, G. S. Gremillion, MACHINE FOR LAYING CABLE AND THE LIKE, filed May 13, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c1128, *John T. Jursich v. J. I. Case Company*. Judgment in favor of the defendant, J. I. Case Company, Oct. 5, 1972.

3,434,208. (See 3,209,066.)

3,469,019. (See 3,209,066.)

3,478,700, Lundvall, Loomis and Breen, FLOOR LATCH STRIP FOR RAILWAY CARS, filed Oct. 4, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c2492, *Unarco Industries, Inc. v. Evans Products Company et al.*

3,575,678, W. F. Barton, REED SWITCH ASSEMBLY, filed Oct. 10, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c2472, *Grigsby Barton, Inc. v. C.P. Clare & Company et al.*

3,588,019, Cozeck, Otero and Pierce, BRACKET FOR ELECTRICAL BOXES, filed Oct. 3, 1972, D.C., C.D. Calif. (Los

Angeles), Doc. 72-2342-DWW, *Anthony J. Cozeck v. Michel Brothers, Inc. et al.*

3,588,095. (See 906,827.)

3,613,797, WHITFIELD AND WHITESIDES, PEANUT DIGGER, SHAKER AND INVERTER, filed Sept. 19, 1972, D.C., E.D.N.C. (Wilson), Doc. 1295-C, *Kelley Mfg. Co. v. Lilliston Corporation*.

3,616,356, C. H. Roy, ELECTROLYSIS IN A PARTICULATE CARBON PACKING, filed Oct. 13, 1972, D.C. Conn. (New Haven), Doc. 15382, *Clarence H. Roy v. Microtech Division of Waveline, Inc.*

3,663,233, J. L. Keszler, METHOD OF TENDERIZING, CURING AND COOKING A MEAT PRODUCT, filed Oct. 11, 1972, D.C. Conn. (New Haven), Doc. 15378, *Julius L. Keszler v. K-T Corporation and Keszler Corporation*.

3,675,655, W. R. Stittner, METHOD AND APPARATUS FOR HIGH FREQUENCY ELECTRIC SURGERY, filed Sept. 19, 1972, D.C. Colo. (Denver), Doc. C-4340, *Electro Medical Systems, Inc. v. Valleylab, Inc.*

Re. 25,737, W. E. Brainard et al., MACHINE TOOL WITH MECHANICAL CUTTING TOOL CHANGER, filed Sept. 15, 1970, D.C., E.D. Mich. (Detroit), Doc. 35374, *Ex-Cell-O Corp. v. Kearney & Trecker Corporation*. Stipulation and order of dismissal without prejudice, Sept. 21, 1972.

D. 195,254. (See 3,151,503.)



## Certificates of Correction for the Week of Feb. 27, 1973

D. 220,242	3,651,154	3,668,708
3,571,954	3,651,792	3,668,727
3,575,795	3,652,133	3,669,266
3,575,911	3,652,309	3,669,901
3,581,512	3,653,262	3,669,963
3,585,006	3,653,653	3,670,008
3,588,828	3,653,932	3,671,114
3,602,400	3,657,041	3,671,525
3,614,727	3,658,478	3,671,651
3,616,189	3,658,548	3,672,707
3,616,322	3,658,813	3,672,877
3,622,991	3,658,919	3,672,930
3,624,206	3,658,992	3,673,233
3,627,996	3,660,087	3,674,124
3,630,893	3,660,697	3,674,494
3,631,257	3,661,562	3,675,777
3,636,333	3,661,694	3,675,899
3,638,137	3,661,893	3,676,023
3,639,211	3,662,965	3,678,459
3,641,012	3,663,628	3,678,463
3,642,094	3,663,665	3,679,345
3,644,881	3,663,427	3,682,281
3,646,103	3,665,846	3,685,353
3,646,587	3,667,810	
3,649,249	3,668,132	

## Disclaimer

3,600,705.—Wirojana Tantraporn and Se Puan Yu, Schenectady, and Paul J. Shaver, Scotia, N.Y. HIGHLY EFFICIENT SUBCRITICALLY DOPED ELECTRON-TRANSFER EFFECT DEVICES. Patent dated Aug. 17, 1971. Disclaimer filed Dec. 29, 1972, by the assignee, General Electric Company.

Hereby enters this disclaimer to claim 22 of said patent.

## Adverse Decisions in Interferences

In the designated interferences involving the indicated claims of the following patents, final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,337,482, H. Watanabe, S. Takahashi, A. Shingyoichi and N. Watanabe, ETHYLENE-VINYL ACETATE COPOLYMER PAPER COATING COMPOSITION, decided June 9, 1972, Interference No. 96,627, claims 1, 2, 3, 4, 5, 7 and 11.

Patent No. 3,417,842, J. H. Kuzara and O. J. Martin, ELECTRIC CONTROLS, decided Nov. 3, 1970, Interference No. 97,247, claims 1, 2, 3, 4, 5 and 6.

Patent No. 3,419,569, U. Renner, INDOLE DERIVATIVES, decided Oct. 10, 1972, Interference No. 97,270, claim 9.

Patent No. 3,455,723, E. L. Kern, COATING WITH SILICON CARBIDE BY IMMERSION REACTION, decided Feb. 7, 1973, Interference No. 98,012, claims 1 and 3.

Patent No. 3,478,667, P. A. Bourquin, TOP DISCHARGE AIR DUCT SYSTEM AND AIR DUCTS THEREFOR, decided Jan. 16, 1973, Interference No. 97,807, claims 1, 3 and 13.

Patent No. 3,481,926, G. A. Hippl and J. B. Siddall, POLY-HYDROXY STEROIDS AND PROCESSES FOR THEIR PREPARATION, decided Sept. 25, 1972, Interference No. 97,236, claim 11.

Patent No. 3,560,200, E. A. Nesbitt, J. H. Wernick and R. H. Willens, PERMANENT MAGNETIC MATERIALS, decided Feb. 8, 1973, Interference No. 97,836, claim 2.

## Certificates of Correction for the Week of Mar. 27, 1973

Re. 27,464	3,657,223	3,676,338	3,687,709
3,550,158	3,657,325	3,676,504	3,687,785
3,552,987	3,658,043	3,676,548	3,687,882
3,536,301	3,658,538	3,676,718	3,687,991
3,568,252	3,658,579	3,676,867	3,688,002
3,569,782	3,658,842	3,677,034	3,688,068
3,573,470	3,659,074	3,677,050	3,688,091
3,575,896	3,660,364	3,677,116	3,688,749
3,576,019	3,660,398	3,677,208	3,688,882
3,578,257	3,660,466	3,677,423	3,689,020
3,589,509	3,660,487	3,678,105	3,689,592
3,597,245	3,660,523	3,678,340	3,689,658
3,600,145	3,660,754	3,679,159	3,689,778
3,601,546	3,660,821	3,679,741	3,689,827
3,603,209	3,661,565	3,679,749	3,690,103
3,603,597	3,661,697	3,679,795	3,690,194
3,612,286	3,661,908	3,679,962	3,690,218
3,616,163	3,661,957	3,679,978	3,690,316
3,617,136	3,662,059	3,680,345	3,690,469
3,617,715	3,662,540	3,680,456	3,690,514
3,619,341	3,663,338	3,681,105	3,690,574
3,619,342	3,663,448	3,681,244	3,690,641
3,625,796	3,665,784	3,681,304	3,691,338
3,630,992	3,665,994	3,681,401	3,691,967
3,632,572	3,667,922	3,681,415	3,692,358
3,633,612	3,667,989	3,681,423	3,693,006
3,633,828	3,668,074	3,681,455	3,693,298
3,637,385	3,668,177	3,682,030	3,693,317
3,637,697	3,668,205	3,682,980	3,693,697
3,637,840	3,668,209	3,683,034	3,694,117
3,640,724	3,668,618	3,683,053	3,694,657
3,640,853	3,668,619	3,683,122	3,694,667
3,641,038	3,669,689	3,683,910	3,695,234
3,642,848	3,670,865	3,683,979	3,695,369
3,642,937	3,670,956	3,684,378	3,695,598
	3,671,328	3,684,538	3,696,467
	3,671,603	3,684,576	3,696,831
	3,671,644	3,684,654	3,697,370
	3,671,908	3,684,809	3,697,497
	3,672,264	3,684,886	3,698,228
	3,672,371	3,685,084	3,698,786
	3,672,904	3,685,284	3,699,182
	3,672,928	3,685,305	3,699,710
	3,672,988	3,685,319	3,699,735
	3,673,015	3,686,190	3,700,768
	3,673,320	3,686,291	3,701,417
	3,674,863	3,686,323	3,702,825
	3,675,172	3,686,599	3,703,383
	3,675,703	3,686,950	3,705,629
	3,675,724	3,686,983	3,705,773
	3,675,931	3,687,201	
	3,676,006	3,687,546	

## PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner  
WILLIAM FELDMAN, Deputy Assistant Commissioner

## CONDITION OF PATENT APPLICATIONS AS OF MARCH 6, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
<b>CHEMICAL EXAMINING GROUPS</b>	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director.....	12-16-71
Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director.....	1-03-72
Heterocyclics; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director.....	11-16-71
Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director.....	12-01-71
Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director.....	11-02-71
Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	
<b>ELECTRICAL EXAMINING GROUPS</b>	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director.....	7-18-72
Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director.....	5-31-72
Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director.....	4-19-72
Communications; Multiplexing Techniques; Facsimile; Data Processing; Computation and Conversion; Storage Devices and Related Arts.	
RECEPTACLES, SANITATION AND CLEANING, WINDING AND MEASURING, GROUP 240—L. FORMAN, Director.....	12-15-71
Receptacles; Joint Packing; Conduits; Plumbing Fittings; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director.....	1-04-72
Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	
DESIGNS, GROUP 290—R. L. CAMPBELL, Director.....	5-26-71
Industrial Arts; Household, Personal and Fine Arts.	
<b>MECHANICAL EXAMINING GROUPS</b>	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director.....	3-17-72
Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Apparatuses; Brakes; Railways and Railway Equipment.	
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director.....	1-03-72
Manufacturing Processes; Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director.....	4-10-72
Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director.....	3-06-72
Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director.....	1-03-72
Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	

Expiration of patents: The patents within the range of numbers indicated below expire during March 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,736,898 to 2,740,116, inclusive  
Plant Patents..... Numbers 1,457 to 1,466, inclusive



# DEFENSIVE PUBLICATIONS

PUBLISHED MARCH 27, 1973

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

## T908,001 INHIBITING POLYMERIZATION OF ACRYLIC AND METHACRYLIC ACIDS AND ESTERS THEREOF

John E. Besser, 4422 Harbor Drive,  
Kingsport, Tenn. 37662

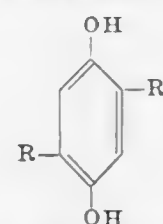
Filed Feb. 14, 1971, Ser. No. 118,506

Int. Cl. C07c 69/54

U.S. Cl. 260—486 R

No Drawing. 12 Pages Specification

Undesired polymerization of acrylic and methacrylic acids and esters thereof can be prevented by adding thereto from about 200 to about 20,000 parts per million by weight of at least one 2,5-di-substituted alkylhydroquinone having the general formula:



wherein R is an alkyl radical of from four to five carbon atoms. The 2,5-di-substituted alkylhydroquinone may be added either directly to the acrylic and methacrylic acids and esters thereof or to the reaction mixture from which the acids and esters are prepared. When these substituted alkylhydroquinones are added to the reaction mixture it has been found that they not only effectively prevent polymerization of the acid or ester during the synthesis process, but also remain in the synthesized products thereby effectively inhibiting their polymerization during storage. The substituted alkylhydroquinones polymerization inhibitors of this invention do not contribute any undesirable color or in any way interfere with successful subsequent processing of the acids or esters into any desired ultimate product.

## T908,002 METHOD OF BONDING A MEMBER TO A THIN PLATE

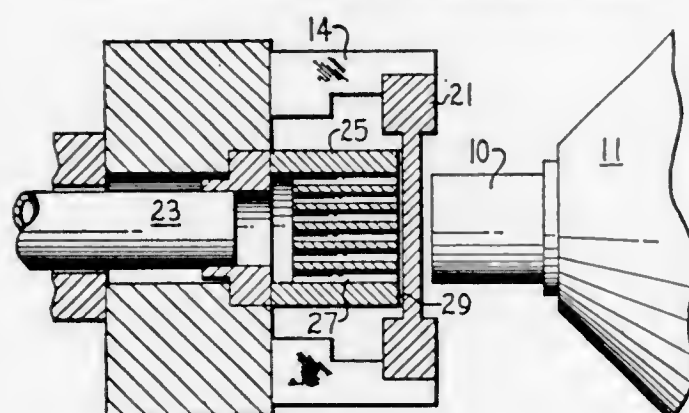
Calvin D. Loyd, 5029 Melody Lane, Peoria, Ill. 61604

Filed June 1, 1971, Ser. No. 148,343

Int. Cl. B23k 27/00

U.S. Cl. 29—470.3

2 Sheets Drawing. 10 Pages Specification



Method of friction bonding a thick section member to

a thin section member, such as a thin plate or sheet, wherein a heat conductor is applied to one side of the thin section member for cooling purposes while the other side of said member heats to bonding temperature along with the mating surface of the larger section member.

The heat conductor may be a block of high heat conducting material, a perforated member having a fluid coolant flowing therethrough, a member which directs a flow of fluid coolant against the backside of the thin section member, or a member having a low melting point. The member having a low melting point is held in contact with the thin section member by a ram and surrounded by a floating sleeve which is also urged against the thin section member and has an end slotted whereby, when the heat conducting member having a low melting point melts, the melted material flows radially outwardly through the slots and the ram continues to force the member into contact with the workpiece where it continues to melt, cooling the workpiece by the heat of fusion.

## T908,003 PROCESS FOR STABILIZED POLYETHERS

Michael Kokorudz, 17994 Parke Lane,  
Grosse Ile, Mich. 48138

Filed June 21, 1971, Ser. No. 155,329

Int. Cl. C07c 43/30

U.S. Cl. 260—615 A

No Drawing. 8 Pages Specification

The process for preparing hydroxyl terminated polyalkylene polyethers stabilized by conversion to acetals through reaction with alpha-haloalkyl alkyl ethers is improved by heat treating the acetals in the presence of an alkali carbonate to eliminate free hydrohalide acid and oxonium hydrogen halide.

## T908,004 PREPARATION OF THIOLHYDROXAMATE CARBAMATES

Earl W. Cummins, Oak Lane Manor, 2410 Shellpot Drive,  
Wilmington, Del. 19803

Continuation of application Ser. No. 872,725, Oct. 30,  
1969. This application Oct. 7, 1971, Ser. No. 187,549

Int. Cl. C07c 119/00

U.S. Cl. 260—453 R

No Drawing. 15 Pages Specification

In the preparation of thiolhydroxamate carbamates of the formula:

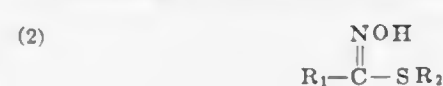


wherein

R<sub>1</sub> is methyl, ethyl, methoxymethyl or (methylthio)methyl; and

R<sub>2</sub> is methyl, ethyl or propyl;

by reaction of a thiolhydroxamate ester of the formula:



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with isocyanic acid in an aqueous medium optionally containing up to 50% of a nonreactive organic liquid, at a temperature between the freezing point and boiling point of the reaction mass (usually between -15° C. and 80° C.), improved yields are obtained by maintaining the pH between 1.5 and 5.0, preferably between 2.5 and 4.5, most preferably between 3.5 and 4.0. The isocyanic acid can be generated in situ by concurrent addition of an alkali metal cyanate such as sodium cyanate and a mineral acid such as H<sub>2</sub>SO<sub>4</sub> to the reaction mass.

## T908,005 CONTROL OF PLANT PARASITIC NEMATODES WITH 2-BENZIMIDAZOLE-CARBAMIC ACID, METHYL ESTER

Edward J. Soboczenski, R.D. 1, Chadds Ford, Pa.

Filed Oct. 27, 1971, Ser. No. 193,167

Int. Cl. A01n 9/22

U.S. Cl. 424—273

No Drawing. 5 Pages Specification

The compound 2-benzimidazolecarbamic acid, methyl ester is useful for the control of plant parasitic nematodes. Thus when the compound is applied to soil, to seeds, to foliage, or to the nematodes at rates of .05 to 50 kilograms/hectare or .05 to 2.0% by weight of the seeds, plant parasitic nematodes such as the dagger, cyst, needle, stubby root, and bud and leaf nematodes are controlled.

## T908,006 PACKAGE FOR TRANSPARENCY SLIDES

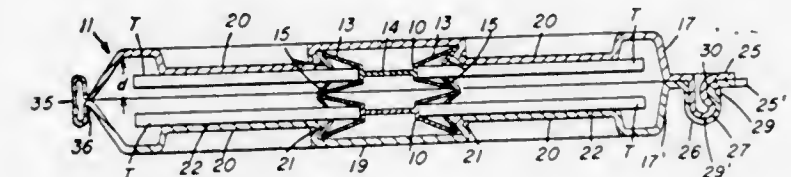
Arthur C. Rissberger, Jr., Webster, and George J. Richards and Adrian C. Runions, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 10, 1971, Ser. No. 197,252

Int. Cl. G09f 15/00

U.S. Cl. 40—106.1

1 Sheet Drawing. 21 Pages Specification



A package for returning a customer's processed and slide mounted transparencies which, in addition to protecting the slides against damage and dust during shipment, can be used as a viewer and/or as an editor for the slides. The package comprises a slide stick on which a plurality of slides are held by their edges in side-by-side relation and a hinged receptacle or wallet in which the sticks of slides are releasably retained with the slides lying flat in each side of the receptacle. The receptacle is made of transparent or translucent plastic which allows the slides to be viewed by transmitted and/or reflected light while in situ in the receptacle after the receptacle is hinged open.

## T908,007 PROCESS AND APPARATUS FOR EXTRUDING POLYOLEFINS

Edward Joseph Moore, Tonawanda, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of application Ser. No. 76,586, Sept. 29, 1970, which is a continuation of application Ser. No. 763,842, Sept. 30, 1968, both now abandoned. This application Nov. 10, 1971, Ser. No. 197,444

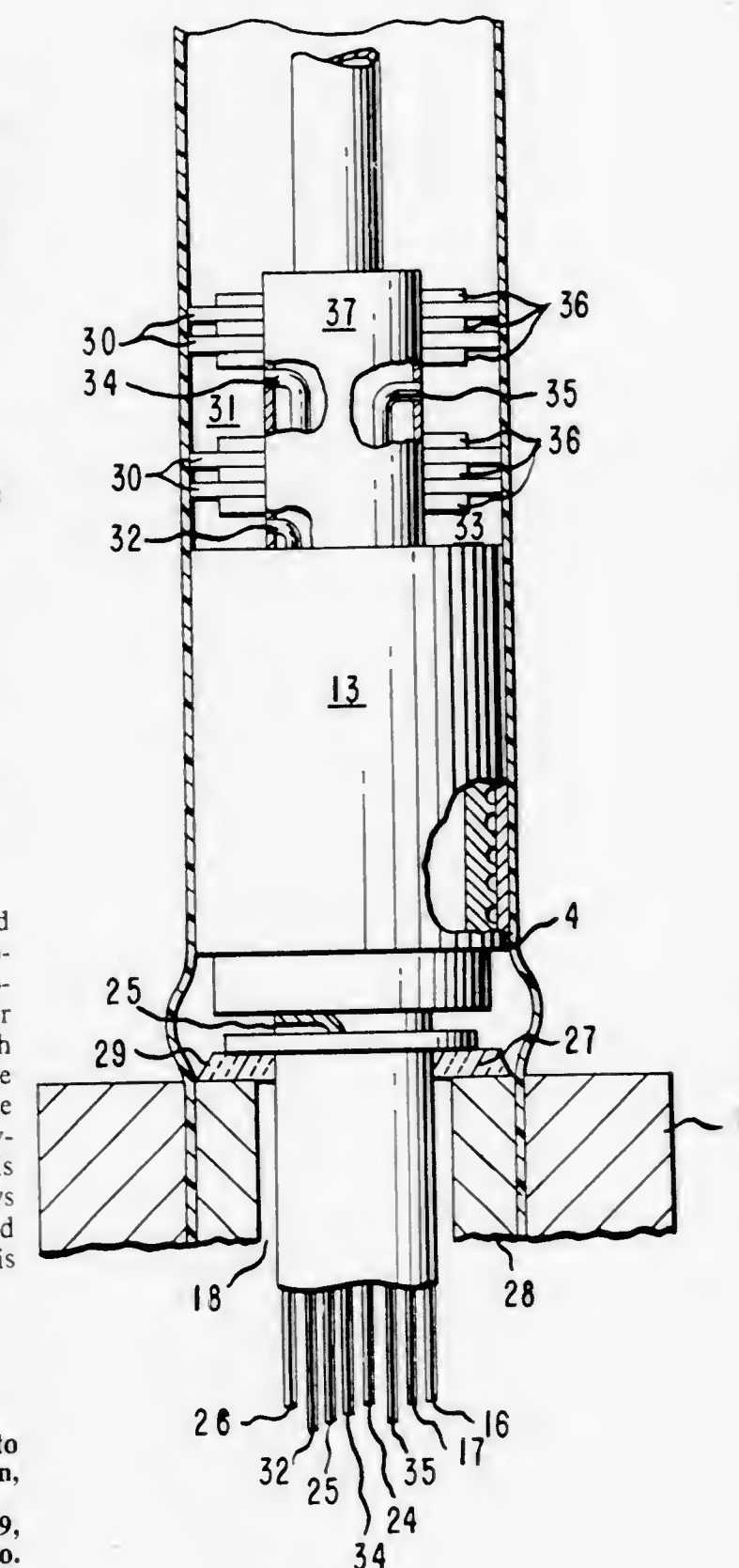
Int. Cl. B29d 7/20, 23/04

U.S. Cl. 264—209

2 Sheets Drawing. 17 Pages Specification

A process for preparing tubular film structures of polyolefins which comprises melt-extruding a polyolefin poly-

meric material in tubular form; advancing the tubular film at a predetermined rate first over a liquid coolant medium disposed internally of such film while maintaining the liquid coolant under pressure without rupturing the film, and then over quenching means for cooling the film to a temperature below its formative state, the liquid coolant medium completely filling a space between and defined by a die member for melt-extruding the tubular film, the inner surface of the tubular film and the quenching means, the liquid coolant medium having a boiling point greater than the temperature of the die member.



The liquid coolant is polyethylene glycol, ethylene glycol, or glycerol which is disposed in a space between a



die member and the quenching means and the space is maintained substantially full of the liquid coolant which has a temperature in the range between 10° C. and 45° C. The surface of the die member facing the space between the die member and the quenching means is insulated with an annular insulating tapered disc coextensive with the die core of the die member whereby contact between said liquid coolant medium and the die member is minimized and whereby contact between the disc and the inside surface of the tubular film advanced thereby also is minimized.

T908,008

## CROSS-LINKED POLYOLEFINS

Richard L. McConnell, 421 Manderly Road, Kingsport, Tenn. 37663; Doyle A. Weemes, 1603 Moore Ave., Greenville, Tenn. 37743; and Frederick B. Joyner, 404 Meadow Lane, Kingsport, Tenn. 37663  
Filed Sept. 28, 1972, Ser. No. 293,263

Int. Cl. C08f 29/02

U.S. Cl. 260—88.2 S

No Drawing, 12 Pages Specification

Cross-linked moldable compositions are prepared by heating crystalline polyolefin prepared from alpha-olefin monomers having at least three carbon atoms at a temperature below the threshold degradation temperature of the polyolefin and above the temperature necessary to maintain the polyolefin in a disordered state in the presence of at least 12.5 weight percent of peroxide for a period of at least 0.25 hour. The reaction may be carried out in solution or in melt phase. The peroxides are used in amounts up to about 30% by weight and are chosen from those peroxides having a half life of from 0.6 second at 250° C. to 1000 hours at 80° C. Suitable temperatures range from 105° C. to 250° C.

T908,009

## PROCESS OF PREPARING SUBSTITUTED p-(HYDROXYPHENYL) ACETIC ACIDS

James C. Martin, 601 N. Mountain View Circle, Johnson City, Tenn. 37601, and Paul G. Gott, 1017 Watauga St., Kingsport, Tenn. 37660

Filed Dec. 8, 1971, Ser. No. 206,178

Int. Cl. C07c 65/02

U.S. Cl. 260—521 R

No Drawing, 12 Pages Specification

Certain substituted p-(hydroxyphenyl)acetic acids, typified by 2-methyl-2-(p-hydroxyphenyl) propionic acid, may be prepared by hydrogenation of the mono-beta-lactones prepared from disubstituted ketenes and p-quinones, at temperatures within the range of 0–150° C. and pressures ranging from one to several hundred atmospheres in the presence of a hydrogenation catalyst such as palladium, platinum, rhodium, ruthenium or nickel. The acid products obtained by the process may be readily converted by well-known autopolymerization procedures to polyesters useful in the production of clear, transparent sheets, films, filaments, fibers, molded articles and other valuable articles of commerce having excellent physical properties.

T908,010

## PROCESS FOR CURING EPOXY RESIN LAMINATES IN INERT HOT LIQUID MEDIUM

James E. Carey, Twin Lakes Drive, Mantua, N.J. 08051; Robert C. Breitel, 3901 Parkview Lane, Apt. 8B, Irvine, Calif. 92664; and Robert J. Moore, 12315 Longworth Lane, Bunker Hill, Houston, Tex. 77024

Filed Dec. 13, 1971, Ser. No. 207,653

Int. Cl. B05c 3/12; B44d 1/098, 1/46

U.S. Cl. 117—119.6

No Drawing, 18 Pages Specification

Glass fiber bundles, glass mat or glass cloth reinforced plastic laminates having improved water resistance and electrical properties are prepared by first impregnating fiber bundles, mats or cloth with a solventless mixture of a liquid polymeric resin such as an epoxy resin and a curing agent therefor and then immersing the product in a hot, non-solvent, liquid bath (silicone oil, molten aliphatic wax) to effect polymerization and cure of the resin.

T908,011

## POLYISOCYANATE MODIFIED THERMOPLASTIC POLYESTER COMPOSITIONS

William Kenneth Witsiepe, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

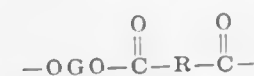
Filed Dec. 17, 1971, Ser. No. 209,424

Int. Cl. C08g 22/10, 22/48

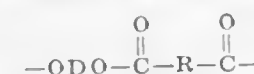
U.S. Cl. 260—75 NK

No Drawing, 28 Pages Specification

A modified polyester composition prepared by mixing a segmented copolyester polymer with about 2–50 milliequivalents per 100 g. of copolyester polymer of a polyisocyanate and subsequently contacting the resulting mixture with water, preferably by exposure to atmospheric water vapor. The initial copolyester has an inherent viscosity of at least about 0.75 at 30° C. in m-cresol and consists essentially of 5–80% by weight of ester units of the structure



and 20–95% by weight of ester units of the structure



G being a divalent radical remaining after the removal of terminal hydroxyl groups from a long chain glycol having a melting point below about 65° C. and a molecular weight of 600–6000, R is a divalent radical remaining after removal of carboxyl groups from a dicarboxylic acid having a molecular weight of less than about 300, and D is a divalent radical remaining after removal of hydroxyl groups from a diol having a molecular weight of less than about 250. Useful polyisocyanates range from monomeric polyisocyanates such as toluene diisocyanate to isocyanato-terminated reaction products having an isocyanato group assay as low as 0.2%.

The modified polyester compositions are thermoplastic and exhibit tensile strength, permanent set, compression set, and flex resistance. They may be processed by procedures used for thermoplastics in general.

## PATENTS

GRANTED MARCH 27, 1973

## GENERAL AND MECHANICAL

3,721,992

## BRUISE PAD ATTACHMENT

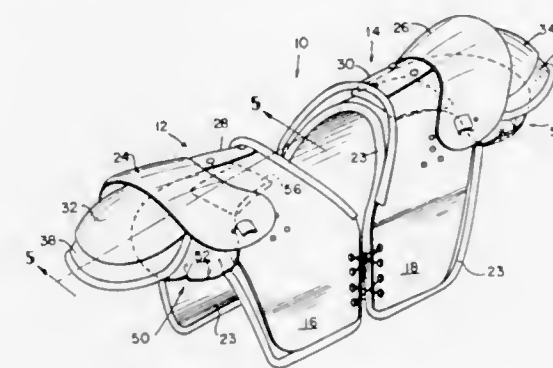
Donald N. Ettinger, St. Louis, Mo., assignor to Hit-Away, Inc., Indianapolis, Ind.

Filed May 18, 1972, Ser. No. 254,768

Int. Cl. A41d 13/00

U.S. Cl. 2—2

11 Claims



An inflatable bruise pad insert for protective gear such as cantilever type shoulder pads is held firmly in place adjacent to a gap which exists between the top and front portions of the shoulder pads. When partially inflated, the pad insert fills the gap and cushions blows to that region to prevent injuries to the wearer.

3,721,993

## AUDITORY PROTECTION ON SAFETY HELMETS

Bo Gunnar Lonnstedt, Kvarnbergsvägen 23, Huddinge, Sweden

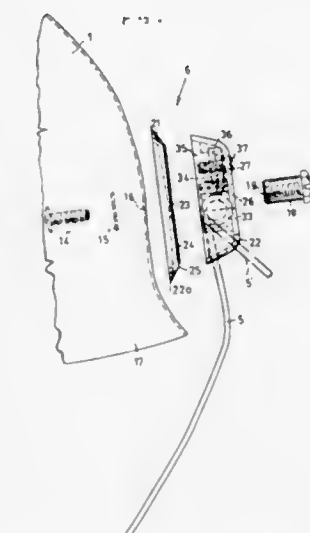
Filed March 12, 1971, Ser. No. 123,712

Claims priority, application Sweden, March 19, 1970, 3786/70

Int. Cl. A42b 3/00

U.S. Cl. 2—3 R

10 Claims



The present invention relates to an arrangement for preventing auditory damage and keeping out irritating noises. It consists of ear muffs displaceable on clamps pivotally arranged with attachment units on a safety helmet. The invention is characterized mainly in that each attachment unit on the helmet is provided with, in addition to attaching means for pivotable attachment on the safety helmet, adjusting means acting on the clamp which is attached to the attachment unit

3,721,994

## DUAL VISOR HEADGEAR

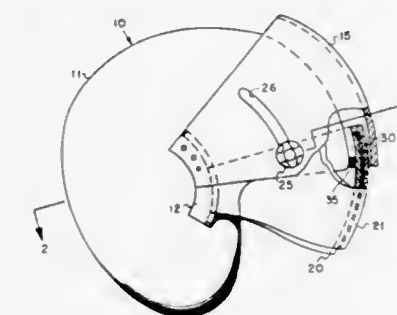
David N. DeSimone, and Frank A. Catroppa, both of Philadelphia, Pa., assignors to The United States of America as represented by the Secretary of the Navy

Filed March 29, 1971, Ser. No. 128,667

Int. Cl. A42b 3/00

U.S. Cl. 2—6

9 Claims



A safety headgear open at the face including an outer tinted visor and an inner clear visor retained between arced tracks on either side of the face opening. In the stowed position both visors are retracted behind a visor canopy across the forehead section of the headgear. Both visors are extensible across the eye area of the face opening by a combination of a locking knob attached to the outer visor extending through an opening in the canopy and lugs formed on the upper edge of the outer visor to engage the upper edge of the inner visor. The position of the outer visor is determined by the position of the knob in the opening and the inner visor is retained simply in position by friction pads.

3,721,995

## TRANSPARENT PROTECTIVE SCREEN

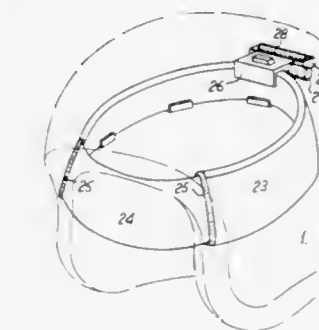
Paul Peillex, Thonon, France, assignor to Arisara Investment Corporation NV, Curacao, Netherlands Antilles

Filed April 12, 1971, Ser. No. 133,096

Int. Cl. A61f 9/04

U.S. Cl. 2—10

6 Claims



The invention deals with a transparent protective shield which comprises an element of a transparent material partly housed in a support. The free portion of said element is intended to be located in front of a sighting field. An actuating device drives the transparent element in displacement relative to the support so that it passes over scraping lips which clean said element.



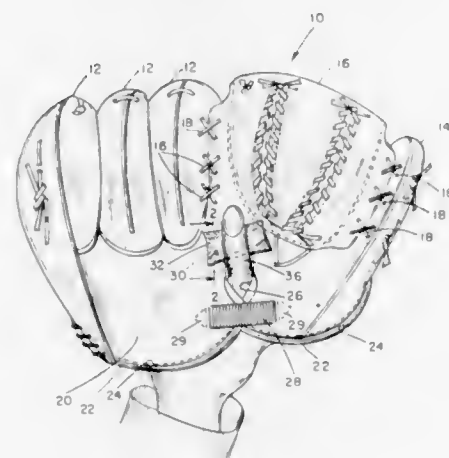
3,721,996

## BASEBALL GLOVE

Benjamin Nadorf, Dobbs Ferry, N.Y., assignor to Everlast World Boxing Headquarters Corp., Bronx, N.Y.  
Filed July 16, 1971, Ser. No. 163,382  
Int. Cl. A41d 13/08

U.S. Cl. 2-19

9 Claims



A baseball glove comprising an exposable ball-receiving pouch and space for confining at least partially a human hand and fingers of the human hand. The glove is generally constituted of leather and has a configuration generally simulating the human hand. An opening is provided in the rear portion of the glove for permitting exposure of at least one of the fingers of the human hand relative to the space in which the remainder of the hand and fingers are confined. An elastic strip is provided for adjusting the effective extent of the edge of the rear portion which is most remote from the finger-simulating elements of the glove to thereby prevent the glove from slipping relative to both the human hand and those fingers confined therein. Moreover, the rear portion of the glove includes a resilient projection which is engageable by that finger of the human hand which is protrudable through the opening provided in the rear portion to further enhance the prevention of the glove from slipping relative to both the human hand and those fingers confined therein.

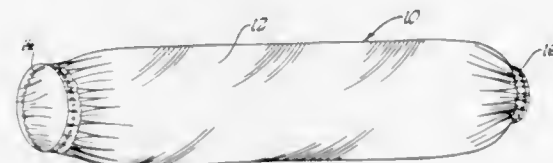
3,721,997

## PROTECTIVE GARMENT

Trexie I. Mundt, Southfield, Mich., assignor to Sterling L. O'Dell, East Detroit, Mich., a part interest  
Filed July 17, 1972, Ser. No. 272,610  
Int. Cl. A41d 27/12, 17/00

U.S. Cl. 2-46

1 Claim



A protective garment comprising a seamless, transparent, plastic body of tubular design having gathered elastic loops at the opposite ends thereof. In one embodiment, the loops are of such size as to be worn about the waist and the length of the body is such as to extend along both the inside and the outside of a coat or other piece of feminine apparel to be protected. In another embodiment, the body is of such length as to be worn between the upper thigh and the ankle and the opposite ends thereof are provided with elastic loops of differing sizes, one end to be worn about the upper thigh and the other end to be worn about the ankle.

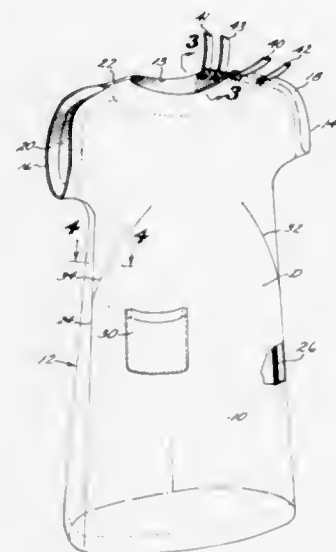
3,721,998

## HOSPITAL SCRUB DRESS

Phyllis L. Meyers, 5235 Linwood Drive, Los Angeles, Calif.  
Filed Nov. 28, 1969, Ser. No. 880,679  
Int. Cl. A41d 1/22

U.S. Cl. 2-74

1 Claim



A hospital scrub dress for use by women of varying physical dimensions. The scrub dress is straight-sided without utilizing a waist line so as to obtain greater comfort and better lines for women of varying shapes. A boat neck is employed which will fit any size neck comfortably. Easy entry to the dress is made possible by a slit shoulder on one of the sleeves. The slit is closed by flat ties. The use of such flat ties permits easy laundering and ironing with a power mangle. The upper edges of the sleeves are open so as to permit freedom of arm movement.

3,721,999

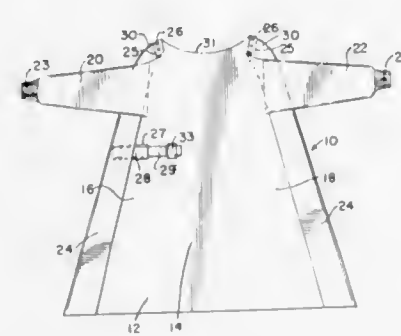
## SURGICAL GOWN AND METHOD OF FOLDING

Tamotsu Goya, Arlington Heights, and James E. Sill, Chicago, both of Ill., assignors to Cenco Medical Health Supply Corporation, Chicago, Ill.

Filed Jan. 24, 1972, Ser. No. 220,259  
Int. Cl. A41b 9/00; A61b 19/00

U.S. Cl. 2-114

14 Claims



A gown particularly adapted for use in surgical and medical procedures, folded in such a manner that only its interior surfaces are exposed to the surrounding environment, assuring sterility of its exterior surfaces. The hands and arms of the wearer may be placed inside the sleeve portions of the gown prior to unfolding to move the gown from place to place without danger of accidental unfolding and consequent loss of sterility. Also disclosed is a process of folding a surgical gown having a body portion and integral sleeve portions by folding the body portion longitudinally toward the center; drawing said sleeve portions partially inside-out forming arm openings at their outer end and placing them parallel and adjacent one another along an axis substantially perpendicular to the longitudinal axis of the gown; folding the body portion upwardly

from its bottom in a plurality of sections; folding the section of the body portion underlying the parallel sleeve portions downwardly over the previously folded sections while tucking the collar points of the neck of the body portion under this section; folding the arm openings of the sleeve portions toward the center of the gown; and, finally, folding the gown in half at its center so that the arm openings face in the same direction.

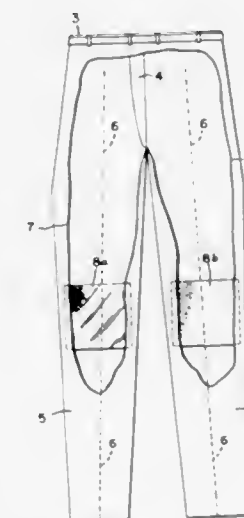
3,722,000

## METHOD FOR REINFORCING TEXTILE GARMENTS WITH THERMOSETTING FILMS

Gary L. Rossell, Philadelphia; Paul C. Fleisher, Jr., Lafayette Hill, and Maurice I. Seifer, Levittown, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.  
Continuation-in-part of Ser. No. 779,606, Nov. 27, 1968, abandoned. This application March 7, 1969, Ser. No. 805,359  
Int. Cl. A41d 1/06

U.S. Cl. 2-227

8 Claims



A process for reinforcing textile garments by forming a coherence of thermosetting or thermosettable reinforcing film in the fabric fibers of said garments at localized areas subject to severe stress is provided. The process is particularly applicable to permanent-crease slacks and like garments impregnated with a solution of resins polymerizable to a water-insoluble state and which provide for the permanent-crease. In the process, the thermosetting film is adhered and cohered to and with the surface fibers on one surface of the garment fabric by application of heat and pressure, cooled and the garment fabric is then optionally baked in an oven to polymerize the permanent crease resins and also to harden or post-cure the thermosetting reinforcing film. The thermosetting reinforcing film which may have a non-woven backing, used in the present invention has controlled flow characteristics and is so characterized that the appropriate combination of heat and pressure will cause the material to set up to a relatively rigid and non-flowable state after a few seconds thereby preventing bleeding through, but the flow will still be sufficient to provide for a good interlock and/or encapsulation of the thermosetting film and the fibers.

3,722,001

## VARIABLE LENGTH TROUSERS CONSTRUCTION

George Terrell Bailey, P.O. Box 271, Johnsonville, S.C.  
Division of Ser. No. 836,268, June 25, 1969, Pat. No. 3,585,644. This application Jan. 14, 1971, Ser. No. 106,401  
Int. Cl. A41d 27/00

U.S. Cl. 2-269

6 Claims

A trousers construction including variable length, tubular trousers legs having a reversely extending fold inside the legs and a separately formed cuff detachably secured at the bottom

edge portion of each trousers leg to permit varying the length of the cuffed trousers legs by upward and downward adjustment of the cuffs with respect to the lower edges of the trousers legs and by varying the depth of the reversely extending fold inside the trousers legs.



3,722,002

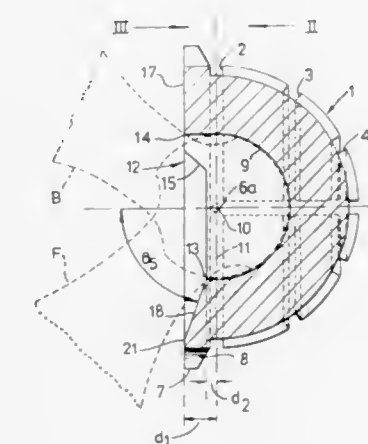
## ACETABULAR SOCKETS

John Charnley, Hale, England, assignor to Chas. F. Thackray Limited, Leeds, Yorkshire, England  
Filed Jan. 17, 1972, Ser. No. 218,443  
Claims priority, application Great Britain, March 3, 1971, 5,891/71

Int. Cl. A61f 1/24

U.S. Cl. 3-1

11 Claims



An acetabular socket having an inner face for receiving the head of a femoral prosthetic component, said inner face being of hemispherical shape extended by a part-cylindrical section of radius equal to the radius of the hemisphere, the axial length of a first circumferential part of the part-cylindrical section being greater than that of a second circumferential part of the part-cylindrical section. Said socket is designed for mounting in the pelvis with the first circumferential part at the posterior to limit backward movement of the femoral prosthetic component, while the shorter, second circumferential part at the anterior allows a good range of forward flexion of the femoral prosthetic component.



3,722,003

**MOLDED L-SHAPED LENTICULAR PROSTHESIS**

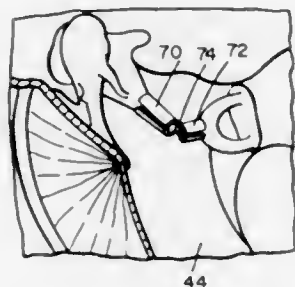
David L. Walchle, Cincinnati, Ohio, assignor to Xomox Corporation, Cincinnati, Ohio

Filed May 18, 1971, Ser. No. 144,538

Int. Cl. A61f 1/24, 1/18

U.S. Cl. 3—1

4 Claims



An L-shaped lenticular prosthesis molded from FEP or medical grade silicone rubber to its final size, ready for inspection, packaging and sterilization, said prosthesis being entirely free of residual stresses.

3,722,004

**DISC FOR HEART VALVES**

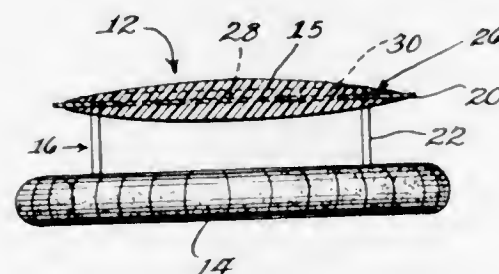
Harry W. Cromie, Pittsburgh, Pa., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed Dec. 8, 1971, Ser. No. 205,852

Int. Cl. A61f 1/22

U.S. Cl. 3—1

10 Claims



A heart valve occluder includes a ring of hard, wear-resistant material such as isotropic, pyrolytic carbon embedded in a plastic matrix with the outer circumference of the ring protruding from the plastic about the entire circumference of the occluder. By this arrangement, the wear rate on the edge of the occluder is improved, while the noise of the occluder striking the struts of its cage is reduced.

3,722,005

**PERCUTANEOUS MYO-ELECTRODE SYSTEM**

Frederick Claud Cowland, Towcester, England, assignor to Plessey Handel und Investments A.G., Zug, Switzerland

Filed Nov. 15, 1971, Ser. No. 198,596

Claims priority, application Great Britain, Nov. 19, 1970, 54972/70

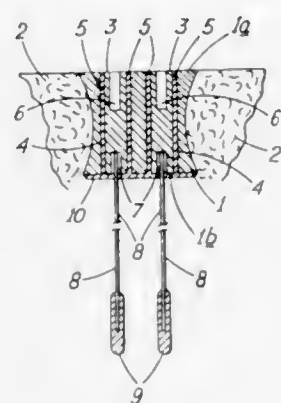
Int. Cl. A61f 1/00; A61b 5/04; A61n 1/36

U.S. Cl. 3—1.1

9 Claims

A percutaneous myo-electrode system for facilitating either the stimulation of, or the extraction of electrical energy due to, muscular activity within the body of a vertebrate. A percutaneous member of a biocompatible carbon material is insertable into an aperture in the body tissue such that a surface thereof is substantially flush with the outer skin of the body tissue. At least one connecting member of electrically conductive biocompatible material is secured within and electrically insulated from the percutaneous member. One end of the,

each, connecting member is connectable, at the surface of the body tissue, to an electrical energy source or user external of the body, whilst the other end thereof is connected to an electrode of an electrically conductive biocompatible material by



means of a connecting lead of an electrically conductive biocompatible material. The electrode is connectable to a muscle within the body. The electrical energy user can be an artificial limb, and the external electrical energy source can be used to stimulate the heart of the vertebrate.

3,722,006

**DEVICE FOR ELECTRIC INCINERATOR DRY CLOSETS**

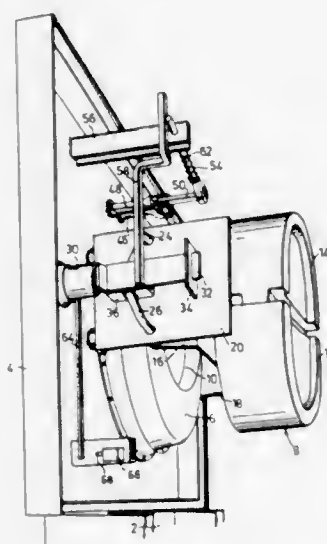
Sven Olof Edholm, Villavagen 27, Vadstena, Sweden

Filed Feb. 6, 1970, Ser. No. 9,366

Int. Cl. A47k 11/02

U.S. Cl. 4—131

7 Claims



Device for electric incinerator dry closets having a collecting vessel placed in a pan featuring a downward, essentially conical taper and, at its lower end, an operable trap door. Said door also serves as a lid above an electric incinerator chamber and is divided into heat insulating, semi-circular halves which simultaneously swing upwards and outwards away from each other. The door halves are suspended from supporting members which are rigidly attached to a casing or stand. When the trap door is closed, a full length projection on the straight side of one of the door halves engages a corresponding recess in the corresponding side of the other door half. The door is kept from opening accidentally by mechanical means which are actuated when a certain weight is on the dry closet seat. The incinerator chamber burns the waste material deposited in it when the collecting vessel falls via the opening cover into said chamber.

3,722,007

**GROUP WASH STATION**

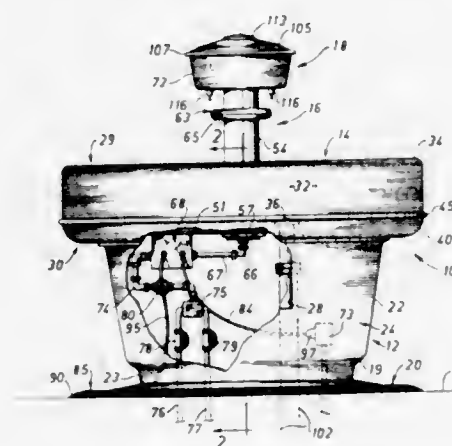
Bryon Camp, 20 Lawrie Road, Concord; Percival Arthur Camp, 15 Tangreen Court, and William Hasso Meyer, 8 Cresthaven Drive, both of Willowdale, Ontario, all of Canada

Filed Feb. 24, 1971, Ser. No. 118,217

Int. Cl. A47k 11/04

U.S. Cl. 4—166

11 Claims



A group wash station includes an inverted frusto-conical base pedestal with a two-part molded plastic wash bowl mounted thereon. A pneumatic tread is adhesively bonded on the floor surface around the base pedestal and is operatively connected through an air hose to a pressure-actuated switch mounted in the base pedestal. The switch is in turn associated with a solenoid valve for controlling the flow of water from supply conduits to a spray head assembly mounted above the wash bowl. A rigid load-supporting plate is usefully provided under the wash bowl for transmitting stresses to the base pedestal.

3,722,008

**DRAIN CLEANERS**

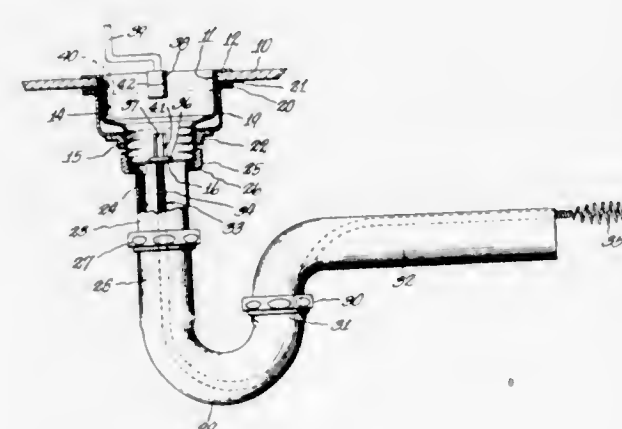
John Boldan, 294 Butler Rd., N.E., Warren, Ohio

Filed March 15, 1971, Ser. No. 124,305

Int. Cl. E03c 1/302

U.S. Cl. 4—255

7 Claims



A device for maintaining the drain of a receptacle, such as the usual household sink, in good water-draining condition, comprising a snake passing through an opening in the bottom wall of a strainer drain basket, the snake remaining in the drain trap for instant use, but being withdrawable partly or fully without great effort.

3,722,009

**PORTABLE CRIB**

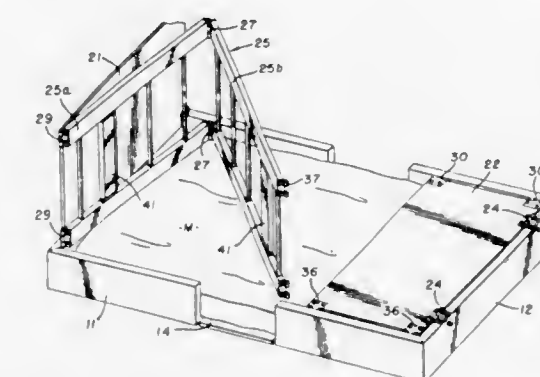
Helen R. Hrynda, 3386 Kingston Lane, Youngstown, Ohio

Filed Aug. 3, 1971, Ser. No. 168,599

Int. Cl. A47d 9/00

U.S. Cl. 5—93

10 Claims



A crib is foldably contained in a portable receptacle. The base members of the crib are formed by the receptacle itself when in an open position and end panels of the crib are hingedly attached to each base member. Side rails of the crib are hinged to each end panel and can be swung into position after the panels are raised to a vertical position. Means are provided to lock the side rails to the base members and to the end panels. Legs for the crib are foldable within each side rail and can be locked in operational position to form a sturdy crib raised off of the floor.

3,722,010

**ADJUSTABLE HOSPITAL BED INSTANTLY MOVABLE TO A TRENDLENBURG POSITION**

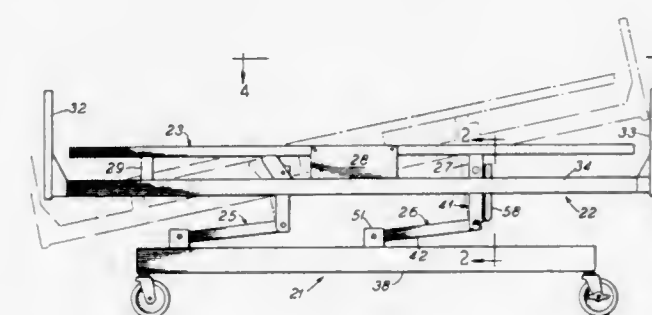
Joseph P. Saterus, Midlothian, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed March 31, 1971, Ser. No. 129,719

Int. Cl. A61g 7/00

U.S. Cl. 5—67

3 Claims



The hospital bed has articulated head and foot elevation linkage systems that effect vertical movement of an upper horizontal frame, to which a mattress supporting structure is attached, with respect to a fixed lower horizontal frame. Rapid shifting to a trendelenburg position is achieved by providing, in the foot linkage system, an extendible segment having a pair of elongated links one of which is slidably and rectilinearly movable in the other. The segment may be quickly extended and locked, and by so doing the upper frame becomes tilted at a desired trendelenburg angle with its foot end raised relative to its head end.

3,722,011

**CAMPING FURNITURE**

Larry Miller, Route 1, Box 371-J, Selah, Wash.

Filed May 6, 1971, Ser. No. 140,745

Int. Cl. A47c 17/64

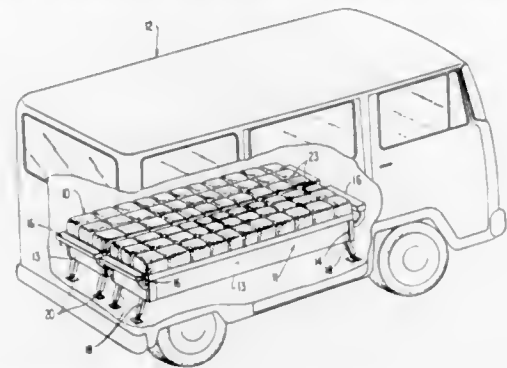
U.S. Cl. 5—118

5 Claims

A pair of bench units may be utilized by campers in vans or under canopies or tents. Each unit embodies a padded lid serv-



ing as a single bed. The two bench units side-by-side in a van or tent form a double bed. Beneath the lid of one unit is a



complete kitchen apparatus and beneath the lid of the other unit is a large insulated storage chest. The twin units have adjustable legs and convenient carrying handles.

3,722,012

**WATER BED HAVING AN ATTACHED PILLOW**

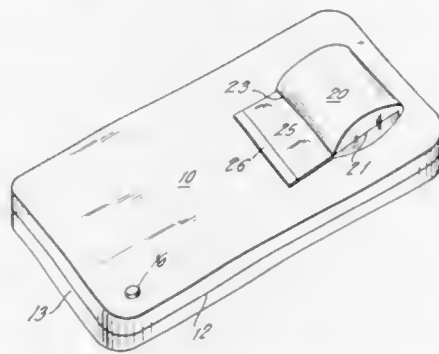
Sidney Tobinck, Oldbridge, and Arnold Semenoff, Fort Lee, both of N.J., assignors to Aqua Therm Products Corporation, Rahway, N.J.

Filed June 3, 1971, Ser. No. 149,512

Int. Cl. A47c 27/08

U.S. Cl. 5—348 WB

9 Claims



A plastic enclosure to be filled with a fluid to define a body upon which one may recline has an inflatable pillow fixed to a region of the enclosure by an elongated web and is movable to a defined position at the head of the enclosure.

3,722,013

**SPRING ASSEMBLY**

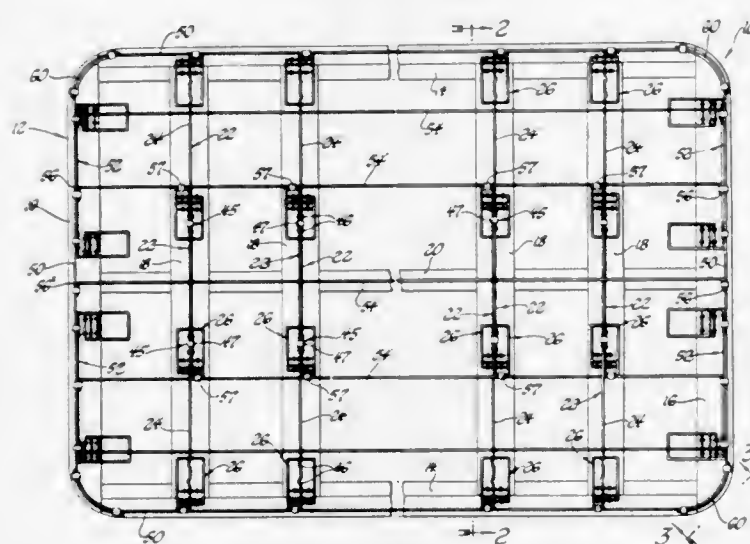
Zygmunt M. Surletta, Detroit, Mich., assignor to Lear Siegler, Inc., Detroit, Mich.

Filed Jan. 18, 1971, Ser. No. 106,972

Int. Cl. A47c 23/02

U.S. Cl. 5—247

10 Claims



A box spring assembly including a generally rectangular frame with a first plurality of spring members extending trans-

versely between the sides of the frame and spaced from one another longitudinally of the frame. Each spring member is defined by an integral wire having a straight load section and a fishmouth section at each end thereof. The spring members are disposed in pairs overlapping one another transversely of the assembly. The particular improvement is the disposition of pairs of undulations in the straight sections of each spring member so that the spring members may be positioned or aligned longitudinally of one another by disposing a clip about the straight sections between adjacent pairs of undulations.

**ERRATUM**

For Class 5—8 see:  
Patent No. 3,722,205

3,722,014

**RETRIEVABLE BUOY**

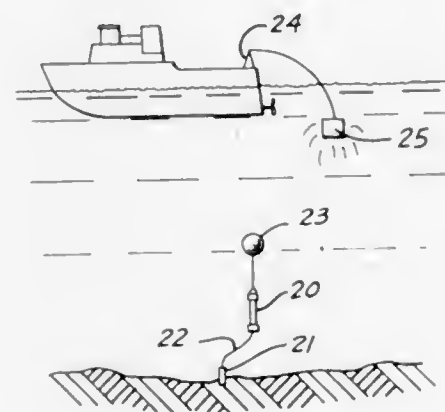
Jack O. Hill; David S. Fridge, Jr., and Vaughn R. Dibble, Jr., all of Houston, Tex., assignors to Oceanography International Corporation, College Station, Tex.

Filed Nov. 19, 1970, Ser. No. 91,002

Int. Cl. B63b 21/52

U.S. Cl. 9—8 R

12 Claims



A retrievable, submersible buoy is disclosed which is anchored at an underwater location and includes an explosive charge release mechanism which releases the buoy from its anchor in response to a remotely actuated recall signal. The buoy may be anchored by an inflatable bag that becomes buried in the sea bed and is filled so as to be buoyant in response to actuation of the explosive charge release mechanism, or by connection through a lanyard line to an underwater structure which connection is released in response to actuation of the explosive charge release mechanism. A recall transmitter located above water actuates a plurality of sound sources, such as explosive charges which provide a series of mechanical signals in a predetermined time sequence to provide a coded recall command, and the buoy includes a receiver which receives these mechanical signals and when the properly coded recall command is received actuates the explosive charge release mechanism to release the buoy and cause it to ascend.

3,722,015

**WATER BOARD**

William S. Miller, and Oscar E. Miller, both of P.O. Box 947, Placerville, Calif.

Filed Dec. 10, 1970, Ser. No. 96,936

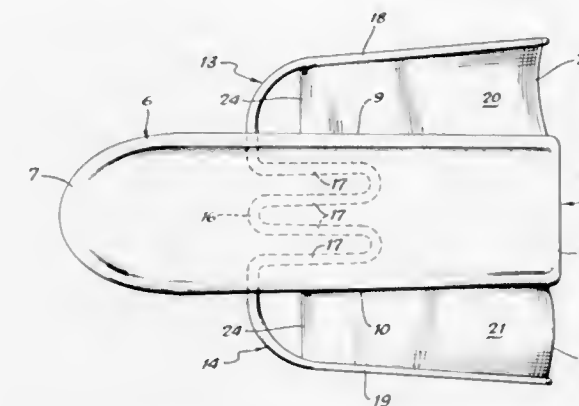
Int. Cl. A63c 15/04

U.S. Cl. 9—310 B

8 Claims

A water board for personal use includes a buoyant float designed to carry a person on the water. Longitudinal frames extend along both sides of the float, each supporting one or

more submerged vanes. Each vane is transversely taut along the leading edge thereof and transversely slack along the trail-



ing edge thereof. The user rocks the float from side to side and so flexes the vanes to propel the float forwardly.

3,722,016

**SHOE STRETCHER**

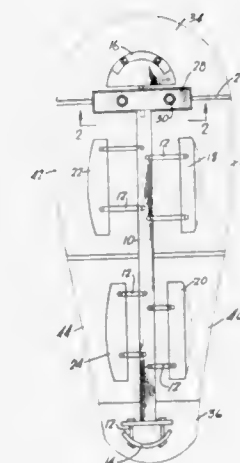
Rene B. Tavo, Deming, N. Mex., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Oct. 4, 1971, Ser. No. 186,036

Int. Cl. A43d 5/00

U.S. Cl. 12—120.5

4 Claims



Apparatus for stretching shoes comprising, in horizontal alignment, a horizontal toe plate, a horizontal heel plate, left horizontal plate means extending on the left side between toe and heel plates, right horizontal plate means extending on the right side, and means to individually move any one of the means or plates forward rearward or sideways as the case may be relative to all other elements of the structure.

3,722,017

**OVER-THE-WING AIRCRAFT LOADING BRIDGE**

Peter T. Gacs, Palos Verdes Peninsula, and Lucien C. Williams, Palos Verdes Estates, both of Calif., assignors to General Steel Industries, Inc., St. Louis, Mo.

Filed July 26, 1971, Ser. No. 165,511

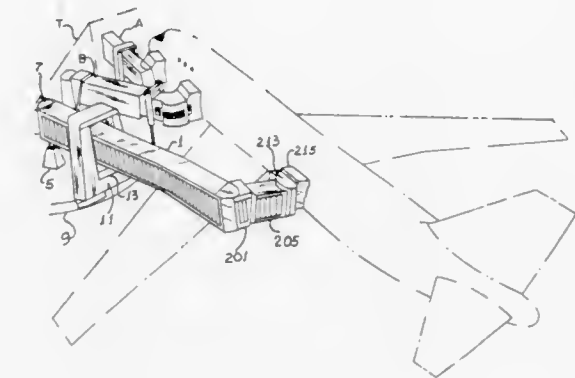
Int. Cl. B65g 11/00

U.S. Cl. 14—71

7 Claims

A bridge for transferring passengers between airport terminal buildings and access doors of aircraft located rearwardly of the aircraft wing has a main passageway member pivotally supported at the terminal building end on vertical and transverse axes and intermediate its ends on a track mounted rack propelled carriage on which it is elevatable and depressable by a combined hydraulic and screw jack system so that its outer end portion, slightly arched, may extend over the wing. At its outer end the main passageway mounts a lateral passageway for pivotal movement about a vertical axis and

vertical movement about a horizontal axis of the lateral passageway. The lateral passageway mounts an outer end unit containing an operator's cab, for pivotal movement about a



vertical axis to positions parallel to aircraft fuselages. The outer end unit contains an extendible canopy for sealing engagement with the fuselage side.

3,722,018

**CLEANING APPARATUS**

Donald J. Fisher, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

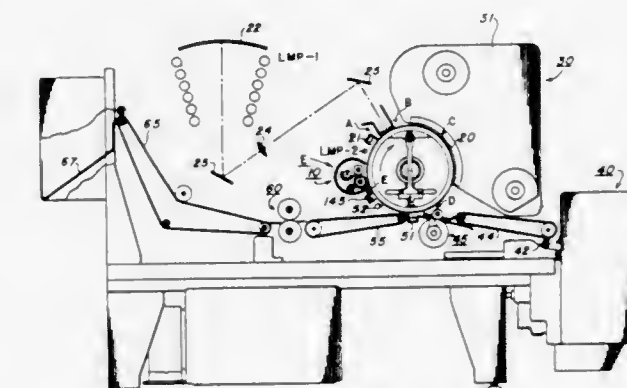
Continuation of Ser. No. 873,870, Nov. 4, 1969, abandoned.

This application Nov. 8, 1971, Ser. No. 196,538

Int. Cl. G03g 15/00

U.S. Cl. 15—1.5

8 Claims



Apparatus is herein disclosed for cleaning residual toner particles from a photosensitive member. A fibrous brush is arranged to move in an endless path to first wipe the brush fibers across the member and then over a used transfer roll. Prior to contacting the transfer roll, the brush fibers and toner collected thereon are subjected to a corona discharge capable of charging the toner and fibers to a polarity opposite to that of the transfer roll wherein sufficient electrostatic contrast is produced to effect an efficient transfer of toner from the brush to the roll surface.

3,722,019

**PAINT TRIMMING DEVICE**

Walter Magnien, 5414-53rd Street, Camrose 1, Alberta, Canada

Filed April 27, 1971, Ser. No. 137,769

Int. Cl. A46b 17/00

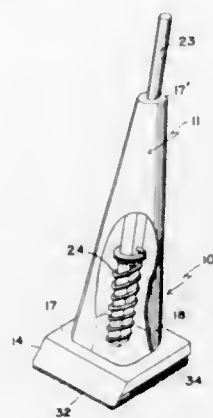
U.S. Cl. 15—114

4 Claims

A spring loaded detachable pad component is carried in a small hand held housing and can be extended for charging



with paint. The housing has an angulated guide and a stop against which the bristles of said pad engage thus holding them

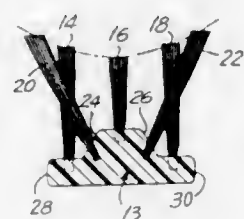


### 3,722,020 TOOTHBRUSH WITH CONCAVITY FORMED BY BRISTLE ENDS

Jeffrey Mark Hills, 7820 Algon Avenue, Philadelphia, Pa.  
Filed Jan. 4, 1971, Ser. No. 103,591  
Int. Cl. A46b 9/04

U.S. Cl. 15-167 R

10 Claims



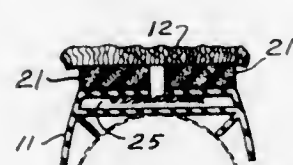
A toothbrush comprising a generally planar head portion having a plurality of bristles forming a concave surface. Some of the bristles are generally perpendicular to said head portion and some are laterally inclined outwardly. This bristle configuration removes food debris, plaque and bacteria lodged in the sulcus area with a minimum of operator manipulation.

### 3,722,021 SHOE CLEANING-POLISHING DEVICE AND METHODS OF MAKING THE SAME

Andrew W. Brainerd; Kent H. Brainerd, and Stuart W. Brainerd, all of One North LaSalle Street, Winnetka, Ill.  
Continuation-in-part of Ser. No. 39,275, May 21, 1970, abandoned. This application March 29, 1971, Ser. No. 129,006

Int. Cl. A47i 13/46, 13/12; A46b 11/02  
U.S. Cl. 15-231

7 Claims



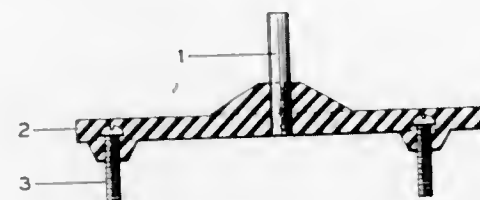
A device integrating into a single hand-operated unit of convenient size, the expendable material and accessory equipment needed to provide, apply, distribute, brush and buff a wax or similar polish on the shoe, during which entire process the hand holding the shoe is not caused to relinquish its grip thereon. Additionally, new and useful means of insertion, retention and removal of an aerosol can into and from proposed housings serving as integrated shoe cleaning-polishing devices, and identification window apertures in the backing shell of such housings, are described.

### 3,722,022 ROTATING PAINT SCRAPER

John A. Faleson, 288 Walzford Rd., Rochester, N.Y.  
Filed Sept. 15, 1971, Ser. No. 133,186  
Int. Cl. A47i 13/02

U.S. Cl. 15-236 R

8 Claims



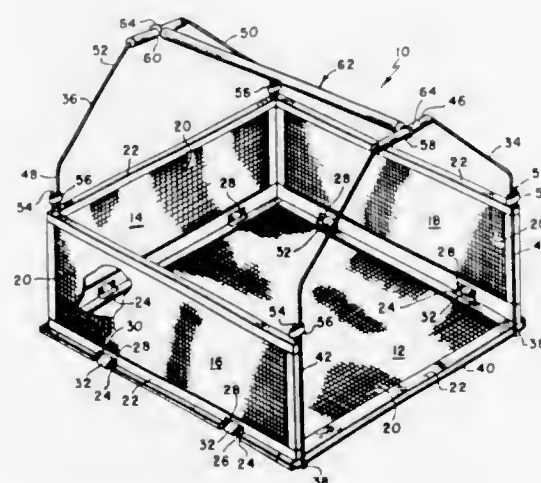
Apparatus for removing an outer surface such as a coating of paint from a masonry base includes a rotatable, resilient disc having a support stem extending from one side of the disc, and a set of elongated members extending from the other side. To use the apparatus, the stem is secured in the chuck of a portable power drill, and the disc is rotated and positioned so that the free ends of the elongated members scrape the outer surface from the base.

### 3,722,023 LEAF AND REFUSE CATCHER

Jack K. Gray, Rt. 1, Box 138, Niceville, Fla.  
Filed March 12, 1971, Ser. No. 123,602  
Int. Cl. A01d 11/00

U.S. Cl. 15-257.1

4 Claims



A collapsible basket-like catcher or carrier having bottom and side panels of mesh wire screen, the side panels being pivotally connected to the bottom panel, a pair of handles on said bottom panel, and locking means on said handles and side panels, whereby the side panels may be locked to each other in an upstanding position for collecting and carrying leaves and refuse or may be collapsed upon said bottom panel for storage.

### 3,722,024 FOOT PEDAL OPERATED ADJUSTABLE RUG NOZZLE FOR VACUUM CLEANER

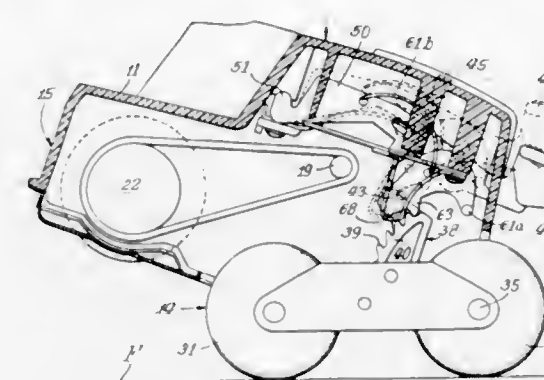
Joseph F. Schmitz, Saint Paul, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.  
Filed Nov. 10, 1971, Ser. No. 197,291  
Int. Cl. A47i 5/34

U.S. Cl. 15-339

16 Claims

A mounting structure for adjustably mounting a vacuum cleaner nozzle for selective disposition in different rug cleaning dispositions. The nozzle position is adjusted by pressing down with the user's foot on a pedal to incrementally raise the

front end of the nozzle to different desired elevations for use in cleaning any one of a plurality of rugs having different height pile. The mounting structure is further arranged to per-



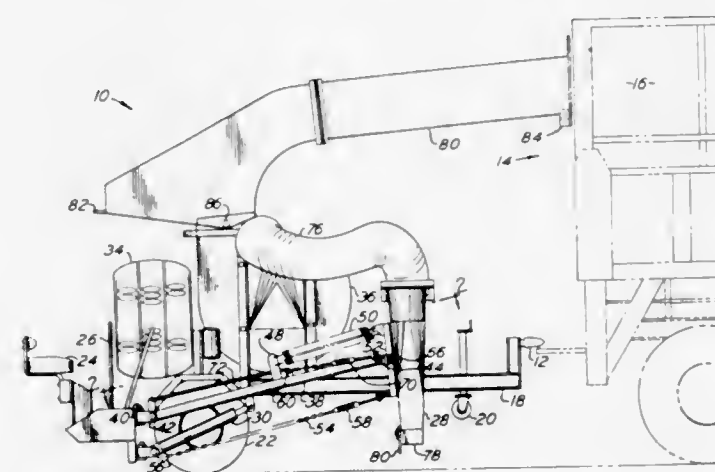
mit the movement of the nozzle to lower positions by an urging thereof such as by the user's foot on the upper surface of the nozzle. An indicator is provided for indicating the elevational setting of the nozzle.

### 3,722,025 LEAF COLLECTOR

William Gledhill, Gallon, Ohio, assignor to Gledhill Road Machinery Company, Gallon, Ohio  
Filed July 12, 1971, Ser. No. 161,551  
Int. Cl. A47i 5/00

U.S. Cl. 15-340

10 Claims



Leaf collecting apparatus including a nozzle positioned close to the ground to serve as an inlet for leaves which are conducted through appropriate ducting to a refuse container. A conventional blower is used to apply a vacuum for sucking the leaves into the nozzle. Hydraulically actuated piston and cylinder combinations are used for adjusting the location of the nozzle both vertically and horizontally to position it for effective operation. Means are also provided for allowing the nozzle to pivot about both a horizontal and vertical axis when said nozzle encounters an obstruction. Biasing means are provided for automatically returning the nozzle to its adjusted position after the nozzle moves away from the obstruction.

### 3,722,026 CASTER GLIDE

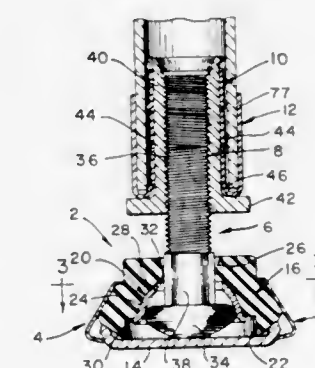
Julius B. Wilhelm, Hull, Mass., assignor to TRW Inc., Cleveland, Ohio  
Filed June 17, 1971, Ser. No. 154,091  
Int. Cl. A47b 91/06

U.S. Cl. 16-42

6 Claims

A caster glide for supporting the hollow tubular leg of a furniture piece. A hollow glide shoe which rests on a floor or floor covering includes a semispherical swivel plate non-rotatably seated in the shoe. Also seated within the shoe and

bearing against the undersurface of the swivel plate in the manner of a ball-and-socket joint is the semispherical head of a bolt, the shank of which projects through an opening in the swivel plate and beyond the upper surface of the shoe. The bolt shank is threaded into a nut which seats in the tubular furniture leg and is retained therein by a fastener secured to the nut and bitingly gripping the internal wall of the tubular leg. The nut carries a load bearing means which is disposed beneath the end of the tubular leg when the nut is fully seated



therein and is adapted to transmit a load on the furniture piece to the nut, the bolt and the shoe. The shoe is axially adjustable relative to the furniture leg by turning the bolt into or retracting same from the nut and the shoe is pivotal about the ball-and-socket joint of the swivel plate and bolt head for adjusting its angular orientation relative to the bolt to provide flush seating on the floor or floor covering. The bolt and swivel plate embody cooperating wrenching means which positively engage to insure effective turning of the bolt responsive to rotation of the shoe.

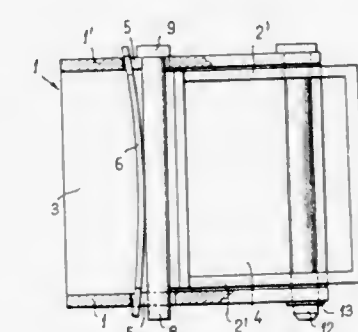
### 3,722,027 HINGES WITH BUILT-IN DOOR CHECK

Pierre Ventre, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt and Automobiles Peugeot, Paris, France  
Filed April 9, 1971, Ser. No. 132,770

Claims priority, application France, April 10, 1970, 7013006

Int. Cl. E05f 3/20; E05d 11/08  
U.S. Cl. 16-50

4 Claims



This hinge device with friction-type built-in door retainer is designed more particularly for the side doors of automotive vehicles and comprises two straps, one strap having its parallel wings pivoted to a pivot pin extending between the parallel wings of the other strap, the wings of the first strap being interconnected, beyond said pin, by a first door holding member lying on the path of a second door holding member secured between the wings of the other strap. One of these two holding members is adapted to recede against the resilient force of a spring when engaged by the other member.



3,722,028

## SLIDING PANEL ROLLER ASSEMBLY

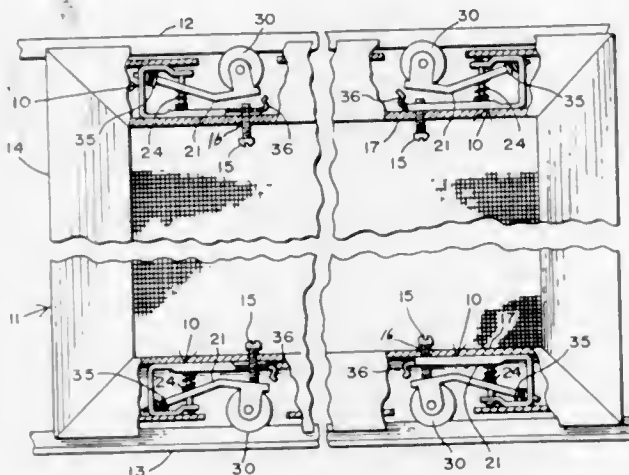
Michael P. Schoenbrod, Miami, Fla., assignor to Aircheck, Inc., Miami, Fla.

Filed Feb. 22, 1972, Ser. No. 227,719

Int. Cl. E05d 13/02

U.S. Cl. 16-91

2 Claims



A roller assembly for sliding panels having a U-shaped frame with one leg portion being longer and in spaced relation to the other, and a roller carrying arm portion pivoted adjacent to the shorter leg portion and releasably held at its other end by a latch at the free end of the longer leg portion. A first coil spring yieldingly urging the arm to remain on the latch and a second coil spring yieldingly urges the arm to swing in a direction away from the longer leg portion and a bolt threaded in a bore on the longer leg portion engages the arm whereby upon threading the bolt, the arm is released from the latch.

3,722,029

## COMBINED HINGE AND GLASS DOOR UNIT

William J. Horgan, Jr., Pittsburgh, Pa., assignor to Blumcraft of Pittsburgh, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 820,541, April 30, 1969, Pat.

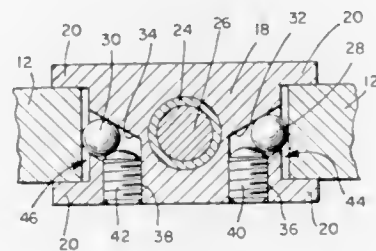
No. 3,555,733. This application Jan. 18, 1971, Ser. No.

107,232

Int. Cl. E05d 7/04

U.S. Cl. 16-129

18 Claims



A hinge means for use with glass doors having solid frames includes a hinge element for a pivotal hinge of the type used where the door is pivoted at top and bottom, which element is laterally adjustable to provide means for correcting misalignment after the door has been hung.

3,722,030

## SELF-LATCHING HINGE

Tom E. Smith, Los Angeles, Calif., assignor to Jaybee Manufacturing Corp., Los Angeles, Calif.

Filed Sept. 15, 1971, Ser. No. 180,746

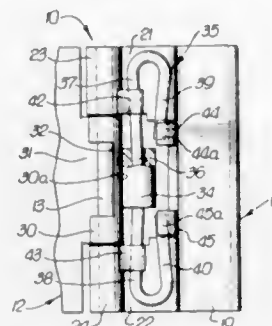
Int. Cl. E05d 11/08

U.S. Cl. 16-142

9 Claims

A self-latching hinge includes a roller-biasing wire spring

retained against the knuckles of one hinge leaf by ears formed from incompletely curled portions of the bearing sleeves of



that leaf and by tabs extending parallel to the leaf attachment plate and bent forwardly into a plane parallel with the ears.

3,722,031

## DOOR CLOSING AND CHECK DEVICE FOR REFRIGERATORS, FREEZERS AND THE LIKE

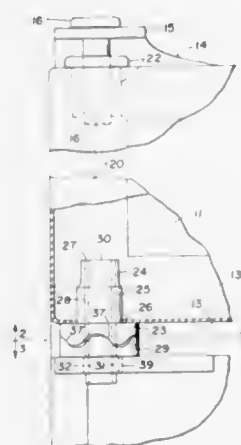
Joseph F. Bourgeois, Cedar Rapids, Iowa, assignor to Amana Refrigeration, Inc., Amana, Iowa

Filed April 20, 1971, Ser. No. 135,628

Int. Cl. E05f 1/06

U.S. Cl. 16-153

2 Claims



A door closing and check device for refrigerators, freezers and the like is disclosed which employs a stationary bushing, including a hinge pin formed integrally therewith, mounted to the cabinet having four upperly directed cam lobes which engage four complementary, downwardly directed cam lobes of a rotatable bushing mounted to the door and rotating in its hinge axis. The lobes of the two bushings are located relative to each other to cause the weight of the door to swing the same to its closed position from a partially open position as well as to check and maintain the door in two successively wider open positions of approximately 85° and a 175°. The two bushings are also formed in a manner to prevent their improper installation and consequent malfunction in the door and cabinet.

3,722,032

## APPARATUS FOR CUTTING AND REMOVING MEAT FROM BONES

James E. Draper, and Jack J. Rejsa, both of Minneapolis, Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Division of Ser. No. 716,137, March 26, 1968, Pat. No.

3,570,050. This application Nov. 17, 1970, Ser. No. 90,302

Int. Cl. A22c 17/04

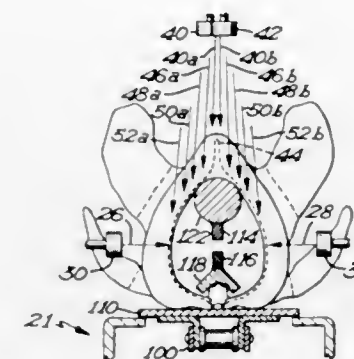
U.S. Cl. 17-1 G

6 Claims

An apparatus for removing meat from bones of animals, e.g., chickens, consisting of a nozzle for forming a jet of a liquid (water or other liquid) having the form of a relatively thin sheet composed of several aligned parallel streams. The jet is directed at the animal preferably at a relatively small

angle of incidence to the surface of the bone. The animal is placed upon a conveyor and advanced relative to the jet to

truder horn onto a receiving surface, such as a conveyor, a knife is supported for movement adjacent the horn outlet and between the horn and receiving surface for severing the formed or extruded material. If the forming or extruding apparatus is operated intermittently, the knife is automatically actuated in response to the stopping of the former or extruder.



form an elongated knife-like cut through the meat. In a typical application breast fillets are removed from the sternum (keel) and rib cage.

3,722,033

## FOWL DRESSING TOOL

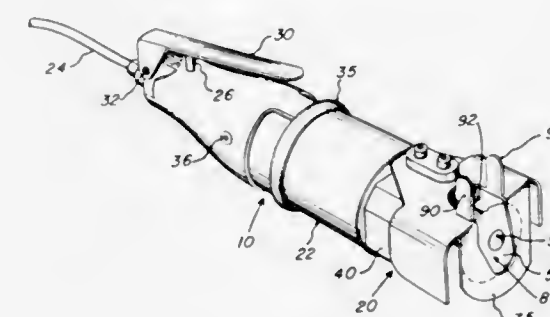
Neil O. Swan, Route 1, St. Cloud, Minn.

Filed Sept. 27, 1971, Ser. No. 184,086

Int. Cl. A22b 3/08

U.S. Cl. 17-11

9 Claims



This invention relates to a tool for removing oil glands or sacs from fowl carcasses and incorporates a pneumatic rotary motor with a cutter and guard section thereon designed to locate the cutter blade in an area where the severing operation can be effected with a minimum of carcass loss and in a minimum of time. The guard structure includes a guard to expose only a portion of the blade for safety purposes and guides at the area exposed to insure accurate location of the blade in the severing operation.

3,722,034

## CUT-OFF DEVICE FOR FORMING APPARATUS

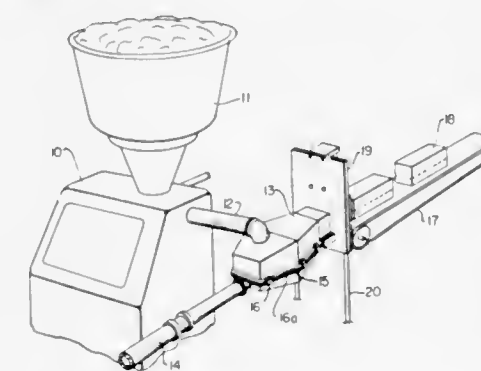
Valerio A. Baccetti, San Leandro, Calif., assignor to Armour and Company, Chicago, Ill.

Filed Nov. 9, 1970, Ser. No. 87,937

Int. Cl. A22c 7/00

U.S. Cl. 17-32

14 Claims



In the forming or extrusion of comminuted material products, such as meat loaf products, through a forming or ex-

3,722,035  
METHOD FOR REMOVING MEAT FROM THE SHELLS OF BIVALE MOLLUSKS

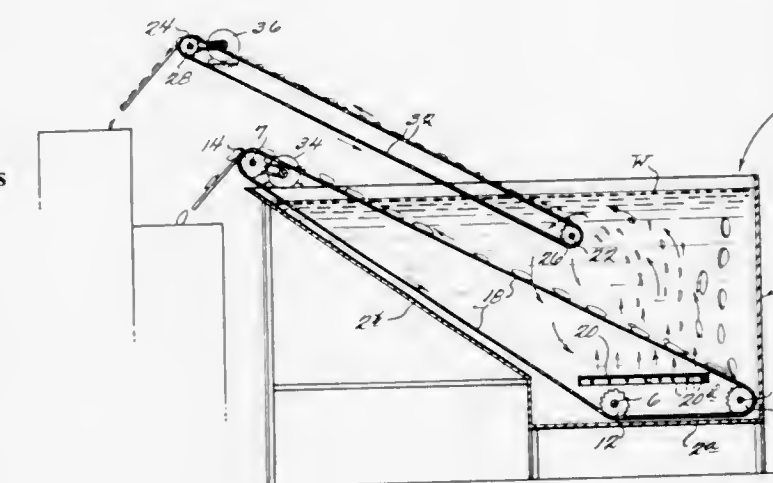
Fletcher Hanks, P.O. Box 70, Easton, Md.

Filed Jan. 27, 1971, Ser. No. 110,047

Int. Cl. A22c 29/00

U.S. Cl. 17-48

2 Claims



Bivalve mollusks, such as clams, are, with meat intact, heated sufficiently to obtain the partial opening of the shells and the withdrawal of at least one end of the adductor muscle from the shell; and while the bivalve mollusk is in this condition it is permitted to fall downwardly into and through a body of water which is devoid of a quantity of salt which would have any deleterious effect upon the meat of the bivalve, or which would make the expended water objectionable for municipal sewage operations; then there is introduced into the lower portion of the body of water compressed air of sufficient magnitude and so located as to provide upwardly rising air bubbles which are capable of assisting in the separation of the meat from the shell and the flotation of the meat upwardly into the upper portion of the body of water while permitting the empty shells to continue to fall downwardly therein; the separated meats are removed from the upper portion of the body of water; and the empty shells are independently removed from the lower portion thereof.

3,722,036

## APPARATUS FOR MOUNTING TOP ROLLERS

Franz Fuchs, Magstadt, Germany, assignor to Kugellagerfabriken Gesellschaft mit beschränkter Haftung, Schweinfurt, Germany

Filed March 3, 1971, Ser. No. 120,535

Claims priority, application Germany, March 4, 1970, P 20 10 104.6

Int. Cl. D01h 5/50

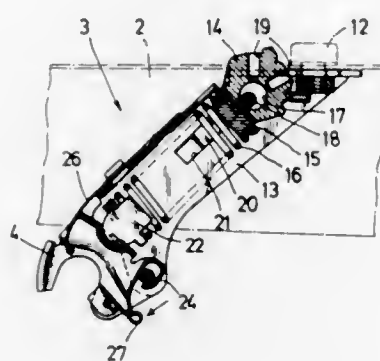
U.S. Cl. 19-282

12 Claims

A top roller for a drawing mechanism is mounted on a link



at the end of a housing. A spring is mounted within the housing to press against the link. Cam means is provided to vary the spring rate of the spring to adjust the pressure on the roller.



3,722,037

## LOCATING PLUG

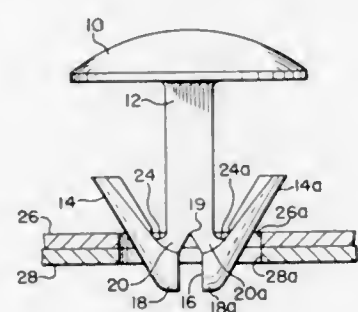
Joseph H. Jaeger, Indianapolis, Ind., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Aug. 23, 1971, Ser. No. 178,518

Int. Cl. A44b 21/00; F16b 13/04

U.S. Cl. 24—73 PF

2 Claims



A locator plug in initial form of a one-piece plastic fastener of the type having an enlarged head at one end of a shank with wings or arms diverging from the opposite end of the shank toward the head and adapted to be passed through apertures in two or more workpieces such as sheet material panels or other structural members which are trapped between the head and the wings; and with the wings joined to the adjacent end of the shank by hinge connections affording maximum pivotal movement of the wings from positions substantially parallel to the shank to positions substantially normal thereto.

3,722,038

## PIPE CLAMPING DEVICE

Frederich Otto Wilhelm Arntz, 184 Oakridge Dr., York, Pa., and Gurney Elden Walton, 322 Reinecke Dr., York, Pa.

Filed Feb. 9, 1972, Ser. No. 226,563

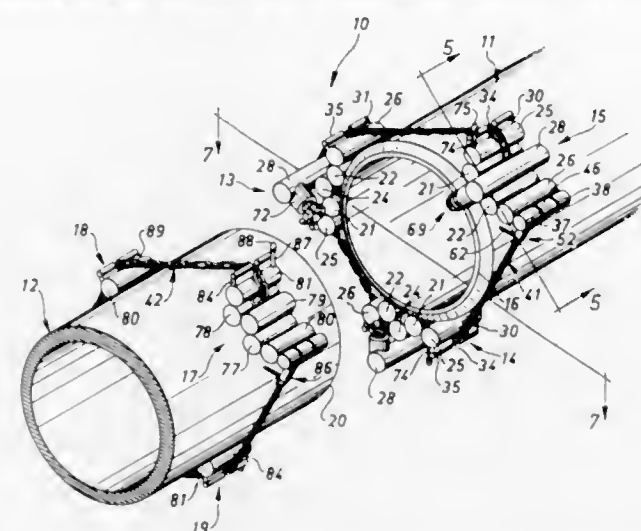
Int. Cl. A44b 21/00; B25b 1/20; F16l 13/02

U.S. Cl. 24—81 PE

35 Claims

A pipe-clamping device for positioning two pipe sections in correct axial alignment and with a desired axial end separation therebetween comprises two sets of pipe-clamping shoes which are moved into positive clamping engagement with first and second pipe sections respectively by chains engaging those shoes and extending around respective ones of the pipe sections, the shoes being provided with slotted plates for receiving selected links of the chains and terminal turnbuckle adjusting mechanisms on the chains being used to tighten them and to provide the positive clamping engagement. Radially disposed and adjustable pipe-positioning or centering pins are provided on extensions of the first set of shoes for obtain-

ing correct axial alignment of the second pipe section with the first pipe section. Removable turnbuckle mechanisms extend



3,722,039

## PLASTIC ZIPPER/CLOSURE FOR FLEXIBLE CONTAINERS

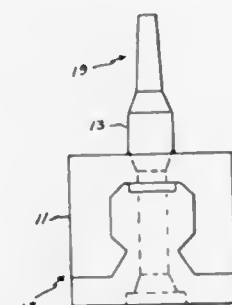
William Paul Robbins, 504 Manchester Rd., Middletown, Ohio, and Clifford R. Bullock, 522 Cheshire, Fort Woatan Beach, Fla.

Filed Feb. 9, 1971, Ser. No. 113,837

Int. Cl. A44b 17/00

U.S. Cl. 24—201 C

6 Claims



A series of flexible and elongated plug or rod-like elements installed along one side of the normally zipper-closed seam of a flexible, aircraft engine-container are mated in tight-fitting relation within a series of matching openings formed along the opposite side of the seam to thereby counteract any tendency of the seam to open under stress.

3,722,040

## WATCH BRACELET END CONNECTION STRUCTURE

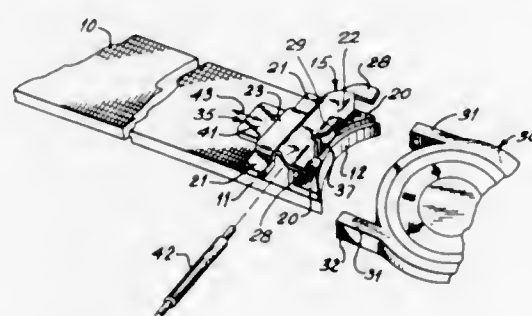
Stanley Meyerson, 111 Ocean Avenue, Brooklyn, N.Y.

Filed Oct. 22, 1971, Ser. No. 191,605

Int. Cl. A44c 5/00

U.S. Cl. 24—265 B

9 Claims



A watch bracelet end connection including a hollow body having a pair of intersecting through passageways, one extending generally transversely of an associated bracelet and the

other generally longitudinally of the bracelet. And a connector pin receiver insertable into the longitudinally extending passageway for adjustable location therein to selectively locate the pin in said transversely extending passageway, the receiver having a deformable element for locking the receiver in position relative to the hollow body.

3,722,041

## RING CLAMP

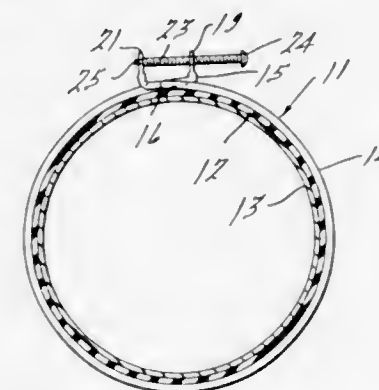
Robert A. Munse, Troy, Mich., assignor to Microdot Inc., Troy, Mich.

Filed July 13, 1971, Ser. No. 162,174

Int. Cl. B65d 63/02

U.S. Cl. 24—283

1 Claim U.S. Cl. 29—25.11



A ring is constructed from a length of wire formed into a circle with the ends bent at right angle and tilted at an angle away from each other. The ends are flattened normal to the plane of the ring to form parallel flanges through which apertures are provided. The aperture in one of the flanges is threaded for supporting a screw of substantial length having a head at one end and a reduced cylindrical nib at the other end which extends into the aperture of the other flange. When the ends of the ring are offset and overlapped the nib at the end of the screw extends into the aperture in the other flange and due to the opposite angular tilt to the flanges the axis of the screw falls in a plane through the engaged sides of the ring. By advancing the screw through the threaded aperture the flanges are moved away from each other thereby tightening the ring about a tube to be sealed.

3,722,042

## STRAND TREATMENT

Robert K. Stanley, Media, and Ira Schwartz, Philadelphia, both of Pa., assignors to Techniservice Corporation, Kennett Square, Pa.

Filed Jan. 31, 1972, Ser. No. 222,135

Int. Cl. D02g 1/12

U.S. Cl. 28—1.6

16 Claims



While being fed into a laterally confining region to be retained temporarily and compressively crimped therein, laterally spaced textile strands are traversed laterally to and

fro along the entrance to the region. The resulting uneven cross-sectional distribution of crimped strand accumulation in the region is conducive to separation of individual strands upon exiting from the region.

3,722,043

## REINFORCED SHADOW MASK FOR COLORED TV PICTURE TUBES

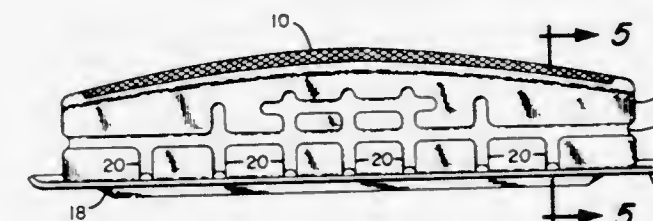
Myron C. Kirchner, Itasca, Ill., assignor to Tubal Industries, Inc., Elk Grove Village, Ill.

Division of Ser. No. 822,792, April 2, 1969, Pat. No.

3,639,799. This application April 19, 1971, Ser. No. 135,307

Int. Cl. H01j 9/00

2 Claims



A shadow mask for color TV picture tubes contains the conventional foraminous or translucent area formed by a multitude of miniature apertures in a curved portion of a thin metal sheet through which the electron beams pass in traveling from the electron guns at the rear of the tube to the viewing face at the front of the tube. Around the translucent area is an imperforate section formed into a wall and a flange and containing strengthening ribs. A reinforcing ring rigidly attached to the flange provides additional stability. Ordinarily, the mask assembly is mounted to the glass bulb of the picture tube by metal, spring-like members which are attached to the wall of the mask.

3,722,044

## FABRICATION OF FOCUS GRILL TYPE CATHODE RAY TUBES

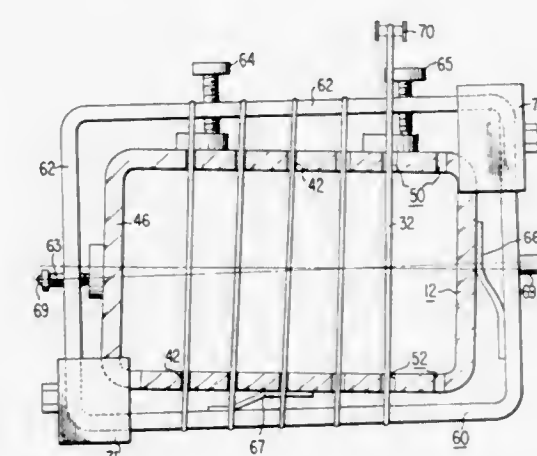
Harold Bell Law, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 10, 1971, Ser. No. 197,267

Int. Cl. H01j 9/18

U.S. Cl. 29—25.16

5 Claims



Prior to assembly of the envelope of a focus grill tube, the cup-shaped panel portion of the envelope is wound with a wire helix which is disposed around and along the panel, each turn of the helix extending across the open side of the panel in predisposed relation with a pattern of phosphor strips on the bottom wall of the panel. Preferably, the helix turns are disposed in grooves in the end surface of the side wall of the panel, and portions of each helix turn are disposed about a member having a thermal expansion greater than that of the helix wire.



3,722,045

**METHODS OF IMPROVING ADHERENCE OF EMISSIVE MATERIAL IN THERMIONIC CATHODES**

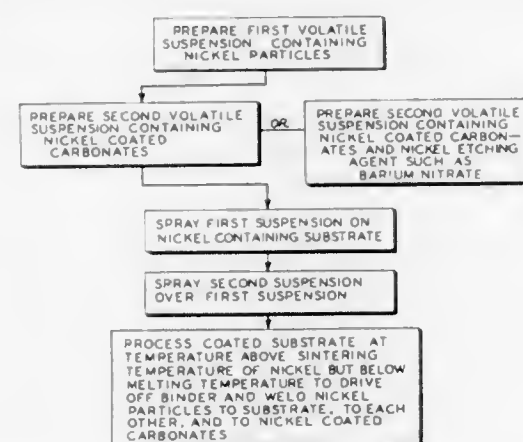
William E. Buescher, Emporium, Pa., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed June 30, 1971, Ser. No. 158,576

Int. Cl. H01j 9/00

U.S. Cl. 29—25.17

6 Claims



An application of metal particles comprised substantially of nickel to a nickel containing cathode substrate is followed by the application of potentially emissive materials comprised of nickel coated carbonates of barium and/or strontium and/or calcium. The particles and nickel coated carbonates are diffusion bonded or welded to the substrate and to each other after the cathode is mounted in a tube, simultaneously with activation of the cathode. The coating thus provided is very adherent and reduces arcing during high voltage applications. An alternate embodiment for further increasing adherence of the emissive material comprises adding a nickel etching agent, such as barium nitrate, to the potentially emissive material suspension. During the temperature increase noted above to activate the cathode, the etching material first melts and densifies the carbonates and then decomposes to etch the nickel particles and the substrate. Further heating changes the etching material and stops the reaction.

3,722,046

**APPARATUS AND METHOD FOR PRODUCING FOUR PIECE LEAD WIRE ASSEMBLIES**

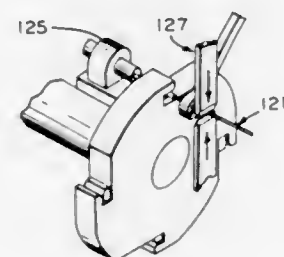
Robert H. Alexander, Russell, and Paul E. Ballard, North Warren, both of Pa., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed Sept. 14, 1971, Ser. No. 180,313

Int. Cl. H01j 9/46

U.S. Cl. 29—25.19

8 Claims



Apparatus and method for simultaneously producing four piece lead wire assemblies during which a plurality of wires are fed at varying intervals to a rotating turret as it revolves through a series of three work stations and one idle station. At the first work station, a first lead wire is fed into the turret where it is clamped by a clamping means located within the turret. A cutter then cuts the first wire after which this newly formed first piece is rotated to the second work station wherein a second wire is fed, cut, and bonded to one end. This joined assembly is then rotated to the idle station where, after

a predetermined time interval, it is rotated to the third work station. Here, a third wire is fed, cut and joined to the unbonded end of the second lead. During this same time period, a fourth wire is fed, cut, and joined to the unbonded end of the first lead. The entire four piece lead wire assembly is then ejected from the turret into a receiving magazine.

3,722,047

**HIGH CHAIR FORMING APPARATUS**

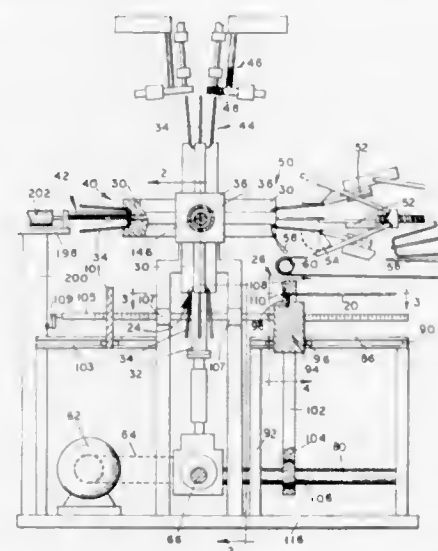
Raymond H. Hulst, Rte. 1, Hamilton, Mich.

Filed Oct. 18, 1971, Ser. No. 190,088

Int. Cl. B21f 15/08, 45/00

U.S. Cl. 29—34 D

21 Claims



An apparatus for forming support members for reinforcing rods. A pair of crossed wires are cut and bent into a U-shape and thereafter retained in a concave cavity of the forming die which is rotated about a rotary turret to a weld station at which the crossed wires are welded together. The welded U-shaped wires are then transferred in the die to a capping mechanism or to an end bending mechanism. The capping mechanism applies caps to the ends of the wires. The end bending mechanism bends the ends of the wires upwardly. The capping mechanisms and the end bending mechanism are adjustable to accommodate wires of different lengths for making support members of different heights.

3,722,048

**SPINDLE CONTROL**

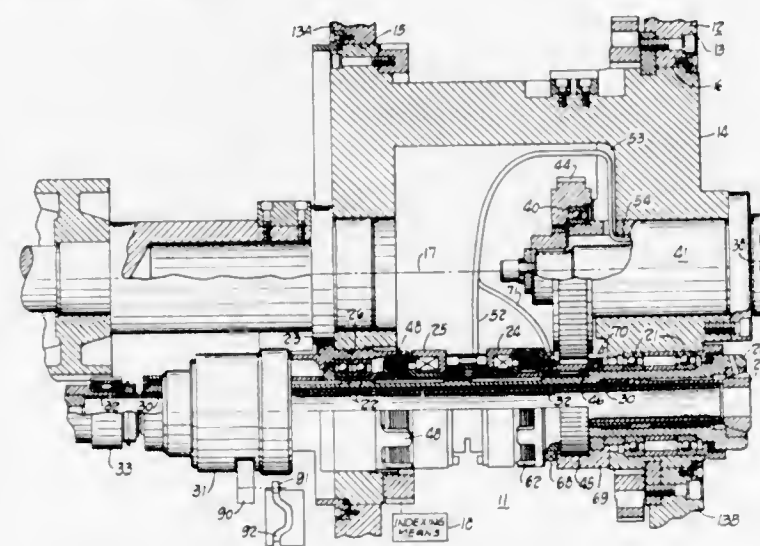
Karl P. Schubert, Mayfield Heights, Ohio, assignor to Acme Corporation, Cleveland, Ohio

Filed Sept. 15, 1971, Ser. No. 180,699

Int. Cl. B23b 9/04, 31/26

U.S. Cl. 29—37 R

20 Claims



A spindle control for a multiple spindle automatic bar machine tool is disclosed with the machine tool being one hav-

3,722,051

**METHOD OF MAKING A RADIAL BEARING CONTAINING END-LOADED FILAMENTS**

Bernard G. Stiff, Lynnfield, and Thomas M. Finelli, North Andover, both of Mass., assignors to Avco Corporation, Cincinnati, Ohio

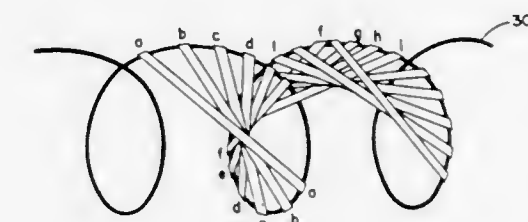
Division of Ser. No. 65,646, Aug. 20, 1970, Pat. No. 3,675,980.

This application Feb. 14, 1972, Ser. No. 226,344

Int. Cl. B21d 53/10; B23p 17/00

U.S. Cl. 29—149.5 NM

1 Claim



ing a spindle carrier journaled in a frame for indexable rotation about an axis. A plurality of bar receiving rotatable spindles are journaled in the spindle carrier and an electric clutch and brake unit is provided within the length of the spindle carrier for each spindle with the clutch and brake unit having a small enough outside diameter to pass through one of the end openings of the spindle carrier during manufacture and having a sufficiently large inside diameter to accept bar workpieces through the hollow spindle. Collets are provided in each spindle to grip the bar workpieces and are actuated by means which has no relative rotation between the collet actuator and the finger holder sleeve on each spindle, yet permits relative indexing movement between each sleeve and the collet actuator. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

3,722,049

**VERTICAL MULTIPLE SPINDLE MACHINE**

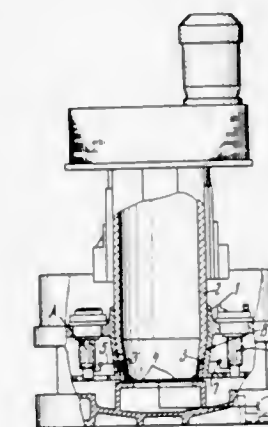
Artur Markovich Itin, and Ernst Khaimovich Agishtein, both of Moscow, U.S.S.R., assignors to Moskovsky Stankostroitelny Zavod, Moscow, U.S.S.R.

Filed July 28, 1971, Ser. No. 166,889

Int. Cl. B23p 23/02

U.S. Cl. 29—38 A

2 Claims



In a vertical multiple spindle machine, the outlets of the oil supply passages provided in the stationary column mounting a table capable of revolving about this column and carrying hydraulic clamping means and the oil inlets of the table are disposed at the same level and arranged so that in each fixed position of the table a regular inlet thereof communicates with the same outlet of the passage of the column, while in the process of turning the table from one fixed position to another the inlets of the table alternately and successively communicate with the remaining outlets of the passages of the column.

3,722,050  
ROLLERS

Abe Samuels, Chicago, Ill., assignor to Speed-O-Print Business Machines Corporation, Chicago, Ill.

Filed Nov. 16, 1970, Ser. No. 89,642

Int. Cl. B21b 31/08

U.S. Cl. 29—129.5

3 Claims



A roller having a resilient body member mounted on a shaft, with the body member embodying integral hub portions of reduced cross section extending from the opposite ends thereof.

3,722,052

**METHOD OF FORMING A STRUCTURAL UNIT**

Andrew J. Toti, 311 W. River Rd., Modesto, Calif.

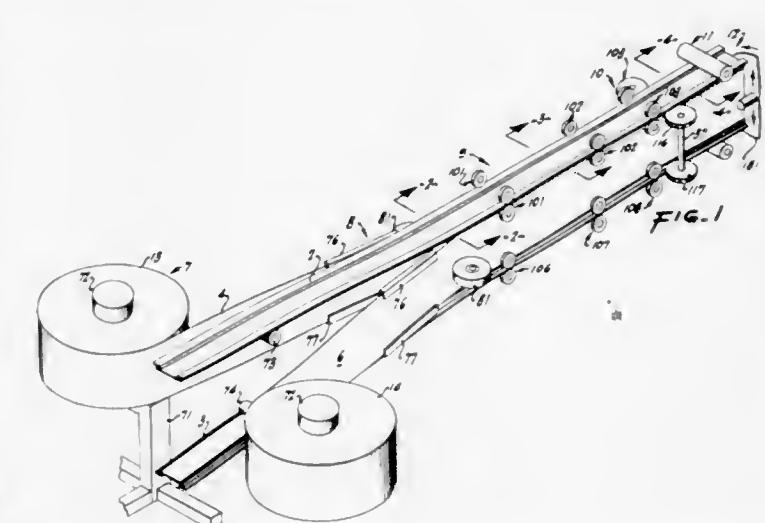
Continuation of Ser. No. 888,717, Dec. 29, 1969, abandoned.

This application Jan. 21, 1972, Ser. No. 219,694

Int. Cl. B23p 17/00, 11/00

U.S. Cl. 29—155 R

37 Claims



A method of forming a structural unit, such as structural beam comprised of a pair of opposed metal extrusions having preformed slot structures extending therealong in which edge portions of a pair of opposed sheet metal side wall members are secured by deforming certain of such members relative to the others so that secure interconnection is effected without requiring separate fasteners. The method disclosed employs predetermined lengths of the metal extrusions which are joined with substantially continuous lengths of sheet metal side wall panels into a unitary assembly which is subsequently cut to a predetermined length determined generally in accordance with the length of the extrusions employed.



3,722,053

**METHOD OF MAKING WELL PRESSURE SEALING CUP REINFORCING STRUCTURE**

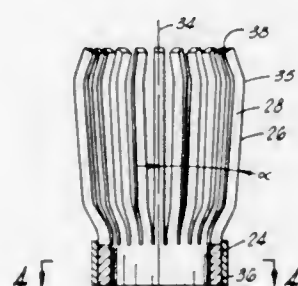
Robert F. Berry, Dallas, and Henry W. Blackwell, Venus, both of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed July 26, 1971, Ser. No. 166,171

Int. Cl. B23p 15/16

U.S. Cl. 29—163.5

9 Claims



An improved reinforcing structure and method of making said structure are disclosed. The improved reinforcing structure is a polyfurcated cylinder having an integral base portion and a tines portion. The method of manufacture includes the steps of rolling a polyfurcated plate with an integral base and tines portion, rolling the base portion into a cylindrical shape and securing the abutting ends of the base.

3,722,054

**HOLD-IN TRANSFER APPARATUS**

Albert J. Bende, and Ralph L. Defalco, both of West Chester, Pa., assignors to Gindy Manufacturing Corporation, Downingtown, Pa.

Filed Oct. 20, 1971, Ser. No. 190,873

Int. Cl. B23p 19/00, 11/00

U.S. Cl. 29—200 J

4 Claims



Apparatus for applying suction to a sheet while simultaneously applying a hold-in force to loose rivets contained in apertures in said sheet to enable the said sheet to be lifted and step-advanced so that the rivets so engaged may be threaded into apertures of a next adjacent sheet prior to heading the rivets to secure the said sheet and said next adjacent sheet together.

3,722,055

**CARTRIDGE OPENING DEVICE**

Anthony C. D'Ercole; James E. Ferris, both of Rochester, and David N. Schwardt, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 9, 1971, Ser. No. 178,955

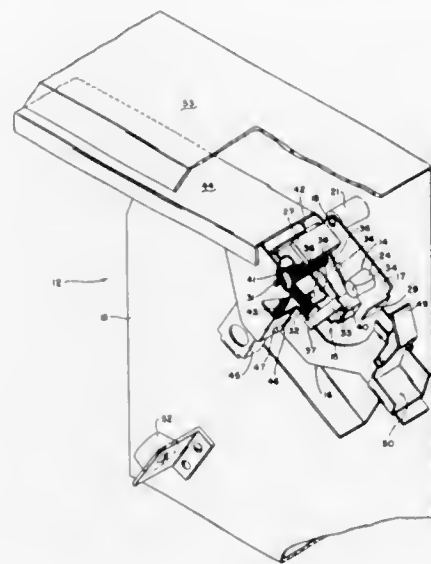
Int. Cl. B23p 19/00

U.S. Cl. 29—200 D

9 Claims

A device for breaking open a frangible cartridge which is adapted to contain a web, the cartridge being of the kind provided with spaced web supply and take-up chambers and with an interconnecting web guide channel. The device includes a fixture for engaging the web take-up chamber of such a cartridge in a manner preventing movement of the web take-up chamber in at least one direction and a guide surface which serves to direct the web take-up chamber into engaged relation with the fixture. An offset portion of the guide surface retains the web take-up chamber at the fixture. The device

further includes a breaker lever which is mounted for movement relative to the fixture for moving, generally in the one direction, the web supply chamber and web guide channel of a



cartridge whose web take-up chamber is engaged by the fixture. Accordingly, the cartridge can be broken open for extraction of a web from the web take-up chamber.

3,722,056

**KNOT SETTING DEVICE IN A FEED MECHANISM FOR HELICOIDAL WIRE SPRINGS**

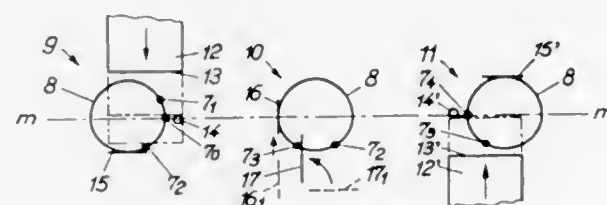
Walter Spuhl, Saint Gall, Switzerland, assignor to Spuhl Ag., Gallen, Switzerland

Filed Sept. 17, 1971, Ser. No. 181,382

Int. Cl. B23p 19/00

U.S. Cl. 29—200 A

12 Claims



A feeding mechanism in which wire coils are supplied in succession between a pair of belts, clamped by the belts and fed stepwise by the belts until a given plurality of coils are accumulated, whereupon a number of such coils are removed together for assembly as a unit. Each coil has knots at its opposite ends and three mechanisms are arranged in sequence in the path of travel of the coils between the belts for angularly turning those coils located at one end of each of the units in stages in the pauses between stepwise advance of the belts so that such knots in the end coils face the other coils in the opposite direction.

3,722,057

**BEARING SERVICE TOOL**

Dwayne R. Barnes, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 29, 1971, Ser. No. 184,725

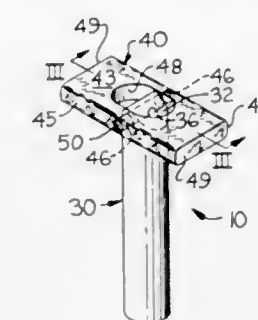
Int. Cl. B23p 19/00; B21d 53/10; B23p 7/00

U.S. Cl. 29—200 D

7 Claims

A bearing service tool for removing and installing a sleeve-type half bearing, upon which is mounted the journals of an internal-combustion-engine crankshaft, without removing the crankshaft. The tool has an elongated rod selectively insertable into an angularly-disposed oil passage in the crankshaft. Pivotally mounted upon the rod is a bearing-engaging member which is capable of contacting an adjacent end of the half

bearing in intimate facing relationship therewith irrespective of the angular disposition of the particular oil passage in which



the rod resides to move the half bearing relative to its associated retaining seat as the crankshaft is rotated.

3,722,058

**FASTENING DEVICE AND COOPERATING TOOL MEANS**

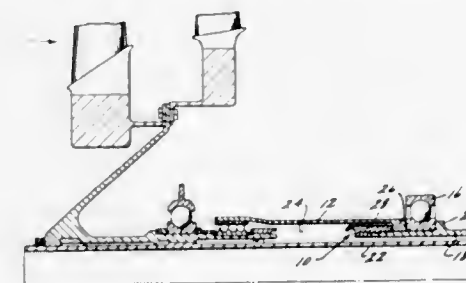
Robert J. Corsmeier, Cincinnati, Ohio, assignor to General Electric Company

Filed Sept. 30, 1971, Ser. No. 185,321

Int. Cl. B23p 19/04; F16c 43/00

U.S. Cl. 29—200 D

8 Claims



Fastening means include a threaded main body member and resiliently movable locking means for preventing relative rotation between the main body member and the shaft when the former has been threaded to its desired position on the shaft. Cooperating tool means are provided for installing and removing the fastener means and include inner and outer telescoped tools which are formed with radial ears which interfit with axially extending main body member lugs so as to grip and transmit torque to the main body member. The inner tool includes an annular portion which telescopes within the main body member to resiliently deflect the locking means during installation and removal.

3,722,059

**MACHINE FOR MAKING A HEAT EXCHANGER TUBE**

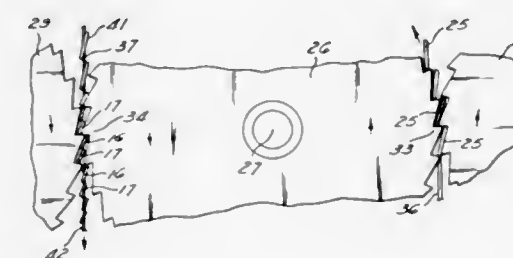
Herbert J. Venables, III, Cleveland, Ohio, assignor to The Venables Machine and Tool Company, Cleveland, Ohio

Filed April 19, 1971, Ser. No. 135,183

Int. Cl. B23p 15/26

U.S. Cl. 29—202 D

6 Claims



Apparatus for forming spine-finned heat exchanger tubing is disclosed in which a strip of metal is slit at a first cutting sta-

tion to provide intermediate spines having a width along the length of the strip equal to twice the desired spine width. The intermediate spines are then cut in half at a second cutting station. The apparatus for slitting the strip utilizes a main cutter roll in combination with two or more cutter rolls located at peripherally spaced locations. The depth of cut of alternate spines is varied to improve strength and heat flow characteristics. The tube is wound so that pairs of spines are axially offset from each other and peripherally diverging from the adjacent spine of an adjacent pair.

3,722,060  
MACHINE

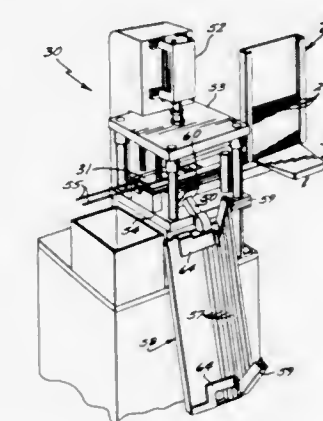
Floyd E. Gaiser, 1701 East Carnegie Avenue, Santa Ana, Calif.

Filed July 27, 1971, Ser. No. 166,530

Int. Cl. H05k 13/00

U.S. Cl. 29—203 D

15 Claims



The present invention relates to apparatus for the mass production of modules; and more particularly to the mass production of electronic modules adapted for use in an printed circuit board. The present application discloses apparatus for mass producing such modules by feeding suitable carrier strip formations onto an indexing trackway, utilizing suitable indexing fingers for moving said carrier strips along said trackway, cutting and forming carrier strip portions to desired configurations, severing the carrier strips to produce individual modules, disabling said machine while the carrier strip is moving or is improperly positioned, delivering the severed finished modules along an output trackway into suitable shipping containers, and salvaging any scrap metal that may comprise precious metals thereon. Mechanism is disclosed for providing said indexing fingers with strictly vertical movement, so that the carrier strips are not inadvertently moved in a horizontal direction. A unit, with suitable flexibility for handling various types and numbers of modules, is disclosed.

3,722,061

**WIRE WRAP PIN POINTERNONE**

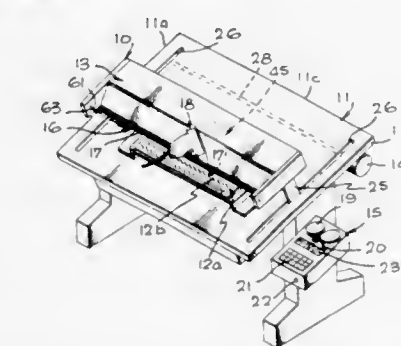
Lowell Bowles, 2236 Hauser Blvd., Los Angeles, Calif.

Filed Aug. 23, 1971, Ser. No. 173,913

Int. Cl. H05k 13/04

U.S. Cl. 29—203 B

24 Claims



An electromechanical pointer indicates the specific terminal board pin to which a wire is to be wrapped. The ap-



paratus comprises a ruled reference carriage driven along one axis to align a carriage ruler edge with the terminal board row containing the specific pin. A plurality of illuminable optical pointers, each comprising a lamp and an optical guide, are spaced along the ruler edge. One or more of the optical pointers is illuminated to indicate the specific pin to be wrapped. A photo-optical vernier permits the optical pointer lamps also to control positioning of the carriage along the one axis. A tool sensing light beam cooperates with the carriage control mechanism to indicate that the wire wrap gun has been correctly positioned at the appointed pin.

3,722,062

## COMPONENT INSERTION SYSTEM

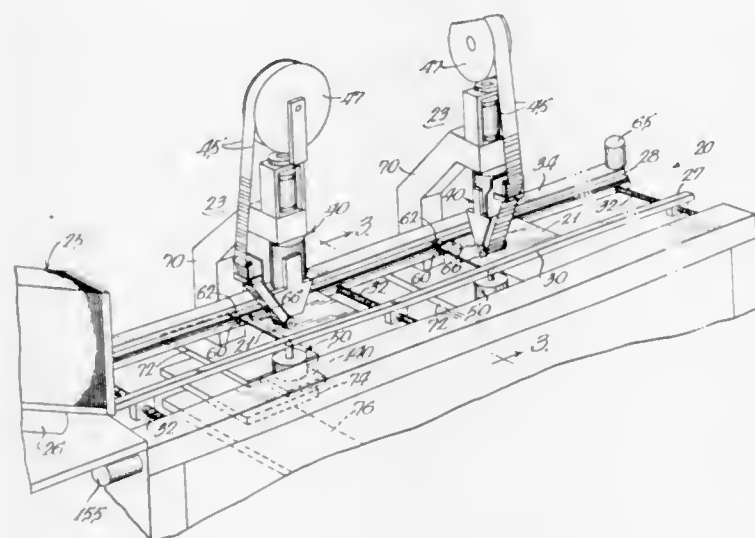
Hashem M. Gharaibeh, Palatine, Ill., assignor to Warwick Electronics Inc., Chicago, Ill.

Filed Nov. 4, 1971, Ser. No. 195,769

Int. Cl. H05k 13/04

U.S. Cl. 29—203 B

19 Claims



An indexing conveyor transfers circuit boards between spaced insertion stations at which alignment pins clamp the circuit boards to fixed reference positions. A component insertion head and a clinch mechanism are horizontally driven about two axes to a programmed insertion position, and then are vertically driven to perform an insertion operation. After each insertion station inserts a plurality of different components at different programmed positions, the alignment pins are withdrawn and the conveyor is indexed. The index conveyor and all insertion stations are controlled by a time-shared computer which stores, for each insertion station, a separate program comprising sets of numerical control movement commands.

3,722,063

## APPARATUS FOR INSERTING INSULATORS AND COIL TURNS INTO THE SLOTS OF A MAGNETIC CORE

Richard B. Arnold, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Continuation-in-part of Ser. No. 875,895, Nov. 12, 1969, abandoned, which is a continuation-in-part of Ser. No. 748,405, July 29, 1968, abandoned. This application Dec. 28, 1970, Ser. No. 101,638

Int. Cl. H02k 15/00

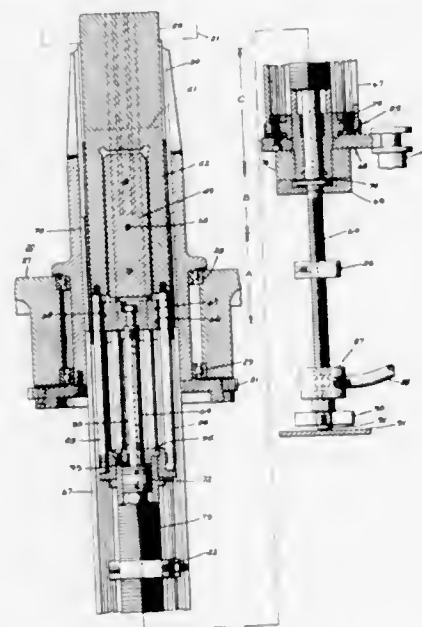
U.S. Cl. 29—205 R

29 Claims

A driver effects a movement of insulator pushers continuously through first, second, and third increments of travel to place insulators in core slots. Divider blade section and coil turn feeder blades are conjointly actuated in an axial direction during second increment of travel. At end of second increment of travel, divider blade section and coil turn feeder blades are extracted and extend through bore of the core. During third increment of travel, only insulator pushers and

turn feeder blades are actuated. At end of third increment of travel, side turn portions of the electrical coil are inserted into predetermined pairs of slots. Relative movement of turn feeder blades and divider blade section reduces the frictional drag on coils. Coil turn feeder blades may be formed with reduced portions terminating in a pair of turn-pushing ledges with turn-receiving gaps defined by the walls of the elements.

Ledges may terminate short of feeder blade peripheral edges, and shoulders axially recessed from ledges may be used. Gaps form slot entrance extensions to receive side turn portions as other side turn portions are inserted. Shoulders



thereafter effect insertion of the side turn portions first received in the slot entrance extensions.

Magnetic cores of different stack heights are accommodated with relatively minor adjustments. Adjusting device associated with the driver can selectively control conjoint movement of divider blade section and turn feeder blades. Stop nut is also selectively and changeably mounted and selectively adjusts insulator pusher travel. This accommodates insulators of different lengths. Setting of stack height adjusting device and stop nut can be accomplished manually or automatically. Coils may be inserted when insulators are not being inserted.

3,722,064

## FERRULE SETTER WITH INDICATING MEANS

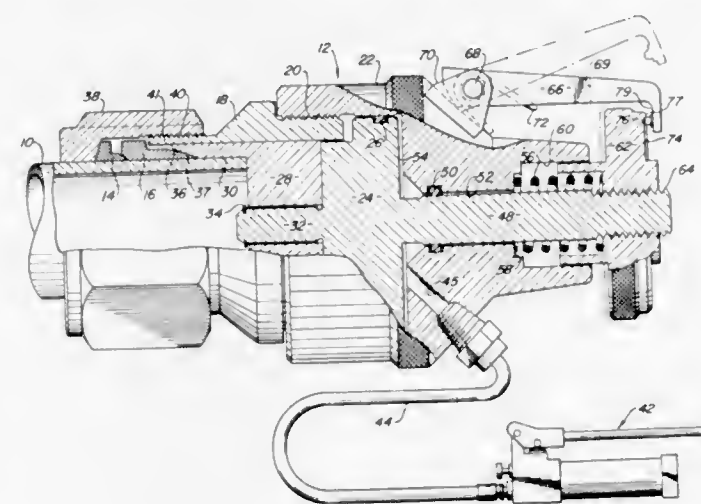
Leonard P. Spontelli, Seven Hills, Ohio, assignor to Crawford Fitting Company, Solon, Ohio

Filed April 15, 1971, Ser. No. 134,155

Int. Cl. B23p 19/04

U.S. Cl. 29—237

16 Claims



A tool for swaging ferrules onto the periphery of a cylindrical member such as a tube or rod. The disclosed tool includes

a frame for supporting and aligning the tube or rod with swaging means. The swaging means is shown as a ferrule camming member reciprocable with respect to the frame. Independently actuated signal means is adapted to indicate when adequate swaging has been accomplished.

3,722,065

## APPARATUS FOR POSITIONING METERING DEVICES

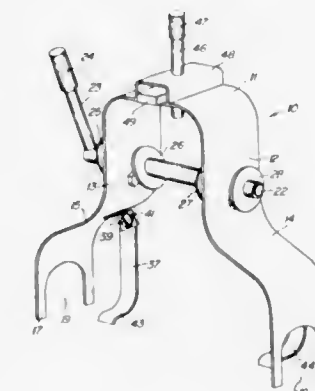
Joseph Warren Harris, Vernal, Utah, assignor to C. R. Industries, Vernal, Utah

Filed Dec. 2, 1971, Ser. No. 204,050

Int. Cl. B23p 19/04

U.S. Cl. 29—237

10 Claims



An apparatus for positioning a metering device to facilitate the attachment of the metering device to feed lines located within a shaft has a generally U-shaped frame having a neck and two arms adapted to rest upon the horizontal portions of the feed lines. The apparatus has means interconnecting the two arms for varying the distance between the arms and has support means disposed between the arms and attached to the frame to support a metering device on the frame. An elongate member, preferably longitudinally extendable, is disposed at the neck of the frame for supporting the frame against the shaft walls in a predetermined position. In use, a metering device can be placed on the support means between the frame arms so that the input connection of the device can be positioned with respect to the feed line connections. The means interconnecting the frame arms is used to diminish the distance between the frame arms and thereby force the feed line connections against the threaded metering device connections for convenient attachment.

3,722,066

## APPARATUS AND METHOD FOR ASSEMBLING UNIVERSAL JOINTS

Karl Spiess, Herzogenaurach, Germany, assignor to Industriewerk Schaeffer OHG, Herzogenaurach, Germany

Filed Aug. 4, 1971, Ser. No. 168,970

Claims priority, application Germany, Aug. 13, 1970, P 20 40 245.3

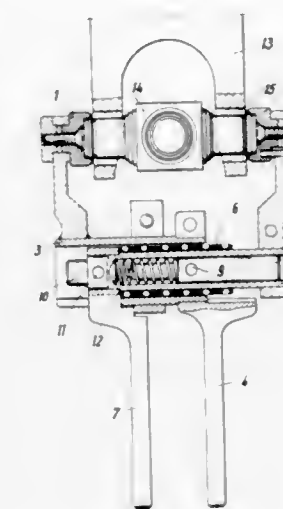
Int. Cl. B25b 27/14

U.S. Cl. 29—271

5 Claims

A device for centering the spider trunnions in the eyes of the corresponding fork arms during the assembling of universal joints, said device comprising a pair of oppositely disposed holding members which extend from the outside into each of the annular spaces defined by the circumferential wall of the eye and the outer surface of the spider trunnions inserted therein and thereby center and hold a pair of spider trunnions in centered position within the eyes; and a process for assembling universal joints which comprises the steps of inserting the four spider trunnions into the respective fork eyes, centering a pair of oppositely disposed trunnions in the corresponding eyes with the aid of said centering device, clamping the other pair of trunnions in place, removing the centering device

and mounting the roller bearings in the spaced between the eyes and the trunnions centered therein, removing the clamps



3,722,067

## DRAPERY HOOK PIN APPLICATOR

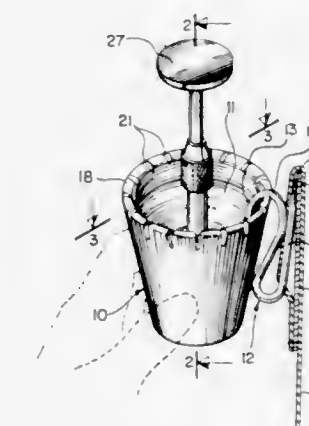
Mary B. Harkins, Vernon Road, Fayette, Ala.

Filed March 12, 1971, Ser. No. 123,797

Int. Cl. B25b 27/14

U.S. Cl. 29—278

3 Claims



This applicator has a conical shaped handle that is opened and recessed at its forward end and is provided with an edge and forming in section generally to a hooked part of a hook pin having a series of grooves along the edge for receiving the loops of the hook pins to steady the same so that upon pushing the handle with the hook pin into the drapery the hook pin is thereby easily inserted without the use of fingers. In order to have the hook pins properly aligned relative to the upper edge of the drapery a measuring means extends from the open end of the handle and has a laterally extending portion on its upper end that can engage the upper edge of the drapery to locate the pointed end of the hook pin at the proper distance from the upper edge so that all of the hook pins assembled upon the handle will be inserted in accordance with the distance between the laterally extending plate portion, the measuring device and the point of insertion of the hook pin assembled upon the handle. A chuck means is used for providing for an adjustable measuring device in which the adjustable member has a stem that extends into the chuck device. The chuck device extends from a sleeve portion in the open end of the handle. The measuring device can thereby be adjusted for different distances of application of the pointed ends of the hook pins into the drapery material from the upper edge of the drapery.



3,722,068

## METHOD FOR FORMING TITANIUM SHEETS

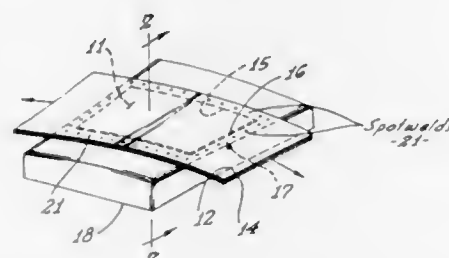
William E. Manchester, Lomita; Carl M. Morris, Manhattan Beach, and John L. Hill, Los Angeles County, all of Calif., assignors to Northrop Corporation, Los Angeles, Calif.

Filed Feb. 22, 1971, Ser. No. 117,403

Int. Cl. B23p 17/00

U.S. Cl. 29—423

6 Claims



A method of forming titanium sheets and the like in which a sandwich structure consisting of a titanium sheet is placed in an envelope constructed of mild hot rolled steel, forming the sandwich structure utilizing a stretch forming operation, bracing the sandwich structure insuring that it will retain its shape during a stress-relieving operation, performing the stress relieving operation and removing the shaped titanium sheet from the envelope.

3,722,069

## METHOD OF OPENING A CLOSED VACUUM VESSEL IN A VACUUM SPACE

Paul Leymonerie, Malmort, France, assignor to U.S. Philips Corporation, New York, N.Y.

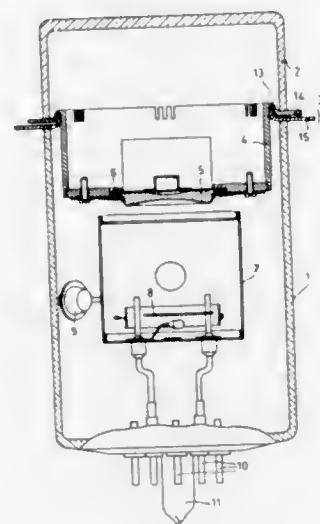
Filed April 5, 1971, Ser. No. 131,149

Claims priority, application France, April 3, 1970, 7012088

Int. Cl. B23p 19/02, 17/00

U.S. Cl. 29—427

5 Claims



A method of opening a vacuum vessel in a vacuum space where the vessel is to be opened without producing undesired elements into the vacuum space. The walls of the vessel must comprise two parts that are connected together by means of a closure member having a U-shaped cross-section. The closure member is constructed of two flat rings that are connected at their inner edge. The method step comprises rotating the parts of the wall in opposite directions until the joining of the edges fractures.

3,722,070

## METHOD OF MAKING ROPE FIGURE

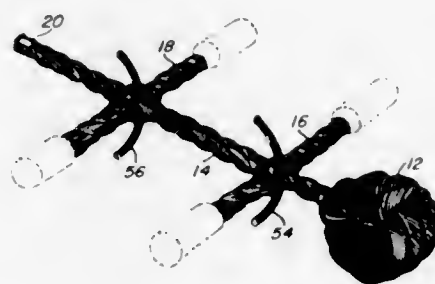
Leo E. Shiner, 903 Alann Drive, Joliet, Ill.

Filed Aug. 1, 1969, Ser. No. 846,872

Int. Cl. B23p 19/04

U.S. Cl. 29—433

4 Claims



An animal simulating assemblage of rope components including a single length of twisted strand rope defining the neck, body and tail portions of the simulated animal and having a stiff wire or similar element extending longitudinally therethrough so as to afford sufficient stiffness to the twisted strand rope to enable it to retain the desired shape in which it is bent. Each pair of legs of the simulated animal formed comprises an additional length or section of twisted strand rope having a lengthwise extending stiffening wire or the like extending therethrough and the additional strand of rope is secured to the appropriate portion of the body defining section of rope. The free end of the neck defining end portion of the body rope section includes a rope knot defining an enlargement to simulate a head and the strands of the remote end of the body defining rope section may be unraveled and brushed to simulate a flag tail, if desired. Suitable eyes may be defined by fish bobbles, beads or the like attached to the head defining rope knot and the mouth or tongue of the simulated animal may be simulated by art foam. In addition, appropriate ears may also be formed of art foam or by opposite ends of a single rope strand inserted half-way through a single loop or a plurality of loops of the head defining knot and the opposite ends of the single strand may be brushed in order to simulate shaggy ears if desired.

3,722,071

## BRAZING POWDER DEPOSITION METHOD

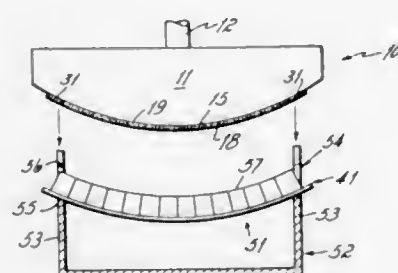
John R. Van Orsdel, Columbus, Ohio, assignor to Aeronca, Inc., Middleton, Ohio

Division of Ser. No. 26,629, April 8, 1970, abandoned. This application Sept. 30, 1971, Ser. No. 185,363

Int. Cl. B23k 31/02

U.S. Cl. 29—471.1

5 Claims



Apparatus and method, in preferred form, particularly adapted for evenly depositing a brazing powder at the interface of a honeycomb sheet and a substrate. The apparatus is comprised of a head having a working face defined by a porous medium, the medium permitting suction therethrough but preventing powder from passing therethrough. The face of the head is provided with shims of a preselected thickness, that thickness being dependent on the weight of powder per

unit area to be deposited. In use, a partial vacuum is established on one side of the head's working face and the powder to be deposited is placed on the other side of the face, the powder thereby being held to the face. A definite and reproducible powder thickness is established by scraping excess powder off the face through use of a knife edge in cooperation with the shims. The honeycomb sheet is preliminarily fixed to the substrate such as, for example, by tack-welding. Thereafter, the powder-coated face of the head is positioned over the honeycomb sheet and the vacuum released. This allows the powder to drop from the head's working face through the honeycomb cells onto the substrate surface. Such results in an even distribution of powder on the exposed area of the substrate, and is a practical method of achieving such distribution in that no skilled operator is required.

3,722,072

## ALIGNMENT AND BONDING METHOD FOR SEMICONDUCTOR COMPONENTS

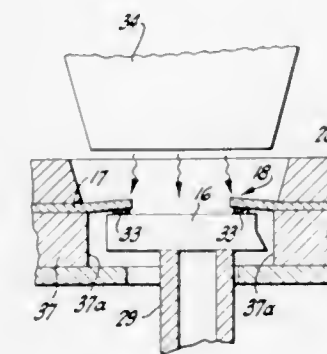
Fritz W. Beyerlein, Sunnyvale, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Nov. 15, 1971, Ser. No. 198,813

Int. Cl. B23k 31/02

U.S. Cl. 29—471.3

9 Claims



A method for bonding semiconductor structures of the type including semiconductor devices and bonding pads to lead structures. A semiconductor wafer containing a plurality of the lead structures is adhesively secured to a perforated die carrier with the wafer aligned so that a perforation underlies each semiconductor structure. The semiconductor wafer is then separated into individual semiconductor structures. An indexing mechanism positions the die carrier and hence the wafer so that one of the semiconductor structures is aligned with a bonding position. Another indexing mechanism positions a sheet of lead structures so that one of the lead structures is aligned with the bonding position. Due to orientation of the die carrier and the sheet of lead structures the bonding pads of the semiconductor structure in the bonding position are aligned with the spaced leads of the lead structure and the bonding position. A vacuum chuck travels up through the perforation in the die carrier and carries the semiconductor structure to the lead structure where it is bonded.

3,722,073

## PRODUCTION OF PRODUCTS DIRECTLY FROM NICKEL CATHODES

Floyd Gotthard Larson, Jr., Ringwood, N.J., assignor to The International Nickel Company, Inc., New York, N.Y.

Filed Oct. 1, 1971, Ser. No. 185,716

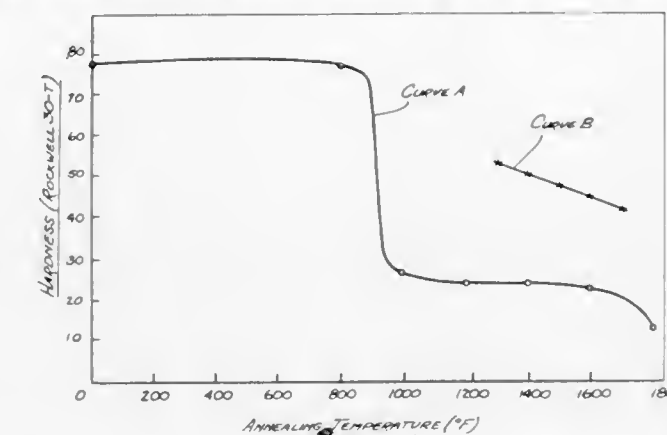
Int. Cl. B23k 31/02

U.S. Cl. 29—472.3

7 Claims

A method of producing a unitary piece from a pack of nickel cathodes, comprising hot working said pack to reduce its thickness by about 75 percent or more. Preferably, the hot working is carried out on such cathode packs heated to about 1600°F. to 2200°F. or higher, reductions of 92 percent or 96 percent or more being desirable. Certain embodiments permit

the unitary piece to be cold worked and annealed to low hardness at temperatures as low as about 950°F., while various other embodiments permit annealing of the cold worked



material at higher temperatures even up to 1800°F., or higher, with substantially no blistering. The present method lends itself to producing nickel strip, such as that suitable for coinage manufacture, from cathode nickel without melting.

3,722,074

## METHOD OF SEALING A METAL ARTICLE TO A GLASS ARTICLE IN A VACUUM-TIGHT MANNER

Johannes Theodorus Klomp, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

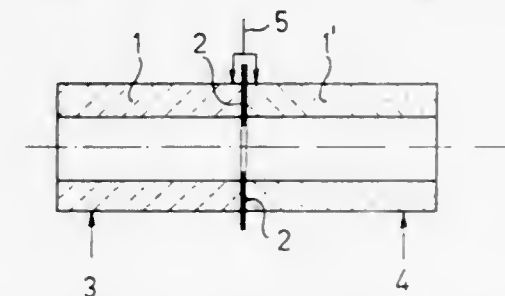
Filed April 13, 1970, Ser. No. 27,605

Claims priority, application Netherlands, April 21, 1969, 6906150; Oct. 25, 1969, 6916130

Int. Cl. B23k 31/02

U.S. Cl. 29—472.9

5 Claims



A method of sealing articles having metal and glass sealing surfaces in a vacuum-tight manner. The joint is established by heating the surfaces under pressure until welding occurs at temperatures which are lower than the softening point of the glass and which lie between the temperature at which the vapor tension of the metal is equal to 10<sup>-10</sup> Torr and the temperature which is the melting point of the metal.

3,722,075

## METHOD FOR CONTINUOUS PRODUCTION OF SPIRAL PIPE

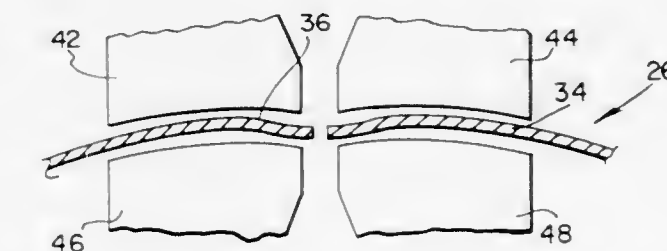
James Eugene Fay, 4204 Nelson Rd., Middleton, Ohio

Filed Jan. 19, 1971, Ser. No. 107,748

Int. Cl. B23k 31/02

U.S. Cl. 29—477.3

9 Claims



A method and apparatus for continuously producing spiral pipe from sheet material including feeding a strip of the sheet



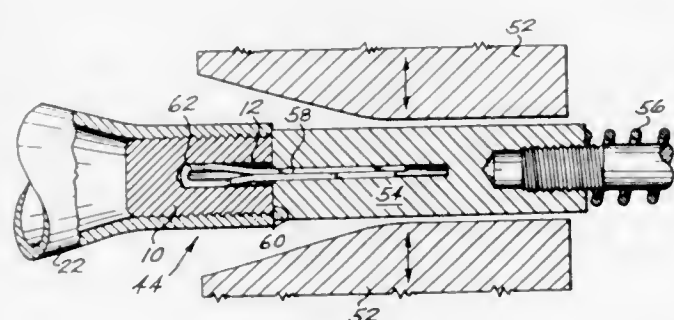
material into a spiral pipe forming machine, continuously deforming a portion of the longitudinal edges of the sheet material so as to bend the edge downwardly toward the axis of the formed pipe and out of the normal plane of the sheet material, forming the sheet material into a spiral tube and bringing the deformed edges into parallel face to face abutting relationship, welding the edges into seam, and reforming the deformed portion of the sheet material to provide a smooth forged weld.

3,722,076

# METHOD OF SWAGE JOINING A METALLIC TUBE TO AN INSERT

Robert K. Dent, 17765 Beach Drive, N.E., Seattle, Wash.  
Division of Ser. No. 883,904, Dec. 10, 1969, Pat. No. 3,652,111. This application Sept. 20, 1971, Ser. No. 181,725  
Int. Cl. B21d 39/00; B23p 11/00  
U.S. Cl. 29—516

6 Claims



There is disclosed an insert of cylindrical shape and of substantially uniform predetermined diameter and length. This insert has a greater hardness than the tube to be employed. Thus, generally, the tube is an aluminum alloy tube and the insert is stainless steel to provide the desired comparative hardnesses. For convenience in handling of the insert during the process, a cylindrical, coaxial recess is drilled in the insert. A conventional thread-rolling device is provided with dies of a hardness greater than the insert and the pattern on the contacting surfaces of said dies is a plurality of annular, spaced, alternate crests and grooves. The crests and grooves are disposed in two longitudinally spaced sections and with the grooves and crests in the first section each having a common diameter and with the diameters of the crests and grooves in the second section each having gradually decreasing diameters. Such dies are used to form a pattern of annularly spaced grooves and crests on the surface of the insert. The crests in the first section of the dies imprint grooves in a first section on the insert and which grooves have a common diameter. The material displaced in the insert, in the imprinting and forming of such grooves, migrates laterally from the grooves or in a direction longitudinally of the insert and forms the crests of uniform diameter in the first section on said insert. The crests in the second section of the dies imprint grooves in a longitudinally spaced second section on the insert and which grooves have gradually increasing diameters. The material displaced in forming said grooves in said second section of said insert forms crests which are not fully formed and which gradually decrease in diameter. Next, the prior to swaging of a tube upon said insert, the insert is provided with a plurality of longitudinally extending grooves by imprinting the said insert with an appropriate tool thus causing said grooves and causing a raise of stock elsewhere of the insert by the same amount as the extent of the said grooves.

Thereafter, a tube end portion of less hardness than said insert is slidably fitted over said insert and the tube is swaged to the insert. The crests of the insert imprint grooves in the tube and the material migrates to form crests in the tube. As the crests of the insert were formed by metal migrating from grooves to form the same, the said crests of said insert will cause grooves and concomitant migration of metal to form

precisely the crests in the tube. In order to ensure against any possible slight voids, there is provided a slight migration over that necessary to form the crests in the tube mating with the grooves on the insert and the longitudinally extending ridges mating with the longitudinally extending grooves of the insert. This swaging provides for cold working of the aluminum of the tube and improves the strength qualities thereof.

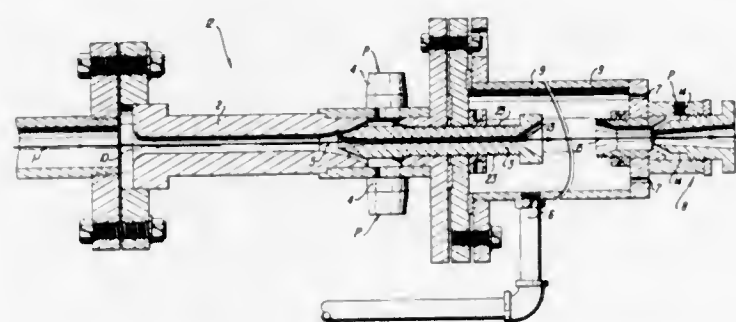
3,722,077

# METHOD OF COOLING AND DRYING A WIRE UTILIZING AN INDUCED AIR WIPE

Robert T. Armstrong, Villa Rica, Ga., assignor to South Wire Company, Carrollton, Ga.  
Filed March 5, 1971, Ser. No. 121,456  
Int. Cl. B23p 17/00

U.S. Cl. 29—527.4

6 Claims



A process of cooling and drying a wire in preparation for the extrusion of an insulated coating thereon wherein a high velocity stream of coolant is passed along and around the wire. The flowing stream of coolant induces a flow of drying medium which thereby accomplishes the drying step.

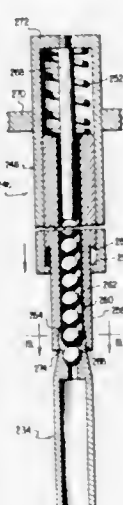
3,722,078

# METHOD FOR CONDUCTING MACHINING AND ASSEMBLY OPERATIONS

John A. Cupler, II, 10 Cupler Dr., Lavale, Md.  
Division of Ser. No. 868,517, Oct. 22, 1969, Pat. No. 3,663,998. This application March 4, 1971, Ser. No. 121,213  
Int. Cl. B23p 13/04

U.S. Cl. 29—557

6 Claims



The disclosure is directed to a vertically oriented automatic tool changer employing non-captive tools for performing machining and/or assembly operations at a plurality of work locations on a single workpiece which workpiece is supported by a work positioner capable of infinite adjustment to present any desired number and spacing of work locations, on the workpiece, to the working axis of the non-captive tools.

A method for performing machining and assembly operations on a work piece is also disclosed. One of a number of non-captive machining or assembly tools is positioned in a

non-captive bearing and advanced toward the work piece to perform an operation thereon. Upon completion of the operation, the first tool is withdrawn from the work piece and interchanged with a second tool which is subsequently advanced toward the work piece to perform another operation.

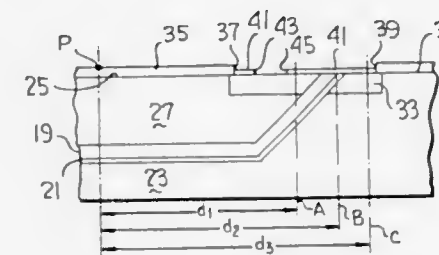
3,722,079

# PROCESS FOR FORMING BURIED LAYERS TO REDUCE COLLECTOR RESISTANCE IN TOP CONTACT TRANSISTORS

James D. Beasom, Indian Harbor Beach, Fla., assignor to Radiation Incorporated, Melbourne, Fla.  
Filed June 5, 1970, Ser. No. 43,789  
Int. Cl. B01j 17/00

U.S. Cl. 29—578

15 Claims



A buried layer in an integrated circuit structure is formed by one-step deposition (epitaxial or diffusion) of heavily doped silicon over the bottom surface of a wafer in which island-separating moats have been etched. The buried layer is thus uniformly provided both at the bottom and along the sides of the finished islands. In the formation of a transistor in the island, a collector contact diffusion layer is diffused through a mask aperture configured and spaced relative to the island center to assure intersection between this diffusion layer and buried layer. In addition the collector contact is deposited through another mask aperture spaced and configured relative to the island center to assure that the collector contact is in contact only with the portion of the collector contact diffusion layer residing within the island edges.

3,722,080

# METHOD FOR PRODUCING THE BASE OF A SEMICONDUCTOR DEVICE

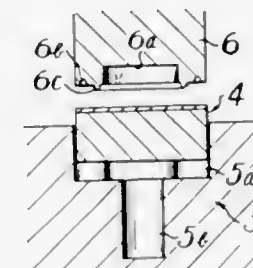
Yoshio Sato, 42-32 Ogikubo, 2-chome, Suganami-ku Tokyo, Japan

Filed Nov. 12, 1971, Ser. No. 198,158  
Claims priority, application Japan, Nov. 16, 1970, 45/100239; Jan. 29, 1971, 46/2856

Int. Cl. B21k 23/00; H01f 17/00

U.S. Cl. 29—581

4 Claims



In a method for producing the base of a semiconductor device from a composite metal workpiece comprising a lower metal layer possessing high electric and thermal conductivities and an upper metal layer clad on the lower metal layer and possessing high electric resistance suitable for electric resistance welding, a semiconductor pellet or element mounting raised portion formed in the workpiece as the workpiece is deformed to a predetermined final base shape is removed the upper metal layer therefrom so as to expose the lower metal

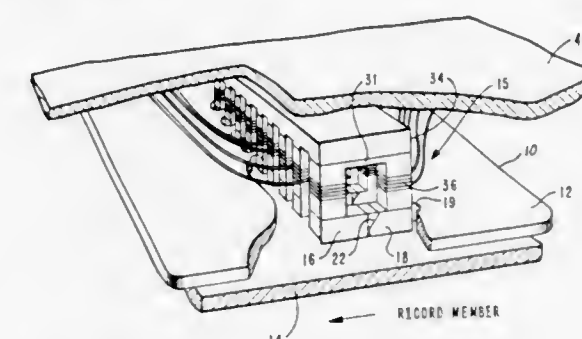
3,722,081

# METHOD OF MAKING A MULTI-CHANNEL MAGNETIC HEAD ASSEMBLY

Samuel C. Neace, 95440 Henderson Ave., Sunnyvale, Calif.  
Filed March 22, 1971, Ser. No. 126,565  
Int. Cl. G11b 5/42; H01f 7/06

U.S. Cl. 29—603

8 Claims



A multi-channel magnetic head assembly for non-contact usage comprises a pair of essentially unitary structures joined along a common plane. A first of the structures comprises a plurality of pole tip elements, formed from a single element and affixed within individual slots to a slotted air bearing element. The individual pole tip elements bridge, at the common plane, individual core legs having a common base and joined to a small circuit board. The arrangement provides precise gap depth, virtually zero gap scatter, and an effective gap length that correspond to the physical length. The head also minimizes change of head position, and is extremely small and of low mass.

Methods of making multi-channel, non-contact head assemblies in accordance with the invention are based upon readily automated cutting and finishing steps. A unitary pole tip assembly is formed from a pair of block elements with an interposed non-magnetic spacer. Interchannel grooves are cut across the gap, forming a comb-like structure which is inserted into and affixed to a slotted air bearing element. The base of the comb-like structure is then ground away to a selected reference plane. The multiple pairs of core legs are formed by grooving a unitary magnetic block in two directions and this base structure is then joined to the pole tip elements.

3,722,082

# METHOD OF MAKING ELECTRICAL TRANSFORMER MEANS

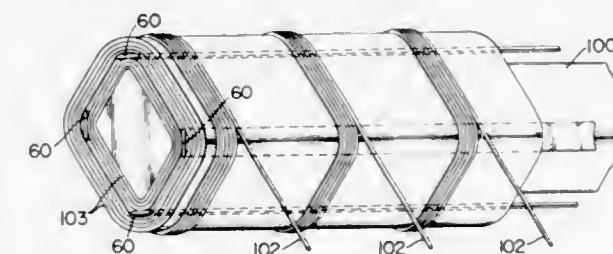
John Hoell, Cincinnati, Ohio, assignor to Foster Transformer Company, Cincinnati, Ohio

Continuation of Ser. No. 839,124, May 15, 1969, which is a division of Ser. No. 605,265, Dec. 28, 1966, Pat. No. 3,500,273. This application July 22, 1971, Ser. No. 165,358

Int. Cl. H01f 7/06

U.S. Cl. 29—605

3 Claims



This disclosure relates to improved electrical transformer means which has heat transfer surface means for transferring



heat outwardly from within electrical coil means of such transformer means to thereby provide optimum electrical performance and to an improved method of making such transformer means and associated coil means.

3,722,083

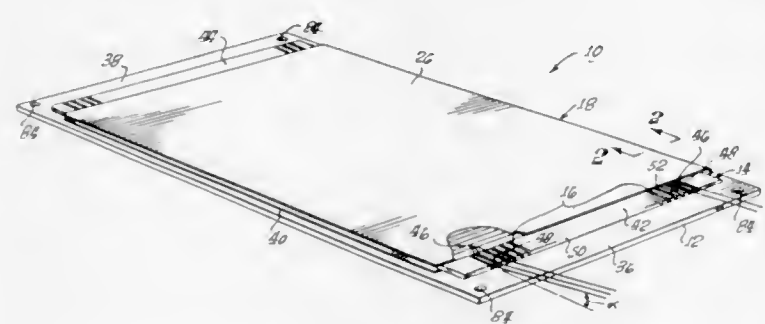
# METHOD OF MAKING A PLATED WIRE MEMORY PLANE

Wendell C. Johnson, Topanga Canyon; Nicolas G. Gomez, Los Angeles, and Claude H. Foret, Culver City, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 15, 1971, Ser. No. 106,839  
Int. Cl. H01f 7/06

U.S. Cl. 29—604

13 Claims



A plated wire memory plane includes a support member, an insulator having a plurality of parallel grooves, a plated wire comprising a conductive wire substrate, an annular magnetic coating uniformly deposited in generally all of the preformed grooves, and a substantially U-shaped word drive line laminate. One leg of said word drive line laminate is positioned between the grooved insulator and the support member. The second leg of the word drive line laminate is positioned to overlie the upper surface of the grooved insulator.

3,722,084

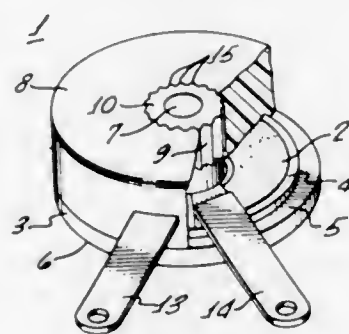
# METHOD OF MAKING POWER RESISTORS

Richard E. Caddock, 640 Sandalwood Ct., Riverside, Calif. Division of Ser. No. 40,281, May 25, 1970, Pat. No. 3,636,493, which is a continuation-in-part of Ser. No. 847,783, July 18, 1969, abandoned, which is a continuation-in-part of Ser. No. 820,538, April 30, 1969, abandoned. This application Sept. 23, 1971, Ser. No. 183,139

Int. Cl. H01c 17/00

U.S. Cl. 29—610

14 Claims



A disc-shaped metal body or base of anodized aluminum has an upstanding central post, the body and post being centrally bored to receive a bolt for stacking or mounting of the resistor. A ceramic wafer or washer is seated on the body and around the post, and has a resistive film provided on the upper surface thereof. The configuration of the resistive film is such that the temperature generated in the central region of the resistor, relatively adjacent the post, thus setting up a highly effective thermal gradient which maximizes the dissipation of heat from the resistor. Terminal lugs or leads connect to the resistive film and extend outwardly generally in the plane of

the washer, there being a connection between each lug and the washer by means of a rivet the ends of which are embedded in thermosetting synthetic resin. All of the components are maintained protected from the environment by a mass of thermosetting synthetic resin which extends upwardly from the film and surrounds the post, the upper surface of the resin being flush with the top of the post and parallel to the bottom of the metal body, in order to permit stacking of the resistors. The body and/or central post incorporate undercut means to prevent axial and rotational movement of the resin relative to the body, despite high thermal and other stresses.

In accordance with the method, the pre-assembled body and ceramic washer (bearing the resistive film) are mounted as inserts in a mold cavity the depth of which is approximately equal to the distance between the upper end of the post and the bottom surface of the metal body. Thus, despite the absence of a plug in the central bore in the post, no molding material enters such bore. Molding is effected by transfer molding, and the mold gate is disposed adjacent the parting line and also generally adjacent or above the ceramic washer. The terminal lugs or leads extend outwardly from the mold cavity through corresponding grooves or recesses located at the parting line.

3,722,085

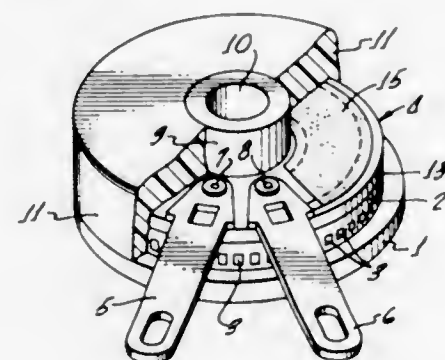
# METHOD OF MAKING FILM-TYPE POWER RESISTORS

Richard E. Caddock, 640 Sandalwood Court, Riverside, Calif. Division of Ser. No. 40,308, May 25, 1970, Pat. No. 3,649,944, which is a continuation-in-part of Ser. No. 847,783, July 18, 1969, abandoned, which is a continuation-in-part of Ser. No. 820,538, April 30, 1969, abandoned. This application Sept. 23, 1971, Ser. No. 183,113

Int. Cl. H01c 7/00, 17/00

U.S. Cl. 29—620

19 Claims



A film-type power resistor consists of a ceramic wafer or washer having a central opening, one side of such washer being printed at its outer and inner edges with generally annular traces of termination metal. An electrically resistive film is printed on such one side over all portions of, and between, the termination metal, excepting for predetermined adjacent end portions which are connected to radially outwardly extending terminal lugs or leads. In one embodiment, the metal traces are continuous, whereas in another embodiment they are interrupted in order to create series-related resistor portions. The washer (and its associated films) are mounted over a metal base and are embedded in a thermosetting synthetic resin, the base having an upwardly extending central post which passes through the opening in the washer to the upper surface of the resin.

In accordance with the method, the planar surface of a ceramic substrate is first printed with termination film traces, following which such traces are overprinted with electrically resistive film. The ceramic (with its associated coatings) is then fired in order to cure the resistive film. Thereafter, the entire outer surface of the resistive film is uniformly abraded by means of a jet of abrasive particles, the abrading continuing in a uniform manner until the resistive film is within the required tolerance. During the abrading step, the terminal regions of the terminal film traces are masked. Thereafter, terminal lugs or leads are connected to such terminal regions.

3,722,086

# PROCESS FOR MAKING FLOOR MAT SWITCHES

Lance A. Wikkerink, Greendale, and Lee R. Wikkerink, West Allis, both of Wis., assignors to Lanson Industries, Inc., Milwaukee, Wis.

Filed Aug. 21, 1970, Ser. No. 65,873

Int. Cl. H01h 11/00, 11/02, 11/04

U.S. Cl. 29—622

9 Claims



To make a floor mat switch, a large O-ring seal is held out adjacent the periphery of one contact plate and rubber separator discs are cemented to the surface of the plate at evenly spaced intervals. A second contact plate is laid on the O-ring seal and spacer discs and the space between the two plates is evacuated. A vinyl spacer ribbon is wound about the plates. The two plates are then suspended in a composite mold in an oven, centered by the spacer ribbon. Liquid vinyl is pumped into the mold and heat cured about the plates.

3,722,087

# METHOD AND APPARATUS FOR MOUNTING TERMINALS ON A CIRCUIT BOARD

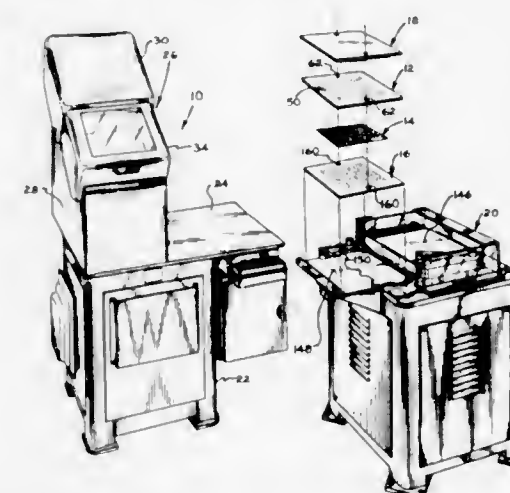
Quentin Berg, New Cumberland, Pa., assignor to Berg Electronics, Inc., New Cumberland, Pa.

Filed Oct. 15, 1971, Ser. No. 189,683

Int. Cl. H05k 13/04

U.S. Cl. 29—626

12 Claims



Loose piece eyelets are wiped back and forth across the top of a tilted transfer plate having eyelet receiving holes therein. An air flow is maintained through the holes in the transfer plate to seat the eyelets in the holes. A circuit board is positioned in a press on top of an anvil plate and the loaded transfer plate is mounted on top of the circuit board. Closing of the press moves a punch plate toward the transfer plate to force the eyelets from the transfer plate into holes in the circuit board and bring the lead ends of the eyelets into engagement with anvils on the anvil plate to stake the eyelets to the circuit board. Eyelets can be staked to the circuit board in holes off center with respect to the staking tooling.

908 O.G.—32

3,722,088

# METHOD FOR FUNCTIONABLE STRUCTURAL ACCOMMODATION OF SNAP-IN ELECTRIC LAMPS

John J. Horan, 420 Quigley Ave., Willow Grove, Pa.

Division of Ser. No. 584,031, Sept. 7, 1966, Pat. No.

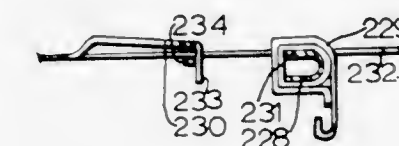
3,523,274. This application Dec. 8, 1969, Ser. No. 888,214

Int. Cl. H02g 15/00; H05k 3/30

9 Claims

U.S. Cl. 29—629

9 Claims



A simple method for modifying metallic structures, such as those of instruments and vehicles, as well as those of buildings, to provide dilatable gaps therein for aligning, elastically holding, and electrically energizing lamps of a new push-insertion category designed to snap into position.

3,722,089

# CAN OPENER WITH REMOVABLE PLATE WHICH CARRIES THE CUTTING ELEMENT THEREON

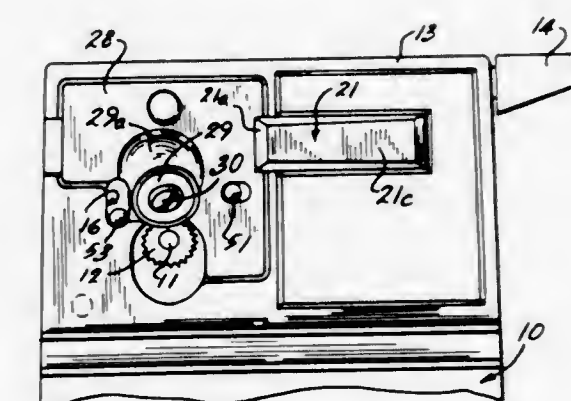
Robert E. McLean, Raytown, and Joseph J. Farkas, Kansas City, both of Mo., assignors to Rival Manufacturing Company

Filed Aug. 28, 1970, Ser. No. 67,677

Int. Cl. B67b 7/38

U.S. Cl. 30—4 R

8 Claims



A can opener has a mounting plate which is positioned adjacent the forward face of the can opener frame. The cutting element for the can opener is carried on a plate which is removably attached thereto by a mortise-tenon combination at one side of the plate and by a spring biased latch on the opposite side. The plate is further biased outwardly from the frame to assure proper clearance between the cutting element and the can feed wheel at all times.

3,722,090

# GUARD BAR FOR SAFETY RAZORS

Jan Dawidowicz, Fairfield, Conn., assignor to Warner Lambert Company, Morris Plains, N.J.

Filed Aug. 12, 1971, Ser. No. 171,075

Int. Cl. B26b 21/00, 21/14

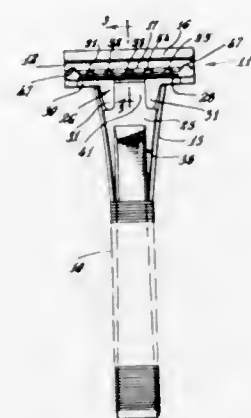
U.S. Cl. 30—32

11 Claims

The disclosure is directed to a safety razor guard bar having a continuous guard bar surface positioned outwardly and below the cutting edge of a razor blade. The continuous guard bar surface is provided to fix the cutting angle of the blade, and to smooth and stretch the skin prior to its engagement with the cutting edge of the blade. The guard bar includes a



plurality of ridges spaced along the upper surface thereof. Each of the ridges has an outer arcuate surface extending from



the continuous guard bar surface upwardly and inwardly to beneath the blade such that the upper portion of each of the ridges is in close proximity to the cutting edge of the blade.

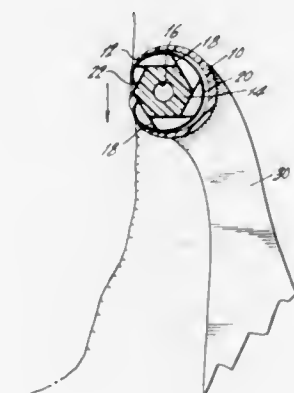
### 3,722,091 DISPOSABLE SAFETY ROTARY RAZOR

Rudolph A. Gagnon, Key West, Fla., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Jan. 11, 1971, Ser. No. 105,580  
Int. Cl. B26b 21/24, 21/54

U.S. Cl. 30—40

1 Claim



A cylindrical hollow sleeve has an axial slot and a handle extending at right angles. An elongated member is detachably disposed in the sleeve and is manually rotatable about its axis. The member carries a plurality of cutting means which are successively indexed at the slot for shaving.

### 3,722,092 CABLE SHEATH CUTTING APPARATUS

Helmut Hans Lukas, Carleton Place, Ontario, Canada, assignor to Bell Canada-Northern Electric Research Limited, Ottawa, Ontario, Canada

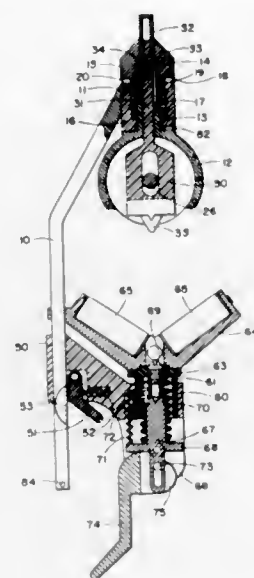
Filed Sept. 27, 1971, Ser. No. 183,892  
Int. Cl. B21f 13/00

U.S. Cl. 30—90.9

11 Claims

A tool for removing the sheath from cables. A cutting edge is positioned between two serrated drive rollers which engage

with the cable periphery. Opposed to the drive rollers are support rollers. The drive rollers are rotated to move the tool on



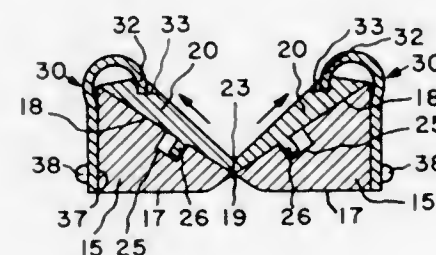
### 3,722,093 WIRE CUTTING PLIER WITH SEVERED END HOLDING MEANS

Harry Kaufman, 44 Highridge Road, New Rochelle, N.Y.

Filed Aug. 16, 1971, Ser. No. 172,160  
Int. Cl. B26b 13/22

U.S. Cl. 30—124

8 Claims



A wire cutting plier with means for holding or gripping the severed or clipped wire end is described. The wire cutting plier part is of conventional construction. The severed end holding means comprises an additional pair of jaws each mounted on the inside surface of a plier cutting jaw and each provided with a bar engaging a slot in the cutting jaw and providing limited lateral sliding movement. Each holding jaw is resiliently held in place by one leg of a generally U-shaped spring clip anchored to the cutting jaw outer edge along a right portion and provided with means along the other leg to prevent turning of the spring clip when the holding jaws are moved upon engagement with the wire end to be clipped.

### 3,722,094 MEANS FOR THE RESILIENT SECURING OF TOOTH SUBSTITUTES

Karl Heinz Rivoir, 15 Klehnlestrasse, 753 Pforzheim, Germany

Filed Aug. 27, 1970, Ser. No. 67,394  
Claims priority, application Germany, Aug. 29, 1969, P 19 43 932.8

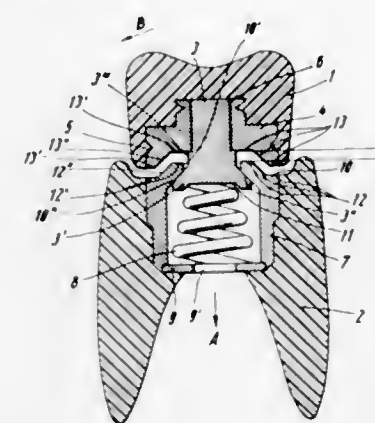
Int. Cl. A61c 13/00

U.S. Cl. 32—2

10 Claims

Means for the resilient and preferably releasable mounting of tooth replacements or substitutes, particularly individual teeth in a plate or bridge or the like, where elastic yielding in axial as well as radial direction is possible, and where a sup-

port member is provided on the tooth which engages a supporting housing of the plate or the like with axial and radial tolerance, and between supporting member and supporting housing an axially and radially effective supporting spring or other elastically effective member is provided and the sup-



### 3,722,095 TAKE-UP SYSTEM FOR DENTAL UNITS AND THE LIKE

Helmut Richard Pietschmann, Karlsruhe-West, Germany, assignor to Sybron Corporation, Rochester, N.Y.

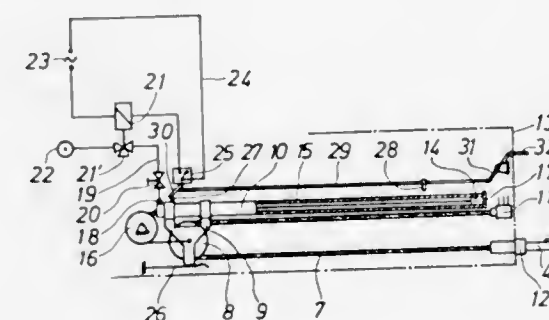
Filed March 9, 1971, Ser. No. 122,436

Claims priority, application Germany, March 10, 1970, P 20 11 198.2

Int. Cl. A61c 19/02

U.S. Cl. 32—22

6 Claims



The invention pertains to a take-up system particularly for dental units in which the utility lines connected to the treating instrument are retracted into the unit by means of a movable pulley which is moved by an air driven piston.

### 3,722,096 MEANS TO HOLD DENTURES IN PLACE

Rudolph J. Kopfer, and John A. Gaylord, both of Greenbrae, Calif., assignors to said Kopfer, by said Gaylord

Filed Dec. 16, 1971, Ser. No. 208,656

Int. Cl. A61c 13/00

U.S. Cl. 32—3

5 Claims



In a denture at least two of the molars are formed by an outer casing holding a reciprocable tooth which is normally pushed outward by a spring adjusted according to the suction required to hold the denture on the tissue of the mouth; the chamber in the outer casing is connected by passages to suction pockets in the tissue side of the denture; each pocket is covered with screens to prevent the sucking of the tissue into the pockets; as the mouth is closed and the teeth are pressed into the respective casings, water is expelled from the pockets and the resulting vacuum sucks the tissue against the screens of the pockets and holds the denture in position; another form of the invention has the plunger in a chamber formed inside of the tooth and extending inwardly of the denture in an elongated pocket and an elongated tray extends from the bottom of the plunger slightly beyond the level of the tissue side of the denture so that the plunger is reciprocated in the chamber and when the tray engages the tissue in the mouth it expels the liquid and produces suction.

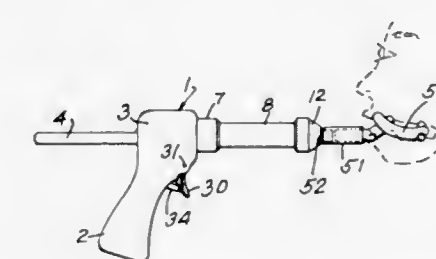
### 3,722,097 METHOD AND MEANS FOR MAKING DENTAL IMPRESSIONS

Albert J. Colman, 427 North Camden Drive, Beverly Hills, Calif.; Paul I. Zandberg, 8202 Romaine Street, Los Angeles, Calif.; and Charles F. Taylor, 150 East Industry, LaHabra, Calif.

Filed Dec. 4, 1970, Ser. No. 95,100  
Int. Cl. A61c 9/00

U.S. Cl. 32—17

17 Claims



A method of impression making for use in dentistry wherein a clear plastic impression tray is stabilized in position in the mouth without any impingement of hard or soft tissue, the impression tray being stabilized and held in the mouth by the patient while the impression material is injected into the stabilized tray by a special injector gun, in such a manner as to produce an impression with neither displacement of the soft tissue, nor entrapment of any air or saliva.

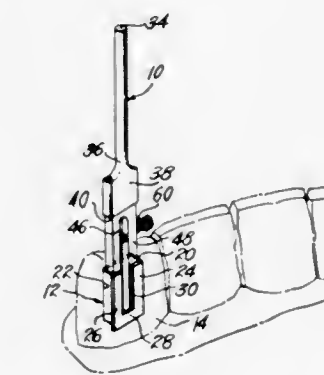
### 3,722,098 DENTAL MANDREL

Melvin D. Poveromo, 1160 Kane Concourse, Suite 203, Miami Beach, Fla.

Filed April 20, 1972, Ser. No. 245,943  
Int. Cl. A61c 13/22

U.S. Cl. 32—5

3 Claims



A dental mandrel for placement and positioning of the female attachment portion of a dental bridgework or the like has a stem with depending tines to set within the attachment.



The tines are provided with means whereby they spread outwardly to frictionally engage the attachment, and are also adapted for movement inwardly whereby the mandrel is easily engaged and disengaged from the attachment without disturbance of its position.

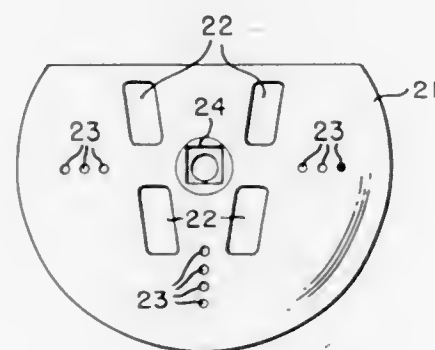
3,722,099

# METHOD OF ACCURATELY AND PRECISELY CONSTRUCTING ARTIFICIAL DENTURES

Bernard Jankelson, 1451 Medical-Dental Bldg., Seattle, Wash.  
Filed Feb. 22, 1971, Ser. No. 117,542  
Int. Cl. A61c 11/00

U.S. Cl. 32-32

9 Claims



Artificial dentures are accurately and precisely constructed using a dental articulator which is rigid, nonyielding and which stores, preserves and makes available every determinant required to build accurate intercuspation of teeth. A unique transparent tooth-setting guide which allows rapid "see-through" mounting of the casts, indicates the size of the teeth suitable for the case and guides the placement of the teeth. With the dental articulator and transparent tooth-setting guides dentures are constructed by (1) establishing the occlusal plane on the biterim or on the teeth, (2) mounting the lower cast on the articulator in a manner to preserve the plane of occlusion, the mounting making use of the transparent tooth setting guide, (3) mounting the tooth-setting guide to the lower cast, (4) mounting the lower cast to the articulator, (5) mounting the upper cast and (6) arranging the teeth in the casts.

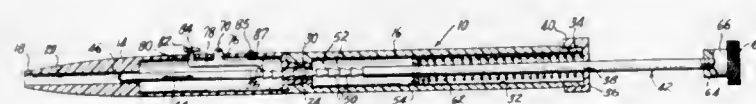
3,722,100

# TOOTH PERCUSSION INSTRUMENT

Manuel I. Weisman, 735 Oberlin Avenue, Augusta, Ga., and Ira Klinger, 3222 York Drive, Augusta, Ga.  
Filed Sept. 8, 1971, Ser. No. 178,569  
Int. Cl. A61c 3/00

U.S. Cl. 32-40 R

2 Claims



A device for imparting percussive force by dentists or the like to a tooth used in critical evaluation and differential diagnosis, in which an elongated housing has a spring biased plunger with graduated positions of force application. The plunger is controlled by a release mechanism, and visually observable indicia correlated to the degree of force applied is provided.

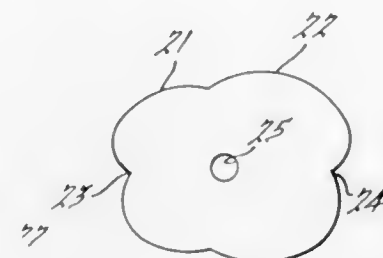
3,722,101

# DENTISTRY BITE OR PROP BLOCK

William F. Via, Jr., P. O. Box 2006, Chapel Hill, N.C.  
Filed March 1, 1971, Ser. No. 119,717  
Int. Cl. A61c 3/00

U.S. Cl. 32-40 R

7 Claims



A disposable bite or prop block for retaining the mouth open for use in dentistry is made from a non-elastic foam plastic material into which the cusps on the bicuspid and molar teeth at one side of the mouth can indent to prop open the mouth and provide a fixed cavity in which dental work can be performed. The patient rests his teeth at one side of the mouth on the block to permit the teeth on the opposite side to be worked on freely in the large cavity provided. The block or prop is constructed to have different cross sectional dimensions so that the mouth can be retained opened to different degrees without fatigue to the jaw muscles.

3,722,102

# DIP STICK

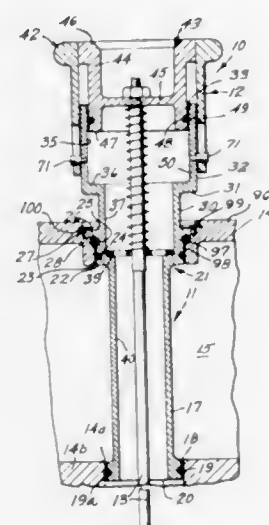
Richard H. Jackson, Downers Grove, and Harry B. Bak, Westchester, both of Ill., assignors to Gits Bros. Mfg. Co., Inc., Chicago, Ill.

Filed Feb. 24, 1971, Ser. No. 118,284

Int. Cl. G01f 23/04

U.S. Cl. 33-126.7 R

6 Claims



A dip stick assembly with a tubular body having an internal ledge of a fixed position and a cup-shaped external opening end with a closure cap adapted to close the end, the closure cap having an axial groove receiving the cup-shaped opening of the tubular body, a dip stick fastened to the cap, a bayonet connection between the cap and the body allowing axial movement of the cap with respect to the body, the dip stick having a spring means around the upper portion thereof, the spring means contacting a radial projection member on the dip stick axially movable thereon, the radial projection adapted to contact the internal ledge on the body wherein the spring will force the cap away from the body to maintain the dip stick normally at a given level while depressing the cap towards the body will move the dip stick axially within the body to a measuring level, the spring cooperating with the bayonet lock to maintain the cap securely fastened to the body.

3,722,103

# ADJUSTABLE ANTHROPOMETER

Harvey G. Gregoire, Patuxent River, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Feb. 1, 1970, Ser. No. 111,384

Int. Cl. A61b 5/10

U.S. Cl. 33-174 D

5 Claims



An anthropometric device designed to provide accurate measurements for evaluation of crew station design. The device can be adjusted to simulate various anthropometric dimensions. Modified retractable tape measures provide arm reach and leg reach distances. A head assembly includes a 180° compass and a retractable reference line to provide angle of vision measurements in elevation and azimuth. The device also includes hip, back and shoulder assemblies which can be adjusted to any percentile rank dimension specified or any population.

3,722,104

# FALSE FINGERNAIL CLASSIFIER

Eugenio Enzetti, Calle Laguna No. 923, Buenos Aires, Argentina

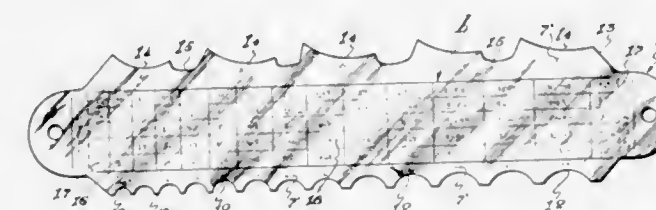
Filed June 1, 1971, Ser. No. 148,629

Claims priority, application Argentina, Dec. 1, 1970, 232729

Int. Cl. G01b 3/04, 3/14, 5/20

U.S. Cl. 33-174 D

5 Claims



The present invention relates to a gauge for measuring and classifying a fingernail to which a false nail is to be applied.

3,722,105

# APPARATUS AND METHOD FOR APPLYING RADIO FREQUENCY ENERGY TO A MOVING WEB OF MATERIAL

William W. Marteny, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed July 6, 1971, Ser. No. 159,630

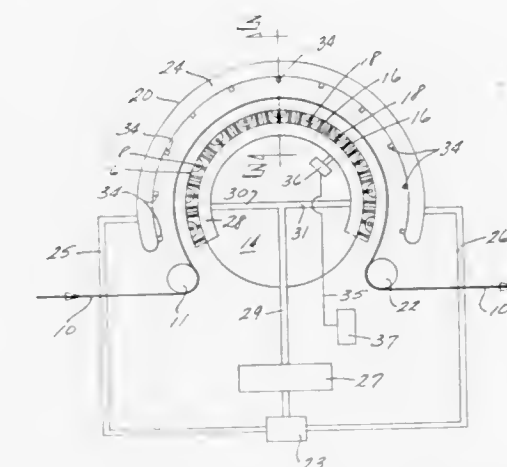
Int. Cl. B01k 5/00

U.S. Cl. 34-1

4 Claims

A moving web of material, preferably of newly formed paper, is diverted from its normal path of travel and directed

through a radio frequency drying area and returned to the normal path of progress. Radio frequency electrodes are arranged around an arcuate path which the web of material follows, thereby minimizing the space required to incorporate radio frequency drying into an existing process. The electrode holders have passages formed therein which are connected to a source of heated air. Air is emitted through the electrode holders and acts to form an air film which prevents the web from touching the electrodes or electrode holders. An enclosure



around the electrode holder area has a plurality of nozzles attached to its interior portion. The nozzles are connected to a source of heated air, the air emitted from the nozzles acting as a position control device for the web. The air emitted from the nozzles and the air film act in balance to maintain the web at a specified elevation above the electrodes. If the web should break, a pressure-sensitive element within the electrode enclosure senses a decrease in pressure and turns off the radio frequency power to avoid any danger to operating personnel.

3,722,106

# CLOTHES DRIER

Kojiro Takeyama, Kawanishi, and Masao Hamamoto, Nishinomiya, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Oaza Kadoma, Kadoma-shi, Osaka, Japan

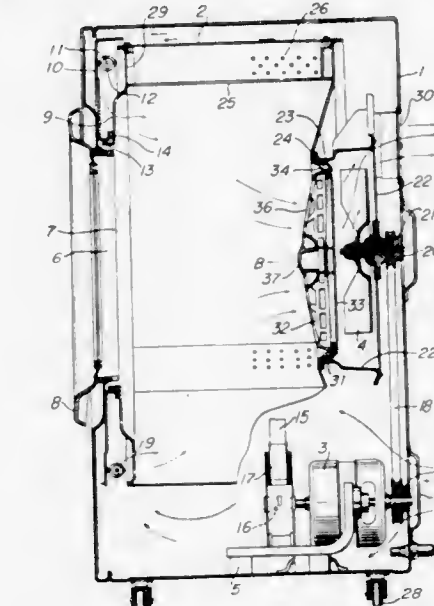
Filed Nov. 16, 1971, Ser. No. 199,123

Claims priority, application Japan, Nov. 25, 1970, 45/117384

Int. Cl. F26b 21/06

U.S. Cl. 34-82

2 Claims



A clothes drier which is so designed that a filter holding frame may be fitted to a rotary drum at its peripheral edge, whereby the mounting and demounting operations of said filter holding frame are simplified, the production cost of the drier is reduced and further the lint efficiency is enhanced.



3,722,107

## CIRCUIT ARRANGEMENT FOR CODE CHECKING AND CODE TRANSFORMING

Edwin Muller, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Munich, Germany

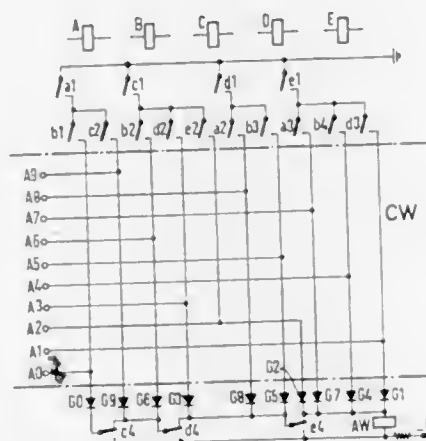
Filed March 5, 1971, Ser. No. 121,369

Claims priority, application Germany, March 10, 1970, P 20 11 310.4

Int. Cl. G06f 3/00

U.S. Cl. 340—347 DD

5 Claims



A circuit is described for simultaneously performing code transformation and code checking operations, e.g. a "n" of "m" code may be transformed into a "1" of "z" code with simultaneous checking. The z outputs of a code transformer can be reached over n contacts of series-connected code relays. The contacts are activated in accordance with the "n" of "m" code combination stored in the relays. An error indicating relay, connectible to the z outputs, is present and has an activating circuit which is completed only when the proper code formation is present.

3,722,108

## INJECTION TRAINING AID

Myron C. Chase, Red Wing, Minn., assignor to Weatherby-Nasco, Inc., Ft. Atkinson, Wis.

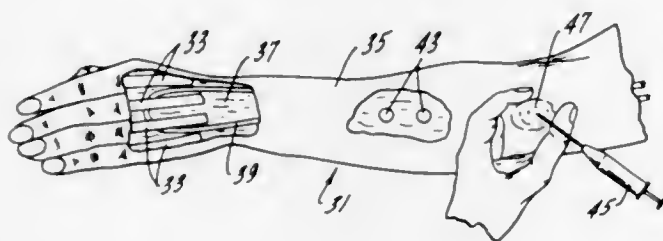
Continuation of Ser. No. 74,763, Sept. 23, 1970, abandoned.

This application April 12, 1972, Ser. No. 243,352

Int. Cl. G09b 23/30

U.S. Cl. 35—17

2 Claims



A training aid for use in the medical arts and simulating at least a portion of a human body. The training aid includes a skin-simulating substance enclosing a flesh-simulating substance to form a replica of an extremity of a human body such as an arm. A bone-simulating substance is embedded in the flesh-simulating substance. Flexible tubes are embedded in the flesh-simulating substance to simulate arteries and veins. Fluid-receiving and retaining buttonlike members are placed immediately under the skin-simulating substance for use in teaching allergy testing.

3,722,109

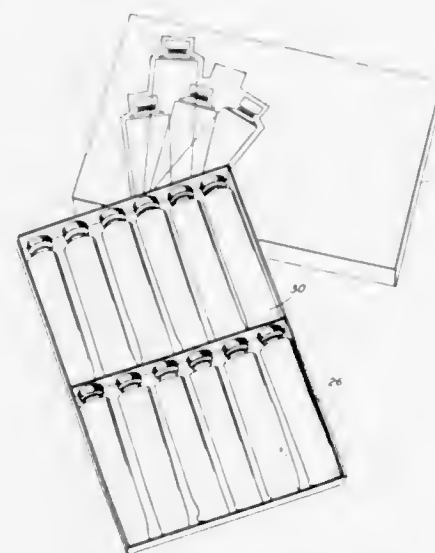
## FINE AND GRAPHICS ARTS PRODUCTS FOR ENABLING AMATEURS AND OTHERS TO SELECT AND-UTILIZE COLOR MATERIALS WITH OPTICAL RESULTS OF INCREASED PREDICTABILITY

Nathaniel J. Jacobson, One Holden Street, Brookline, Mass. Continuation-in-part of Ser. No. 78,644, Oct. 6, 1970, Pat. No. 3,628,260, which is a continuation of Ser. No. 694,736, Dec. 29, 1967, abandoned. This application Sept. 15, 1971, Ser. No. 180,701

Int. Cl. G09b 11/00

U.S. Cl. 35—28.5

4 Claims



A limited number of predetermined, systematically identified color materials are predeterminedly arranged in an array of distinguishable groups of colors of like "value," with reference to the terms "hue," "value" and "chroma" as used in the "Munsell Color System" (or with reference to equivalent terms as used in analogous systems). The user, in working with the array, efficaciously is enabled to create a particular color of predicted optical character by mixing given colors from a particular group of premixed colors of like "value."

3,722,110

## EDUCATIONAL TRAINING DEVICE

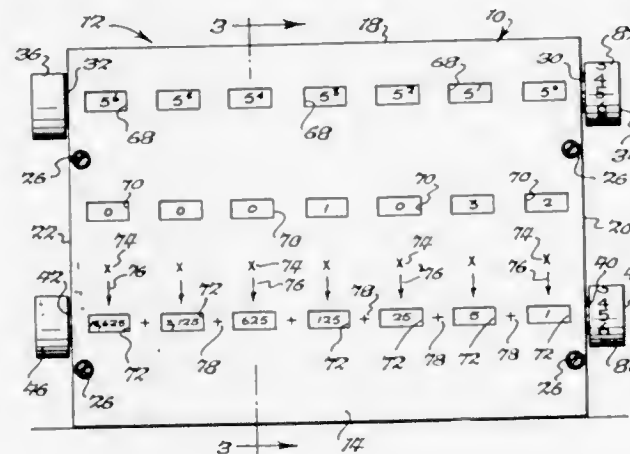
Mary F. Morrissey, and Thomas J. Morrissey, both of 3363 Baseline Road, Grand Island, N.Y.

Filed April 3, 1972, Ser. No. 240,453

Int. Cl. G09b 19/02

U.S. Cl. 35—30

9 Claims



A manually operable educational device for assisting the user in converting a numeral from one base numeration system to a corresponding numeral in a different base numeration system. The device comprises a frame for housing a plurality of rotatable cylinders having numerical indicia thereon selectively displayed through windows provided in the frame

front wall. Mathematical symbols are imprinted on the outer face of the front wall to correlate the displayed numerals in such a manner facilitating the computations thereof to effect the conversion of numerals from one to another base numeration system.

3,722,111

## EXAMINATION PAPER TEST SCORE SYSTEM

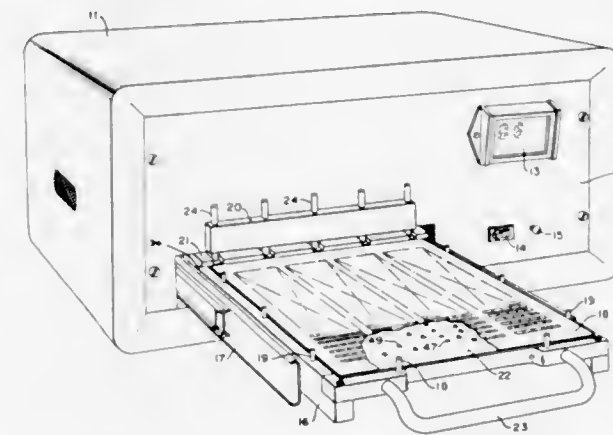
Michael P. Georges, P.O. Box 800, Norwood, Mass.

Filed June 18, 1970, Ser. No. 47,264

Int. Cl. G09b 5/00

U.S. Cl. 35—48 B

10 Claims



The Examination Paper Test Score System provides for registry of a multiple column test answer sheet containing multiple-choice answer blocks with a light permeable predetermined pattern representing answer response positions. A test bed transports the registered master answer-aperture plate and test sheet past a scan line of photo detector devices which register the student's score as the number of light transmissive areas contained in each row and each row consisting of a plurality of blocks from adjacent columns is read by scanning at a sensor row as the aligned sheets pass thereacross. The apertures in the test sheet and the master answer-aperture plate are related to provide a constant transmission aperture area with a substantial misalignment tolerance.

3,722,112

## SKI BOOT CONSTRUCTION

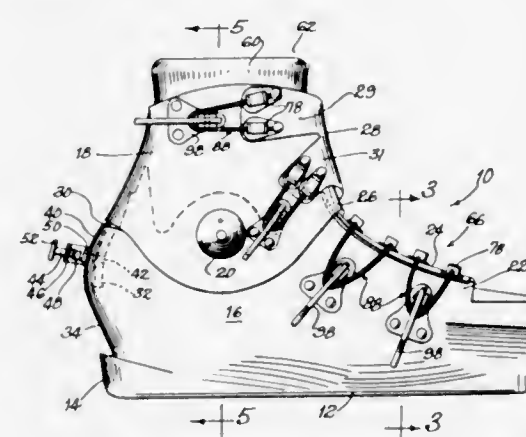
Gerard E. Morgan, Lake Forest, Ill., assignor to Riddell, Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 851,936, Aug. 21, 1969, Pat. No. 3,570,148. This application Feb. 18, 1971, Ser. No. 116,405

Int. Cl. A43b 00/00

U.S. Cl. 36—2.5 AL

17 Claims



A ski boot providing securing means for tightening the boot around the foot. The securing means includes a band having its ends secured to boot portions. The ends of the band are threadably attached so that infinite adjustments are possible to accommodate different wearers. The band preferably comprises a spring mounted around a wire or cable whereby a strong, flexible and threadable member is provided.

3,722,113

## ARTICLE OF FOOTWEAR

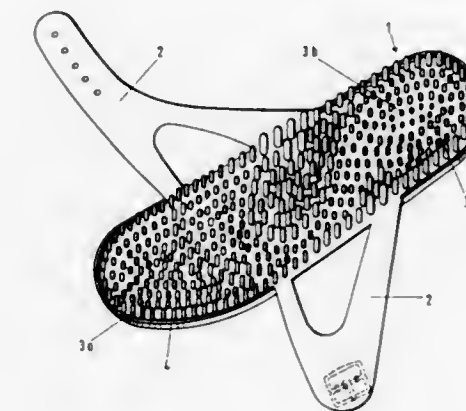
Karl Birkenstock, Lohfelder Str. 40-42, bad Honnef, Germany Filed May 6, 1971, Ser. No. 140,691

Claims priority, application Germany, June 20, 1970, G 70 23 257.4

Int. Cl. A43b 3/12

U.S. Cl. 36—11.5

16 Claims



An article of footwear has uppers which may in form of straps, and a sole of yieldable elastomeric material which is provided at least on its upper and, according to some embodiments, on its lower surface with projections which extend substantially normal to the general plane of the respective surface. The projections may be of different length.

3,722,114

## EPICYCLIC SELF-LOADING MECHANISM FOR A SCRAPER

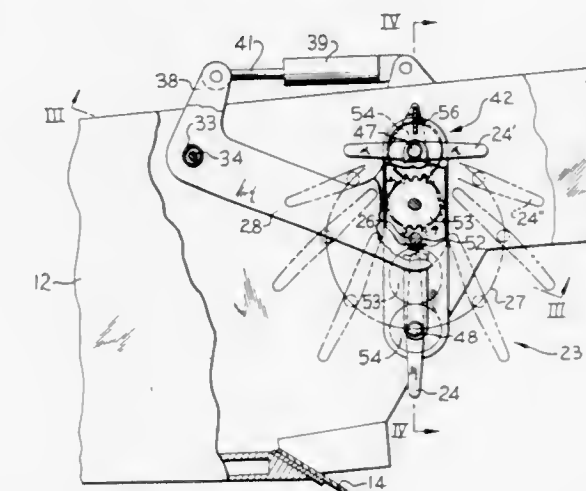
Harvey A. Knell, Joliet; James A. Olthoff, South Holland; Barry A. Scoggin, Plainfield, and Roger M. Smith, Joliet, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed June 1, 1970, Ser. No. 42,214

Int. Cl. E02f 3/04

U.S. Cl. 37—4

9 Claims



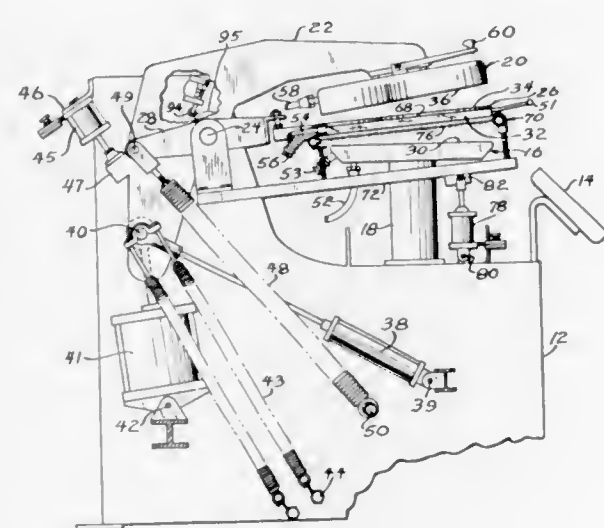
Movement of earth over the cutting edge of a scraper is assisted by a pair of blades which orbit about an axis of rotation which is parallel to the cutting edge and situated between the blades. Each blade also turns about an axis spaced from the orbit axis to provide a preferred inclination at each portion of the orbit. The blades are supported by the planetary gear carrier of an epicyclic gear set which drives the blades and which has a non-rotating sun gear at the orbit axis.



### 3,722,115 GARMENT PRESS

Richard M. Hanson, Salt Lake City, Utah, assignor to McGraw-Edison Company, Elgin, Ill.  
Filed July 12, 1971, Ser. No. 161,657  
Int. Cl. D06f 71/00

U.S. Cl. 38—21

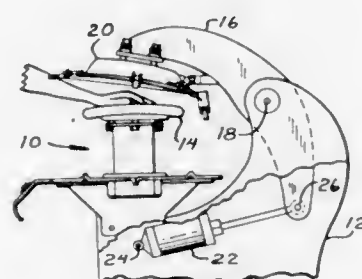


A garment press having at least a pair of opposing press heads and including a porous article supporting leaf between the cooperating press heads and means for spacing the leaf from the lower press head so that the article to be pressed can be easily dressed thereon and for moving the leaf against the lower press head during pressing of the article, and further having means for separating the press heads only slightly after the pressing cycle and for drawing vacuum in one of the heads for cooling and drying air flow over the article yet on the leaf.

### 3,722,116 GARMENT PRESS HEAD SAFETY CONTROL

Michael G. Beeley, Salt Lake City, and Richard D. Thompson, Granger, both of Utah, assignors to McGraw-Edison Company, Elgin, Ill.  
Filed May 3, 1972, Ser. No. 250,067  
Int. Cl. D06f 71/08

U.S. Cl. 38—27

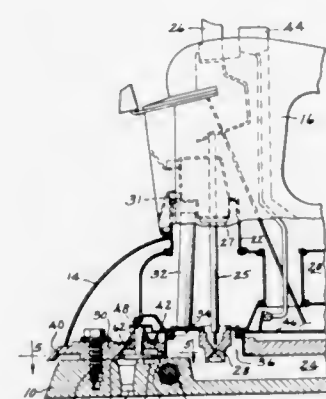


A safety control for a garment press having complementary heads which are moved between separated and closed positions, and specifically including a cable tautly suspended in surrounding proximity from one head at a location to hit and be laterally deflected by any part of an operator between the heads upon the heads closing, a pickup member connected to the cable and shifted when the cable is displaced laterally, and control components responsive to the shifted pickup member operable to shut off head closing power to the press and to dump all press power to allow quick head separation.

### 3,722,117 STEAM NOZZLE IRON

William E. Davidson, Ontario, Calif., assignor to General Electric Company, Bridgeport, Conn.  
Filed May 15, 1972, Ser. No. 253,427  
Int. Cl. D06f 75/06

11 Claims U.S. Cl. 38—77.83



The invention discloses a flash boiler steam iron having separate primary and secondary steam chambers formed by the soleplate and coverplate of the iron and using steam valve means between the chambers wherein the valve means is selectively movable to control steam flow sequentially through the primary and secondary chambers in one position and solely through the primary chamber in another position. The iron has nozzle means thermally connected to the soleplate and directed forwardly and downwardly toward the fabric whereupon steam is controlled by the valve structure to pass through the soleplate or to discharge a curtain of visible steam ahead of and around the nose of the iron.

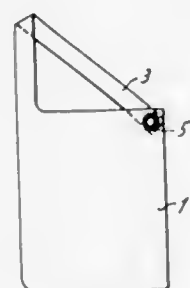
### 3,722,118 ATTACHABLE LABEL

Xaver Burgi, General Guisan Strasse 36, Aarau, Switzerland  
Filed Dec. 31, 1970, Ser. No. 103,194  
Claims priority, application Switzerland, March 20, 1970, 4304/70

U.S. Cl. 40—21 R

Int. Cl. G09f 3/14

2 Claims

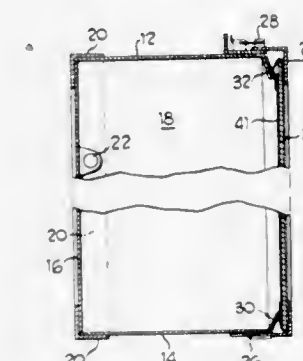


An attachable label characterized by a wider portion which serves to receive an inscription and which is provided with one part of a fastening means, and by a narrower portion which constitutes an elongated strip and which carries the other part of the fastening means, the whole arrangement being such that when the elongated strip is bent over one fastening part can be brought into operative connection with the other fastening part.

3,722,119  
ADVERTISING DISPLAY DEVICE  
Marvin W. Braun, 1738 78th Court, Elmwood Park, Ill.  
Continuation-in-part of Ser. No. 888,761, Dec. 29, 1969, abandoned. This application Feb. 3, 1972, Ser. No. 223,235  
Int. Cl. G09f 13/04

U.S. Cl. 40—132 D

2 Claims U.S. Cl. 40—152



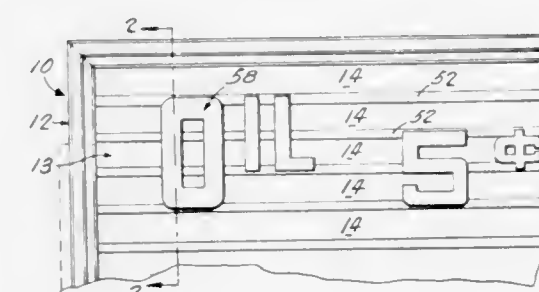
An advertising display device, particularly adapted for portable, backlit signs, includes a clear, protective pane covering a translucent sign or card on which the copy is imprinted. The pane is provided with marginal flaps and sealing strips which envelope the edges of the sheet. When the assembled sign and pane are inserted in position in a hinged door frame panel, and the frame closed against a housing, the sealing strips are brought into sealing engagement with a flange extending from the housing to hold the sheet firmly in place, thus preventing entry of moisture and foreign matter.

### 3,722,120 DISPLAY SIGN

Henry Finkel, Westmount, Quebec, Canada, assignor to M. C. Webster Co. Ltd., Town of Mount Royal, Quebec, Canada  
Filed Dec. 31, 1970, Ser. No. 103,119  
Int. Cl. G09f 7/08

U.S. Cl. 40—140

9 Claims

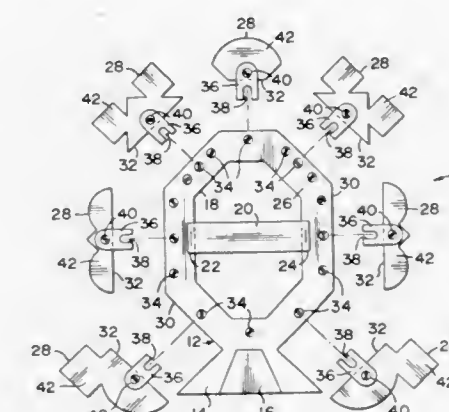


The disclosure herein describes a display sign which consists of a series of superposed slats identical in shape and supported and confined in frame members, also identical in shape; each slat includes, at its upper portion, a lengthwise groove defined by two upwardly extending resilient leg portions and, at its lower portion, a lengthwise channel having a restricted entrance portion slightly smaller than the overall distance extending between the extremities of the leg portions. Each slat further includes, on each of its front and rear faces, a longitudinally extending rail which cooperates with the rail of another slat to support indicia, such as letters, symbols and numerals. The disclosure also teaches two ways of mounting hooks on the back of these indicia in order to support them on the rails.

### 3,722,121 PICTURE FRAME

Edward Olczewski, 1650 7th Avenue North, St. Petersburg, Fla.  
Filed Jan. 6, 1971, Ser. No. 104,312  
Int. Cl. G09f 1/12

8 Claims



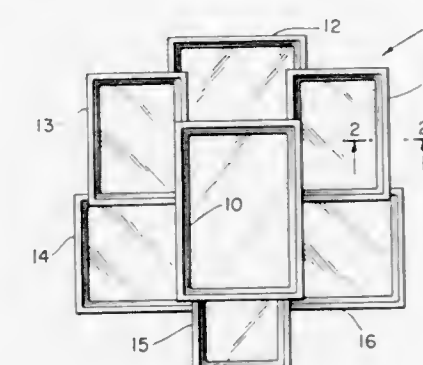
A picture frame comprising a body having a substantially annular configuration wherein a plurality of ornamental members may be removably attached to various points along the outer periphery of the body member. The members are attached by substantially U-shaped clips secured to each member and designed to cooperate with one of a plurality of screws adjustably attached to the body so as to connect the clip in locking engagement with the rear surface of the body. Each of the ornamental members may have a different configuration and may be interchangeably secured at various positions along the periphery of the body thereby allowing one to selectively change the ornamental configuration of the frame.

### 3,722,122 PICTURE FRAME ASSEMBLY

Louis J. Sesto, Redondo Beach, Calif., assignor to Photo Plastic International, Santa Monica, Calif.  
Filed Nov. 22, 1971, Ser. No. 201,077  
Int. Cl. G09f 1/12

U.S. Cl. 40—152

4 Claims



A picture frame assembly includes a plurality of frames having identical marginal cross-sectional contours for co-operation with clip means for securing the frames in overlapping relationship so that the assembled frames enable the creation of a collage of pictures mountable in the frames for hanging on a wall.

### ERRATUM

For Class 40—152 see:  
Patent No. 3,723,904



3,722,123

## CASELESS AMMUNITION FIRING SYSTEM

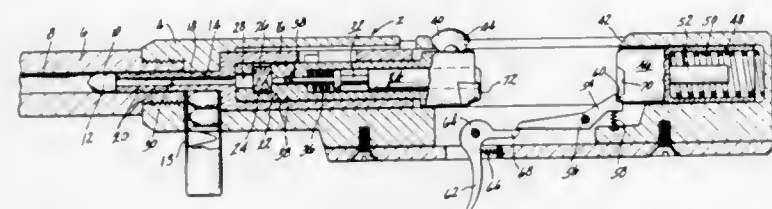
Fred G. Parisi, Northford, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Aug. 25, 1971, Ser. No. 174,706

Int. Cl. F41c 11/00

U.S. Cl. 42-16

2 Claims



A system for feeding and firing ammunition of the variety having no casing. Sealing of the firing chamber is accomplished by providing a reciprocating bolt assembly having a bolt projection which is telescopically received in the barrel bore. The projection picks up and seats the projectile in the firing chamber. The propellant charge may be secured to the projectile, or may be separately loaded in the bolt mechanism. In the latter case, a fluid passage extends from the propellant chamber through the bolt projection to the projectile chamber.

3,722,124

## TARGET GAME

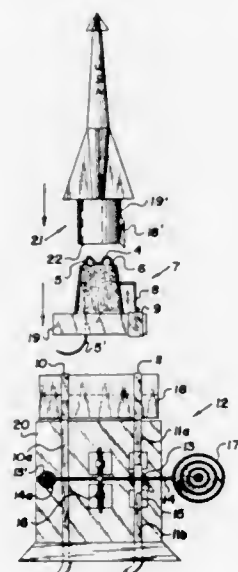
Albert Nathanson, 75-60 199th St., Flushing, N.Y.; Charles Girsky, 67 South Mall Dr., Melville, N.Y., and Matthew R. Miller, 77 South Bicycle Path, Selden, N.Y.

Continuation-in-part of Ser. No. 53,377, July 9, 1970, abandoned. This application Nov. 30, 1971, Ser. No. 203,203

Int. Cl. F41c 3/06; A63b 63/00, 71/06

U.S. Cl. 42-54

12 Claims



A toy device which in a preferred embodiment is a target game having a target receivable of a blow by a mallet, a dart, a BB, a bullet, or the like, a closing of the switch by a hitting of the target or a hitting of the bull's eye of the target serving to close a switch which is held in a closed position by a magnet, the closing of the circuit actuating an electrical circuit providing heat to an electrode in contact with an inserted cap which heat explodes the cap to cause a snugly fitting but removable enclosure to pop off because of the heat effect on the gases within the enclosure, the circuit being broken by a safety switch when the enclosure around the filament is popped off or otherwise removed, the filament being of a removable and replaceable variety and mountable in a position such as to provide sufficient room for a cap to be inserted beneath the filament with the head of the cap in contact with a contact surface of the filament.

3,722,125

## FAST LOADING CARTRIDGE HOLDER FOR REVOLVERS

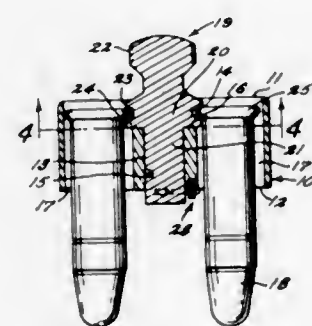
Robert D. Switzer, 148 Sheridan Avenue, Fort Thomas, Ky.

Filed April 28, 1971, Ser. No. 138,263

Int. Cl. F42b 39/04

U.S. Cl. 42-89

4 Claims



A holder for releasable securement of a round of cartridges in condition for simultaneous loading of the round into the cylinder of a revolver. The holder comprises a cylindrical body having a plurality of angularly spaced apart, cartridge receiving through-bores adapted to introduce the cartridge round into the chambers of a revolver cylinder. The holder also includes a manually operated cartridge engaging member mounted for oscillating movement on the holder body centrally of the through-bores and having a cartridge stop rim projecting laterally into common ends of the through-bores and a cam spaced from the rim and having laterally extended portions engageable under the case flanges of the cartridges and radially reduced portions between the extended portions that clear said flanges. The holder also includes an over-center spring detent means between the body and the cartridge engaging member to urge and then positively maintain the said member in either a cartridge round holding or a cartridge round discharging position.

3,722,126

## MARINE HAULING APPARATUS

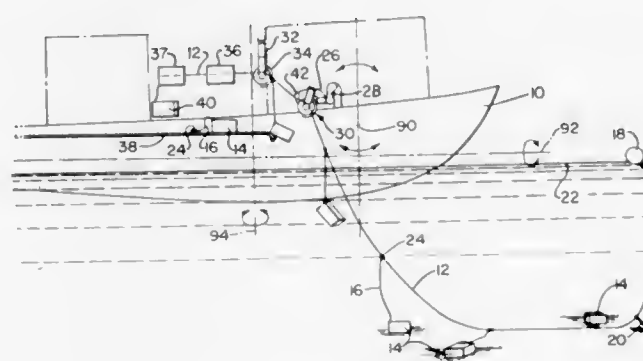
William D. Whipple, and Howard W. Gifford, Westport Point, Mass., assignors to Prelude Corporation, Westport Point, Mass.

Filed Nov. 2, 1970, Ser. No. 86,263

Int. Cl. A01k 79/00

U.S. Cl. 43-6.5

20 Claims



A marine surface vessel hauls a trawl of marine life-harvesting equipment with a first pulley-like unit located and movably jointed for lifting the trawl cable from the sea with minimal disturbance due to motion of the vessel relative to the sea and for separation of the trawl cable from the harvesting equipment attached to it, and with a second pulley-like unit located for positioning both the trawl cable and the harvesting equipment on the vessel for further handling.

3,722,127

## HOOK-SETTING FISHING ROD HOLDER

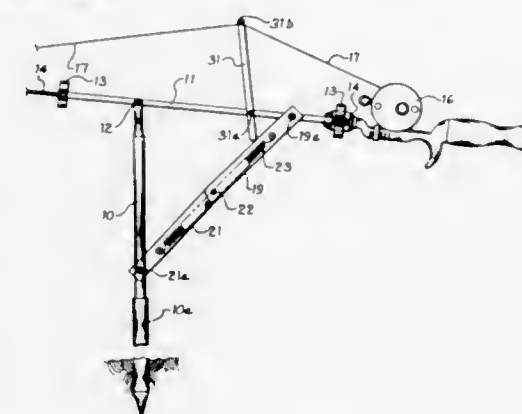
Vern A. Atkins, Sr., 4118 N. Sheridan, Indianapolis, Ind.

Filed Nov. 16, 1970, Ser. No. 89,635

Int. Cl. A01k 97/00

U.S. Cl. 43-15

2 Claims



Disclosed is a member establishing the attitude of a fishing rod attached to it, the member being held in a substantially horizontal position by the over-center position of a toggle assembly. A trigger lever, actuated by a relatively light pull on the fishing line, nudges the toggle assembly back across center when the line is pulled to snap the member, and hence the tip of the fishing rod sharply upwardly. The mechanism is distinguished by the fact that triggering or release occurs without the necessity of exerting a force large enough to overcome that exerted by the over-center toggle spring.

3,722,128

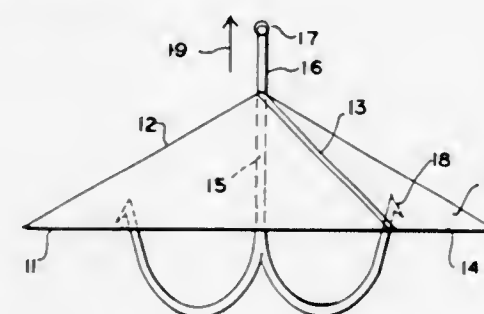
SNAG SHIELD AND SCENT CARRIER FOR LURE HOOKS  
Denis Tremblay, 526 Yale Avenue, E., Winnipeg, Manitoba, Canada

Filed Feb. 3, 1971, Ser. No. 112,309

Int. Cl. A01k 83/00

U.S. Cl. 43-42.1

1 Claim



A flexible porous shield is engaged over the shank of a fish hook and shields the barbs from snags yet does not interfere with the barb engagement when struck. The porous material may also be used as a scent carrier.

3,722,129

## FISHING LURE

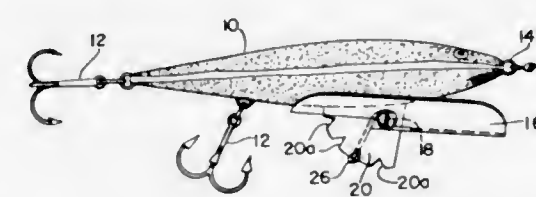
Jay E. Jensen, 811 Lynwood Street, Raritan, N.J.

Filed Nov. 20, 1970, Ser. No. 91,385

Int. Cl. A01k 85/00

U.S. Cl. 43-42.03

4 Claims



A fishing lure in which a transducer is carried by a body member and is responsive to information from the water in

which the lure is placed for regulating the position of a pair of fins pivotally mounted to the body member, to control the depth of the fishing lure in the water.

3,722,130

## ELEMENT FOR RAPID JOINT FOR TUBULAR FISHING LINES

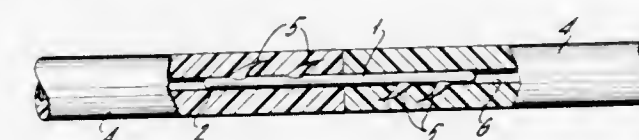
Ernesto G. Handl, Paso de Los Andes 153, Mendoza, Argentina  
Filed March 12, 1971, Ser. No. 123,710

Claims priority, application Argentina, March 12, 1970, 227495

Int. Cl. F16g 11/00, 11/08

U.S. Cl. 43-44.98

5 Claims



This is a rapid action connecting element for tubular fishing lines. This element can be used to repair cut lines and to assemble sections. The element comprises a single flexible pin with rounded ends with barbs at its ends having their point directed toward the central section of the pin. Half the pin is introduced into a hole in one tubular line and the other end of the pin is introduced into an end of another tubular line. Upon pushing the ends of the tubular lines together, they are held connected, by reason of the barbs becoming embedded in the lines.

3,722,131

## BRIDGE FOR MINIATURE TRAINS

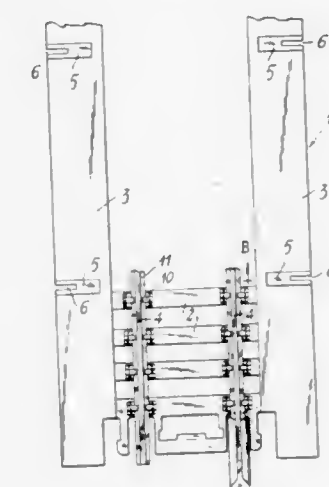
Alessandro Rossi, Como, Italy, assignor to Rivarossi S.p.A., Como, Italy

Filed Nov. 23, 1971, Ser. No. 201,344

Int. Cl. A63h 33/00

U.S. Cl. 46-1 K

6 Claims



A bridge for miniature trains comprising at least a rail section having laterally coupling seats for removably engaging transverse extension of garder means.

3,722,132

## WING FOR TOY AIRPLANES, PARTICULARLY HELICOPTERS

Uwe C. Seefluth, 2409 Klingberg, Seestrass, Klingberg, Germany

Filed Feb. 8, 1971, Ser. No. 113,496

Int. Cl. A63h 27/12

U.S. Cl. 46-75

15 Claims

A toy airplane wing, particularly a rotary wing for toy helicopters, comprising an upper and a lower profiled



semimonocoque shell members of plastic material joined together to form the wing the profiling being such that only a



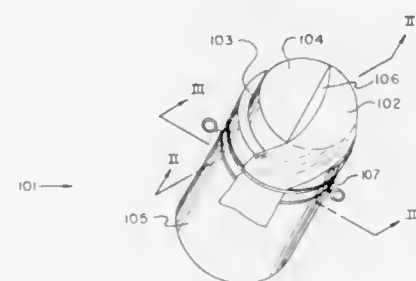
partly hollow body is formed while the greater part of the wing area consists of flat superposed thin plastic material.

### 3,722,133 GAME CALL

James K. Morgan, P.O. Box 688, Jackson, La.  
Filed March 8, 1972, Ser. No. 232,709  
Int. Cl. A63h 5/00

U.S. Cl. 46-178

6 Claims



A call for imitating the sound of wild game having a resilient sound producing membrane in combination with two different sound controlling means.

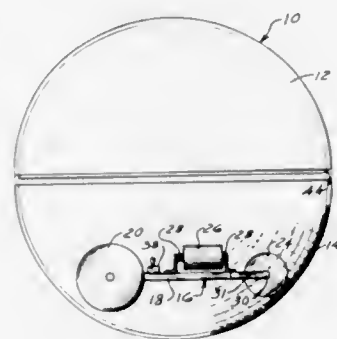
### 3,722,134

SELF-PROPELLED CONTINUOUSLY MOVING TOY  
Charles E. Merrill, 4461 Coconut Creek Blvd., Pompano, Fla.,  
and Joseph H. Gifford, 9403 N.W. 37 Court, Coral Springs, Fla.

Filed Oct. 12, 1971, Ser. No. 188,322  
Int. Cl. A63h 17/00

U.S. Cl. 46-206

9 Claims

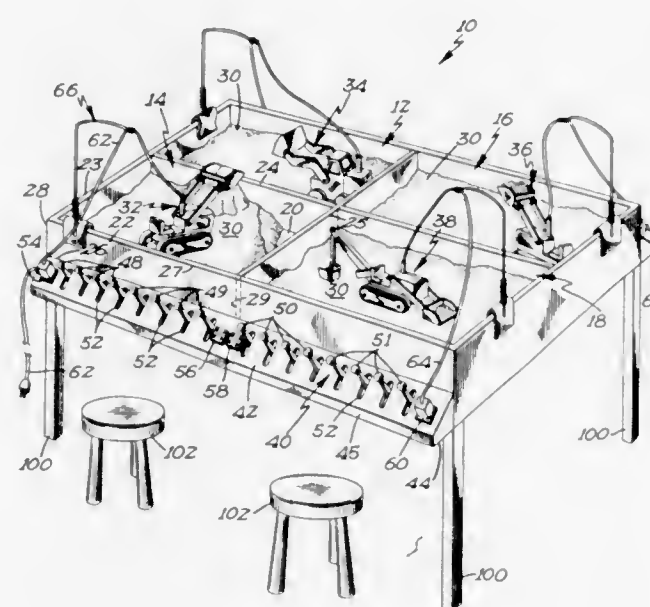


A self-propelled toy that moves about a planar surface, changing direction whenever an obstacle too large to drive over is contacted. The toy is comprised of a rigid, hollow shell having a driving means, within which the driving means provides the necessary torque on the shell for forward and turning motion.

3,722,135  
PLAY TOY FOR USE WITH MINIATURIZED VEHICLES  
Richard W. Jacobson, Route 1, Grand Meadow, Ill.  
Filed Dec. 27, 1971, Ser. No. 212,076  
Int. Cl. A63h 33/26

U.S. Cl. 46-244 A

10 Claims



A play toy for use with miniaturized, motorized electrically driven vehicles to allow the selective manipulation of such vehicles is disclosed. In the preferred embodiment, an open top, box-like container is arranged upon legs to approximately table top height. Arranged on the sides of the container are electrical power control consoles each including four electrical control levers for controlling the power to an outlet plug mounted on the console. Small unconnected particles of material such as ground rubber or sand, are placed in the container to a depth of several inches; miniaturized vehicles are placed upon such material; and an electrical control cord between such vehicles and the outlet plug on the console is supported on a cord arm attached to the side of the container to allow an operator to selectively manipulate such vehicles through the use of the electrical control levers at the control console.

3,722,136  
HOUSEKEEPING DOLL HAVING REVERSIBLE MOTOR  
DRIVING SELECTIVELY MOVABLE ARMS  
Herbert Thorn, Flushing, and Harvey Berkin, Merrick, both of N.Y., assignors to Ideal Toy Corporation, Hollis, N.Y.  
Filed Oct. 27, 1971, Ser. No. 193,066  
Int. Cl. A63h 29/22, 13/04

U.S. Cl. 46-247

30 Claims

A toy doll is provided which has a reversible electric motor therein operatively connected to a gear train for separately and independently oscillating the arms of the doll, with one of the arms being mounted for oscillation about a horizontal axis and the other arm being mounted for oscillation about a vertical axis. Separate oscillation of the arms is accomplished by means of unidirectional clutches which permit movement of only one of the arms in accordance with the direction of rotation of the motor. In addition, the same reversible motor is operably connected to the doll's head and a mounting struc-

ture for the doll's legs so as to oscillate the doll's head about a vertical axis while simultaneously oscillating the doll's torso



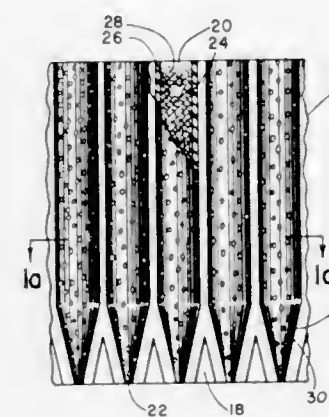
about a fore-and-aft axis, to simulate human movement, irrespective of the direction of rotation of the motor.

### 3,722,137

TRANSPLANT HANDLING MEANS  
Donald A. Kesinger, Denver, and Leland S. Inscho, Jr., Broomfield, both of Colo., assignors to The Gales Rubber Company, Denver, Colo.  
Filed Dec. 30, 1970, Ser. No. 102,582  
Int. Cl. A01g 9/10; A01c 11/02

U.S. Cl. 47-34.13

7 Claims

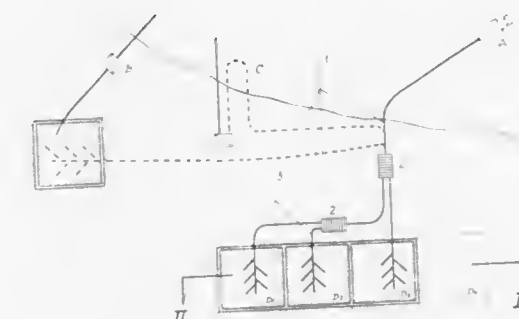


Process and apparatus are described for handling and treating a plurality of seeds including the method of (1) forming a continuous transplant carrier provided with spaced containers, each of sufficient size to accommodate a germinated seed or plant, and media to support growth and provided with means for exchange of moisture and gases, (2) inserting seed and support media within the containers, and (3) germinating and preculturing the seeds in the containers for at least a period of time to allow radical and cotyledon to emerge from the seed coats and develop. The invention is particularly useful in the automated transplanting of a variety of plants including high value crops such as sugar beets and lettuce.

3,722,138  
PROCEDURE FOR A DIRECTED HYDRAULIC FILL  
Harnaj D. Veceslav, Bucharest, Romania, assignor to Institutul De Petrol, Bucharest, Romania  
Filed Nov. 3, 1970, Ser. No. 86,484  
Int. Cl. B03b 1/00

U.S. Cl. 47-58

8 Claims

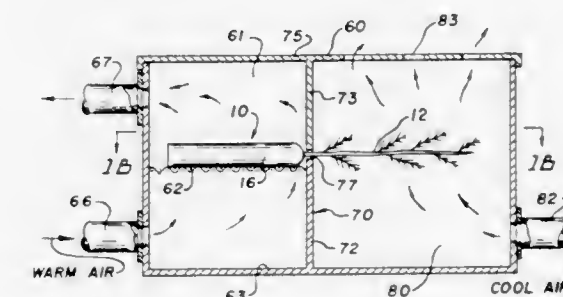


A slurry obtained from a hydraulic excavating or dredging process is passed through classifiers which grade its solid phase according to particle size. The area to be filled is subdivided into a plurality of basins and secondary slurries carrying the fractions are deposited successively in these basins. Simultaneous with the deposition of the coarse-fraction slurry in a second basin and after the settling of the coarse fraction in the first basin, a medium-fraction slurry is deposited in the first basin. Thereafter the coarse-fraction slurry is deposited in a third basin, the medium-fraction slurry in the second basin, and a fine-fraction slurry in the first basin, making a three-blanket-coarse, medium, and fine-layering in the first basin. Then all three slurries are simultaneously deposited and settled down the line in the other basins.

3,722,139  
CONTAINERIZED TREE SEEDLING UNITS AND  
METHOD OF MAKING THESE UNITS  
Norman R. Pelton, 12127 York Avenue, Haney, British Columbia, Canada  
Continuation-in-part of Ser. No. 757,991, Sept. 6, 1968, abandoned. This application Nov. 5, 1970, Ser. No. 87,201  
Int. Cl. A01g 9/10

U.S. Cl. 47-58

7 Claims



A containerized tree seedling unit including an elongated container around the roots of a tree seedling and made of a clay-like mud in and around the roots, and means for maintaining the container in a semi-rigid state for handling, storing and planting purposes. Peat moss and/or fertilizer may be included in the mud. A method of producing this containerized unit which includes pressing a body of moist clay-like material into and around the root system of the seedling to form the container.

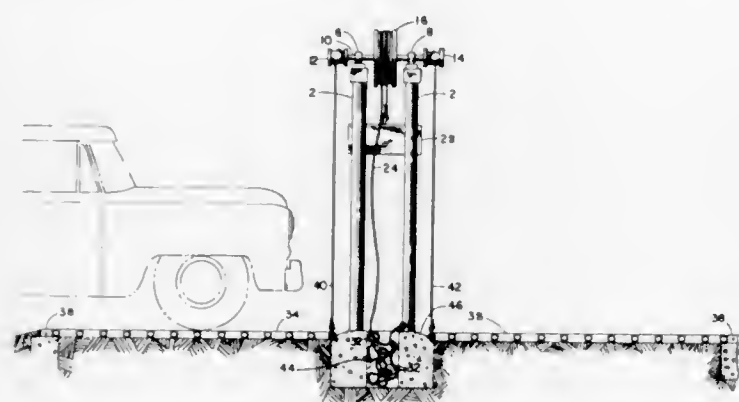


### 3,722,140 AUTOMATIC GATE

John M. Newton, Rt. 3, Box 207, Grapevine, Tex.  
Filed Feb. 17, 1971, Ser. No. 115,966  
Int. Cl. E05f 13/04

U.S. Cl. 49—30

17 Claims



An automatic gate characterized by several distinctive features, including: (1) the use of flexibly mounted barrier members forming a collapsible gate that moves downwardly into a recess means to open the gate; and (2) timed hold down means to keep the barrier members lowered for a period of time after a vehicle has moved off an approach ramp that effects the lowering in order to allow passage of long trailers onto the ramp. Also disclosed are specific structures for carrying out the respective embodiments including: (1) the use of a counterweight in the raising means, (2) the use of five or more tubular barrier members for preventing exit of small livestock such as sheep and the like; (3) a cattle guard type approach treadle so that an animal cannot walk on the treadle to open the gate; and (4) an arming lever, and a cam for engaging a free end of the arming lever such that the timer is armed by downward movement of the approach treadle but allowing return of the arming lever and the treadle.

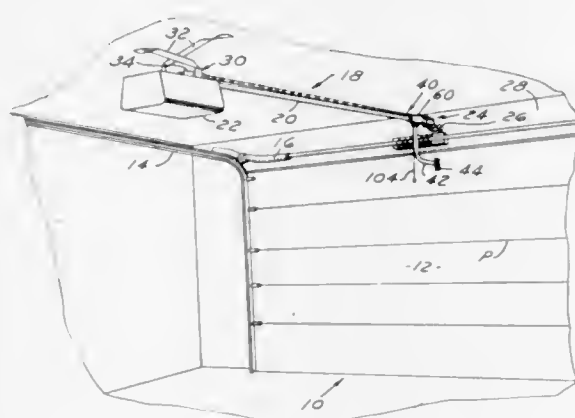
### 3,722,141 OVERHEAD DOOR OPERATOR RELEASE

Harold L. Miller, Detroit, Mich., assignor to Vemco Products, Inc., Detroit, Mich.

Filed May 28, 1971, Ser. No. 148,093  
Int. Cl. E05f 11/54, 15/16

U.S. Cl. 49—139

9 Claims



A traveler for an overhead garage door operator with a linear power shuttle, a guide track and an actuator arm for raising and lowering a door. The traveler is connected to the actuator arm and carried by the track for reciprocating movement thereon. A biased latch connects the traveler to the power shuttle to open and close the door in normal operation, releases the traveler from the shuttle to facilitate manual opening and closing of the door, and automatically re-connects the traveler with the shuttle.

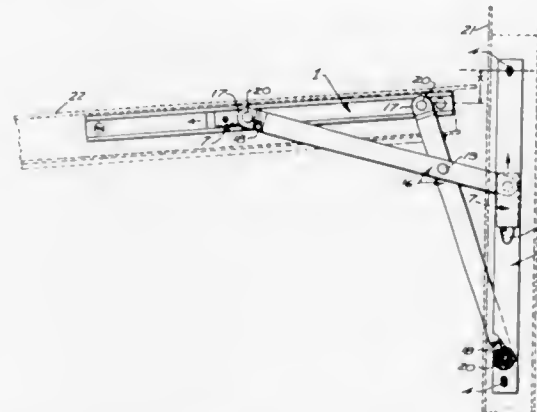
### 3,722,142 MOUNTING BRACKET FOR OVERHEAD WINDOW

Axel W. Anderberg, Los Angeles, and George A. Taylor, LaCrescenta, both of Calif., assignors to A. W. Anderberg Manufacturing Co., Los Angeles, Calif.

Filed June 16, 1971, Ser. No. 153,517  
Int. Cl. E05d 15/28

U.S. Cl. 49—248

8 Claims



A mounting bracket for overhead windows wherein both the window frame and window have guide members. A pair of brace members are pivotally connected intermediate their ends to form four pivoting extremities, two of which are pivotally connected at a fixed axis to the two guide members, and two are pivotally connected to friction slides movable along the slide bars.

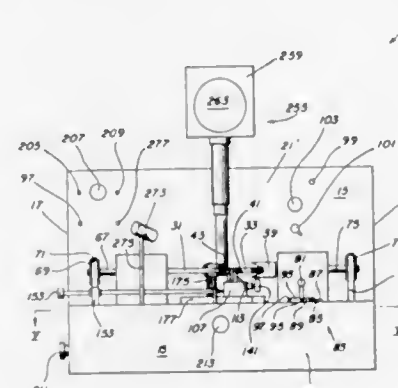
### 3,722,143 CONTACT LENS EDGE FINISHING MACHINE

Truman W. Cottom, Memphis, Tenn., assignor to Roy W. Mabry, Tutwiler, Miss.

Filed Jan. 29, 1971, Ser. No. 110,979  
Int. Cl. B24b 13/00

U.S. Cl. 51—5

1 Claim



A portable machine used to accomplish the final operations in the sequence of fabricating a contact lens. The machine includes a pair of rotating inwardly directed spindles, each having a rubber tip and can be bindingly brought together to firmly support the rotating contact lens while the final operations are effected. A feature of the machine is the lens centering device which accurately positions the geometrical center of the lens in coincident alignment with the rotating axes of the spindles. The machine also includes a movable guidably supported cutting tool for concentrically reducing the diameter and the thickness of the lens at the periphery thereof, a movable guidably supported rotating polishing wheel for blending the newly cut surfaces with the previously ground optic surfaces and polishing the periphery of the lens, a unique mechanical oscillator which cyclically shifts the rotating axis of the polishing wheel so as to automatically and uniformly polish all the newly cut surfaces, i.e., the terminal edge, the convex surface and the concave surface of the lens, and a workpiece enlarger which presents a visual blow-up of the lens, the cutting tool, and the polishing wheel to the operator.

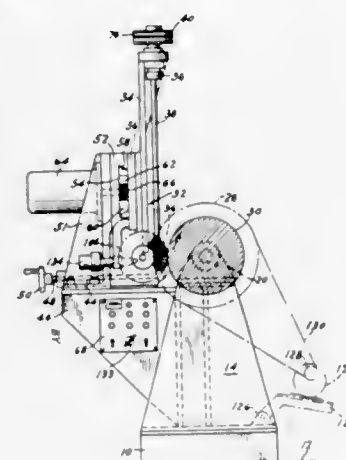
### 3,722,144 METHOD AND MACHINE TO DE-BUR COMMUTATOR BARS

Cyril J. Rickrode, New Oxford, and Charles A. Becker, Hanover, both of Pa., assignors to Cam Industries, Inc., Hanover, Pa.

Filed April 6, 1971, Ser. No. 131,642  
Int. Cl. B24b 1/00, 5/04; B24d 13/02

U.S. Cl. 51—50 R

14 Claims



This invention comprises a method and one embodiment of a machine for automatically deburring the opposite sharp edges of commutator bars of the armatures of electric motors and generators by the use of an abrading brush rotatably driven in opposition to the direction of rotation of the commutator while the brush traverses the bars thereof longitudinally. At the completion of deburring one similar edge of each bar, the rotary directions of the brush and commutator are reversed to deburr the opposite edges of the bars.

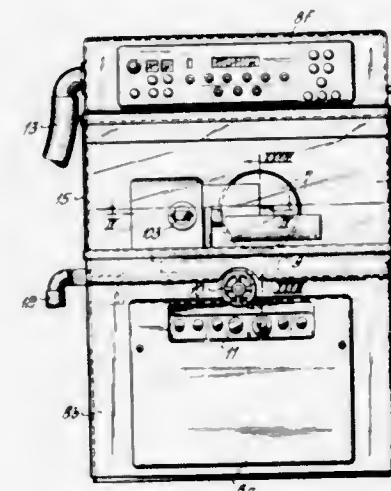
### 3,722,145 MACHINE FOR GRINDING OF WORKPIECES

Heinz G. Amrhein, Buderich; Herman Stander, Dusseldorf, and Heinz Rosenow, Osterath, all of Germany

Filed May 12, 1970, Ser. No. 36,582  
Claims priority, application Germany, May 13, 1969, P 19 24 315.3

U.S. Cl. 51—56

41 Claims



Batches of identical turnplates or analogous metallic workpieces are ground in an automatic machine wherein a pusher evacuates workpieces from a magazine and delivers them into the receptacle of a transfer unit which changes the orientation of such workpieces and places them between two pins of a clamping unit. The latter is mounted on a carriage which is reciprocable along a supporting table and moves the workpieces against the active surface of a cupped grinding wheel.

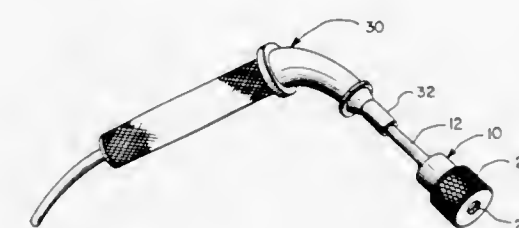
### 3,722,146 DEVICE FOR SHARPENING THE TAPERED POINTS OF DENTAL INSTRUMENTS

Leopoldo Rodriguez, 1304 Academy Boulevard, Colorado Springs, Colo., and Donald G. Birk, 1130 Waston Road, Colorado Springs, Colo.

Filed March 2, 1971, Ser. No. 120,176  
Int. Cl. B24b 3/60, 23/00

U.S. Cl. 51—73 R

6 Claims



A novel device for sharpening the tapered ends of dental instruments such as explorers and picks is disclosed. The device comprises an elongated housing having a shaft extending from one end thereof for insertion into a dental drill which effects rotation of the housing about an axis. The other end of the housing defines an open, elongated cavity in axial alignment with the shaft. A grinding stone is adapted to be removably inserted into the cavity, the stone having a cylindrical bore therethrough in alignment with the rotational axis of the housing and being maintained in place in the housing by a removable end cap. The tapered ends or points of dental instruments are inserted into the cylindrical bore of the stone while the housing is being rotated by the dental drill and, through suitable manipulation of the dental instrument, the tapered point thereof can be readily renewed.

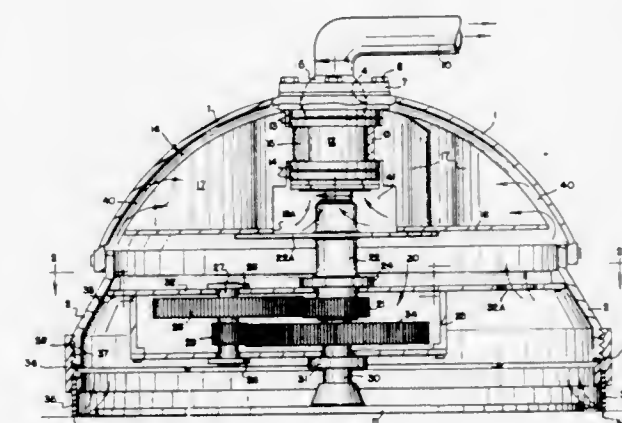
### 3,722,147 AIR DRIVEN ABRADING DEVICE

Lawrence M. Brenner, 1500 Golden Avenue, Eugene, Oreg.

Filed Aug. 16, 1971, Ser. No. 171,860  
Int. Cl. B24b 25/00, 55/06

U.S. Cl. 51—170 T

7 Claims



An air powered device for abrading wall and floor surfaces. A turbine is disclosed within a dome-like housing. An abrading disc is powered by the turbine via a gear reduction drive. A source of reduced air pressure draws air into the housing past the periphery of the disc for the pick up of dust particles with the airflow path being inwardly to an area of low pressure located centrally of the turbine. A conduit member in communication with said source is movably attached to the dome-like housing and may additionally serve as a hand hold. An air barrier restricts the incoming airflow to the path over the periphery of the abrading disc.



3,722,148

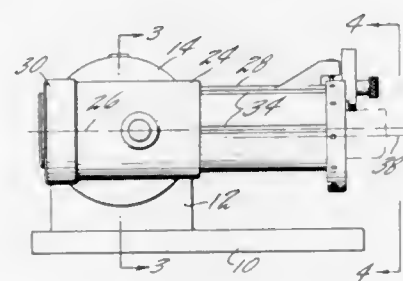
## UNIVERSAL TOOL SHARPENING FIXTURE

Arne Y. Grahm, Granby, Conn., assignor to The Poly-Choke Company, Incorporated, East Hartford, Conn.  
Continuation-in-part of Ser. No. 722,952, April 22, 1968, abandoned. This application April 23, 1970, Ser. No. 31,232

Int. Cl. B24b 3/18

U.S. Cl. 51—225

17 Claims



In the present invention of a universal tool sharpening fixture, a pair of sleeves are provided, one being rotatably mounted and the other being eccentrically positioned within the rotatably mounted sleeve so that an eccentric path of motion can be generated. A tool holder is positioned in the eccentrically mounted sleeve, and the periphery of the tool holder has a series of depressions which cooperate with a plunger to define successive positioning stations for the flutes of the tap to be sharpened. In one embodiment a positioning blade is mounted on the holder to insure a proper initial location of a tool in the holder and a two-step mechanism controls the degree of rotation of the rotatable sleeve depending on the requirements of a tool to be sharpened. In another embodiment rotational adjustment of the detent mechanism permits the radial relief at the cutting edge of the tool to be varied for either right- or left-hand tools.

3,722,149

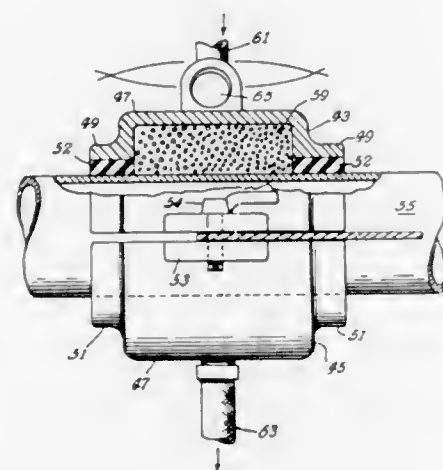
## GRIT PAD CLEANER

Albert G. Bodine, 3877 Woodley Avenue, Van Nuys, Calif.  
Continuation-in-part of Ser. No. 759,034, Sept. 11, 1968, abandoned, which is a continuation-in-part of Ser. No. 699,198, Jan. 19, 1968, Pat. No. 3,544,292, which is a continuation-in-part of Ser. No. 423,559, Jan. 5, 1965, Pat. No. 3,380,195. This application April 12, 1971, Ser. No. 133,068

Int. Cl. B24b 3/106

U.S. Cl. 51—241 S

4 Claims



A device for cleaning surfaces and the like which is comprised of a plate subjected to resonant sonic vibration and a high-impedance material, such as rubber, connected to and extending from the vibratory surface to contact the surface to be cleaned, forming an enclosure when so in contact, the enclosure being filled with a cleaning grit material which is caused to vibrate by the vibratory plate.

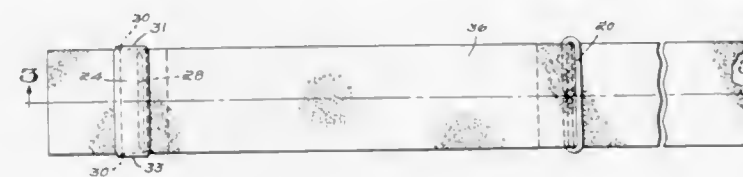
3,722,150

## ABRADING DEVICE TO CLEAN SURFACES

Arthur D. Pass, 27 Hazelwood St., Malden, Mass.  
Filed June 30, 1971, Ser. No. 158,450  
Int. Cl. B24d 15/04

U.S. Cl. 51—391

7 Claims



An abrading device to clean fittings and such, particularly exterior surfaces, has an abrasive sheet in combination with a backer. The abrasive sheet and backer are retained by connective that hold the member in predetermined position of use, yet permit changing of such position whenever desired by a simple sliding movement of the sheet.

3,722,151

## BACK AND END WALLS FOR BATHTUB ALCOVE

Stewart F. Gardner, c/o Central Storage and Ware Housing, Inc., 108 North Elkhart Avenue, Elkhart, Ind.  
Filed March 8, 1971, Ser. No. 121,943  
Int. Cl. A47k 3/08

U.S. Cl. 52—36

4 Claims



This invention relates to bathtubs, and particularly to finishing the installation of a tub in a rectangular alcove by means of a back and end walls quickly secured in position above the tub and having molded in designs for utility or appearance, and wherein the back and end walls are molded as a single relatively thin sheet, and after molding are adapted to be bent along vertical score lines to define the back and end walls and to allow for installation.

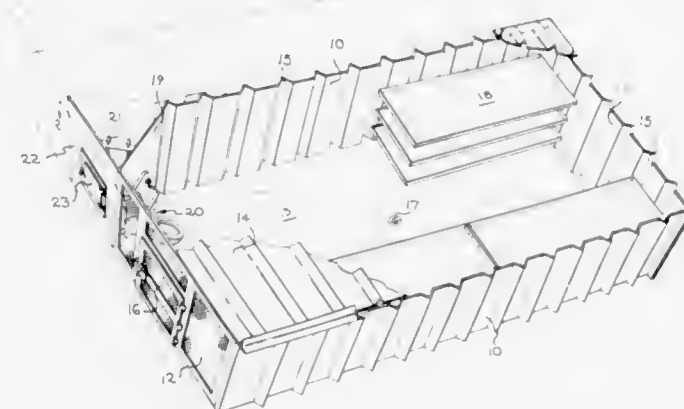
3,722,152

## PORTABLE JAIL CELL

Benjamin G. Schlatter, and Sydney Spate, both of Toledo, Ohio, assignors to Art Inon, Inc., Toledo, Ohio  
Filed Aug. 2, 1971, Ser. No. 167,984  
Int. Cl. E04h 3/08

U.S. Cl. 52—79

1 Claim



A portable jail cell which can be transported as a unit and installed in a jail or designated building. A windowless struc-

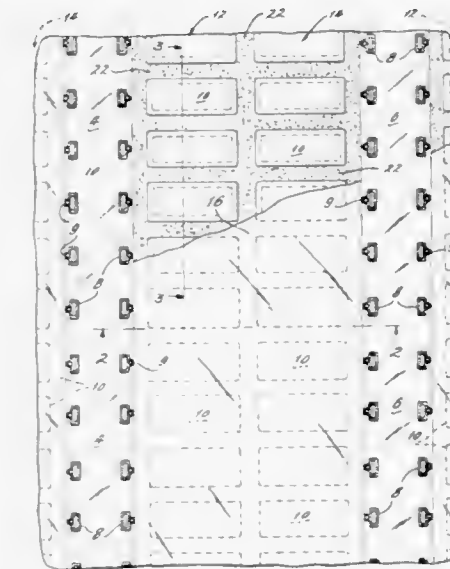
3,722,155

## CEMETERY COVERED BY AN ARTIFICIAL TURF MATERIAL

Milton J. Glock, and Loran P. Glock, both of Belleville, Ill., assignors to said Milton J. Glock, by said Loran P. Glock  
Filed Nov. 9, 1970, Ser. No. 87,982  
Int. Cl. E04h 13/00

U.S. Cl. 52—133

10 Claims



ture which has a foraminous metal screen door for light and air, is of ribbed sheet metal panels except for the floor. The floor is of cast concrete provided with channels on which to set and weld a unit cell. Sheet metal bunks which are welded inside the cell create a solid one piece unit. At one corner is an angled wall portion connecting contiguous side walls, and on the inner side of which are the toilet and wash bowl and on the outer side are suitable plumbing fixtures. This enables two cells to be placed side by side with adjacent angled wall portions to provide convenient access chambers and dispose the plumbing for the two cells in conveniently accessible location. The sheet metal for the wall panels is not less than one-eighth inch in thickness to militate against manual cutting.

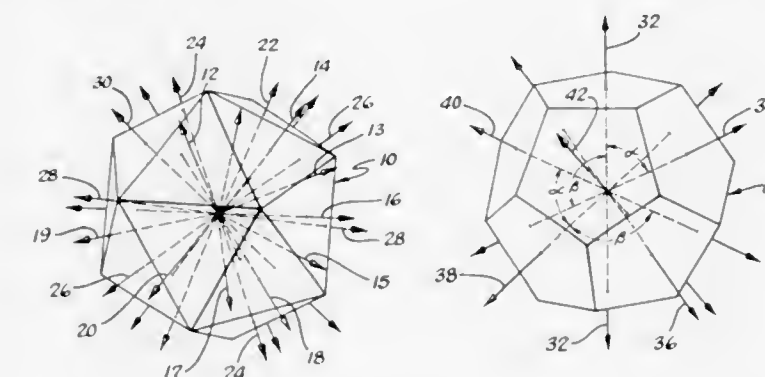
3,722,153

## STRUCTURAL SYSTEM

Stephen C. Baer, Corrales, N. Mex., assignor to Zomeworks Corporation, Albuquerque, N. Mex.  
Filed May 4, 1970, Ser. No. 34,163  
Int. Cl. E04b 1/32

U.S. Cl. 52—81

10 Claims



A structural system in which the structural members are interconnected so that they are parallel to the lines of the star of the faces of an icosahedron. The system includes structural members parallel to the lines of the star of the vertices of an icosahedron and also includes structural members parallel to the lines of the star of the midpoints of the edges of an icosahedron.

3,722,154

## EXTENSIBLE BOOM WITH BUCKLING-PREVENTION

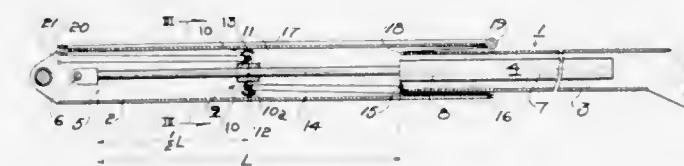
Teruya Sakamoto, 2482-10 Midori-cho, Sakaide; Takemi Nishimura, 230-14 Nonowe, Havikino, and Osamu Takarada, 1475 Omachi, Mure-cho, Kita-Gun, all of Japan  
Filed Oct. 15, 1970, Ser. No. 80,913

Claims priority, application Japan, Jan. 31, 1970, 45/8718; Feb. 2, 1970, 45/9452

Int. Cl. E04h 12/34

U.S. Cl. 52—121

11 Claims



In an extensible boom of the type having telescopically extensible boom members, a buckling-preventing method for hydraulic cylinder unit employed in the boom wherein an intermediate position of an optionally extended piston-rod of said cylinder unit is always supported with a buckling-preventing device having legs slidably or rotatably engaged with inner circumference of a boom member. The present invention further includes driving means for said buckling-preventing device which moves the device to said intermediate position of the piston-rod in connection with the operation of said cylinder unit.

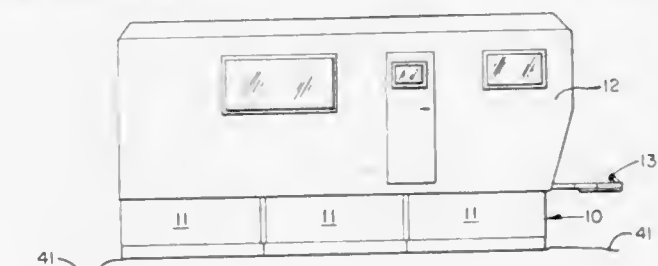
3,722,156

## MOBILE HOME SKIRTING

Charles E. Bryant, 15301-54 Highway West, Goddard, Kans.  
Filed Aug. 21, 1968, Ser. No. 754,332  
Int. Cl. E02d 5/74; E04h 17/00

U.S. Cl. 52—169

8 Claims



This invention comprises novel mobile home skirting that is economically manufactured, quickly installed, easily



removed, and conveniently stored. This invention resides in a system of skirting made of basically identical panel sections. Each panel section has a lower panel removably connected to an upper panel. Each upper panel is adapted to be connected or fixed to the underside of a mobile home. The lower panel can be lowered into contact with the ground and fastened. Each panel section is provided with means for aligning it with the next panel section. Also a utility panel and access panel is provided. The panels are best made available in lengths of 4 feet and 6 feet for fitting all sizes of mobile homes.

3,722,157

## PANEL ASSEMBLY SYSTEM

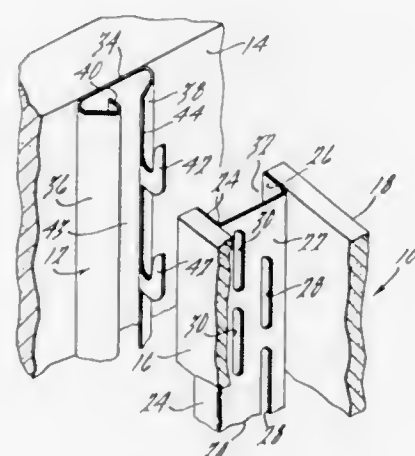
Bohdan Prokop, Warren, Mich., assignor to Fruehauf Corporation, Detroit, Mich.

Filed March 15, 1971, Ser. No. 123,998

Int. Cl. E06b 1/12, 5/06; E04c 1/10

U.S. Cl. 52-211

13 Claims



This disclosure pertains to a system for assembling prefabricated wall panel units for use in the construction of homes, buildings and other structures of a permanent or mobile nature. The panel assembly system is comprised of a panel receiving bracket, disposed along one vertical edge of a panel, which includes a plurality of vertically spaced, outwardly extending hook shaped projections, and a channel column, disposed along an adjacent edge of a second panel, having a plurality of vertically spaced slots disposed therethrough its web. The bracket and the hook shaped projections are adapted to be received therein a groove, defined by the inward surfaces of the channel, and the vertically spaced slots respectively, with interlocking being accomplished by relative vertical sliding movement therewith. Various embodiments of the above system are disclosed which include an interlocked connection with a door frame and an attachment method to a wall surface wherefrom the partition is to be extended.

3,722,158

## PROTECTIVE ARRANGEMENT FOR EXPOSED TENSIONED CABLE

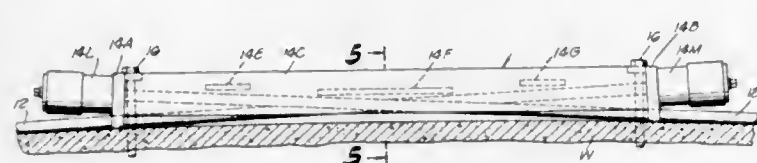
Maximilian Jacobus Dykmans, 4434 Mayapan Drive, La Mesa, Calif.

Filed Sept. 30, 1971, Ser. No. 185,132

Int. Cl. E04c 3/10, 5/08

U.S. Cl. 52-224

6 Claims



A protective covering is provided for a tensioned cable encircling a concrete tank. The covering is in the form of a tube

having its opposite ends in a frame mounted on the tank. After the cable is prestressed, grout is poured into one end of the tube to fill the annular space between the cable and tube for protection of the stressed cable against corrosion and vandalism.

3,722,159

## PREFABRICATED CONCRETE STRUCTURE

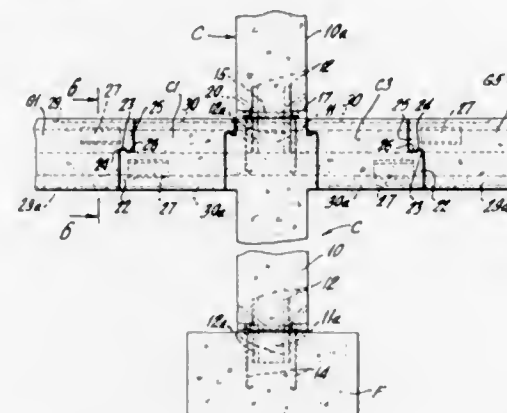
Samuel J. Kessler, 2500 Johnson Ave., Riverdale, N.Y.

Filed Oct. 27, 1971, Ser. No. 193,083

Int. Cl. E04b 1/30, 1/54

U.S. Cl. 52-252

9 Claims



Each supporting column includes vertically aligned prefabricated concrete shafts, and steel members embedded in each shaft project downward into a pocket in the upper portion of the next lower shaft, the pocket being filled with a concrete mix into which the projecting steel members of the superimposed shaft are inserted before the mix has set. Angle irons welded to these steel members have horizontal flanges substantially flush with the lower end of the corresponding column shaft, and the flanges are secured to the upper ends of anchor rods embedded in the underlying shaft outside its said pocket. Integral with each column shaft are four horizontal brackets extending at a common level with an angle of 90° between each pair of adjacent brackets, and a prefabricated concrete girder extends horizontally from each bracket of each column to an opposing bracket of a remote column, each end portion of the girder resting upon and being interlocked with a shelf on the adjacent bracket. The opposite sides of the girders and brackets have ledges on which rest the adjacent marginal portions of prefabricated concrete floor slabs, these marginal portions interlocking with the ledges. Special means are provided for centering, leveling and aligning the interlocking parts.

3,722,160

## DECK STRUCTURE AND CONNECTOR FOR DEMOUNTABLE PARKING BUILDING, OR THE LIKE

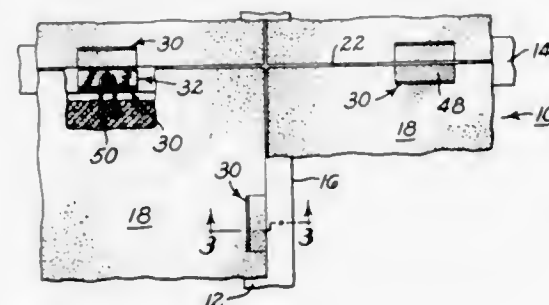
Charles A. Bentley, 443 North McCadden Pl., Los Angeles, Calif.

Filed Feb. 25, 1971, Ser. No. 118,613

Int. Cl. E04g 21/12; E04b 1/24, 5/10

U.S. Cl. 52-278

5 Claims



A deck structure for a demountable parking building, or the like, comprising beams providing rectangular bays, rectangular

lar concrete slabs respectively covering the bays and having their edges seated on corresponding beams, connectors spaced apart along the edges of the slabs and securing them to the corresponding beams, and fittings spaced inwardly from the edges of the slabs for lifting them into and out of position.

Each connector includes an angle member having a horizontal flange adjacent the bottom of the corresponding slab and having a vertical flange embedded in the corresponding slab and spaced inwardly from the corresponding edge thereof, a vertical bushing extending upwardly from the horizontal flange adjacent the vertical flange and embedded in the corresponding slab and welded to the angle member, a bolt extending through the bushing and the corresponding beam and having a nut threaded thereon, and a U-shaped anchor embracing the bushing and extending through and welded to the vertical flange of the angle member and having its free ends enlarged and embedded in the concrete of the corresponding slab.

3,722,161

## CURTAIN WALL WINDOW GASKET CONSTRUCTION

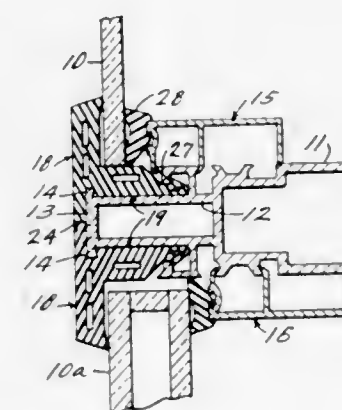
Howard R. Brown, Bowling Green, Ohio, assignor to The D.S. Brown Company, North Baltimore, Ohio

Filed Nov. 19, 1970, Ser. No. 91,035

Int. Cl. E04b 1/62; E06b 3/62

U.S. Cl. 52-400

2 Claims



A glazing gasket construction for a curtain wall installation which secures the glass in place within a rigid structural form and thermally separates all structural members from outside air. The resilient gasket has a configuration, in cross section, which includes a sealing strip with a planar outer face having one edge extending over the adjacent window pane and the second edge over the structural support of the building. Extending inwardly from the sealing strip intermediate its edges is an attachment leg which is secured to the structural member. When side-by-side windows are installed, the gaskets are placed adjacent each other with their second edges in close abutment to cover any exposed structural member and to thus provide a thermal barrier between the outside air and the building structure.

3,722,162

## TESSELATION OR PAVING ELEMENT

Hans Thorkil Ludvigsen, Fjellebro, Rudme, Denmark

Filed Oct. 12, 1970, Ser. No. 79,887

Claims priority, application Germany, Oct. 13, 1969, G 69 39 758.6

Int. Cl. E04b 2/00, 1/24; E01c 5/00

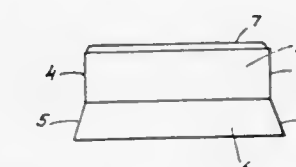
U.S. Cl. 52-608

3 Claims

Tesselation or paving element or tile comprising an underpart having two by two symmetrical side surfaces, of which one pair is converging and the other diverging in the direction

of the upper surface, said part carrying at its upper surface a prism, the base of which is congruent with the upper surface, wherein said prismatic part makes up at least one-third, preferably more than half of the height of the element in order to improve the mutual interlocking in directions perpendicular to the surface of the paving as well as making the joints impenetrable for loose underlayer.

Tesselation of paving element or tile having parallel upper surfaces and bottom faces and oblique, two by two symmetrical side surfaces, of which at least one pair is converging in the upper surface and at least another pair in the bottom face, are



known. Thus, these bodies make up shortened cross prisms, the axis of which is parallel with the upper surface and the bottom face.

By joining these bodies together the elements are fixed in upwards as well as in downwards direction, when the tesselated or tiled pattern has been arranged. Each element may on its upper surface as well as on its bottom face carry a prism, the base of which is corresponding to or smaller than the surface in question, said base having such a form that the elements when joined may form a continuous surface. By these known elements the height of the prism in question is small in comparison with that of the cross prism.

3,722,163

## APPARATUS FOR CONSTRUCTING REMOVABLE PARTITION WALLS

David M. Satkin, Hidden Hills; Gene B. Helvie, Newport Beach, and Charles J. Tillotson, Sepulveda, all of Calif., assignors to Architectural Partitions, Los Angeles, Calif.

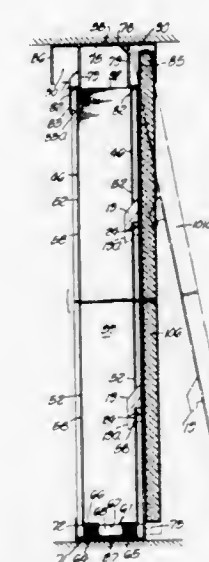
Division of Ser. No. 846,379, July 31, 1969, Pat. No.

3,608,266. This application Nov. 23, 1970, Ser. No. 91,793

Int. Cl. E04b 2/78, 2/82

U.S. Cl. 52-122

4 Claims



A wall structure in which channel-shaped studs are supported in spaced relationship by channel ceiling and floor runners, the parallel legs of the studs providing side surfaces having laterally spaced pairs of slots at longitudinally spaced intervals, wall forming panels being removably mounted on the studs with marginal hook members. The panels are delivered to the construction site with the hook members coplanar with the inner surface of the panels. The hooks are then bent at the site into inwardly projecting position to extend into one longitudinal set of the slots of the slot pairs on the studs, the hook



members of the other adjacent wall panel being arranged to extend into the other set of the slots of the slot pairs. The studs rest upon floor wedges which lock the studs into registry with a ceiling runner which thus becomes the reference point for vertical alignment of the wall panels. The wall structure is assembled by wedging a first stud in vertical alignment in registry with the ceiling runner, hanging a first wall panel from the stud, placing a second stud askew between wall and ceiling runners and rotating or twisting the stud into final position by engaging the unattached marginal hooks of the first panel in the slots of the stud and then lifting the stud against the ceiling runner and wedging the stud in that reference position, which relates the hooks and the stud in final engagement. Succeeding wall panels are hung and succeeding studs put in place in like manner, while the panels of the other wall face are attached during or after the construction of the first wall face.

3,722,164

### SPRING WIRE SPACER, ESPECIALLY FOR SPACING REINFORCING MESH FROM THE FORM IN THE MANUFACTURE OF CONCRETE STRUCTURES AND THE LIKE

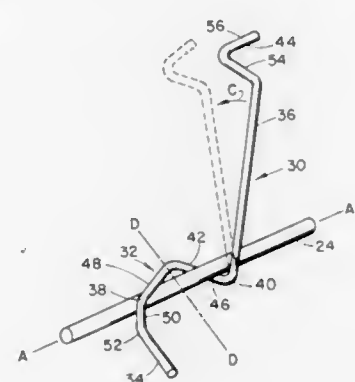
Hartzell H. Schmidgall, c/o Hawkeye Concrete Products, Mediapolis, Iowa

Filed Feb. 9, 1971, Ser. No. 113,976

Int. Cl. E04c 5/16; E04h 12/00

U.S. Cl. 52—684

5 Claims



In the casting of concrete pipe, etc. the reinforcing mesh must be kept in spaced relation to the form during the introduction of the concrete. This invention pertains to a novel spring wire spacer attachable to and detachable from the mesh and having a projection engageable with the form to space the mesh properly.

3,722,165

### DEVICE FOR MOUNTING WALL PARTS

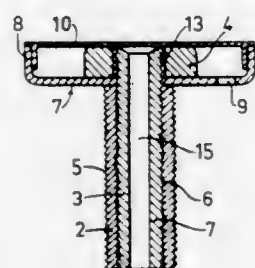
Erik Forsberg, and Uno Landin, both of Vallingby, Sweden, assignors to Gunnar Fredrikson AB, Stockholm, Sweden

Filed Aug. 24, 1970, Ser. No. 66,380

Int. Cl. E04b 1/38; E04c 5/00

U.S. Cl. 52—704

4 Claims



A device for securing building parts such as a base plate to a concrete foundation wherein a nut is threadably engaged with a rod having a cutting edge, the rod being disposed in a tube anchored in the foundation, whereby the rod can be screwed into the material of the base plate by turning the nut.

3,722,166

### CORNER FURRING STRIP

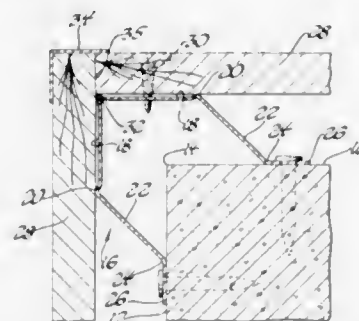
Frank J. McNeerney, 7381 Muerdale Boulevard, Walled Lake, Mich.

Filed March 12, 1971, Ser. No. 123,519

Int. Cl. E04b 2/60

U.S. Cl. 52—720

4 Claims



An elongated unitary strip member which supports wall panels at a corner intersection of a building. The strip member has a cross section including a pair of faces upon which the panels are supported and which are spaced from the corner defined by the building walls. A leg extends from the outward end of each face at an angle of approximately 135° relative to the face and a flange extends parallel to each leg from the end thereof. The flanges are secured to the walls of the building.

3,722,167

### RUNNER FOR CEILING SUSPENSION

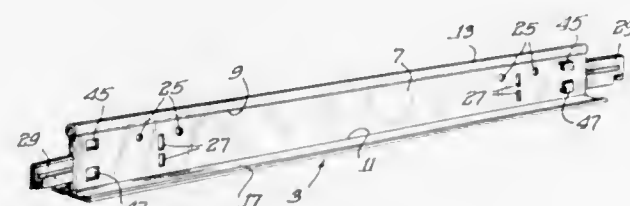
Donald L. Rousey, Des Plaines, Ill., assignor to Questor Corporation, Toledo, Ohio

Filed Dec. 23, 1970, Ser. No. 100,908

Int. Cl. E04c 5/55

U.S. Cl. 52—726

6 Claims



A main runner for a suspended ceiling construction comprises a member of generally inverted T-shape and having opposed tongues for engagement with a channel-shaped guide structure of adjacent runners. Each tongue has a locking tab at its lower side that snap fits with the guide structure at a region offset from the line of flexing of the guide structure. The lower corner of the tongue adjacent to the locking tab is cut away to provide clearance for the tongue of the endmost runner to permit that runner to be tilted during its assembly with the first mentioned runner.

3,722,168

### METHOD OF MODULAR BUILDING CONSTRUCTION

Daniel Comm, Highland Park, Ill., assignor to Dano Modules, Inc., Chicago, Ill.

Division of Ser. No. 705,391, Feb. 14, 1968, Pat. No. 3,514,910. This application June 1, 1970, Ser. No. 42,340

Int. Cl. E04b 1/00; E04g 21/00

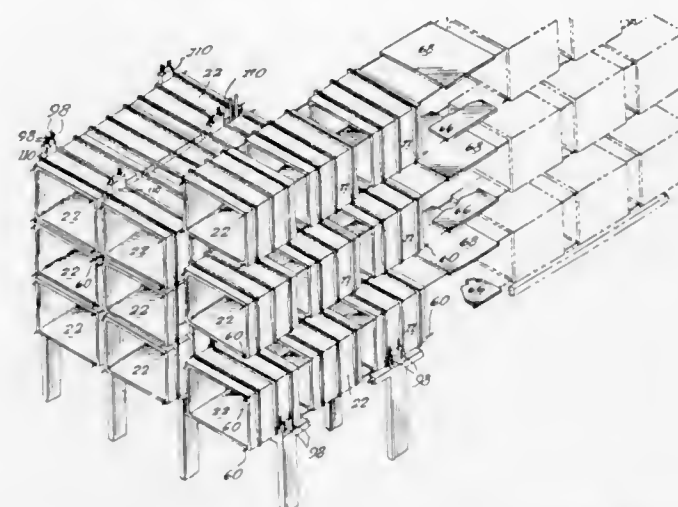
U.S. Cl. 52—742

10 Claims

A method of constructing a building from a number of prefabricated modules. Each of the modules has solid spacing ribs on its outer surface, which ribs cooperate with similar ribs on adjacent modules to define a series of spaces between adjacent modules. The modules are stacked and arranged ac-

cording to a predetermined building plan, and selected spaces defined by adjacent sets of cooperating spacing ribs are filled

with the element itself. One or more beam assemblies are mounted on each of the supports above the element to be hoisted. Means for positioning each support with respect to



with poured concrete to form support columns for the building. A prefabricated module made especially for use with the method is also disclosed.

3,722,169

### METHOD OF BUILDING CONSTRUCTION

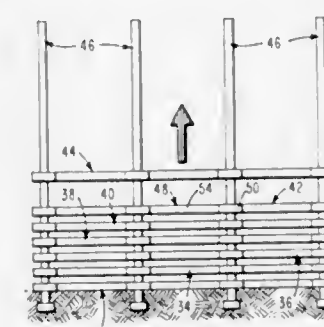
Robert L. Boehmig, 3030 Peachtree Rd., Atlanta, Ga.

Continuation-in-part of Ser. No. 829,541, June 2, 1969, abandoned. This application Jan. 4, 1971, Ser. No. 103,665

Int. Cl. E04b 1/35

U.S. Cl. 52—745

2 Claims



A method for construction of a multi-story building wherein the roof may be constructed first at an intermediate level, following which each floor is constructed in an elevation near ground level. After the floors are constructed, the roof and each floor is lifted to its ultimate elevation. The floors are constructed, one at a time, at closely vertically spaced intervals, and each is supported solely by the support columns during the construction. Thus, each floor serves as access to the construction of the next floor above but does not support the same. A constructional joint is provided to permit vertical movements of the floors relative to the columns after the floors are constructed. The joint basically comprises a collar arrangement disposed for receiving a vertical support column therethrough and the collar is shiftable vertically relative to the column. Further, the collar is constructed as an integral part of a horizontal beam extending outwardly from the column.

3,722,170

### METHOD OF HOISTING AND ANCHORING HEAVY STRUCTURES IN A BUILDING

Herbert Francis Jones, West Haverstraw, N.Y., assignor to Treadwell Corporation

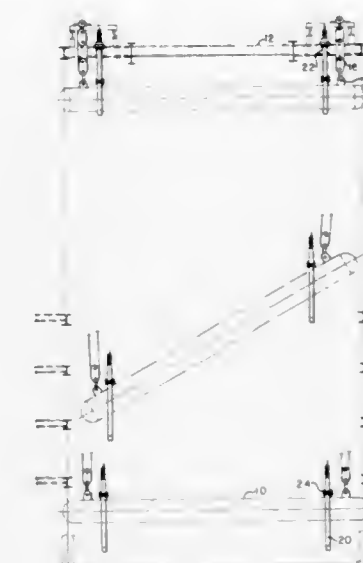
Filed Jan. 13, 1971, Ser. No. 106,219

Int. Cl. E04g 21/00

U.S. Cl. 52—745

4 Claims

Method and apparatus for hoisting heavy elements is provided in which the supports for the element are hoisted along



the element are also provided so that the element and supports may be hoisted into place with concurrent alignment of the supports with respect to openings provided for the permanent mounting of the element.

3,722,171

### BUILDING ROOF STRUCTURE AND METHOD

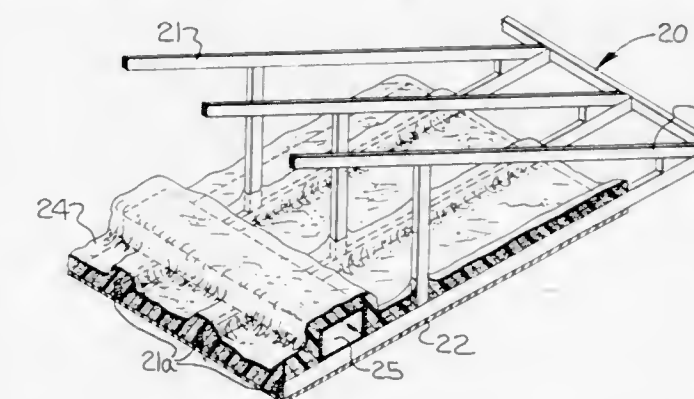
Fred Darroll Godley, Charlotte, N.C., assignor to Modular Wall Systems, Inc., Charlotte, N.C.

Filed Oct. 6, 1971, Ser. No. 186,836

Int. Cl. E04b 1/00; E04g 21/00; E04b 7/02

U.S. Cl. 52—745

7 Claims



A building roof structure including adhered together panels defining a finished interior ceiling for space within the building and trusses structurally supporting a roof covering for the building is assembled by arranging the panels in horizontal array, superposing an arrangement of trusses above the panels, adhering the panels and trusses together into a unitary roof and ceiling structure and then superposing the unitary roof and ceiling structure on side walls for the building.

3,722,172

### DEVICE FOR AUTOMATICALLY VARYING THE OPERATING SPEED IN PACKAGING MACHINES FOR CIGARETTES

Ariosto Seragnoli, Bologna, Italy, assignor to G. D. Società In Accomandita Semplice Di Enzo Seragnoli E Ariosto Seragnoli Via Pomponia, Bologna, Italy

Filed Aug. 19, 1971, Ser. No. 173,120

Claims priority, application Italy, Sept. 8, 1970, 3541 A/70

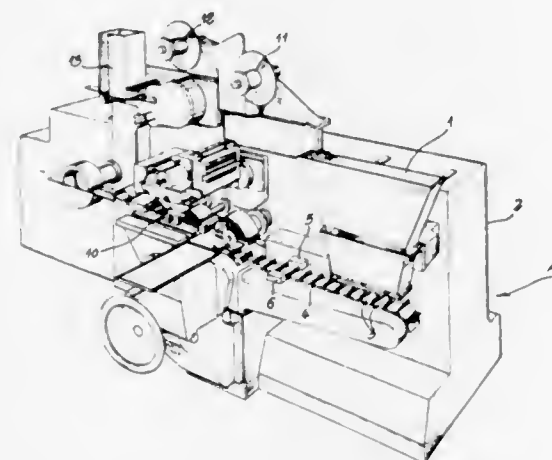
Int. Cl. B65b 57/12

3 Claims

Disclosed herein is a device for automatically varying the operating speed of a cigarette packaging machine in response



to the presence or absence of defective groups of cigarettes to be packaged. The device includes a sensing member for sensing the number of cigarettes in a group, and for sensing the amount of tobacco in each cigarette. Control means are provided to maintain the operating speed of the machine at a high rate until a defective group of cigarettes is sensed by the



sensing member, whereupon the operating speed is decreased to prevent malfunctions which may otherwise result from operational changes due to the detection of such defective groups. The control means operates to again speed up the machine after a predetermined duration of sensing by the sensing member during which no defective groups of cigarettes are detected.

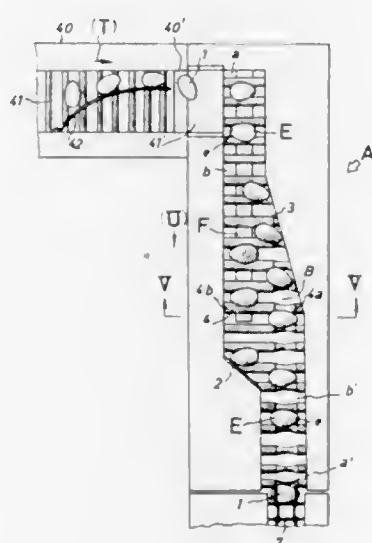
3,722,173

**ALIGNMENT AND PACKAGING UNIT FOR EGGS**  
Hikoji Noguchi, 19, No. 2605, Aza Ko-Jizo-Shita, Oaza, Tokorozawa, Japan

Filed Dec. 7, 1971, Ser. No. 205,638  
Int. Cl. B65b 57/10

U.S. Cl. 53—62

6 Claims



An egg alignment and packaging unit so designed and arranged that a number of eggs supplied at random are aligned and placed in a predetermined number and finally contained in an egg container, so that the egg packaging operation can be performed both positively and efficiently.

### 3,722,174 PACKAGING OF LIQUID-FILLED FLEXIBLE POUCHES IN THERMOPLASTIC BAGS

Jean Paul Bergevin, Kingston, Ontario, and Karl Otto Kuester, Collins Bay, Ontario, both of Canada, assignors to Du Pont of Canada, Limited, Montreal, P.Q., Canada

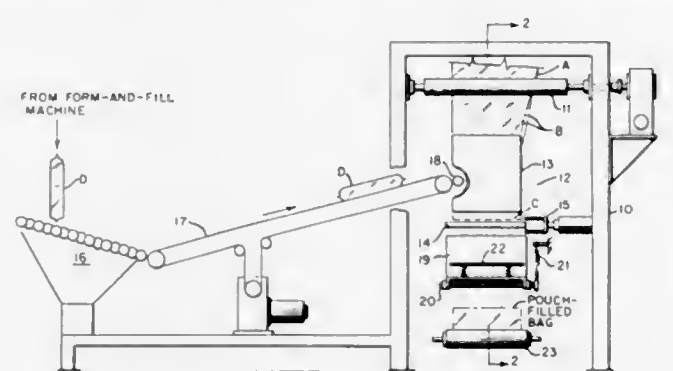
Filed May 18, 1971, Ser. No. 144,430

Claims priority, application Canada, June 19, 1970, 86,071

Int. Cl. B65b 9/08

U.S. Cl. 53—182

2 Claims



A process and apparatus for continuously packaging liquid-filled flexible pouches in thermoplastic bags by:

- spreading a folded thermoplastic film over a pouch-receiving box wherein the fold forms the bottom of the bag;
- heat-sealing the leading edges of the film to each other beneath the pouch-receiving box forming one closed side of the bag;
- placing two or more liquid-filled packages in the pouch-receiving box;
- heat-sealing the trailing edges of the film to each other over the pouch-receiving box forming another closed side of the bag; and
- discharging the bag having one end open and containing the liquid-filled pouches.

3,722,175

### RAPID PAPER WRAPPING MACHINE FOR SOAP-LIKE ARTICLES

Maurizio Maulini; Franco Aluola, both of Bologna, and Herbert Rueff, Croce Di Casalecchio, all of Italy, assignors to Azionaria Costruzioni Macchine Automatiche A.C.M.A. S.P.A., Bologna, Italy

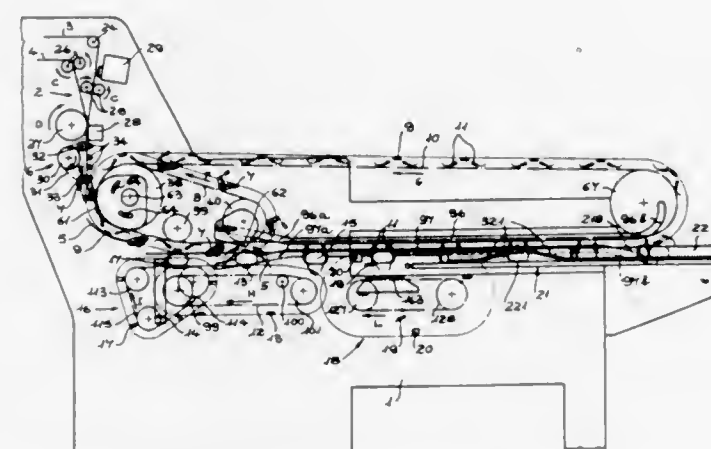
Filed Sept. 8, 1971, Ser. No. 178,716

Claims priority, application Italy, Sept. 22, 1970, 3551 A/70

Int. Cl. B65d 11/12

U.S. Cl. 53—209

5 Claims



A rapid paper wrapping machine for pieces of soap and the like articles comprising an input station for supplying a number of paper sheets, and output station for folding and

sealing the paper sheets on the lateral sides of the article to be wrapped, a feeder for the articles, a first line extending from the input station to the output station, a plurality of pairs of spaced jaw members along said line arranged to embrace the articles on it, abutment members between each pair of jaw members, a second line adjacent to the first line and provided with a plurality of pincers, a third line adjacent to the first line provided with a plurality of spaced supports, a unit for expelling paper sheets from the input unit to the pincers, a pusher for transferring articles from the feeder to the support and abutment members, and cam elements along the first and second line to actuate the pincers and the abutment members in a proper time relationship.

3,722,176

### PACKAGE HANDLING

Adrianus Hordijk, Zaandam, Netherlands, assignor to Hordijk G., Houtindustrie Zoandam N.V., Zaandam, Netherlands

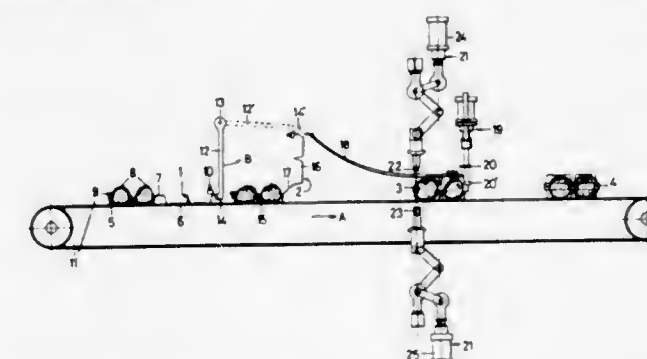
Filed April 5, 1971, Ser. No. 131,138

Claims priority, application Netherlands, April 7, 1970, 7004968

Int. Cl. B65b 7/26

U.S. Cl. 53—376

3 Claims



A resilient plastic container having a box section and lid section formed with equal pluralities of complementary hollows or spaces to hold articles such as eggs and tomatoes and with closure means adapted to snap one into the other, is transported in an open position, lid section first, on a belt conveyor against a depending hook which moves the lid section to an upright position and then slips off while the container moves under a downwardly sloping guide plate under which the lid section is closed on top of the box section. The conveyor as well as the guide plate have slits through which plungers pinch the closure means together while the package is held by stop means helping to align the lid section with the box section.

3,722,177

### PACKAGE WRAPPING APPARATUS WITH PACKAGE ACTUATED WEB SEVERING TOOL

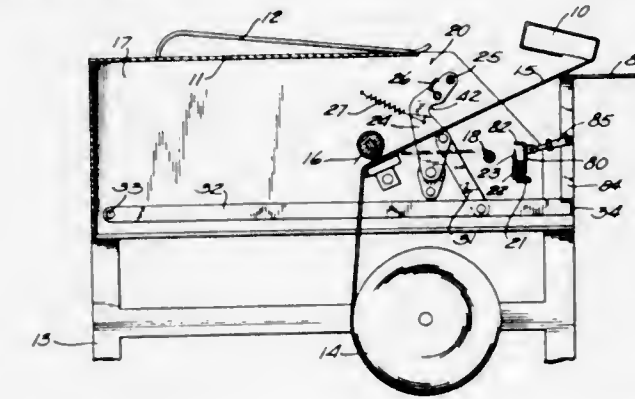
Charles E. Michels, Racine, Wis., assignor to Reliance Electric Company, Toledo, Ohio

Filed Feb. 14, 1971, Ser. No. 112,582

Int. Cl. B65b 11/56, 67/10

U.S. Cl. 53—390

2 Claims



Package wrapping apparatus which has a wrapping table and a roll film stand is provided with a cooperating knife blade

and web snubber to sever the web into lengths appropriate for wrapping the package. The web snubber and knife blade are mechanically actuated in time with the wrapping sequence under pressure of the package which is undergoing wrapping on the apparatus. The web severing tool parts are provided with motion transmitting linkages to a movable frame having a package rest. The movable frame is shifted under pressure of the package, thus to actuate the linkages and sever the web.

3,722,178

### SULFUR TRIOXIDE VAPOR FOR DUST CONDITIONING

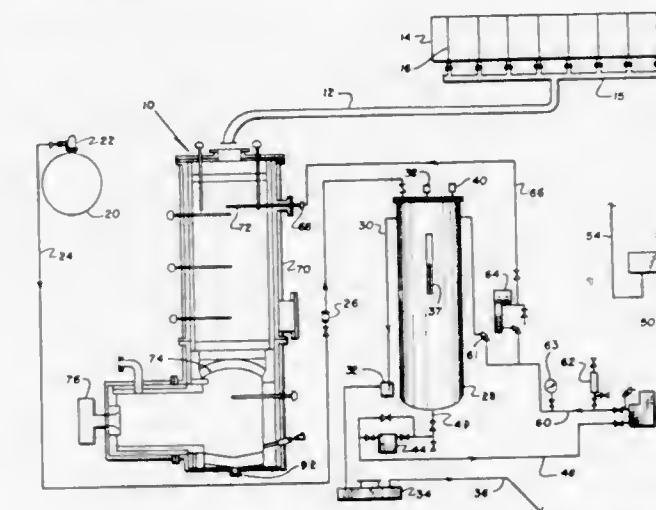
Harold H. Aaland, 12653 Killian Street, N., Hollywood, Calif., and James L. Ma, 2341 Dunswell Avenue, Hacienda Heights, Calif.

Filed June 24, 1971, Ser. No. 156,266

Int. Cl. B03c 3/01

U.S. Cl. 55—4

10 Claims



A process and apparatus for heating, vaporizing and decomposing sulfuric acid for production of sulfur trioxide to be used in conditioning stack gases to be treated in an electrostatic precipitator.

3,722,179

### LIFE SUPPORT PROCESS AND SYSTEM USING SOLVENT EXTRACTION

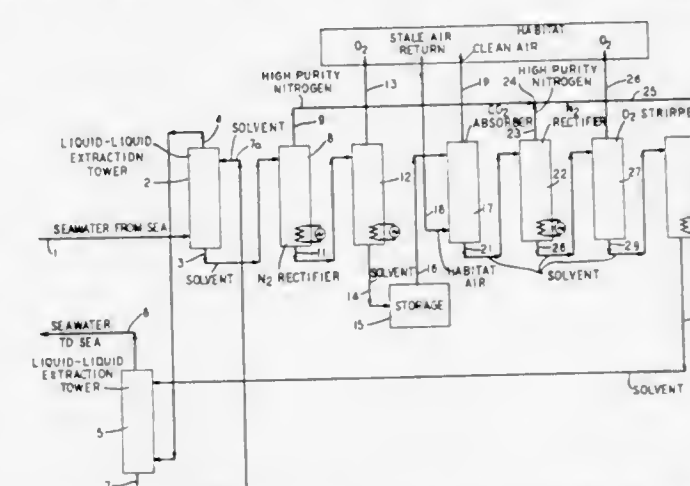
Walter B. Moen, Erie, Pa., and Albert Halfon, Niskayuna, N.Y., assignors to Alrco, Inc., Murray Hill, New Providence, N.J.

Filed April 16, 1970, Ser. No. 29,218

Int. Cl. B01d 53/18

U.S. Cl. 55—40

14 Claims



A life support system for an undersea habitat which derives oxygen directly from the sea without connection to shore or supply ships. Dissolved gases, including oxygen and nitrogen, are derived by liquid-to-liquid extraction from a stream of sea water. The gas-loaded solvent is first stripped of nitrogen, and then oxygen, in successive rectification processes, the oxygen passing into the habitat. Exhaust gas from the habitat is partially purified by passing it through fresh solvent, for absorption of carbon dioxide, after which it is recirculated in the



habitat. The solvent, containing essentially nitrogen and carbon dioxide, is again contacted by gas-stripped sea water, which reabsorbs the carbon dioxide and nitrogen, and returns to the sea.

3,722,180

## DE-GASSING OF LIQUIDS

Harold T. C. Boucher, Thornbury, near Bristol; Christopher Frank Arthur Wheeler, Whitechurch, and John Martin West, Redland, all of England, assignors to British Aircraft Corporation Limited, London, England

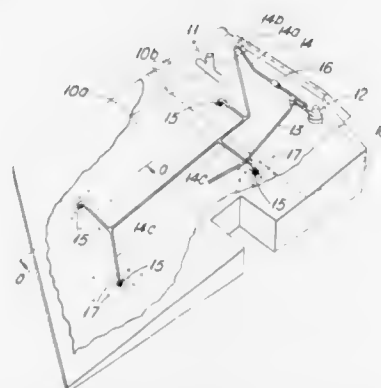
Filed April 21, 1971, Ser. No. 136,023

Claims priority, application Great Britain, May 1, 1970, 21,090/70

Int. Cl. B01d 19/00

U.S. Cl. 55—46

5 Claims



A method of removing gases from a body of liquid, in which the gases have been dissolved at a first ambient pressure, comprising subjecting the liquid to a second ambient pressure of lower absolute value than the first ambient pressure, removing a proportion of the liquid from the body, causing the removed liquid to liberate at least some of the gases dissolved therein in the form of bubbles, and discharging the bubble-containing liquid into the remainder of the body in such a manner that the bubbles pass through the body, thereby releasing at least part of the gases dissolved therein.

3,722,181

## CHROMATOGRAPHIC PACKING WITH CHEMICALLY BONDED ORGANIC STATIONARY PHASES

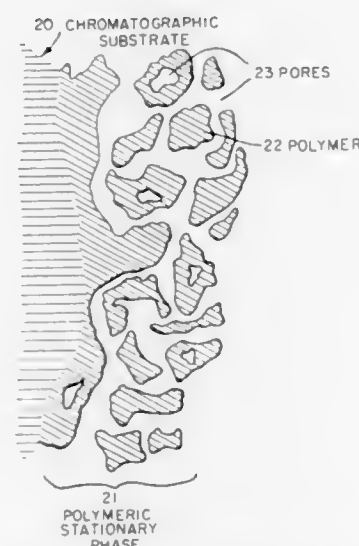
Joseph J. Kirkland, and Paul C. Yates, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 22, 1970, Ser. No. 39,665

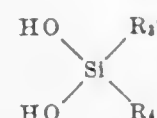
Int. Cl. B01d 15/08

U.S. Cl. 55—67

18 Claims



A process for making a chromatographic packing having a polymeric stationary phase in which molecules having the formula

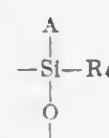


wherein  $\text{R}_3'$  is a hydroxyl, or an aliphatic or aromatic hydrocarbon monovalent radical, and

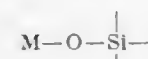
$\text{R}_4$  is a monovalent aliphatic or aromatic hydrocarbon radical,

are partially prepolymerized, chemically bonded to a polyvalent metal-containing substrate, the metal having a valence of 3–5, and further polymerized.

The polymeric stationary phase has a repeating unit of the formula



wherein A is —O— or a monovalent aliphatic or aromatic hydrocarbon radical, and is chemically bonded to the surface of the substrate by an



linkage, where silicon is part of a repeating unit.

3,722,182

## AIR PURIFYING AND DEODORIZING DEVICE FOR AUTOMOBILES

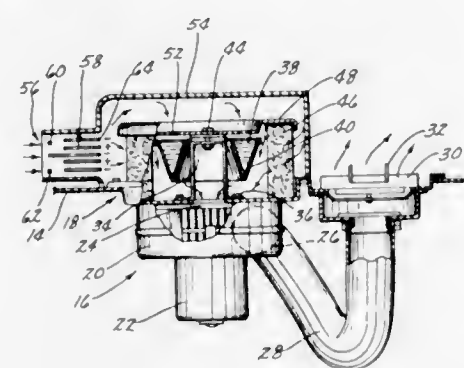
John E. Gilbertson, 2200 Ashworth Rd., West Des Moines, Iowa

Filed May 14, 1970, Ser. No. 37,120

Int. Cl. B03c 3/14

U.S. Cl. 55—124

2 Claims



An air purifying and deodorizing device for an automobile comprising a housing positioned on the rear window deck of the automobile and having air intake and air discharge openings. An electronic filtering device is mounted at the air intake opening for removing air-borne particles from the air being taken into the device. A ring-shaped filter device is positioned in the housing for further filtering the air as it passes therethrough. A deodorant cup is positioned within the ring-shaped filter and deodorizes the air as the air passes through the device. An electric fan means is positioned below the rear deck and is adapted to draw the air through the device and to discharge the same through the discharge opening. A directional vent is provided at the discharge opening for directing the discharged air onto the rear window to de-fog the same. An optional purifying and deodorizing device may also be employed which is adapted to supply outside air into the interior of the vehicle and to purify and deodorize the same.

3,722,183

## DEVICE FOR CLEARING IMPURITIES FROM THE ATMOSPHERE

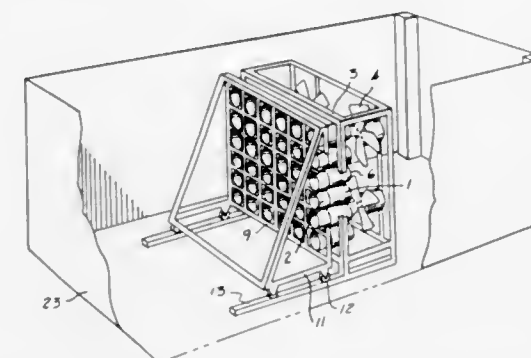
John A. Gaylord, 31 Corte Ortega, Greenbrae, Calif.

Filed Feb. 16, 1971, Ser. No. 115,631

Int. Cl. B03c 3/06

U.S. Cl. 55—128

4 Claims



Oppositely charged electrode cones or electrode cylinders are adjustably supported so that one cone or cylinder is within the other cone or cylinder but spaced therefrom, whereby air currents attracted to and flowing through the electrostatic field have particles of impurity acquire the charge of one of the electrodes and are repelled to be collected on and adhere to the other electrode cone or cylinder. Specifically the cones are made of fiberglass and the adjacent faces of the cones are coated with fiberglass wool. The cylinders may be of larger diameter and may be made of steel.

3,722,184

## APPARATUS FOR SEPARATING OIL AND GAS FROM A FOAMING CRUDE OIL STREAM

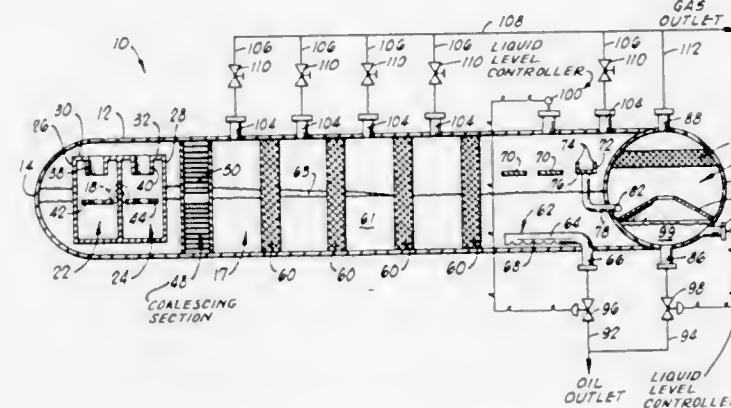
Robert E. McMinn, Oklahoma City, Okla., assignor to Black, Sivals & Bryson, Inc., Oklahoma City, Okla.

Filed May 17, 1971, Ser. No. 143,998

Int. Cl. B01d 19/00

U.S. Cl. 55—174

8 Claims



The present invention relates to improved apparatus for separating oil and gas from a foaming crude oil stream of the type which includes an elongate substantially horizontal vessel having a crude oil stream inlet at one end and oil and gas outlets at points removed from the inlet. By the present invention a coalescing section comprised of a plurality of smooth cylindrical plates positioned longitudinally and concentrically to provide annular flow passages therebetween is disposed within said vessel across the interior thereof and adjacent to the crude oil stream inlet so that gas, oil and foam from the crude oil stream pass through the annular flow passages and oil carried with the gas is coalesced and agglomerated on said plates and removed from the gas. A plurality of foam breaking pads are disposed in the vessel positioned in spaced relationship

across the interior thereof on the side of the coalescing section away from the crude oil stream inlet, each of the foam breaking pads including knitted mesh having a texture to distort and break oil foam thereby releasing the gas held in the foam. An oil outlet from the vessel is provided positioned on the side of the last of the foam breaking pads away from the crude oil stream inlet, and a closed compartment is disposed within the vessel at the end thereof away from the crude oil stream inlet. A passageway is provided communicating the top portion of the vessel with the closed compartment so that gas separated from the crude oil stream and gas released from foam in the vessel is passed into the closed compartment. Gas and oil outlets from the closed compartment are provided, and a mist extractor pad is positioned across the closed compartment between the passageway and the gas outlet so that oil mist entrained in the gas passing through the compartment is removed therefrom.

3,722,185

## GAS SCRUBBING METHOD AND APPARATUS

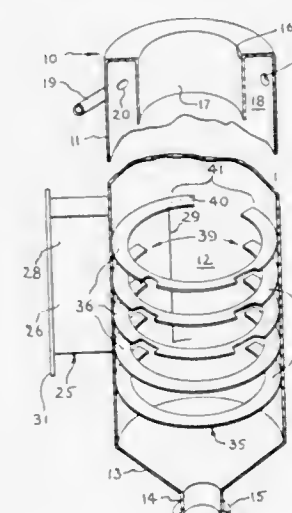
Gerhard Miczek, Louisville, Ky., assignor to Fisher Klosterman, Inc., Louisville, Ky.

Filed June 9, 1971, Ser. No. 151,213

Int. Cl. B01d 47/06

U.S. Cl. 55—238

16 Claims



Apparatus is provided for utilizing a liquid flow to remove particulate solids such as dust from industrial gases. The apparatus includes a contacting chamber having means therewith for providing a continuous water wash-down in the form of a substantially downward water sheet concentric to the chamber inner surface. Provision is made for dust-laden gas to enter the chamber tangentially and thereafter flow upwardly in a helical path whereby dust particles are centrifugally driven into the concentric water sheet. A means is provided inwardly adjacent the tangential inlet to substantially increase the efficiency of dust removal from the flowing gas. The latter means makes possible the attainment of performance, in a medium energy gas scrubbing apparatus, favorably comparable to a high energy and relatively expensive venturi scrubber apparatus.

3,722,186

## AIR FILTER CONSTRUCTION

Jerry W. Parker, Santa Ana; John W. Scholz, Newport Beach, and Kenneth E. Mitchell, Santa Ana, all of Calif., assignors to Uni Filter, Orange, Calif.

Filed Jan. 27, 1972, Ser. No. 221,199

Int. Cl. B01d 46/04

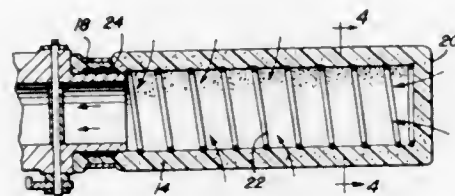
U.S. Cl. 55—304

4 Claims

An air filter construction adapted to be easily mounted to various carburetor intake openings, said air filter construction comprising a generally cylindrical filter element of open pore foam material or the like, a coil compression spring mounted in the interior of the cylindrical filter element for supporting



such in sealing engagement at one end thereof with the carburetor opening and including a plurality of substantially spaced



convolution along its length to assure unhindered flow of air through the filter element into the carburetor opening.

3,722,187

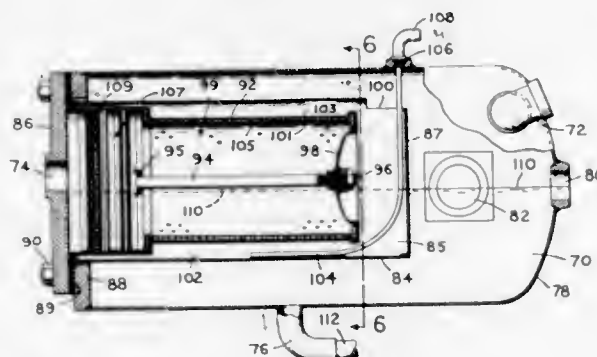
## LIQUID AND GAS SEPARATING ASSEMBLY

Olin E. Potter, Wilbraham, and Biagio J. Tomasi, S. Hadley Falls, both of Mass., assignors to Worthington Corporation, Harrison, N.J.

Division of Ser. No. 809,187, March 21, 1969, Pat. No. 3,588,288. This application Aug. 21, 1970, Ser. No. 65,771  
Int. Cl. B01d 50/00

U.S. Cl. 55—323

8 Claims



A liquid and gas separating assembly for an air compressor. The assembly includes an outer shell, an inner shell within the outer shell and a liquid-gas separating element within the inner shell. A gas laden with liquid particles, such as oil laden air from an air compressor, is admitted to the outer shell in which a large amount of the entrained liquid settles out of the gas into a pool of stored liquid partially submerging the inner shell in the lower portion of the outer shell. The gas passes into the inner shell through an inlet above the pool of liquid and then through the liquid-gas separating element. The separated gas and liquid are removed from the two shells through different outlets.

3,722,188

## DESICCANT CAPSULE AND PACKAGE EMBODYING THE SAME

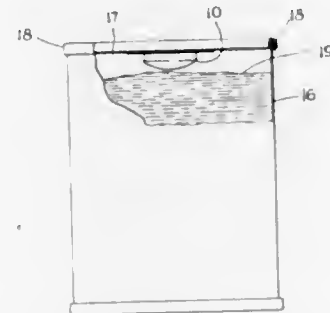
John S. Cullen, 138 Wesley Avenue, Buffalo, N.Y.

Filed Dec. 10, 1970, Ser. No. 96,853

Int. Cl. B01d 53/14

U.S. Cl. 55—384

2 Claims



A capsule of a synthetic moisture-permeable material such as cellulose acetate contains a desiccant material such as cal-

cium oxide and has an adhesive surface which is applied to the interior of a container whereby the capsule is exposed to moisture in the container or in the contents thereof but with the capsule attached to an interior container wall to prevent the same from being commingled with the contents of the container.

3,722,189

## APPARATUS FOR REMOVING HYDROCARBONS FROM A GAS STREAM

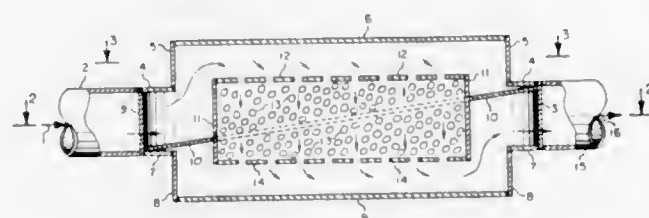
John F. Tourtellotte, Westfield, N.J., assignor to Chemical Construction Corporation, New York, N.Y.

Filed May 24, 1971, Ser. No. 146,186

Int. Cl. B01d 53/04

U.S. Cl. 55—389

16 Claims



A fluid-solid contactor is disclosed which provides maximum contact area with minimum displacement, by passing the fluid into a preferably cylindrical container containing a coaxial internal preferably cylindrical solids bed, and diverting the fluid by means of an annular inclined baffle to attain fluid flow through the bed. The invention is applicable to the removal of hydrocarbons from an engine exhaust gas by absorption into a solid absorbent.

3,722,190

## CONDITIONER ROLL MOUNTING MEANS AND CUSHIONING STOP SYSTEM THEREFOR

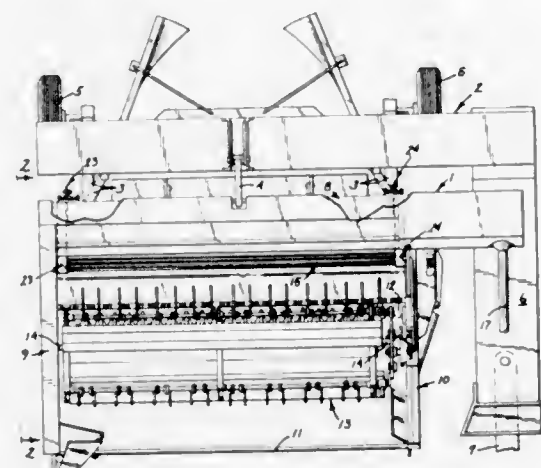
Ivan E. Fisher, Mankato, Minn., assignor to Owatonna Manufacturing Company, Inc., Owatonna, Minn.

Filed July 14, 1972, Ser. No. 272,011

Int. Cl. A01d 47/00

U.S. Cl. 56—1

8 Claims



A pair of superposed parallel crop conditioner rolls, one journaled in a frame on a fixed axis, the other mounted for generally upward and downward movements toward and away from the one roll. Springs yieldingly urge the moveable roll towards the fixedly positioned roll, and stop elements limit movement of the moveable roll toward the fixedly positioned roll. Adjustment mechanism positions the moveable roll generally forwardly or rearwardly relative to a position vertically spaced from the axis of the fixedly positioned roll.

3,722,191

## WINDROWING MEANS FOR AGRICULTURAL MACHINE

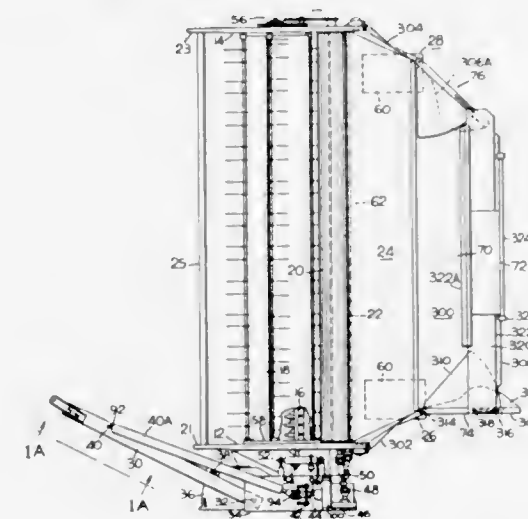
Benjamin A. Braunberger, West Bend, Wis., assignor to Gehl Company, West Bend, Wis.

Filed Feb. 25, 1972, Ser. No. 229,466

Int. Cl. A01d 43/00

U.S. Cl. 56—189

6 Claims



A tractor drawn and powered agricultural machine, such as a mower-conditioner for hay-like crops, comprises a main frame having a pair of spaced apart side walls between which a sickle mower, a tine reel, a pair of conditioning rolls, a crop gathering hood and windrowing means, and a pair of transport wheel assemblies are mounted. Operating power from the tractor is supplied through a rotatable power take-off shaft and clutches to a transmission unit which is connected to and drives the conditioning rolls and the sickle mower. The crop gathering hood and windrowing means are designed to deliver the crop in a swath or windrow in a fluffy condition which promotes drying and include adjustable side and rear shields.

3,722,192

## GRASS-CATCHING AND BAGGING APPARATUS FOR ROTARY LAWN-MOWERS

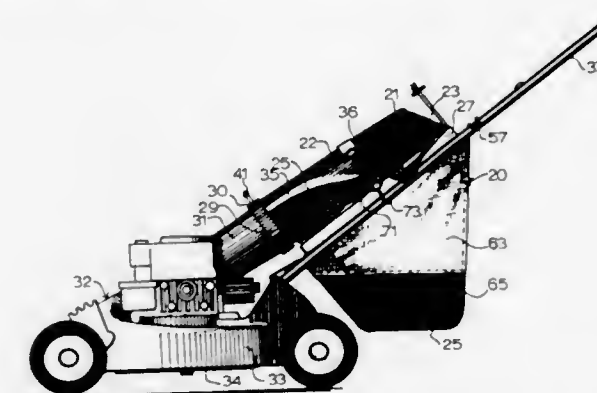
Thomas J. Corbett, 12481 Mansbrook, Sterling Heights, Mich.

Filed Sept. 16, 1971, Ser. No. 181,088

Int. Cl. A01d 35/22

U.S. Cl. 56—202

7 Claims



A grass-catching and bagging apparatus for rotary lawn-mowers having a duct discharging an air stream and entrained grass-cuttings. A perforate cowl is connected to the duct by a throat and has a depending flange for attaching a bag thereon. A deflector vane under the cowl leads from the throat and has an end curving downwardly centrally of the cowl and the bag thereon to direct the stream and cuttings down into the bag where the enlarged space expands and dissipates the air stream, drops the cuttings into the bag, and permits the air to rise upwardly around the downwardly centrally deflected air stream and escape through the perforate cowl. An imperforate hood over the cowl directs air escaping from the cowl endwise

and sidewise. Back and side-walls on the hood deflect the escaping air downwardly while the open front deflects it forwardly. A sling supports the load in the bag attached to the cowl and sling side-walls contain the bag thereon. The sling and side-walls have perforate bottom portions and the downwardly deflected air from the hood is received within the sling and side-walls and is vented via their perforate bottom portions adjacent the ground remote from the breathing area of a user.

3,722,193

## AUTOMATIC HEADER HEIGHT CONTROLLING MECHANISM

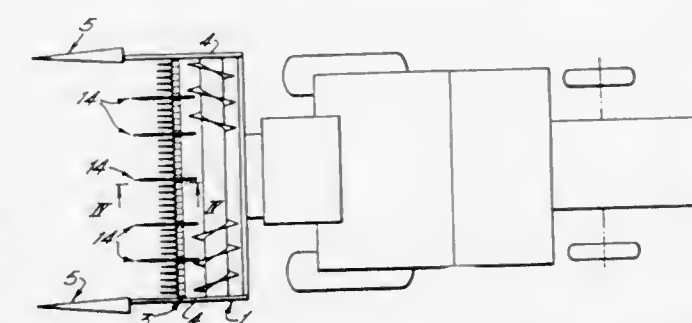
Gilbert J. Strubbe, Zedelgem, Belgium, assignor to Clayson N.V., Zedelgem, Belgium

Filed Oct. 21, 1971, Ser. No. 191,282

Int. Cl. A01d 67/00

U.S. Cl. 56—208

25 Claims



An automatic header height controlling mechanism for agricultural machines, more especially harvesters of the type having a header with a cutting mechanism for harvesting crops, whereby said automatic header height controlling mechanism comprises electrical position indicators which may be actuated by ground sensing members coupled to the side edges of the header and extending far in front of the header, in combination therewith a series of feeler elements provided rearwardly of and inbetween said ground sensing members, a header lifting rams controlling mechanism controlling the oil supply to and discharge from said rams and an electric servo circuit actuating said rams controlling mechanism, coupling said rams controlling mechanism to the electrical position indicators for forming a positioning circuit for generally positioning the header at a desired level above the ground on the one hand, and to the feeler elements for on contact thereof with an obstruction located inbetween the ground sensing members to raise the header, independent from the header positioning circuit on the other hand.

3,722,194

## CONVERGING REEL ASSEMBLY HAVING A TINE CONTROL MECHANISM INCORPORATED THEREIN

Lawrence M. Halls, 567 East Jackson St., New Holland, Pa.

Filed Dec. 30, 1971, Ser. No. 213,861

Int. Cl. A01d 57/02

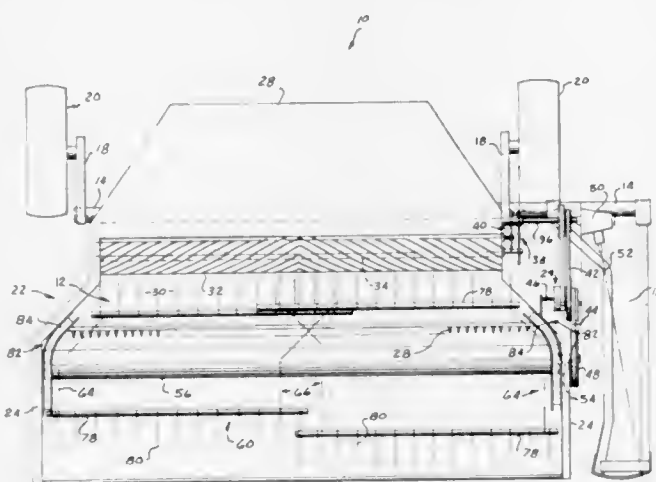
U.S. Cl. 56—226

18 Claims

In a mower-conditioner having a header with a sickle bar transversely mounted therein for cutting a swath of crop material of given width, a pair of transversely disposed conditioning rolls spaced rearwardly of said sickle bar and of less width than said sickle bar, a converging reel assembly mounted transversely above said sickle bar and adapted to engage a swath of crop material corresponding to the width of said sickle bar and converge that crop material into a narrower swath where the crop material may be readily received by said conditioning rolls. The converging reel assembly of the present invention generally comprises a pair of reel sections, each reel section rotatively mounted about one side of a transverse axis within said header and including outer and inner laterally spaced spiders with each spider having a plurality of radially extending spider arms. Each spider arm is pivotally



mounted for movement in the direction of said transverse reel assembly axis. Corresponding spider arms of each reel section are interconnected by a tine bar with the tine bar being rotatively mounted therebetween and including a series of tines extending therefrom. A cam structure is fixedly disposed adjacent each outer spider and includes a cam track curved inwardly about the rear portion thereof adjacent said conditioning rolls. Each outer spider arm includes a cam following



mechanism fixed thereto and confined within said cam track for moving the spider arms thereof back and forth in the direction of the transverse reel assembly axis as the reel assembly is rotated. A linkage structure responsive to the back and forth movement of the spider arms is connected to said tine bars and is operative to rotate the tine bars and consequently vary the attitude of the tines extending therefrom in response to the back and forth movement of selected spider arms.

3,722,195

## CUTTER BAR FOR MOWER

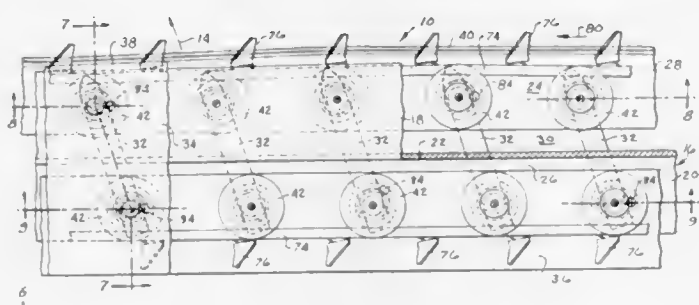
Joseph C. Hurlburt, Leola, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.

Filed Aug. 24, 1970, Ser. No. 66,370

Int. Cl. A01d 55/24

U.S. Cl. 56—245

8 Claims



An impact type cutter bar unit utilizing an endless belt type cutter assembly having cutters spaced along the same and projecting laterally outward from the outer face of the belt for free impact engagement with agricultural material to be cut thereby, the cutter assembly being supported and guided by pulleys and driven by a drive pulley connected to power means, and including a simple, rigid Z-shaped main supporting bar providing elongated rigidity and upper and lower compartments in which the opposite elongated courses of the belt-type cutter assembly travel. The cutter bar unit also has vibration-inducing mechanism in the form of unbalanced pulleys to aid in freeing the cutters of debris.

3,722,196

## CUTTER BAR ASSEMBLY

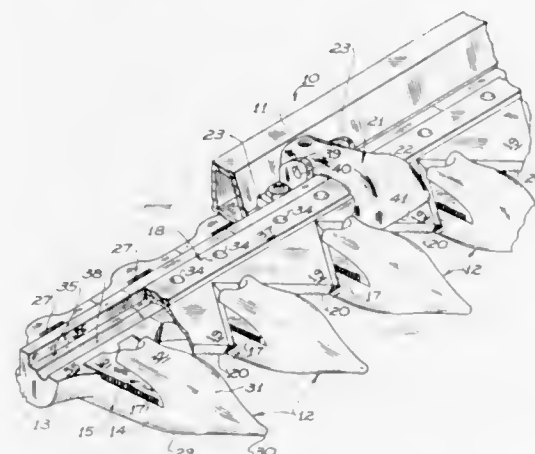
William E. Templeton, 1807 West Hanley Road, Lexington, Ohio

Continuation-in-part of Ser. No. 104,354, Jan. 6, 1971, abandoned. This application May 19, 1971, Ser. No. 145,052

Int. Cl. A01d 55/02

U.S. Cl. 56—298

11 Claims



A cutter bar assembly including an improved sickle support system whereby each of the guards has an integrally formed upwardly facing bearing surface extending the entire width of the guard in the area to the rear of its ledger plate. The bearing surfaces are juxtaposed such that together they extend the entire length of the sickle. A plurality of hold-down brackets overlie the sickle at regularly spaced positions and are adjustable to provide appropriate clearances.

3,722,197

## METHOD AND MACHINE FOR FORMING A LARGE ROUND BALE OF A FIBROUS MATERIAL

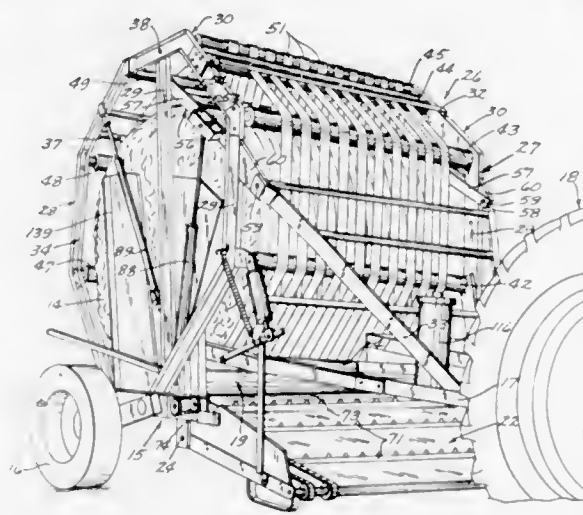
Gary J. Vermeer, P.O. Box 200, Pella, Iowa

Filed Jan. 3, 1972, Ser. No. 214,833

Int. Cl. A01d 39/00

U.S. Cl. 56—341

6 Claims



The method and machine is for forming large round bales about 7 feet in diameter, 6 feet long and weighing about a ton and a half. The machine has a portable frame provided with pickup device for gathering and delivering windrowed material on to a horizontal rearwardly moving belt conveyor. Cooperating with the horizontal conveyor is an endless belt assembly movable in a generally upright circular path and including a lower extensible section that is initially movable adjacent to and in the opposite direction of the horizontal conveyor so as to form with the horizontal conveyor a baling zone. As the bale within the baling zone increases in size, the extensible section is automatically and progressively extended about the bale, in response to such increase, against a

predetermined tension or pressure constantly applied on the belt assembly. A completed bale is thus compact and of a uniform density over all portions thereof. After being formed the bale can be released in the field, or carried by the machine to a desired storage location.

3,722,198

## METHOD AND APPARATUS FOR SPINNING YARNS OF STAPLE FIBERS AND FILAMENTS

Konrad Gotzfried, Gabelsberger Strasse 75, Goggingen, Germany

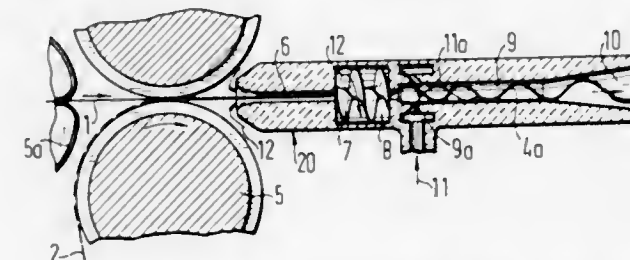
Filed Oct. 5, 1971, Ser. No. 186,655

Claims priority, application Germany, Oct. 7, 1970, P 20 49 186.5

Int. Cl. D01h 1/12

U.S. Cl. 57—58.89

10 Claims



In a pneumatic spinning apparatus, loose fiber ends are spread laterally from a sliver of staple fibers before the sliver is twisted with a sliver of continuous filaments into a yarn in a tube by a helical air stream. The loose fiber ends form a surface layer of the yarn which is deposited last and is therefore less tightly through than the core predominantly consisting of the continuous filaments and the remainder of the staple fibers. When the twisting air and the tightly spun yarn pass into a chamber of much greater cross section, the twisting action of the air on the yarn is relaxed, and the yarn untwists until the twist in the surface layer or shell is reversed to balance the reduced twist in the core. Backward propagation of the twist toward the intake end of the apparatus is prevented by a brake consisting of a screw whose flights bound a helical guide duct. The slivers move through the duct in frictional engagement with the stem of the screw and start twisting as they approach the end of the duct near the twisting zone.

3,722,199

## CAN SPINNING FRAME

Adriano M. Gardella, 24 B, Via al Capo di Santa Chiara, Genoa, Italy

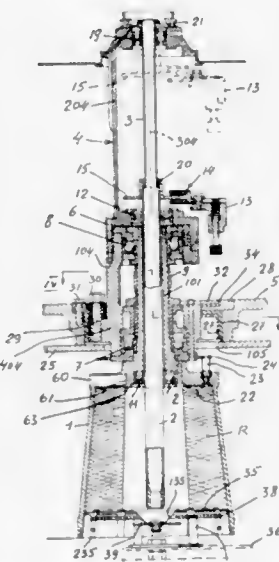
Filed May 4, 1971, Ser. No. 140,049

Claims priority, application Italy, May 8, 1970, 12672 A/70

Int. Cl. D01h 1/08, 7/74

U.S. Cl. 57—77

21 Claims



A centrifugal can-spinning spindle having its three components, i.e., bell-shaped can, distributing tubular thread

guide and pre-twisting tubular thread guide, all mounted on a single common support member for mounting as a unit on a spinning frame.

3,722,200

## BOLSTER CASE FOR TEXTILE SPINNING AND DRAWING MACHINES

Loyal H. Tingley, Jr., Box 406, Havana, Ill.

Division of Ser. No. 681,351, Nov. 8, 1967, Pat. No. 3,497,946.

This application Dec. 23, 1969, Ser. No. 1,905

Int. Cl. D01h 7/12

U.S. Cl. 57—130

3 Claims



A bolster case wherein a tubular member is provided with a collar intermediate its ends and the collar is firmly engaged between an enlarged tubular portion formed at one side thereof and a bead formed at the other side.

3,722,201

## HIGH TENSILE STRENGTH CHEMICAL RESISTANT REINFORCED ASBESTOS YARN PRODUCTS

James Joseph Whalen, Washington Township, N.J., assignor to Johns-Manville Corporation, New York, N.Y.

Filed April 21, 1971, Ser. No. 136,174

Int. Cl. D02g 3/20

U.S. Cl. 57—144

8 Claims

A high tensile strength and chemical resistant asbestos yarn product comprising a composite of a core strand of multiple filaments composed of fluorocarbon resin and overlying staple asbestos fiber twisted thereabout with portions of some of the staple asbestos fiber lodged intermediate individual filaments of the multifilament core strand.

3,722,202

## SPINNING A FILAMENT-WRAPPED STAPLE FIBER CORE YARN

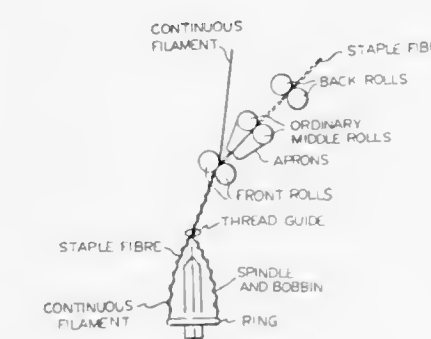
Rafael Audivert Indarte, Barcelona, Spain, assignor to The United States of America as represented by the Secretary of Agriculture

Filed Sept. 24, 1971, Ser. No. 183,396

Int. Cl. D02g 3/04, 3/36

U.S. Cl. 57—144

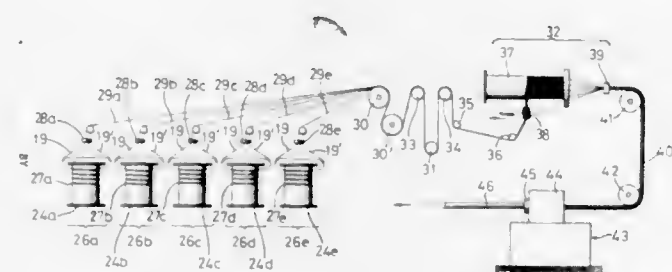
2 Claims



Continuous filament nylon of from 15 to 40 denier has been wrapped and twisted around a cotton core during spinning to produce yarns which are superior in uniformity, strength, and strength variability and can be spun at much higher speeds than the cotton control.

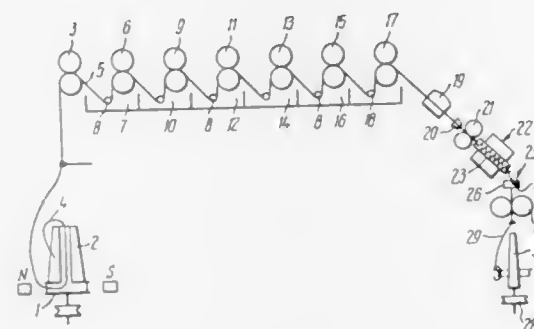


**3,722,203**  
**METHOD FOR CONTINUOUSLY MANUFACTURING A COMMUNICATION CABLE**  
 Hisateru Akachi, Kanagawa-ken, Japan, assignor to Oki Den-sen Kabushiki Kaisha, Kanagawa-ken, Japan, a part interest  
 Filed Oct. 29, 1970, Ser. No. 85,212  
 Claims priority, application Japan, Nov. 15, 1969, 44/91494  
 Int. Cl. H01b 13/04  
 U.S. Cl. 57—160  
 4 Claims



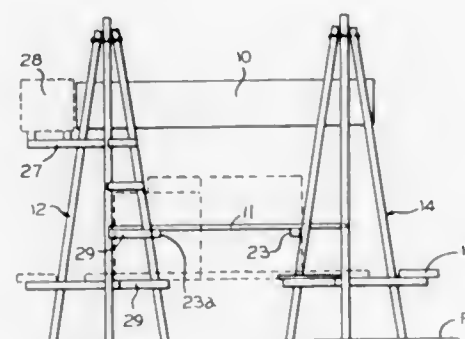
A method and an apparatus thereof of manufacturing a communication cable, comprising a primary stage in which a plurality of insulated conductors are wound on each of a plurality of identical winding reels and a secondary stage in which the winding reels are now used as feeding and twisting reels and in which the conductors wound on each of the feeding and twisting reels are twisted into a strand and a plurality of the thus formed strands are further twisted into a stranded cable which is thereafter coated with a protective sheath. The three major steps of the secondary stage are carried out all continuously.

**3,722,204**  
**APPARATUS FOR PRODUCING HIGHLY STRETCHABLE TWIST COTTON YARN**  
 Elena Ernestovna Tsirkel, ulitsa Bela Kuna, 19; Ljudmila Nikolaevna Stepanova, ulitsa Schevchenko, 17; Antonina Vasilievna Schiptsova, ulitsa Bestuzhevskaya II; Nina Alexandrovna Tsareva, ulitsa Basseinaya, 63; Andrei Maximilianovich Nessler, ulitsa Bela Kuna, 19, all of Leningrad, and Idal Aizikovitch Vishnyak, ulitsa Universitetskaya, 371, kv. 39, Tashkent, all of U.S.S.R.  
 Filed Nov. 9, 1970, Ser. No. 87,944  
 Int. Cl. D02g 3/40; D01h 13/30  
 U.S. Cl. 57—164  
 1 Claim



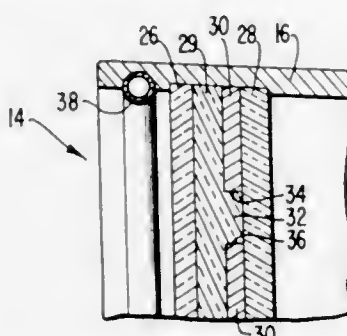
A method to produce highly stretchable twisted cotton yarn, wherein a single yarn is plied in two or more folds, and twisted in the direction of the single yarn twist, then the resulting plied yarn is treated in a bath with an alkaline solution, neutralized by acid, and water-washed, whereupon the yarn is impregnated with thermosetting resins, squeezed, dried, heat cured, and then straightened out and untwisted, thereby giving it a twist in the direction opposite to that of the plied yarn, thereby to produce a highly stretchable twisted cotton yarn.

**3,722,205**  
**FURNITURE STRUCTURE**  
 Theodore H. Meyer, 417 Summit St., Barrington, Ill.  
 Filed March 16, 1971, Ser. No. 124,859  
 Int. Cl. A47c 17/40, 7/03  
 U.S. Cl. 5—8  
 11 Claims



An improved article of furniture with four uprights adjutably supporting near their upper ends a bed frame and supporting below the bed frame a table surface carrying benches adjacent the table surface with the uprights capable of supporting any load and each including tripod arranged legs secured together at a connecting point at their upper ends and spread apart at their lower ends with connecting members limiting the spreading movement of the legs.

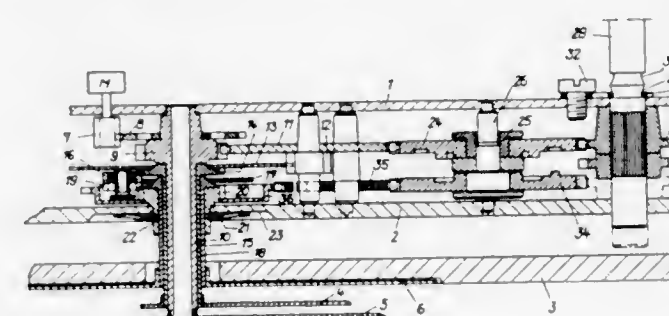
**3,722,206**  
**SELF-ILLUMINATED LIQUID CRYSTAL TIMEPIECE**  
 John M. Bergey, Lancaster, Pa., assignor to HMW Industries, Inc., Lancaster, Pa.  
 Continuation of Ser. No. 794,551, Jan. 28, 1969, abandoned.  
 This application March 1, 1971, Ser. No. 119,806  
 Int. Cl. G04b 19/30  
 U.S. Cl. 58—50 R  
 16 Claims



The time piece includes seven-bar-segment digital time indicating displays, the segments being selectively actuated by a time indicating source through a logic circuit. In one form, the display face includes a clear front glass, a dark back reflector glass spaced from the front glass, liquid crystals disposed between the glasses and an electrode material formed on the back glass with portions thereof removed while the remaining portions form electrodes for the seven bar segments. Selected energization of the electrodes energizes the liquid crystal segments to provide a light scattering effect whereby light incident to the energized liquid crystal segments is reflected to provide a digital display against a dark background. A nuclear powered light source surrounds the display face to provide light incident to the energized liquid crystals for digital display under dark conditions. In another form, the front glass is coated white except for the segments and a nuclear powered light source is located behind the rear clear glass plate on which the electrodes are carried. In the daytime, the energized bar segments reflect light rendering the same indistinguishable from the white opaque surface whereby the natural dark color of the nuclear light source appears through the nonenergized and transparent liquid crystal bar segments providing a daytime digital time display. For night-time display, the nuclear powered light source transmits light through the

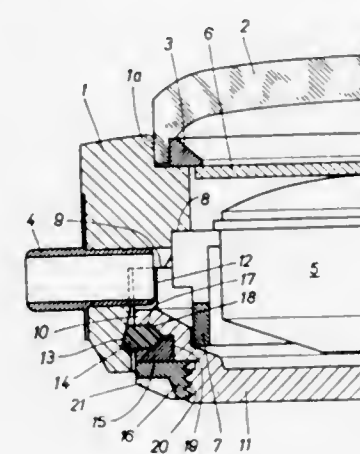
nonenergized liquid crystal bar segments to provide the digital time display.

**3,722,207**  
**UNIVERSAL TIMEPIECE**  
 Claude Challandes, Sonceboz, Switzerland, assignor to Centre Electronique Horloger S.A., Brequet, Neuchatel, Switzerland  
 Filed May 17, 1971, Ser. No. 144,128  
 Claims priority, application Switzerland, May 22, 1970, 7656/70  
 Int. Cl. G04b 19/22, 27/00  
 U.S. Cl. 58—42.5  
 7 Claims



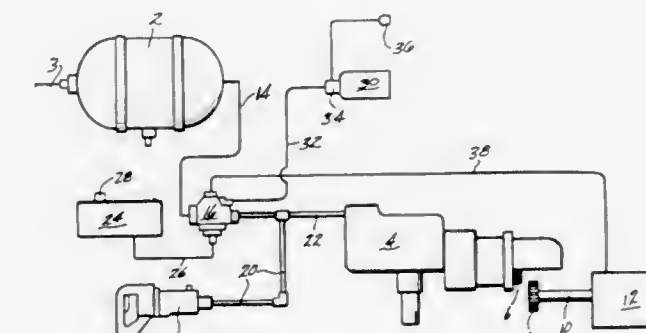
A universal timepiece comprises a disc driven by means comprising meshing first and second planet wheels pivotally mounted on a rotatably carrier angularly fixed with the disc, the first planet wheel meshing with a pinion in an hours hand driving train, and the second planet wheel meshing with a solar pinion. The solar pinion is normally angularly fixed, but a setting train for the disc meshes with the solar pinion to enable rotation thereof.

**3,722,208**  
**HERMETIC WATCH-CASE**  
 Raymond Ryser, Renan, Switzerland, assignor to Manufacture de Boites de Montres S. Graber S.A., Renan (Canton of Berne), Switzerland  
 Filed June 5, 1972, Ser. No. 259,692  
 Claims priority, application Switzerland, June 11, 1971, 8538/71  
 Int. Cl. G04b 37/08  
 U.S. Cl. 58—90 R  
 8 Claims



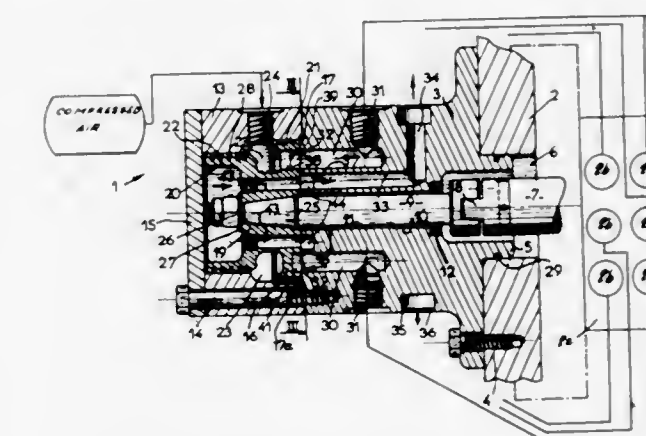
A hermetically sealed watch case in which the middle and the back define between them a groove for an elastic sealing ring. A rigid ring is provided to compress the elastic sealing ring and this ring is activated by a threaded piece, the threads of which are separated from the interior of this watch case so that the latter is protected from any fine cuttings resulting from turning the threaded piece.

**3,722,209**  
**ENGINE-STARTING SEPTUM**  
 James Kaytor, Route 1, W. Frankfort, Franklin, Ill.  
 Filed April 9, 1971, Ser. No. 132,746  
 Int. Cl. F02b 67/00; F01b 27/00  
 U.S. Cl. 60—6  
 5 Claims



A combination relay and check valve for use with a fluid actuated engine starting system. The valve includes a housing which contains a diaphragm connected to a valve. The valve divides the housing into inlet and outlet chambers. A lubricant reservoir is contained in the housing and means are provided to inject a charge of lubricant into the chambers when the valve is opened. Excessive pressure in the outlet chamber acts on the diaphragm to close the valve and means are provided to selectively close off the source of control pressure from the diaphragm so that the valve cannot be opened when the engine is running.

**3,722,210**  
**ROTARY PNEUMATIC STARTER DISTRIBUTOR FOR INTERNAL COMBUSTION ENGINE**  
 Karl Kuhn, 78 Saint-Germain-En-Laye, France, assignor to Societe D'Etudes de Machines Thermiques, Saint-Denis, France  
 Filed Jan. 25, 1971, Ser. No. 109,439  
 Claims priority, application France, Jan. 23, 1970, 7002475  
 Int. Cl. F01b 29/04; F02n 9/04  
 U.S. Cl. 60—16  
 10 Claims



An automatic rotary distributor for compressed air starting of a multicylinder internal combustion in particular Diesel engine with a cam shaft-driven rotary distributor disk receiving compressed air on one side while being in sliding tight pressure contact by its opposite side with the complementary side of a stationary distributor body, said disk being so shaped that the incoming compressed air acts only upon a circular annular concentric portion of said disk which is thereby applied with a reduced resulting total pressure force against said body.

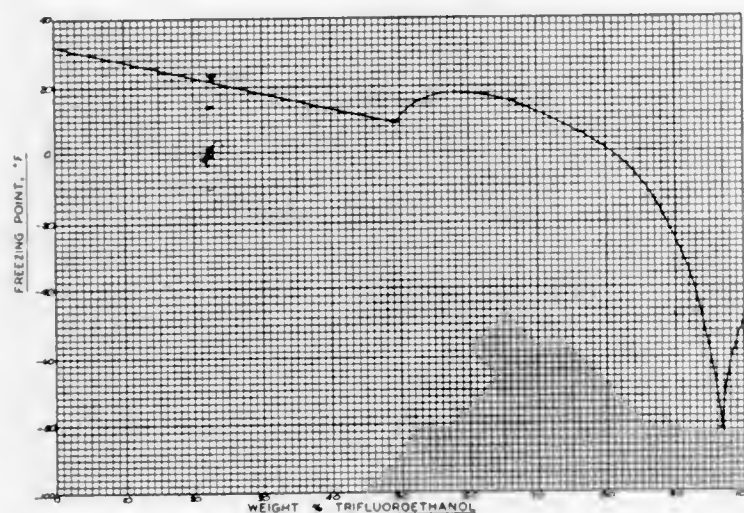


3,722,211

**PRIME MOVER SYSTEM UTILIZING TRIFLUOROETHANOL AS WORKING FLUID**  
Rex C. Conner, Englewood, and Louis L. Ferstandig, Ridgewood, both of N.J., assignors to Halocarbon Products Corporation, Hackensack, N.J.  
Filed Sept. 28, 1970, Ser. No. 75,904  
Int. Cl. F01k 25/10

U.S. Cl. 60—36

10 Claims



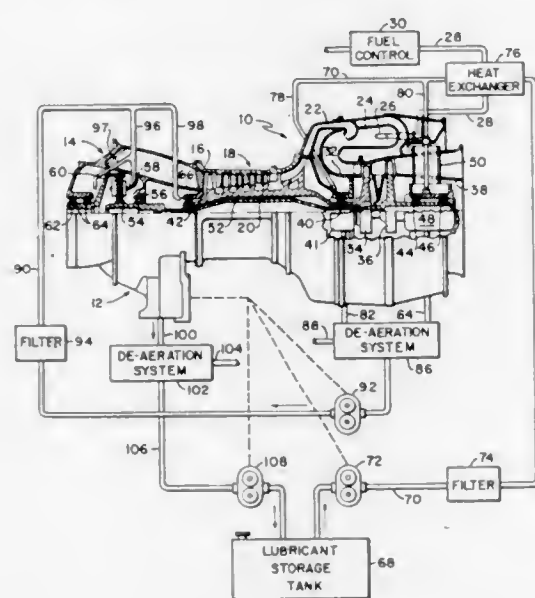
An anti-pollution heat engine including a prime mover system wherein the working fluid comprises trifluoroethanol, preferably containing about 3 to 25 percent of water by weight.

3,722,212

**GAS TURBINE ENGINE LUBRICATION SYSTEM**  
Wolfgang J. Stein, Milford, Conn., assignor to Avco Corporation, Stratford, Conn.  
Filed March 4, 1971, Ser. No. 120,853  
Int. Cl. F02c 7/06

U.S. Cl. 60—39.08

8 Claims



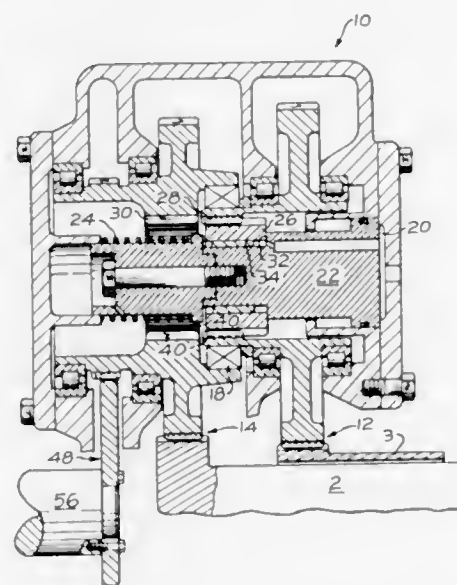
The disclosure illustrates a gas turbine engine lubrication system comprising a pump that pressurizes oil and delivers it through a heat exchanger to the engine bearings located in a hot region of the engine. From there the lubricating fluid is de-aerated and repressurized without passing it through a heat exchanger for delivery to the bearing assemblies located in the cooler region of the engine. This lowers the heat rejection of the engine and minimizes the heat exchanger requirements.

3,722,213

**GEAR TRAIN FOR GAS TURBINE ENGINES**  
Carl W. Carter, Peoria, and Lloyd E. Johnson, East Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.  
Filed Jan. 25, 1971, Ser. No. 109,393  
Int. Cl. F02c 3/10, 7/02

U.S. Cl. 60—39.16 R

1 Claim



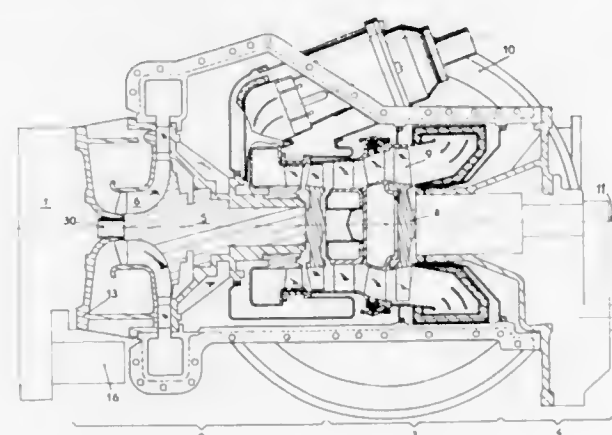
A triple lay shaft gear train for a two-shaft gas turbine engine. The gear train includes a lay shaft mounted overrunning clutch which permits a uni-directional lock-up of the power turbine and gasifier turbine when synchronous speeds have been reached and a positive lock-up coupling means which permits selective bi-directional lock-up of the lay shafts to provide the advantages of both single-shaft and two-shaft turbine operation. The gasifier turbine and power turbine are capable of different rotational speeds.

3,722,214

**GEARBOX FOR CONTROLLING THE MECHANISMS OF A GAS TURBINE ENGINE HAVING ROTARY HEAT EXCHANGERS**  
Jack Guillot, 19 rue Voltaire, Juvisy sur Orge, France  
Filed Aug. 12, 1970, Ser. No. 63,217  
Int. Cl. F02c 7/20

U.S. Cl. 60—39.31

10 Claims



A gearbox for driving the various accessories of a gas turbine provided with rotating heat exchangers. The gearbox has a triangular shape and fits on the front of the turbine. An electric starter is mounted on the gearbox casing parallel to the longitudinal axis of the turbine and extends under one end of the turbine.

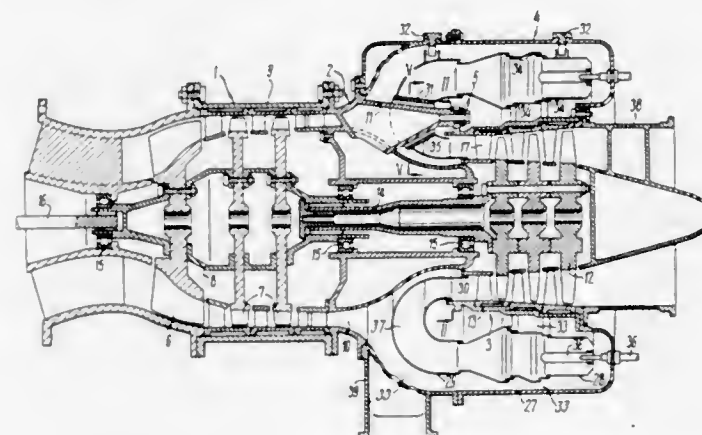
3,722,215

**GAS-TURBINE PLANT**  
Konstantin Ivanovich Zhdanov, Prospekt Pobedy, 19; Alexander Grigorievich Tomilin, ulitsa Kalinina, 28, kv. 22; Anatoly Mikhailovich Polyakov, ulitsa Kalinina, 28, kv. 27; Andrei Alexandrovich Luznin, ulitsa Kalinina, 22/36 kv. 18; Gennady Petrovich Kaimov, ulitsa Pervomaiskaya 35, kv. 52, all of Stupino Moskovskoi oblasti; Jort Nikolaevich Vasiliev, Ploschad Vosstania, 1, kv. 60, Moscow; Nikolai Andreevich Sheremet, ulitsa Novogireevskaya, 13, kv. 52, Moscow; Jury Georgievich Bekhli, Prospekt Mira, 118a, kv. 211, Moscow, and Evgeny Petrovich Federov, Moskovsky Prospekt, 52, kv. 7, Moscow, all of U.S.S.R.  
Continuation of Ser. No. 815,668, April 14, 1970, abandoned.  
This application March 30, 1971, Ser. No. 129,577

U.S. Cl. 60—39.32

Int. Cl. F02c

23 Claims



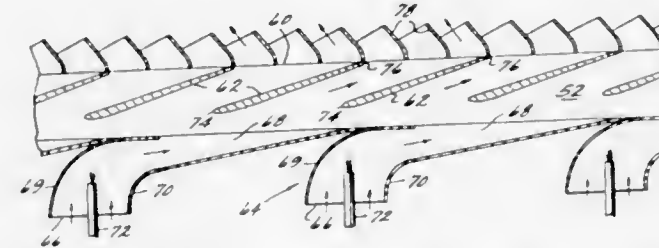
A gas-turbine plant in which the turbine is enclosed in an annular combustion chamber and the inlet portion of the stator of the turbine is connected to the stator of the compressor through the intermediary of the body of the diffuser in such a manner that it is possible to compensate temperature deformations of said body of the diffuser and stator of the turbine. To obtain a compact plant possessing good operating characteristics use is made of a compressor whose first stage is made diagonal and whose subsequent stages are axial.

3,722,216

**ANNULAR SLOT COMBUSTOR**  
Donald W. Bahr, and Daniel L. Harshman, both of Cincinnati, Ohio, assignors to General Electric Company  
Filed Jan. 4, 1971, Ser. No. 103,604  
Int. Cl. F02c 3/00

U.S. Cl. 60—39.36

15 Claims



A combustion system for a gas turbine engine is equipped with a fuel carbureting device which delivers a uniform fuel/air mixture to the primary combustion zone through a continuous annular slot. Fuel and air are provided as a continuous tangential flow to an annular premixing chamber, which is configured so as to provide an exit which comprises the continuous annular slot. Radial swirl vanes are positioned within this slot to turn the fuel/air mixture axially, while counterswirl vanes surround the slot to provide additional primary combustion air to rapidly mix with the fuel/air mixture and to provide flame stabilization regions around the entire annular combustion chamber.

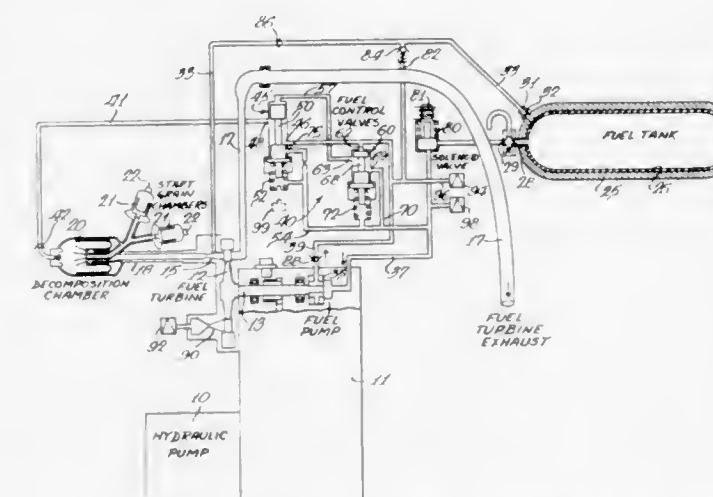
908 O.G.—33

3,722,217

**AUXILIARY HYDRAULIC POWER SUPPLY**  
Richard W. Reynolds, and Kent Weber, both of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.  
Filed March 3, 1971, Ser. No. 120,424  
Int. Cl. F04b 17/00

U.S. Cl. 60—39.48

17 Claims



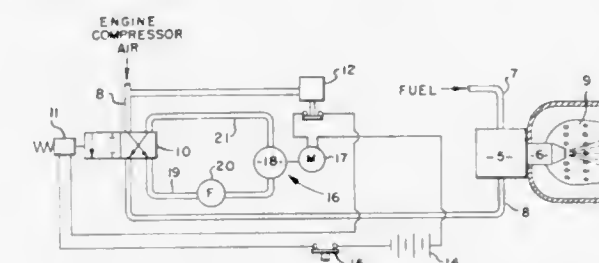
An emergency hydraulic power supply for providing hydraulic power to an aircraft system in event of engine failure including a hydraulic pump, a hot gas turbine for driving the pump, a decomposition chamber for decomposing fuel to provide hot gas for driving the turbine, a fuel storage tank, pump means for delivering fuel from the tank to the decomposition chamber, conduit means connecting the pump outlet and the decomposition chamber, means for conducting hot gas from the decomposition chamber to the fuel tank for pressurizing the fuel to force the latter toward the pump means, means utilizing tank pressure for purging the conduit means on pump shutdown, and coupling means for using external fluid under pressure for testing operation of various components without decomposition of fuel.

3,722,218

**AIR BOOST FUEL ATOMIZING SYSTEM**  
Dominic J. Lapera, Chardon, Ohio, assignor to Parker-Hannifin Corporation, Cleveland, Ohio  
Filed Dec. 4, 1970, Ser. No. 95,312  
Int. Cl. F02g 1/00

U.S. Cl. 60—39.74 R

10 Claims



An air boost fuel atomizing system for a gas turbine engine or the like operative to supply compressed air to atomizing fuel injection nozzles during starting of the engine until the engine compressor discharge pressure exceeds the combustion chamber pressure by a prescribed amount such as to obtain efficient atomization and combustion of the fuel on compressor air alone, and when that occurs at say, 80 percent of the maximum turbine shaft speed which may vary from engine to engine, the air boost fuel atomizing system is de-energized. In one system according to this invention, the boost blower or compressor is in series between the engine compressor and the fuel-air manifold so as to deliver to the latter increased air pressure as required during starting of the engine and until the engine attains a predetermined speed, after which the engine compressor discharge pressure is itself sufficient to sustain ef-



efficient atomization and combustion. In another system according to the present invention, the boost compressor has an atmospheric intake port and a discharge port communicating with a high pressure air reservoir from which air is conducted to the fuel-air manifold via a pressure regulator during starting of the engine and until the engine compressor air is of sufficient magnitude to sustain efficient atomization and combustion at which time the air boost system is de-energized.

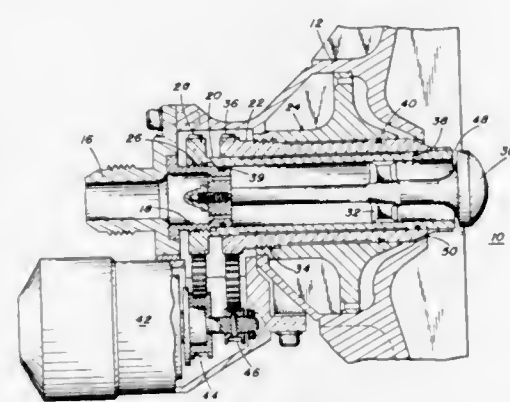
3,722,219

**VARIABLE AREA INJECTOR FOR ROCKET ENGINE**  
Duane Robert Spencer, Redondo Beach, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed April 26, 1971, Ser. No. 137,633  
Int. Cl. F02g 1/00

U.S. Cl. 60—39.74 A

2 Claims



A device for varying the thrust of a rocket engine either before or during flight, and for adjusting the mixture ratio easily and quickly during engine burn. A variable area fuel injector having concentric sleeves which are independently axially moveable for respectively controlling the flow of fuel and oxidizer independently of one another is provided for this purpose. These sleeves are threadably engaged with the rocket and a fixed pintle therein for permitting this axially movement.

3,722,220

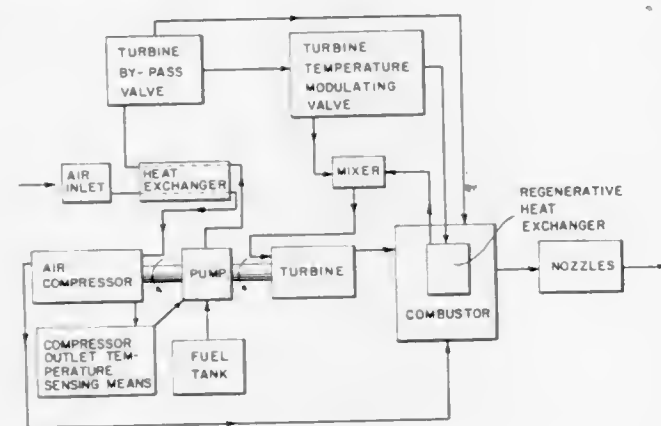
**REACTION PROPULSION ENGINE AND METHOD OF OPERATION**

Robert L. Wolf, Chesterfield County, Va., and Rodney McGann, Northridge, Calif., assignors to Texaco Inc., New York, N.Y.

Filed Nov. 20, 1963, Ser. No. 325,118  
Int. Cl. F02k 11/00

U.S. Cl. 60—267

2 Claims



1. A reaction propulsion system including means providing a combustion chamber having an impulse expansion outlet nozzle therefrom, means providing a ram air intake, means directing air from the ram air intake to the combustion chamber, a fuel storage chamber, heat exchange means in heat exchange contact with the air in said air directing means,

means directing fuel from said storage chamber through said heat exchange means, an air compressor providing a portion of the air directing means between the heat exchange means and said combustion chamber, a direct expansion turbine for driving said compressor, means directing at least a portion of fuel from said heat exchange means through the direct expansion turbine and then into said combustion chamber, a regenerative heat exchanger in said combustion chamber, and means for selectively directing a portion of the fuel passing through said heat exchanger to said regenerative heat exchanger and then to the turbine.

3,722,221

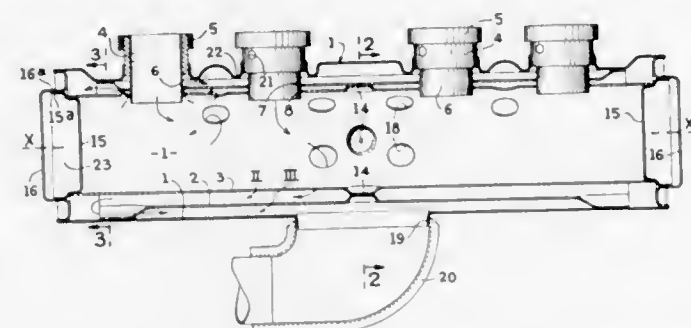
**POST-COMBUSTION REACTOR FOR EXHAUST GASES OF AN INTERNAL COMBUSTION ENGINE**

Jean Chopin, Ruell-Malmaison, and Jacques Eloy, Montbeliard, both of France, assignors to Automobiles Peugeot, Paris, France

Filed Dec. 13, 1971, Ser. No. 207,363  
Claims priority, application France, Feb. 22, 1971, 7105970  
Int. Cl. F01n 3/10

U.S. Cl. 60—282

14 Claims



A treating reactor for exhaust gases of an internal combustion engine. It has three concentric tubular walls defining concentric chambers which intercommunicate. Inlet pipes connected to the outer wall extend through the inner walls with clearance and put the innermost chamber in communication with the exhaust pipes of the engine. An outlet connected to the outer wall puts the outermost chamber in communication with the exterior. The tubular walls are interconnected in pairs in a plane perpendicular to the axis of the reactor. The fixing points of one pair are staggered with respect to the fixing points of the other pair in said plane. Slidable guide means slidably interconnect adjacent end portions of the tubular walls.

3,722,222

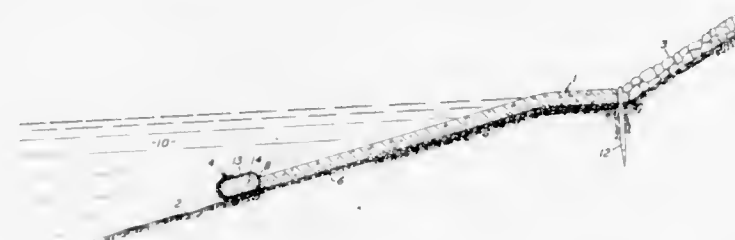
**SUPPORT MEANS FOR SLOPE REVETMENTS**  
Gerardus Rinkel, 's-Hertogenbosch, Netherlands, assignor to Bitumarin NV, Zaltbommel, Netherlands

Filed March 9, 1971, Ser. No. 122,551  
Claims priority, application Netherlands, May 11, 1970, 7006762

Int. Cl. E02b 3/12

U.S. Cl. 61—38

12 Claims



A method and means is provided for protecting slope revetments of banks and of harbor basins and waterways against crumbling under the water line. The method includes the step of supporting the foot of the revetment with an oblong body

which extends in the longitudinal direction of the slope and which is suspended from a carrier. This carrier rests at least in part on the slope and is covered by the revetment.

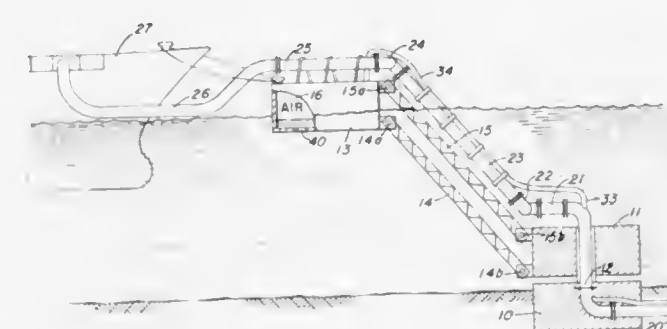
3,722,223

**SUBMERSIBLE SINGLE POINT MOORING FACILITY**  
Ronald L. Gratz, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed July 22, 1971, Ser. No. 165,222  
Int. Cl. B63b 21/00; B65b 3/00

U.S. Cl. 61—46

2 Claims



A submersible single point mooring facility for a bed of water which includes a mounting affixed to the bed of the body of water, a base mounted by means of a swivel to the mounting which permits 360° horizontal rotation of the mounting about the base, a buoy which is attached by means of a rigid arm to the base such that the arm is pivotally attached to the base and pivotally attached to the buoy, and means for floating the buoy or submersing the buoy such that the single point buoy can be floated during loading location and subsequently submersed to protect the buoy from accidental impact by passing ships or damage from surface ice.

3,722,224

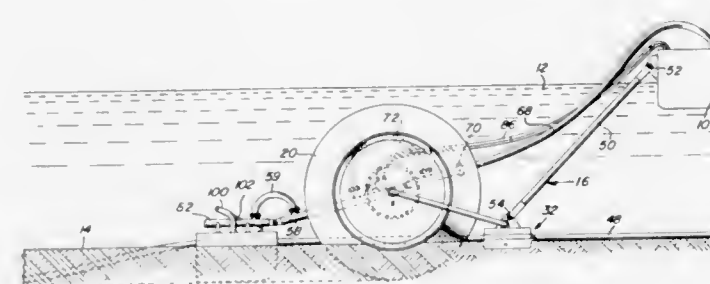
**SUBMARINE PIPELINE TRENCH**

Lynn H. Roy, 317 Alamo St., Lake Charles, La.  
Filed Feb. 8, 1971, Ser. No. 113,500

Int. Cl. B63b 35/04; E02f 5/02

U.S. Cl. 61—72.4

12 Claims



A submerged bottom travelling apparatus for movement along behind a surface vessel, either by its own motive power or by towing, and operable to form and lay a pipe in a bottom trench. The apparatus includes a pair of large supporting wheels for rolling along the bottom and depressing the bottom surface along closely spaced parallel paths and water-jet and water-vacuum structure is also provided for removal, by erosion and vacuuming, of the bottom material disposed between the paths of movement of the large support wheels on the bottom. Further, the apparatus includes guide structure operable to move along a pipe or submarine cable being unwound by the surface vehicle or a preceding surface vehicle and to guide the pipe or submarine cable into the trench being formed.

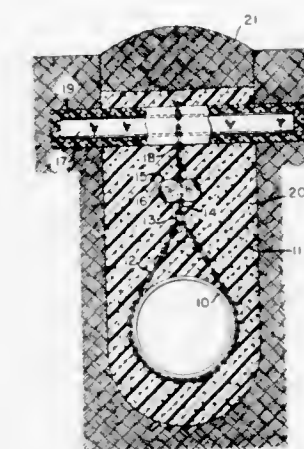
3,722,225

**PIPELINE SUSPENSION SYSTEM**

Herbert G. Empson, 2027 Lynwood Terrace, San Jose, Calif.  
Filed Nov. 2, 1970, Ser. No. 86,236  
Int. Cl. F16l 1/00, 3/00

U.S. Cl. 61—72.1

9 Claims



The pipe is suspended in spaced relation within a ground trench by a chain sling connected to a cross beam by a shock absorber. The pipe and such suspension are fully enclosed by plastic foam formed in place or applied as a wrapping.

3,722,226

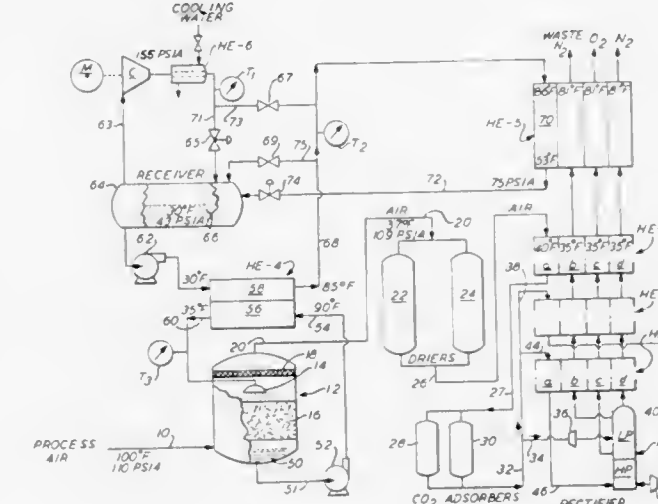
**PROCESS GAS FORECOOLING SYSTEM**

Richard L. McDermott, Somerset, and Scott A. Mueller, North Plainfield, both of N.J., assignors to Airco, Inc., New York, N.Y.

Filed March 25, 1970, Ser. No. 22,482  
Int. Cl. F25j 3/00, 3/03

U.S. Cl. 62—13

7 Claims



Forecooling system for a pressurized stream of warm, water-saturated process gas comprising a cooling tower wherein the gas stream is water-cooled and then directed to dryers and processing means, a first heat exchanger for cooling the tower water by a fluorocarbon refrigerant, a compressor and receiving tank for supplying the refrigerant, a second heat exchanger for cooling the exhaust refrigerant from the first exchanger by end-process product gas, and an expansion valve in a refrigerant return line between the second exchanger and receiving tank; an alternate method for directly cooling the process gas stream in the first heat exchanger.



3,722,227

**WATER DISTRIBUTION CONTROL FOR AUTOMATIC ICE CUBE MAKER**

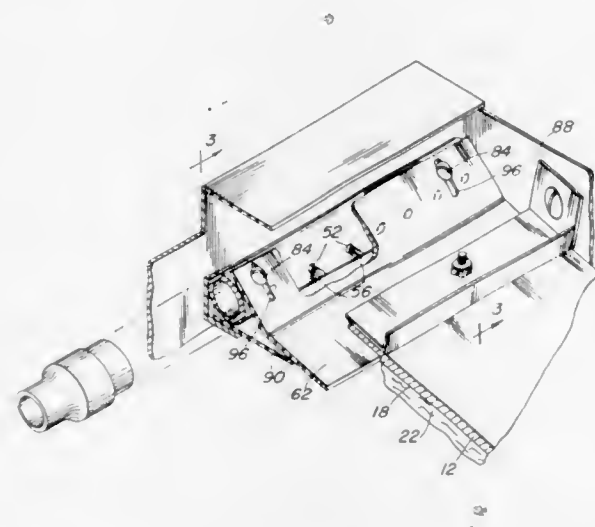
Harold Herman Esser, Chicago, and Ralph Brent Olson, Lombard, both of Ill., assignors to Schneider Metal Manufacturing Co., Chicago, Ill.

Filed Sept. 14, 1970, Ser. No. 71,869

Int. Cl. F25c 1/12

U.S. Cl. 62—347

7 Claims



In an automatic ice cube maker of the type in which water flows on the underside of a refrigerated plate to form ice thereon, interceptor means or baffle means interposed between the water supply means and a spatial zone below the refrigerated plate to prevent water loss from the water circulation system and to prevent water contamination of ice through discharge of water from the water supply means to the spatial zone below the refrigerated plate.

3,722,228

**CONTROL OF REFRIGERANT MIGRATION TO COMPRESSOR DURING SHUTDOWN**

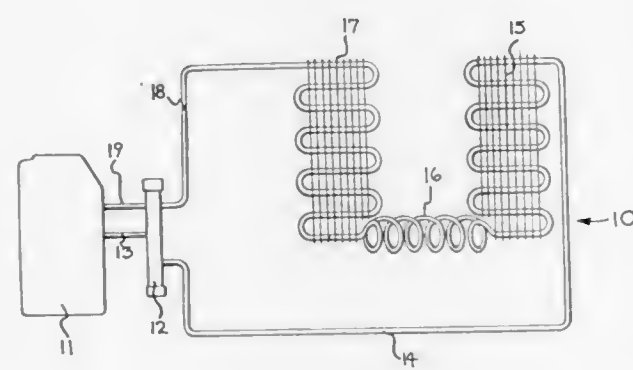
Russell T. Smith, Innisbrook Apts. 3A, Mill Road, Adrian, Mich.

Continuation-in-part of Ser. No. 112,942, Feb. 5, 1971, abandoned. This application Oct. 12, 1971, Ser. No. 188,132

Int. Cl. F25b 41/00

U.S. Cl. 62—206

10 Claims



A control of refrigerant migration to the compressor during shutdown in a vapor compressor refrigeration cycle in which a compressor forces the vaporized refrigerant to a condenser from which it passes through an expansion device to an evaporator and then returns to the compressor. The control is such that the head pressure from the compressor opens the passage to the condenser and when the compressor is shut down, such passage automatically closes. Both the inlet to the compressor and outlet from it are automatically opened and closed. Thus, during the shutdown interval the vaporous refrigerant cannot migrate to the compressor.

3,722,229

**SMOOTH SURFACE CHILLER CRYSTALLIZER**

Ikuta Kayahara, and Yusuke Tanaka, both of Osaka, Japan, assignors to Maruzen Oil Co., Ltd., Osaka, Japan

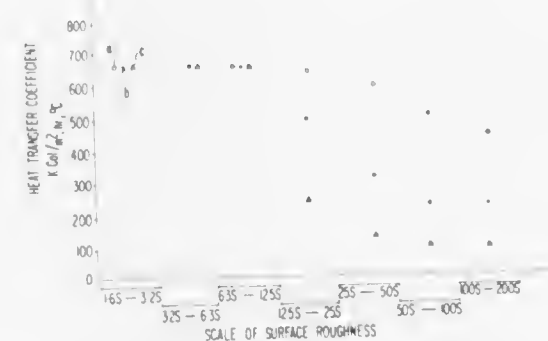
Filed Dec. 29, 1971, Ser. No. 213,614

Claims priority, application Japan, Dec. 29, 1970, 45/120791

Int. Cl. F28f 13/00, 17/00

U.S. Cl. 62—354

6 Claims



A chiller equipped with a scraper for crystallizing and separating p-xylene in a mixture of  $C_8$  aromatic hydrocarbons including p-xylene by indirect cooling, in which the scraped surface exhibits a surface roughness of less than 12.5-S as indicated in the Japanese Industrial Standard (JIS) B 0601-1970, is disclosed.

3,722,230

**SHIP REFRIGERATION**

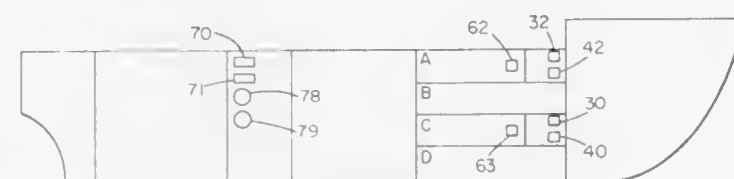
James Scott, Atkinson, N.H., and John S. McDowell, Jr., Flushing, N.Y., assignors to United Brands Company, Boston, Mass.

Filed Dec. 10, 1970, Ser. No. 96,882

Int. Cl. B63b 25/26

U.S. Cl. 62—200

2 Claims



A ship refrigeration system permits evaporators in different ship cargo compartments being held at different refrigeration temperatures though the respective evaporators are fed refrigerant from a common source, and control means accessible at a common control center are used for modulating the refrigerant pressures in the evaporators in separate compartments of the ship independently depending upon the cooling load demands in the separate compartments.

3,722,231

**METHOD AND MEANS FOR CIRCULAR KNITTING**

Albert Edward Cooke, Leicester, England, assignor to Triplite Limited, Leicester, England

Filed March 9, 1970, Ser. No. 17,789

Claims priority, application Great Britain, March 13, 1969, 13,166/69

Int. Cl. D04b 15/48

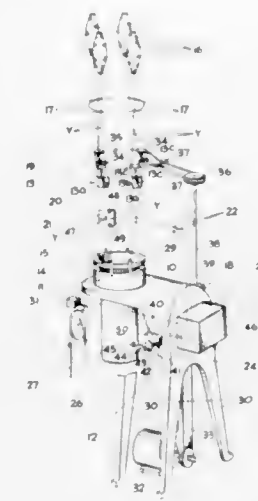
U.S. Cl. 66—132

6 Claims

A method and means are provided for controlling the operation of a circular knitting machine having a plurality of feeding stations with yarn positively fed to the needles at one at least of said stations, wherein the tension is a positively fed length of yarn extending to the feeding point from the positive feeding means at one of the feeding stations is maintained constant by adjusting the needle cylinder axially to adjust the

stitch size at each station under control of a sensing device acting on said length of yarn, so as to compensate for any

liquids on textiles, such as woven and knitted fabrics, tufted fabrics, fibrous fleeces, joined yarns, tassel bands and the like. The apparatus is particularly characterized in that a treating liquid is heated separately from the material being treated at least to the boiling temperature in the case of aqueous solu-



changes in tension from a normal value in the said positively fed length of yarn.

3,722,232

**CONTINUOUS WASHING APPARATUS**

Erwin B. Bahnsen, Hinsdale, Ill., assignor to Steiner American Corporation, Salt Lake City, Utah

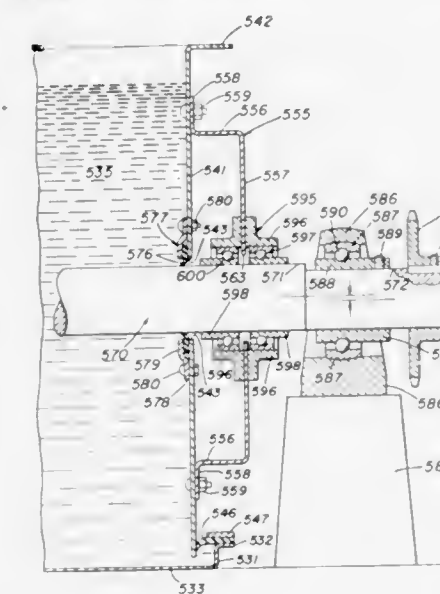
Division of Ser. No. 879,764, Nov. 25, 1969, Pat. No. 3,698,214.

Filed Sept. 28, 1971, Ser. No. 184,574

Int. Cl. B05c B05c

U.S. Cl. 68—3 SS

4 Claims



A plurality of cloth articles are transported through a washing apparatus on a conveyor supported by a plurality of shafts extending through movable side walls of the washing apparatus and supported on bearings outside of the washing apparatus to prevent contact of the wash solution with the bearings supporting the shafts, orbital movement of the movable walls imparts similar orbital movement to the conveyor supported by the shafts to impart cycloidal movement to the cloth articles transported by the conveyor.

3,722,233

**PROCESS AND APPARATUS FOR CONTINUOUSLY REFINING RUNNING LENGTHS OF MATERIALS**

Christian August Meier Windhorst, Hamburg, Germany, assignor to Artos Dr.-Ing. Meier-Windhorst Kommanditgesellschaft, Hamburg, Germany

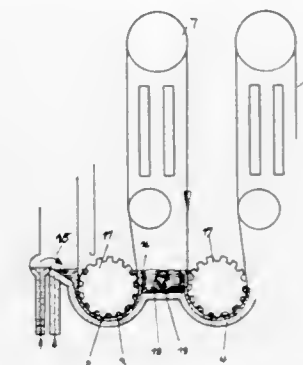
Division of Ser. No. 802,314, Jan. 31, 1969. This application Oct. 22, 1970, Ser. No. 83,182

Int. Cl. B05c 9/14

U.S. Cl. 68—5 D

1 Claim

An apparatus for the continuous refining, preferably dyeing, of wide guided lengths of materials, is used in hot treating



3,722,234

**POWER RINSE CLOTHES WASHERS**

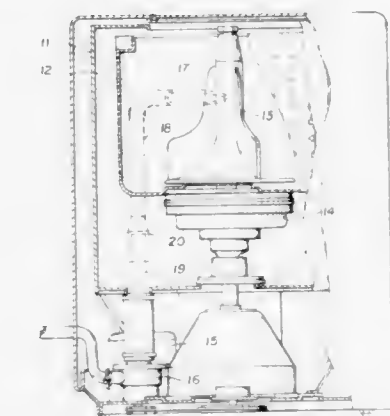
Peyton W. Douglas, Bemus Point, N.Y., assignor to Blackstone Corporation, Jamestown, N.Y.

Filed Dec. 24, 1968, Ser. No. 786,682

Int. Cl. D06f 39/08

U.S. Cl. 68—23.5

3 Claims



A clothes washing machine having an outer tub, an inner rotatable tub concentric therewith, a reciprocable agitator and means for selectively driving the agitator and inner tub is provided with means introducing water into the area between the inner tub and outer tub, preferably tangentially against the inner tub in its direction of rotation, at the time the inner tub begins its rotation.

3,722,235

**METHOD AND APPARATUS FOR DYING TEXTILES**

George S. McGee, Jr., c/o Alloy Fabrications, Inc., P. O. Box 2538, Chattanooga, Tenn.

Filed Jan. 7, 1971, Ser. No. 104,553

Int. Cl. D06f 17/12

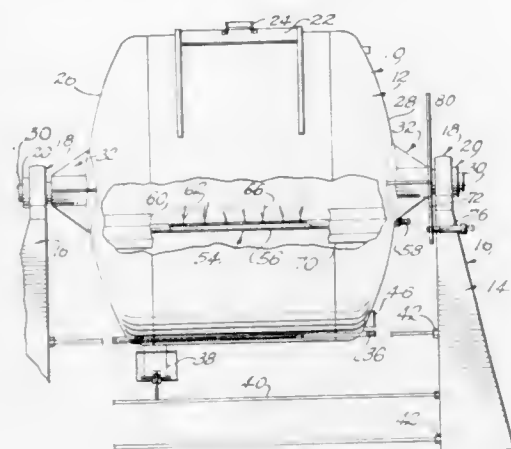
U.S. Cl. 68—183

3 Claims

A method of dyeing textiles such as hosiery, socks, rugs, tubular knit goods or the like, submerged in a tank of dye liquor which is agitated by means of air pressure from orifices beneath the surface of the dye liquor. A conventional dyeing tub mounted for partial rotation on a stand is filled to its uppermost level with the dye liquor. An airline inside the tank is a hollow pipe or pipes extending through the tank below the central axis thereof and has a plurality of spaced air orifices therein from which air emits under pressure controls from an



air supply line outside the tube which is connected to the air-line inside the tub. The dye liquor level can be increased



because the conventional paddle wheel has been eliminated and the capacity has thereby been increased.

3,722,236

**LOCK ASSEMBLY FOR LITTER BINS**

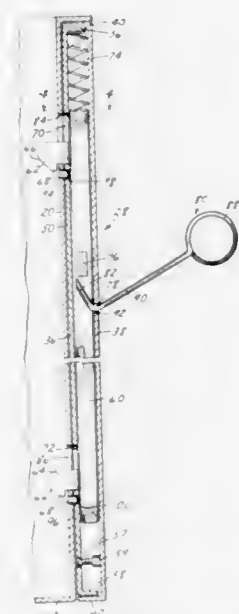
Harry Zelenko, 150 East 61st St., New York, N.Y.

Filed Nov. 16, 1971, Ser. No. 199,289

Int. Cl. E05b 65/52, 35/00

U.S. Cl. 70—78

7 Claims



A litter bin having a hinged door is provided with a lock assembly comprising a bar mounted for vertical sliding movement along an inner surface of the door and having a pair of vertically-spaced latch members which extend through corresponding slots on a confronting wall portion of the litter bin. A spring biases the bar downwardly to a locking position in which the latch members overlap said wall portion and prevent the door from being opened. A small circular keyhole is located in the door and is spaced beneath a release pin which projects from the bar. The lock may be opened by a key having a shank formed with an angular terminal portion which is sized to be inserted through the keyhole, and is sufficiently long to engage and raise the release pin when the shank of the inserted key is turned downwardly.

3,722,237  
LOCKS

Alfred Charles Taylor, Brisbane, Australia, assignor to Meyers

Taylor Pty. Ltd., Virginia, Queensland, Australia

Filed April 27, 1971, Ser. No. 137,932

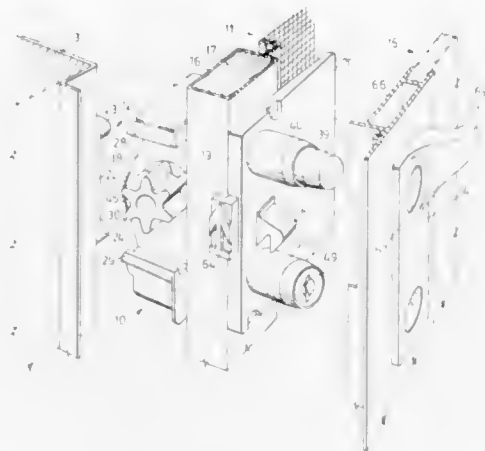
Int. Cl. E05b 65/04

U.S. Cl. 70—107

4 Claims

A lock for double doors, normally hinged about a common axis, includes an outer door attachment and an inner door

locking assembly engageable with a lock strike at the doorway, and having inside and outside release means, and also inside and outside key-operated locking mechanisms. This assembly also has a mating latch engageable with the other door



attachment to hold the doors adjacent, its release covered when the inner door is closed. The outer door attachment is so apertured that when the doors are adjacent, the outside release means and key-operated mechanisms are accessible from outside the outer door.

3,722,238

**REMOTELY OPERATED ELECTRICAL COMBINATION LOCK**

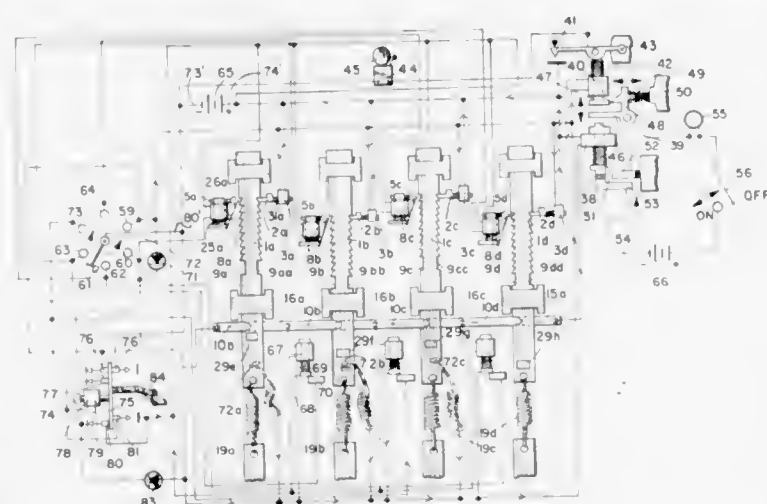
Albert W. Ring, 158-46 96th St., Howard Beach, N.Y.

Filed July 29, 1971, Ser. No. 167,209

Int. Cl. E05b 49/04

U.S. Cl. 70—278

18 Claims



An electrical combination lock in which the lock is in a preferred embodiment a door latch, safe lock, or a switch for actuating a motor, or the like, having a plurality of separate combination switches each switch of which requires a predetermined number of actuations in order to activate the respective switch, each succeeding switch being connected to reset itself and all preceding switches and concurrently to set off an alarm if the actuation member is actuated prior to the closing of all preceding ones of the combination switches, as well as there being a separate actuation member for resetting all of said switches, substantially all combination switches each including a means to reset and to actuate an alarm whenever the predetermined number of actuations for the respective switch is exceeded by a predetermined degree, once actuated the alarm remaining actuated until reset by the opening of the lock by correctly dialing the total combination of the several switches, and a separate actuation switch for opening the circuit connecting the first combination switch actuation means with the alarm circuit and for simultaneously closing the activation circuits of the plurality of combination switches, and for concurrently opening the circuit between the actua-

tion means for the first combination switch and the actuation means for the separately actuatable reset.

3,722,239

**STEERING WHEEL LOCKING DEVICE FOR VEHICLES**

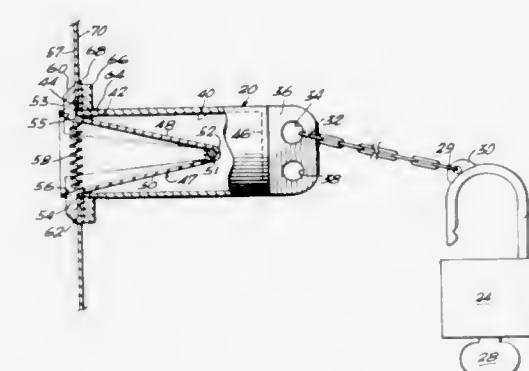
Francisco Mestre, 1834 S.W. 27th Avenue, Miami, Fla.

Filed Oct. 7, 1971, Ser. No. 187,443

Int. Cl. B60r 25/02; E05b 73/00

U.S. Cl. 70—212

6 Claims



A device for preventing full steering manipulation of the steering wheel of an automobile comprising, a padlock for locking engagement around either the ring or spoke portion of the steering wheel and a chain connecting between the padlock and a tubular member which is adapted to be received through a hole in the dashboard and latched therein in a manner so as to prevent removal thereof from the outer side of the dashboard.

3,722,240

**CYLINDER LOCK**

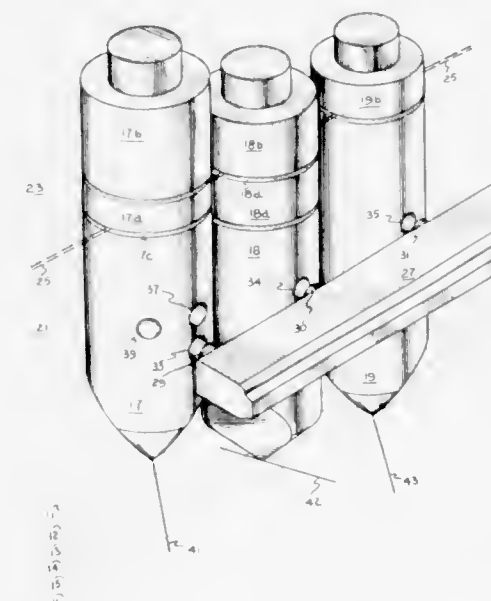
Roy C. Spain, P.O. Box 1668, and Roy N. Oliver, 148 Ellen Dr., both of Salem, Va.

Filed Jan. 25, 1971, Ser. No. 109,395

Int. Cl. E05b 15/14, 27/04

U.S. Cl. 70—364 A

3 Claims



A cylinder lock having tumblers movable within a key plug in response to the insertion of a bitted key whereby the tumblers both translate and rotate to present discretely located operating elements, or cavities, to cooperating elements, or projections, carried by a fence normally retaining the key plug from rotation in its cylinder shell to release the fence and permit the plug to be rotated; i.e., the projections of the fence normally bearing against the surfaces of the tumblers out of registration with the aforesaid discretely located elements until matching cavities are engaged to bring about release of the fence.

3,722,241

**SECURITY CYLINDER LOCK**

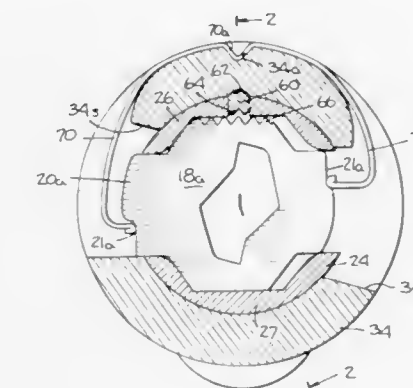
Stan J. Sussina, Larchmont, N.Y., assignor to Liquidonics Industries, Inc., Plainview, N.Y.

Filed March 3, 1971, Ser. No. 120,529

Int. Cl. E05b 29/02

U.S. Cl. 70—364 R

5 Claims



A longitudinal side bar is employed in connection with a standard type of cylinder lock having wafer tumblers with ears that extend through a opening in the rotatable cylinder into the cylinder housing. In order to open the lock, the tumbler ears must be retracted into the cylinder. The longitudinal side bar is held in a longitudinal groove in the rotatable cylinder. When the cylinder rotates, the side bar cams radially inward to engage the tumblers. When the lock is being comprised and torque is applied to the cylinder, the cylinder rotates a predetermined amount even though the tumbler ears are not retracted. The side bar will then ride in to engage the edges of the tumblers to prevent further retraction of the tumbler ears. In this fashion, compromise of the lock is defeated.

A sheet metal curved leaf type spring is also employed to grip the tumblers and provide a constant spring force tending to prevent the tumblers from being aligned by a pick.

3,722,242

**SAFETY LOCK**

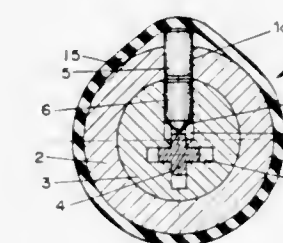
Paul Lipschutz, Croissy-sur-Seine, France, assignor to Societe d'Exploitation des Brevets Neiman, Neuilly-sur-Seine, France

Filed June 14, 1971, Ser. No. 152,798

Int. Cl. E05b 15/00

U.S. Cl. 70—364 A

6 Claims



A key-operated, releasable safety-lock of the pin tumbler cylinder type wherein the pin tumblers may project outwards from radial bores accommodating same in the stationary cylindrical outer casing, said pin tumblers being urged inwards by an outer pin-biasing, elastic sleeve tightly enclosing said casing and covering said radial bores and pin tumblers.



3,722,243

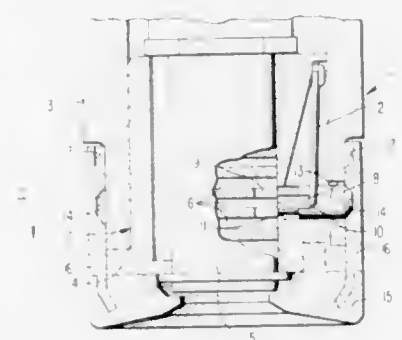
## STEERING LOCK FOR MOTOR VEHICLES

Gerhard Schiesterl, Stuttgart, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany  
Filed Nov. 1, 1971, Ser. No. 194,235

Claims priority, application Germany, Nov. 2, 1970, P 20 53 775.1

Int. Cl. E05b 15/16, 29/02

U.S. Cl. 70—369



A steering lock for motor vehicles consisting essentially of a steering lock housing, a lock cylinder, a rotor with plate tumblers, a cover cap with a cylindrical extension and a locking pin forced outwardly by a spring and extending through the steering lock housing, which engages in a groove provided in the extension of the cover cap; this extension is thereby made from a material of high strength and an immersion aperture is provided at the end face of at least one plate tumbler, into which the locking pin can be inserted in such a manner that it also simultaneously overlaps over at least one plate tumbler.

3,722,244

## METHOD OF CONTROLLING CONTINUOUS ROLLING OF METAL STRIPS

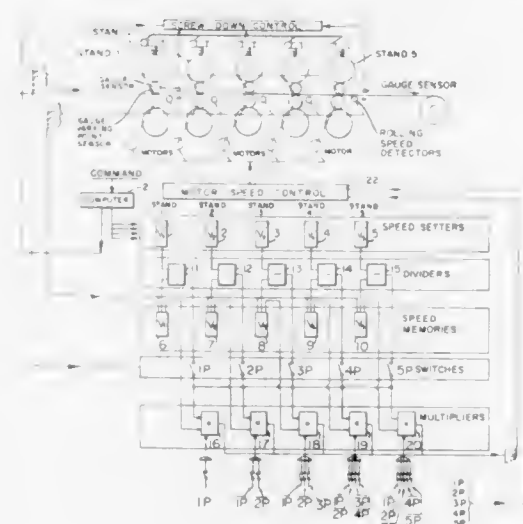
Seiji Fujii, Hiroshi Kuwamoto, Masayuki Ishida, Fukuyama, and Masamoto Kamata, Kawasaki, all of Japan, assignors to Nippon Kokan Kaishiki Kaisha

Filed Feb. 26, 1971, Ser. No. 119,117

Claims priority, application Japan, March 7, 1970, 45/19211

Int. Cl. B21b 37/00

U.S. Cl. 72—16



In the continuous rolling of a metal strip by means of a plurality of tandem mill stands, the gauge of the strip is varied by varying the rolling speed of a particular mill stand and of succeeding and/or preceding mill stands by the same increment when a gauge varying point of the strip reaches the particular mill stand, and then the rolling speeds of the succeeding and/or preceding mill stands are successively varied by the same increment, thereby finally varying the rolling speed of all stands to the speeds required to produce a strip of a given gauge.

## HYDROSTATICALLY OPERATED EXTRUDING MACHINE

3,722,245

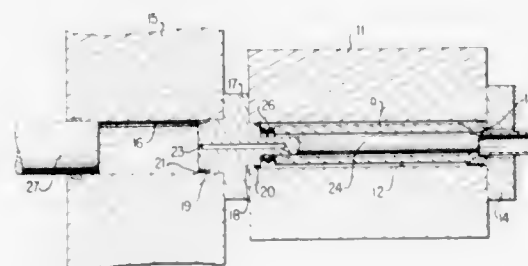
Shunji Yamamoto, Nada-ku, Kobe; Tatsu Fujita, Tarumi-ku, Kobe, and Yoshihiro Yamaguchi, Okubocho, Akashi, all of Japan, assignors to Kobe Steel, Limited, Kobe, Japan

Filed May 10, 1971, Ser. No. 141,663

Int. Cl. B21c 23/08

12 Claims U.S. Cl. 72—60

7 Claims



In a hydrostatically operating extruding machine which has a billet container having a cylindrical hollow, a die removably inserted in one end thereof, a die support suitably installed for bearing the die, a hydrostatic pressure generator associated with the billet container having a cylindrical hollow and a ram slidably inserted from a remote end thereof, the improvement comprising connecting means coaxially and sealingly securing the end of the hollow of the billet container opposite the die and the end of the hollow of the generator opposite the ram and having a hollow, a mandrel coaxially secured to the connecting means and extending through the hollow of the billet container and fluidly communicating with both the pressure generator and the billet container.

3,722,246

## HOT PERFORATING MILL

Teresio Passoni, Milan, Italy, assignor to Innocenti Societa Generale Per L'Industria Metallurgica E Meccanica, Milan, Italy

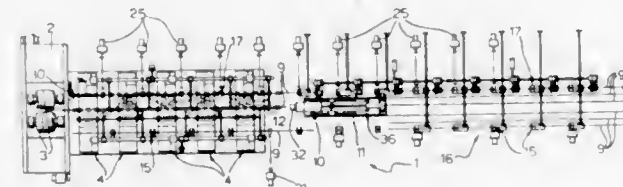
Filed April 1, 1971, Ser. No. 130,366

Claims priority, application Italy, April 10, 1970, 68210 A/70

Int. Cl. B21b 25/02, 25/06

U.S. Cl. 72—97

5 Claims



A hot perforating mill has a first roller guide alongside the carriage which releasably carries the piercing mandrel. A first lifting arm raises the mandrel off the first guide and holds it in position for the carriage to engage when the carriage is moved from its rearward to its forward position. When a tubular bloom has been formed and the carriage moves the mandrel, surrounded by the bloom, clear of the mill rollers, a second lifting arm moves the bloom and mandrel transversely on to a second roller guide. Here the bloom is extracted from the mandrel while the mandrel is held against movement. The bloom and mandrel travel separately down the second guide, the mandrel being transferred on to a bench behind the carriage for cooling and storage before being placed on the first guide for re-use.

3,722,247

## CORRUGATION OF THIN SHEET

Georges Rouyer, Paris, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

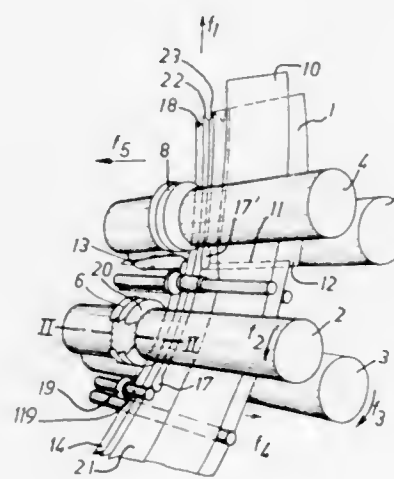
Filed April 5, 1971, Ser. No. 131,048

Claims priority, application France, April 8, 1970, 7012767

Int. Cl. B21d 15/04

U.S. Cl. 72—106

3 Claims



A machine for corrugating thin sheet metal comprising two rolls at a first work station, at least two rolls at a second work station, tracking lateral rollers, a corrugation-forming rake mounted on each roll, at least one clamping roll upstream of one work station, a shell of sheet metal being rotatable between the two rakes of each work station, each work station effecting through the pressure of the first-rake roller a bending of the metal to form a half-profile of the corrugation of each successive helix turn, the successive turns screwing helix-fashion into the rakes whereby to obtain a corrugated shell.

3,722,248

## TUBE FORMING METHOD AND APPARATUS

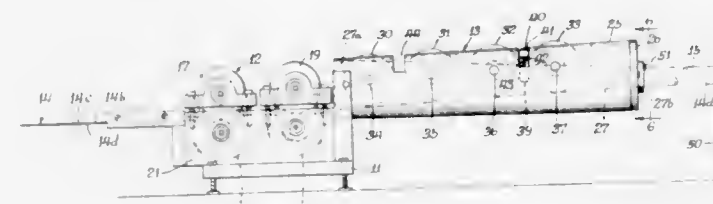
Walter R. Brunken, Medinah, Ill., assignor to Scientific Tube, Inc., Addison, Ill.

Filed June 17, 1970, Ser. No. 46,876

Int. Cl. B21d 5/08

U.S. Cl. 72—176

10 Claims



A flat strip of metal moving lengthwise first has its edges turned up by roll-forming. Thereafter it moves into the large end of a horn and along one side of the horn so that that side gradually imposes an increasing curvature on the metal and at the exit end of the horn the metal is substantially cylindrical. A non-galling surface is used on the contact face of the horn. A pin between the edges of the sheet at the exit end of the horn orients the cylindrical tube.

3,722,249

## DEVICE FOR ROLLING CORRUGATED TUBULAR PARTS

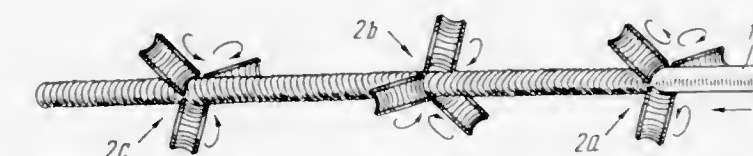
Evgeny Alexandrovich Zhukovich-Stosha, prospekt Mira, 43, kv. 5; Vadim Anatolievich Verderevsky, Volgogradsky prospekt, 171, kv. 35; Genrikh Moiseevich Cherednichenko, ulitsa Mikhailova, 29, korpus 3, kv. 88; Fedor Nikolaevich Dobychin, ulitsa Pavla Andreeva, 28, kv. 168; Rafail Moiseevich Lakernik, 11 Parkovaya ulitsa, 44, kv. 100; Felix Grigorievich Svidovsky, Novogirevo, Sojuzny prospekt, 18, kv. 180, and Aron Isaakovich Shapiro, ulitsa Zorge, 16, kv. 86, all of Moscow, U.S.S.R.

Filed Dec. 3, 1970, Ser. No. 94,745

Int. Cl. B21d 15/06

U.S. Cl. 72—187

3 Claims



A device for rolling corrugated tubular parts, in which there is provided a row of series arranged passes formed by toothed rolls with at least the first of the passes in the direction of rolling being effected with driven toothed rolls.

3,722,250

## ROLLING MILLS AND METHODS

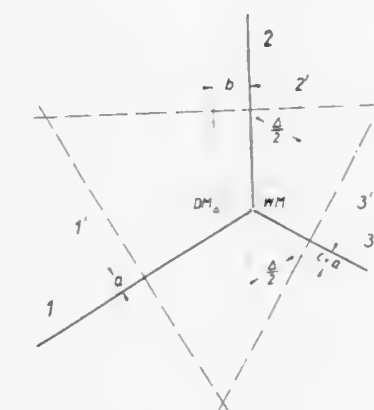
Werner Demny, Dusseldorf, Germany, assignor to Friedrich Kocks

Filed May 20, 1971, Ser. No. 145,220

Int. Cl. B21b 13/10

U.S. Cl. 72—224

11 Claims



A multi-roller stand, e.g. three roller, for a rolling line in a rolling mill, e.g. a rod mill, has journaled therein rollers of slightly different diameter. When the rollers become worn the worn larger roller can be refinished and used in the same stand as a replacement for the worn smaller roller. The latter can then be refinished or reground and can replace a still smaller worn roller in the same stand or in another stand, in the latter case as a replacement for a larger roller in said other stand. Alternatively the worn larger roller, after refishing or reprofiling can be moved to a similar position in another stand higher up the line. In this case a worn larger roller from the first stand can, after refishing or reprofiling, be used to replace a smaller roller in the last stand.

3,722,251

## APPARATUS AND METHOD FOR LEVELING METAL STRIP

David A. Withrow, Willoughby, Ohio, assignor to Production Machinery Corporation, Mentor, Ohio

Filed Dec. 17, 1971, Ser. No. 209,249

Int. Cl. B21d 43/28; B21c 37/02

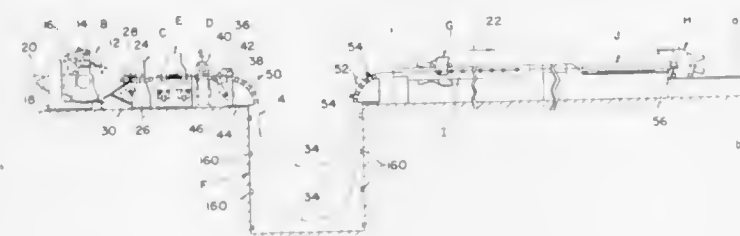
U.S. Cl. 72—294

15 Claims

Apparatus for leveling metal strip having a predetermined width includes gripping means for intermittently and succes-



sively gripping predetermined length portions of the strip at longitudinally-spaced locations. The strip is stretched between the longitudinally-spaced locations to produce a stretched strip portion having a width intermediate the spaced locations which is less than the predetermined width. Trimming means acts longitudinally of the strip to trim side portions thereof in order to reduce the predetermined width, at least at the spaced locations, to, or slightly less than, the poststretched width. The strip is continuously fed to a first looping means and continuously pulled from a second looping means. The



gripping means is positioned between the first and second looping means. During a stretching operation, the size of the loop in the first looping means increases and the size of the loop in the second looping means decreases. Transfer means transfers a stretched portion of strip to the second looping means subsequent to a stretching operation. During the transfer step, the size of the loop in the first looping means decreases and the size of the loop in the second looping means increases. The trimming means is spaced from the second looping means in the direction of movement of the strip.

3,722,252

## SHEET METAL FORMING APPARATUS

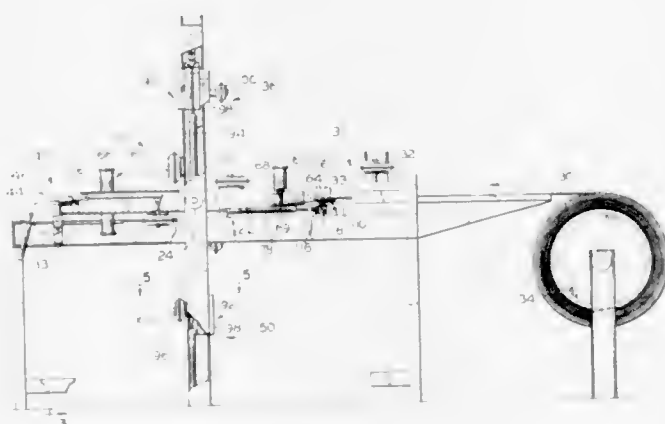
Louis E. Marantette, Portland, Oreg., assignor to General Metalcraft, Inc., Portland, Oreg.

Filed Aug. 20, 1970, Ser. No. 65,436

Int. Cl. B21d 11/04

U.S. Cl. 72—306

13 Claims

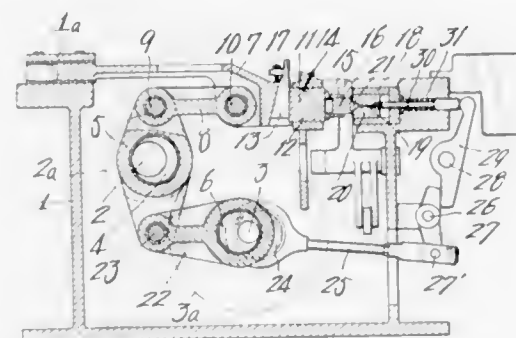


A sheet metal blank is fed from a cutter to a clamp of a turret mechanism and is stepped from station to station, where forked twisters form loose tucks in portions of the blank, flatteners press the tucks to tight folds to form well defined corners, and a frustum, which is formed in another portion of the blank as the corners are formed, is bent to a tilted position relative to the portion of the blank in which the corners are formed.

3,722,253  
DOUBLE STROKE-DOUBLE BLOW HEADER  
Hisashi Tsuda, and Masahiro Oyamada, both of Aida Engineering Kabushiki Kaisha, Sagami-hara-shi, Japan  
Filed Dec. 22, 1970, Ser. No. 100,722  
Int. Cl. B21d 28/00, 45/00

U.S. Cl. 72—338

2 Claims



A double stroke — double blow header in which a slide is mounted in a machine frame for linear reciprocal movement, a punch attached to said slide, and a forming die fixedly secured to said machine frame in axial alignment with and in opposition to said punch and having a product ejecting knockout pin therein, a stationary cutter fixedly secured to said machine frame in parallel to and spaced from one side of said forming die and having an opening through which wire material is to be fed, a movable cutter having an opening for receiving a portion of said material and also for loosely receiving a pin therein and reciprocally movable between said stationary cutter and said forming die, a drive shaft rotatably supported in said frame and having an integral eccentric sheave thereon, a rockable slide drive lever fitted on said eccentric sheave and having one end connected to said slide through a linkage for driving the slide, a follower shaft rotatably supported in said frame to be driven by said drive shaft with a rotational speed ratio of 2:1 with respect to the drive shaft and having two integral eccentric sheaves thereon, a control lever fitted on one of said eccentric sheaves on the follow shaft and pivotally connected to the other end of said slide drive lever, and an operation bar fitted on the other eccentric sheave on said follower shaft for actuating said knockout pin to eject a formed project out of said forming die.

3,722,254

## MATERIAL FORMING APPARATUS

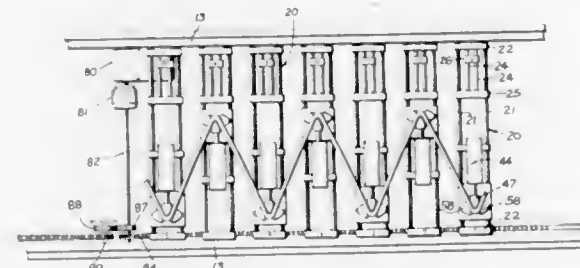
Michael Katogir, 41 Beverly Rd., N.E., Atlanta, Ga.

Filed Nov. 17, 1970, Ser. No. 90,318

Int. Cl. B21d 11/07

U.S. Cl. 72—383

19 Claims



This invention relates to a material forming method and apparatus for use in forming a series of predetermined shaped configurations in a length of material. More particularly, this invention includes a series of material forming heads. Each of the material forming heads includes complementary material bending means for forming a predetermined shape in a length of material. The series of material forming heads are supported on the material forming apparatus in a position to receive a length of material to be formed. Control means is

operatively associated with the material forming heads for effecting a material forming operation. The control means includes automatic means for stopping the forming operation after the material has been formed to a predetermined shape. The control means is selectively settable whereby the shape of the material can be adjusted to a desired set position. The series of material forming heads are supported on the material forming apparatus and operatively associated with each other whereby the heads are moveable relative to each other in response to the material being formed to a predetermined shaped configuration. The material bending means includes spaced material contacting and guide means detailed to prevent damage to the length of material during a forming operation.

3,722,255

## ROTATABLE PRESS DIE

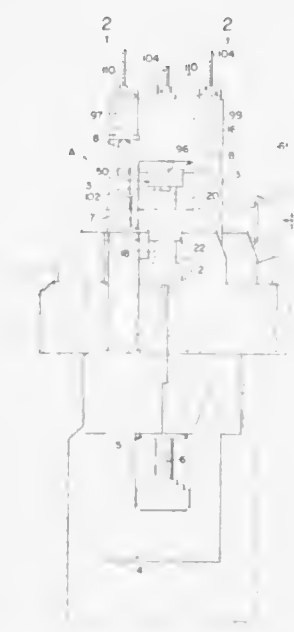
Elwood Allen Martin, Salem, Ohio, assignor to Gulf & Western Industrial Products Company, Grand Rapids, Mich.

Filed Sept. 8, 1971, Ser. No. 178,592

Int. Cl. B21j 13/02

U.S. Cl. 72—447

17 Claims



A top die on a forging press is rotatable about a vertical axis to facilitate die replacement and to position the die for use as a straightening tool.

3,722,256

## WIRE BENDING TOOL

Michael Iascone, 79 Third St., Medford, Mass.

Filed April 1, 1971, Ser. No. 130,114

Int. Cl. B21d 37/14

U.S. Cl. 72—470

10 Claims



A hand tool is adapted for bending wire manually and includes an elongate bar having a wire engaging head secured thereto at one end and another, similar, wire engaging head disposed intermediate the ends of the bar. Two such identical tools are employed to effect the desired bend in the wire. Each head on each tool projects transversely from the bar and has a T-shaped channel which extends parallel to the axis of the bar. In use the tools are placed, head end to head end, parallel to the wire, with the wire received in the T-shaped slots. With the adjacent head ends of the tools in abutment, the distal ends of

3,722,257

## INCREMENTAL CONSTRUCTION OF THREE-DIMENSIONAL OBJECTS HAVING PREMACHINED ROD ELEMENTS AND METHOD FOR FORMING THE SAME

Harold N. Bogart, Farmington; Norman W. Hopwood, Jr., Dearborn, both of Mich.; Archie A. Pearson, Tryon, N.C., and Foster E. Whitacre, Farmington, Mich., assignors to Ford Motor Company, Dearborn, Mich.

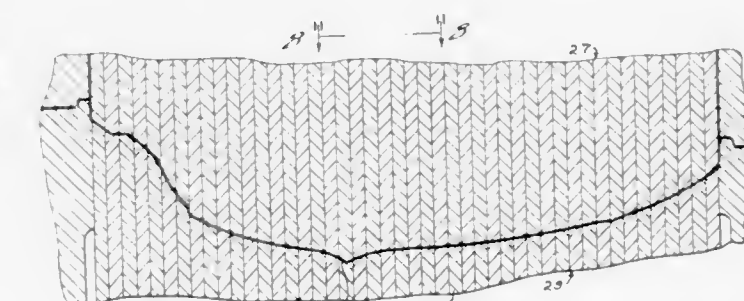
Division of Ser. No. 749,685, Aug. 2, 1968, Pat. No. 3,605,528.

This application Nov. 5, 1970, Ser. No. 87,198

Int. Cl. B21d 37/14; B21k 5/20

U.S. Cl. 72—475

3 Claims



A three-dimensional article and a method of manufacturing it, said article comprising individual increments in the form of rods that are premachined or preformed and assembled in registry, said rods being precut to discrete lengths, one end of each rod forming an increment of a precalibrated surface contour, each incremental surface being located in an optimum plane tangent to the precalibrated surface, the rod lengths and the cutting angles for the individual rods being determined by numerical control techniques.

## ERRATUM

For Class 72—294 see:  
Patent No. 3,722,280

3,722,258

## SYSTEM FOR MEASURING TIME DIFFERENCE BETWEEN AND SYNCHRONIZING PRECISION CLOCKS

Jean R. Besson, 1, rue du Moulin de Pierre, Issy-les-Moulineaux, and Jean R. Boillot, 145, rue de Chalais, L'Hay-les-Roses, both of France

Filed March 9, 1972, Ser. No. 233,078

Claims priority, application France, March 12, 1971, 7108710

Int. Cl. G04b 17/00

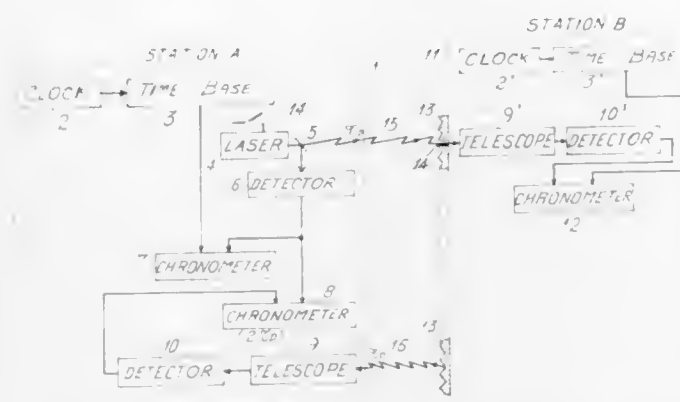
2 Claims

System for measuring the time difference between a master precision clock and a slave precision clock situated respectively in a master and a slave station remote from each other. The clocks generate timing pulses with respective frequencies very close to each other. The master station includes a laser source of light pulses generating luminous pulse signals, a local detector of these signals and means for transmitting them towards the slave station. The slave station includes a detector of the luminous pulse signals and means for reflecting the same towards said master station. Two chronometers in the master station measure the time difference between the instant of generation of a luminous pulse signal and a master clock timing pulse and the time difference between the instant of generation of a luminous pulse signal and the instant of de-



tection of a reflected back luminous pulse signal and a third chronometer in the slave station measures the time difference

thereafter the sliver is again expanded and by virtue of such expansion there is produced at the expansion zone a pneumatic vacuum which is proportional to the weight variations of



between the instant of detection of a luminous pulse signal and a slave clock timing pulse.

3,722,259

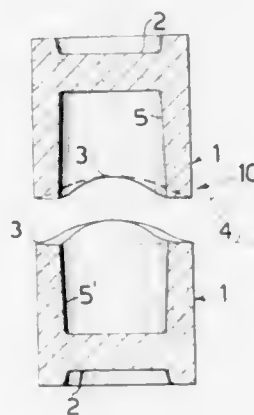
**RESISTANCE HEATER TEST CAPSULE CONSTRUCTION**  
Thaddaus Kraus, 9495 Triesen, Fürstentum, Liechtenstein, assignor to Balzers Patent-Und Beteiligungs-Aktiengesellschaft, Balzers, Fürstentum, Liechtenstein  
Filed July 6, 1971, Ser. No. 159,836

Claims priority, application Switzerland, July 20, 1970, 011024/70

Int. Cl. G01n 25/14; F27d 11/02

U.S. Cl. 73-19

4 Claims



A test capsule made of graphite which can be clamped between current supply electrodes and heated by current passage therethrough includes interengageable container-forming portions which, when fitted together, form a closed cylindrical capsule. The two parts are made of substantially identical size and configuration and they have corrugated or wavy-form side edges which interengage and interlock without a joint upon closing.

3,722,260

**METHOD AND APPARATUS FOR DETECTING WEIGHT VARIATIONS OF A SLIVER ON SPINNING PREPARATORY MACHINES**

Paul Staheli, Wilen bei Wil/Thurgau, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland  
Filed March 5, 1971, Ser. No. 121,333

Claims priority, application Switzerland, March 11, 1970, 3582/70

Int. Cl. D01h 5/32; G01b 13/04, 13/08

U.S. Cl. 73-37.7

11 Claims

A method and apparatus for detecting weight variations of a sliver on spinning preparatory machines, such as cards, draw frames and similar machines, at which the sliver passes through the channel or duct of a sliver funnel or trumpet. According to the invention, the sliver is initially condensed in the sliver funnel duct in order to expel entrained air. Immediately

the throughpassing sliver. This generated vacuum is then advantageously employed to control an amplifier for performing a desired operation, namely a measuring or control.

3,722,261

**METHOD OF AND APPARATUS FOR LOCATING LEAK AREAS OF PIPE LINES, ESPECIALLY UNDERGROUND PIPE LINES**

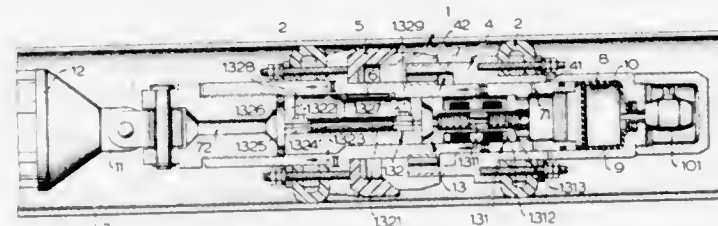
George Milke, Munster, Germany, assignor to Hoesch Aktiengesellschaft, Dortmund, Germany  
Filed Dec. 10, 1970, Ser. No. 97,456

Filed Dec. 10, 1970, Ser. No. 97,456

Int. Cl. G01m 3/02, 3/26

U.S. Cl. 73-40.5 R

19 Claims



A method and apparatus for locating leaks in conduits, such as pipes, particularly underground pipes. The apparatus comprises a member to be placed in the pipe and is free therein and can be moved from position to position along the pipe by a supply of fluid to the pipe on one side or the other of the member. The member is adapted to be sealed to the pipe and has a flow passage therethrough having flow sensitive measuring instrumentalities therein. The member also, preferably, includes a broadcasting device which broadcasts signals received from the instrumentalities to a remote station wherein the signals can be read.

3,722,262

**OSCILLATING VISCOMETER**

Philip J. Gilinson, Jr., Chelmsford, and Charles R. Dauwalter, Waban, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed March 16, 1972, Ser. No. 235,279

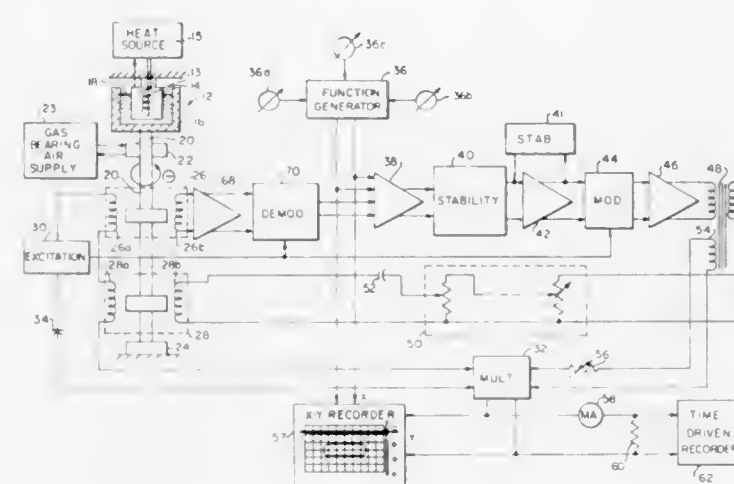
Int. Cl. G01n 11/16

U.S. Cl. 73-59

18 Claims

For complex rheological studies, a viscometer is employed having a fixed and temperature controlled first element and a rotatable second element with a fluid whose viscous properties are to be measured contained between the two elements. A precision drive circuit is provided for oscillating the second element with respect to the first element at very slow shear rates in accordance with a periodic electrical signal whose waveform is variable. The current required to rotate or stop

the second element is measured against time and angular displacement to provide an indication of fluid viscous properties



and to permit separate detection of the elastic and viscous responses of the fluid.

3,722,263

**ULTRASONIC INSPECTION APPARATUS**

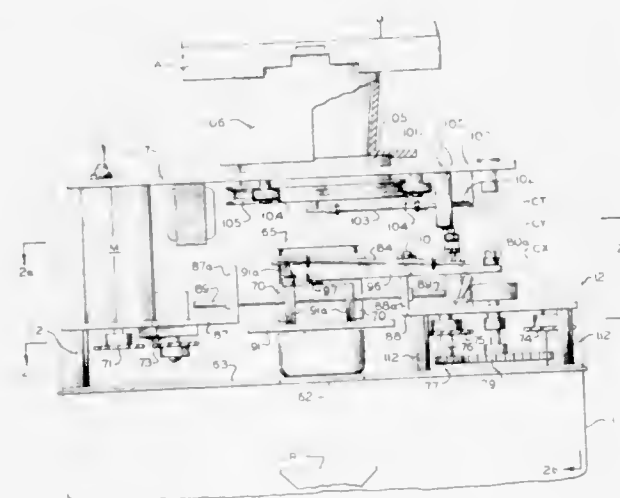
Bruno Wendell Hautaniemi, Ithaca; Robert A. Bowman, Ludlowville, and Kenneth R. Bangert, Ithaca, all of N.Y., assignors to Ithaco, Inc., Ithaca, N.Y.

Filed Dec. 21, 1970, Ser. No. 99,785

Int. Cl. G01n 29/04

U.S. Cl. 73-67.8 S

25 Claims



Ultrasonic inspection apparatus includes an improved transducer guide assembly to provide uniform acoustic coupling to an animal. Successive line scan traces made in a fixed position on the face of a cathode ray tube as a transducer moves along a complex path and as reflected sound energy is received are imaged on successive portions of a film which need not be translated relative to the cathode ray tube. A plurality of cams translate a lens mounted in between the cathode ray tube and the film and appropriately rotate the film without translating it. In one alternative embodiment the cathode ray tube image is both translated and rotated electronically, so that no relative motion is required between the cathode ray tube and the film. In several other embodiments, the CRT line trace is relayed using fiber optics or photosensors and light-emitting diodes to provide a remote trace along a rigid rod which is appropriately moved relative to the film.

3,722,264

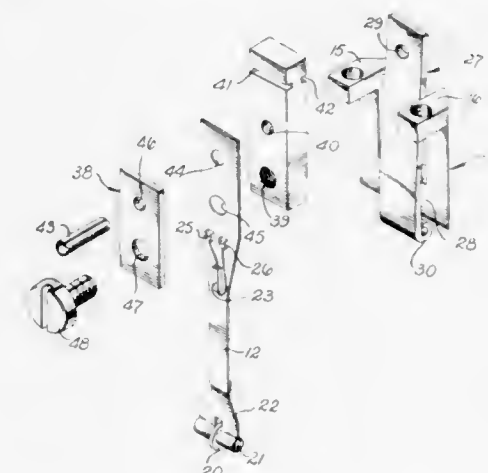
**TRANSDUCER AND COMPONENTS THEREFOR**  
Robert Eugene Talmo, Pasadena; Donald L. Ham, Arcadia, and Lowell J. Leyrer, Costa Mesa, all of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jan. 25, 1971, Ser. No. 109,224

Int. Cl. G01l 1/22; G01b 7/18

U.S. Cl. 73-88.5 R

8 Claims



A differential pressure unit having an internal leaf spring cantilever strain gage beam in which the normally fixed end of the beam is adjustable in position throughout a predetermined range.

3,722,265

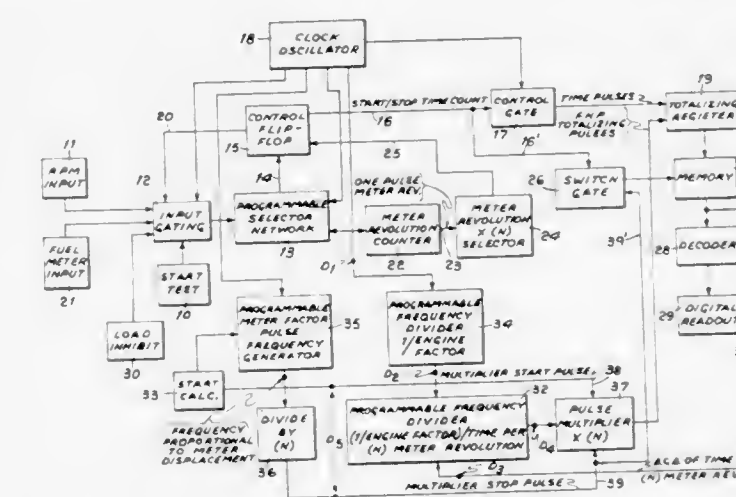
**ENGINE PERFORMANCE COMPUTING ARRANGEMENT**  
Thomas R. Metz, and Eugene F. Holben, both of Haddonfield, N.J., assignors to Conflow Corporation, Blenheim, N.J.

Filed March 15, 1971, Ser. No. 124,098

Int. Cl. G01m 15/00

U.S. Cl. 73-117.3

26 Claims



A computing arrangement is described in which the fuel horsepower of an engine under test is calculated and displayed. A programmable network generates a pulse output when a preselected RPM is reached by the engine under test. A control means in response to the output pulse permits time clocking pulses to be applied to a register to sense the time required for a predetermined number of fuel input pulses to be generated. A fuel consumption meter counting means is coupled to sense the predetermined number of fuel input pulses, and a storage means stores the total time required to sense the fuel pulses. A programmed calculating arrangement is coupled to the storage means and programmed for computing the fuel horsepower of the engine and to display in a digital readout the results of the calculation.



3,722,266

**BRAKE BLEEDING TOOL**

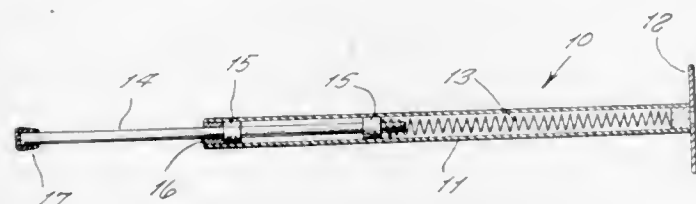
John C. Dunham, 227 Parker St., Cement City, Mich.

Filed Jan. 3, 1972, Ser. No. 214,812

Int. Cl. G05g 21/00

U.S. Cl. 73—132

1 Claim



A tool for temporarily holding down an automobile brake pedal while mechanical installation or adjustment is being made by a mechanic, thus releasing the necessity of employing a second person for depressing the brake pedal with the foot; the device consisting of a spring loaded bar assembly which at one end rests against the brake pedal and which at its other end bears against the front of the driver's seat.

3,722,267

**HOIST-TESTING APPARATUS AND CONTROL SYSTEM THEREFOR**

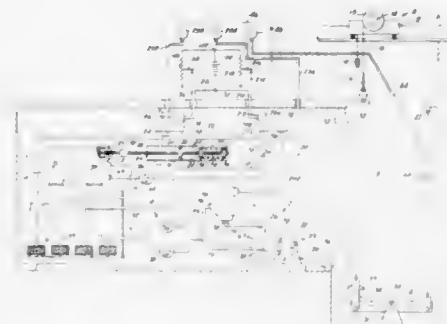
Richard O. Gordon, Belgium, Wis., assignor to Harnischfeger Corporation, Milwaukee, Wis.

Filed Nov. 3, 1971, Ser. No. 195,114

Int. Cl. G011 3/00

U.S. Cl. 73—133 R

13 Claims



Apparatus for testing the rated load, speed and braking capabilities of a hoist comprises a hydraulically operated test winch which imposes a predetermined load or line pull at a predetermined speed on the hoist line. The hoist line is connected to the test winch cable by a lever and pulley arrangement. A load cell responsive to lever movement and, therefore, the load imposed, provides a visual readout thereof at an operation control station. Load size is remotely adjustable from the control station by a load control rheostat which controls an electric-hydraulic pressure control valve which, in turn, adjusts the pressure relief setting of a pressure relief valve between a hydraulic winch motor and the hydraulic pump for that motor. A load control pressure gauge at the control station is responsive to output pressure of the electric-hydraulic pressure control valve for the pressure relief valve and is calibrated to indicate pounds of line pull or load which the hoist being tested can exert to enable the operator to set the load control rheostat accordingly. Load speed is remotely adjustable from the control station by a speed control rheostat which controls another electric-hydraulic pressure control valve which, in turn, operates a cylinder to adjust the speed setting of a servo-stem speed control device on the pump. A speed control pressure gauge at the control station is respon-

sive to output pressure of the other electric-hydraulic pressure control valve for the speed adjustment cylinder and is calibrated to indicate feet per minute of hoist line speed to enable the operator to set the speed control rheostat accordingly.

3,722,268

**LOAD INDICATOR FOR MOORING LINE**

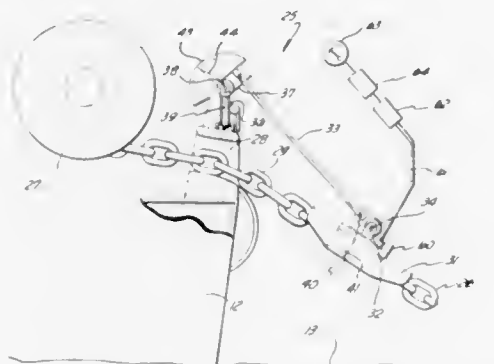
Robert Curtis Crooke, Corona Del Mar, and Carl E. Hilsabeck, Fountain Valley, both of Calif., assignors to Global Marine Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 734,710, June 5, 1968, abandoned. This application March 4, 1971, Ser. No. 121,176

Int. Cl. G011 5/04

U.S. Cl. 73—143

12 Claims



Mooring line load indicating apparatus having a sensing device connected to a mooring line and an associated indicator showing the slope of the line at a chock or the like and from which load in the line may be determined. Alternatively, the indicator may show the mooring line load directly. The invention also provides a method of mooring line load determination, which method includes the steps of determining the water depth, the slope of the mooring line at a chock or the like and applying such values to a graph to obtain a value of load in the line without the need of mental or mathematical operations.

3,722,269

**TIRE AND BRAKE TEST DEVICE**

Geoffrey Herbert Arthur Gunnell, and Frank Derek Shaw, both of Stoke-on-Trent, England, assignors to The English Electric Company Limited, London, England

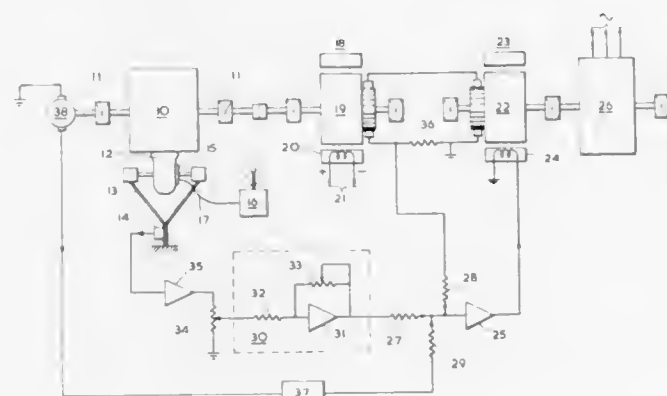
Filed March 16, 1970, Ser. No. 19,830

Claims priority, application Great Britain, March 14, 1969, 13,637/69

Int. Cl. G011 5/28

U.S. Cl. 73—146

16 Claims



A machine for testing the performance of tires and brakes has a drum 10 against which presses a tired-wheel 12, the drum being coupled to a D.C. electric machine 18, and the tired wheel having a brake 15 for varying the tractive effort applied by the wheel to the drum. Control apparatus for the

electric machine varies the torque applied to the drum by the electric machine in dependence upon the tractive effort applied to the drum by the brake so that the apparent inertia of the drum and associated mechanical parts is, as desired, smaller than, equal to, or greater than the true inertia according to the setting of the control apparatus. A test starts with the drum rotating at a predetermined speed, and the brake is then applied so as to cause energy to be transmitted to the brake from the drum via the tire.

The machine may also be used for testing internal combustion engines and clutches.

Similar control arrangements may also be applied to friction welding machines, and to other machines in which the stored energy of one member is to be transmitted frictionally to another member, the stored energy being thereby controllable at values less than, equal to, or greater than the actual value.

3,722,270

**NON-DESTRUCTIVE METHOD OF DETERMINING TIRE LIFE**

Lawrence R. Sperberg, 6740 Fiesta Drive, El Paso, Tex.

Division of Ser. No. 847,778, July 14, 1969, Pat. No.

3,563,088, which is a continuation of Ser. No. 578,707, Sept.

12, 1966, abandoned, which is a continuation-in-part of Ser.

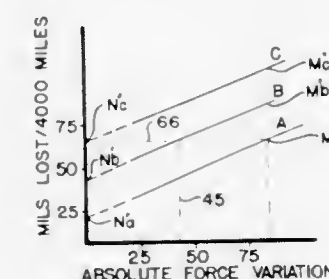
No. 504,727, Oct. 24, 1965, Pat. No. 3,397,583. This

application Feb. 12, 1971, Ser. No. 114,997

Int. Cl. G01m 17/02

U.S. Cl. 73—146

10 Claims



A non-destructive method of determining the durable life of a tire by measuring the lateral and radial force variations exhibited by the tire. A series of similar tires are measured for their force variations, and subjected to usage in order to determine the effect of the force variations upon the durable life characteristics of the series. The force variations exhibited by the tire are compared to the data obtained from the series of tires in order to non-destructively determine the life of the tire.

3,722,271

**GEOCHEMICAL PROSPECTING IN SUBMERGED AREAS**

Leo Horvitz, 8116 Westglen Dr., Houston, Tex.

Filed Nov. 20, 1970, Ser. No. 91,532

Int. Cl. E21b 47/10

U.S. Cl. 73—170 A

10 Claims

A method of geochemical prospecting in submerged areas comprising the taking of samples of the water at or close to the bottom at spaced locations in such an area, which samples are then analyzed to determine the concentration therein of leakage products indicative of the presence of subterranean petroliferous deposits and the results of such analyses are correlated with sample location to provide information concerning such deposits. The method also includes the taking of samples of the earth formation beneath the bottom at such sample locations from which the character of the formation and the concentration therein of products indicative of the presence of subterranean petroliferous deposits may be obtained.

3,722,272

**CLEAR AIR TURBULENCE DETECTORS**

Alasdair McPherson, Keysoe, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

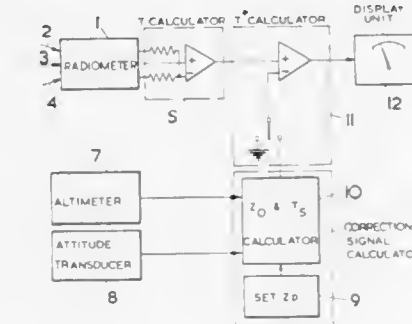
Filed July 9, 1971, Ser. No. 161,177

Claims priority, application Great Britain, July 10, 1970, 33,541/70

Int. Cl. G01c 21/00

U.S. Cl. 73—178 R

6 Claims



A radiometer for use in aircraft as part of a clear air turbulence detector apparatus, constructed to provide signals representing the atmospheric temperatures of at least three regions ahead of the aircraft and centered about sight-lines having different angles of elevation or declination with respect to the aircraft, is connected to means for deriving a temperature-difference signal indicating the difference between the measured temperature of a central one of the regions and an average of the measured temperatures of two regions on opposite sides of the central region. The apparatus preferably includes a correction-signal deriving circuit for deriving a correction-signal dependent upon the local tropopause height at the time of flight and the altitude of the regions subject to temperature measurement and a display for indicating when the temperature-difference signal differs significantly from the correction signal.

3,722,273

**FLOW MEASURING APPARATUS**

Hiroo Yamasaki, and Yoshio Kurita, both of Tokyo, Japan, assignors to Yokogawa Electric Works, Ltd., Tokyo, Japan

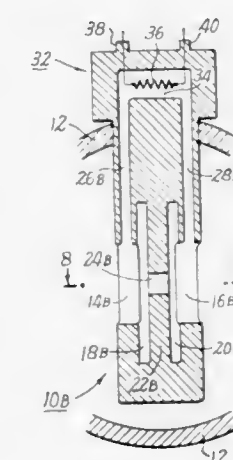
Filed Jan. 22, 1971, Ser. No. 108,731

Claims priority, application Japan, Jan. 30, 1970, 45/8196

Int. Cl. G01f 1/00; G01p 5/00

U.S. Cl. 73—194 B

6 Claims



Flow metering apparatus comprising an elongate cylindrical element mounted in the stream of flowing fluid to produce Karman's vortices, the element being formed on opposite sides thereof with openings leading into corresponding interior cavities coupled together within the element; pressure conduits connect from each of the interior cavities to a sealed pressure chamber outside of the stream of flowing fluid and



containing a flow-responsive detecting device including an electrically-heated wire adapted to develop electrical pulses corresponding to the pressure pulses produced by the shedding of Karman's vortices.

3,722,274

**MAGNETIC FLOW METER**

Luc Yves Natens, B 2600 Berchem, and Jean Martha De Guedre, B 2520 Edegem, both of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

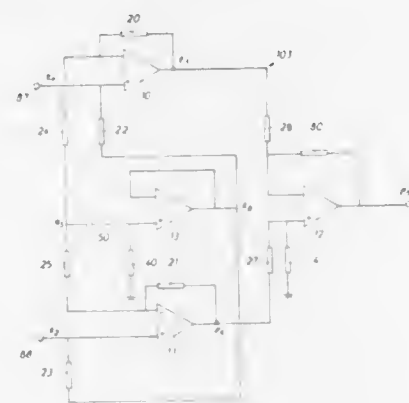
Filed April 13, 1971, Ser. No. 133,560

Claims priority, application Great Britain, April 14, 1970, 17,752/70

Int. Cl. G01f 1/00; G01p 5/08

U.S. Cl. 73—194 EM

5 Claims



A magnetic flow meter, the pre-amplifier of which comprises two identically connected operational amplifiers having differential inputs, each feeding one of the differential inputs of a third operational amplifier, two identical impedances connected in series between the inverting inputs of the first two operational amplifiers, a fourth operational amplifier connected as a voltage follower the input of which is connected to the node of the said two impedances and the output of which is connected through two pairs of series resistors to the corresponding non-inverting inputs of the two first mentioned operational amplifiers, the nodes of said pairs of series resistors being connected through further resistors to the output of the corresponding operational amplifiers, the input terminals of the pre-amplifier being formed by the said non-inverting inputs of the two first mentioned operational amplifiers and the output of the pre-amplifier being formed by the output of the third operational amplifier.

3,722,275

**BLUFF BODY FLOWMETER ARRANGEMENT FOR USE IN CONTROLLING AIR POLLUTION PRODUCED BY INTERNAL COMBUSTION ENGINES**

Alan E. Rodely, Fanwood Township, Union County, and Theodore J. Fussell, Bridgewater Township, Somerset County, both of N.J., assignors to Eastech, Inc., South Plainfield, N.J.

Filed Nov. 4, 1971, Ser. No. 195,544

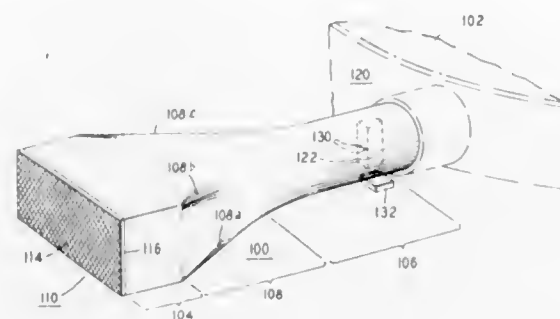
Int. Cl. G01f 1/00

U.S. Cl. 73—194 B

13 Claims

A bluff body flowmeter arrangement is described for use in controlling air pollution produced by internal combustion engines. The arrangement, which is used to monitor the air intake of the combustion engine, comprises, in combination, a conduit having an optional entrance portion of a relatively large uniform cross-section, an exit portion of a relatively smaller uniform cross-section coupled to the engine air intake and a transition portion having a tapered cross-section connecting the entrance and exit portions; a bluff body disposed in the exit portion transverse to the air flow; and damping means covering the inlet of the entrance portion for preventing drafts and cross-winds from disturbing the velocity profile of air flow in the conduit sufficiently to interfere with regular vortex shedding by the bluff body. Also described is an em-

bodiment in which the entrance portion of the conduit is omitted, in which case the damping means covers the inlet of



the transition portion through which air enters and passes to a bluff body located in the exit portion.

3,722,276

**VOLUMETRIC FLOW RATE MEASUREMENT OF A FLOWING STREAM**

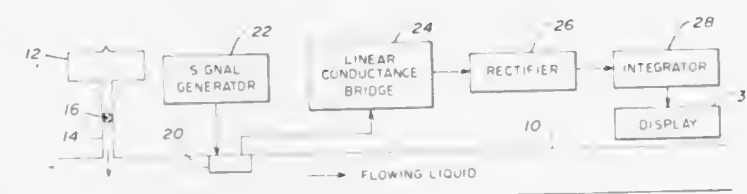
Ronald W. Chandler, Richardson, and Jack B. Hammond, Carrollton, both of Tex., assignor to Tetradyn Corporation, Dallas, Tex.

Filed Dec. 6, 1971, Ser. No. 204,837

Int. Cl. G01f 1/00

U.S. Cl. 73—194 E

19 Claims



The specification discloses a technique for determining the volumetric flow rate of a flowing stream wherein a predetermined quantity of material which will alter the electrical conductivity of the stream is selectively introduced into the stream. A conductance probe is disposed downstream from the point at which the material is deposited in order to continuously detect the electrical conductivity of the stream. An enforced linearity electrical bridge is responsive to the output of the probe for detecting the change in conductance of the stream which is caused by the added material. Integrating circuitry integrates the change in conductance determined by the bridge. A nonlinear meter is responsive to the integrating circuit, along with an indication of the electrolyte equivalents of the deposited material, in order to directly indicate the volumetric flow rate of the stream. Circuitry is provided to prevent the polarization of the conductance probe. A reset circuit enables the integrating circuitry to be set to zero for additional measuring cycles.

3,722,277

**TRANSMISSION HAVING DIRECTION CONTROL**

Ferol S. Fell, Newton; Lowell J. Goering, Moundridge, and William D. Long, Hesston, all of Kans., assignors to Hesston Corporation, Hesston, Kans.

Filed May 11, 1971, Ser. No. 142,135

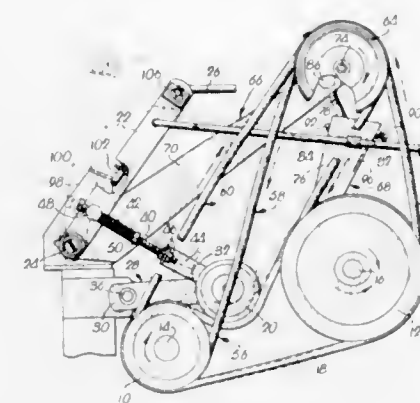
Int. Cl. F16h 9/00

U.S. Cl. 74—220

17 Claims

A power transmission is provided with a pair of belts interconnecting a drive and a driven sheave in an arrangement which permits selective rotation of the driven sheave in either direction by movement of corresponding idler pulleys alternately from a neutral position to their belt tightening posi-

tions. A lost motion assembly forming a part of an extensible toggle link connection with one of the belt tightening units bypass the turbine if the rate of fluid flow rises above a predetermined value. This arrangement enables the turbine



makes it possible to use but a single actuator to control the entire operation.

3,722,278

**FLOW METER**

Francis Graham Young, Southampton, and Christopher Guy Scott Wilson, Portsmouth, both of England, assignors to National Research Development Corporation, London, England

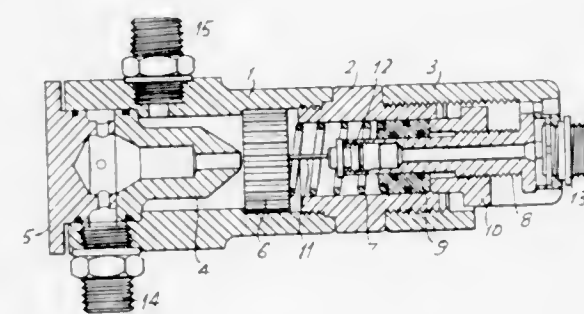
Filed Oct. 21, 1970, Ser. No. 82,729

Claims priority, application Great Britain, Oct. 22, 1969, 51,795/69

Int. Cl. G01f 1/00

U.S. Cl. 73—228

2 Claims



A flow of liquid to be monitored is passed longitudinally into a cylinder via a nozzle so as to impinge on a leaky piston within the cylinder. The piston is resiliently urged towards the nozzle and takes up a position dependent on the flow rate, this position being sensed by a displacement transducer.

3,722,279

**APPARATUS FOR MEASURING FLUID FLOW**

Jan Jablonski, London, England, assignor to Elliott Brothers (London) Limited, London, England

Filed May 11, 1970, Ser. No. 36,154

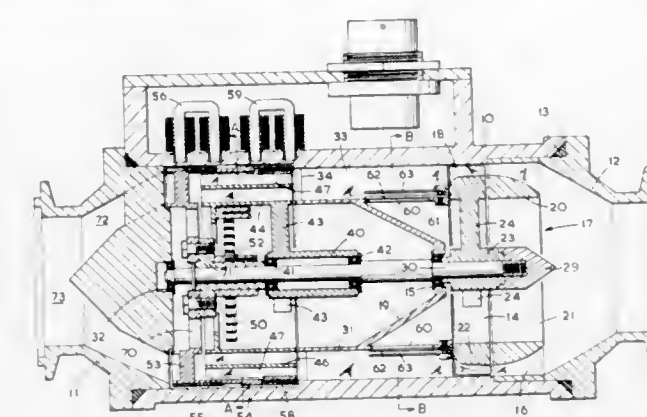
Claims priority, application Great Britain, July 9, 1969, 34,643/69; May 9, 1969, 23,752/69

Int. Cl. G01f 1/00

U.S. Cl. 73—231 M

15 Claims

In apparatus for measuring the mass rate of flow of a fluid by imparting an angular component of velocity to the fluid and measuring the flow rate in arbitrary time units, the angular velocity is imparted to the fluid by an impeller. In this invention the impeller is driven by a turbine which is driven by the fluid the rate of flow of which is to be measured. Valves are also provided so that some of the fluid will automatically



speed to be maintained substantially constant over a very wide range of rates of fluid flow.

3,722,280

**PORTABLE FASTENING TOOL**

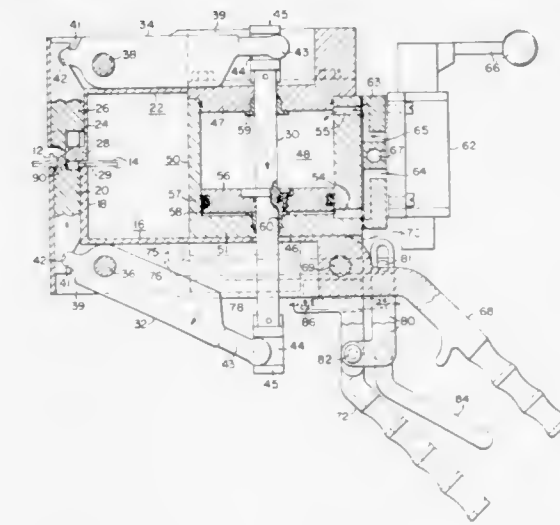
Theodore A. Van Greuning, Dana Point, Calif., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed March 25, 1971, Ser. No. 127,930

Int. Cl. B21d 43/28, 39/00

U.S. Cl. 72—294

9 Claims



A portable tool for fastening together superposed metal members. The tool has two movable frame portions which are operable to firmly clamp the metal members together. With the metal members firmly clamped, a punch element, movable within one of the frames, is moved to punch integral tabs in the members through die openings provided in the other frame. As the punch is withdrawn the tabs are bent by a bender element movable within the other frame, the bending being sufficient to firmly lock the members together without a complete bending of the tabs back against the surface of the superposed members.

3,722,281

**LIQUID HEIGHT GAUGE**

Lawrence B. Marsh, Silver Spring, Md., assignor to Engineering Physics Company, Rockville, Md.

Filed Nov. 4, 1970, Ser. No. 86,676

Int. Cl. G01f 23/22

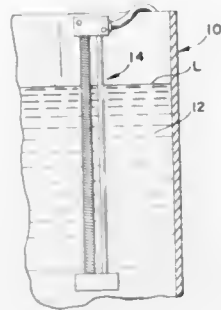
U.S. Cl. 73—304 R

14 Claims

A primary means comprises a coil wrapped around a support member, a secondary means including a coil also wrapped around said support member and adjacent said primary coil. The primary coil is insulated from the liquid and the secondary coil is exposed to the liquid. The secondary means includes a second remote member which is also exposed to the



liquid and a voltage is developed between the first and second secondary members. The primary coil is connected with an a.c. source and induces an alternating voltage in the secondary



coil. An indicating means indicates the voltage developed between the secondary members which is proportional to the level of liquid in contact with the two secondary members.

3,722,282

**APPARATUS FOR REMOTELY DISPLAYING TEMPERATURE DIFFERENCES OF AN OBJECT**  
Fernand Rene Loy, Choisy-le-roi, France, assignor to U.S. Philips Corporation, New York, N.Y.

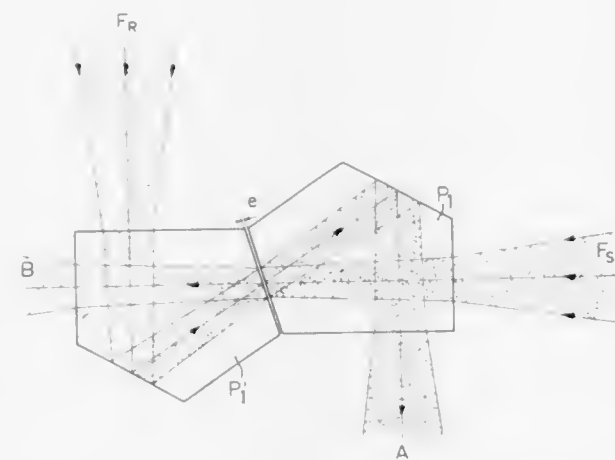
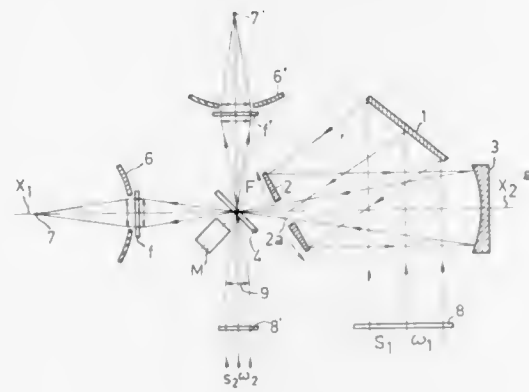
Filed Oct. 22, 1970, Ser. No. 83,104

Claims priority, application France, Sept. 26, 1969, 6932987

Int. Cl. G01j 5/62; G02f 1/34

U.S. Cl. 73—355 R

2 Claims



An analyzing device for displaying temperature differences of an object in which a modulator device is inclined at an angle to the principal axis of the analyzing device and alternately transmits the rays which emanate from a point of the scene to be analyzed and a reference beam which indicates the mean temperature of the said scene.

3,722,283

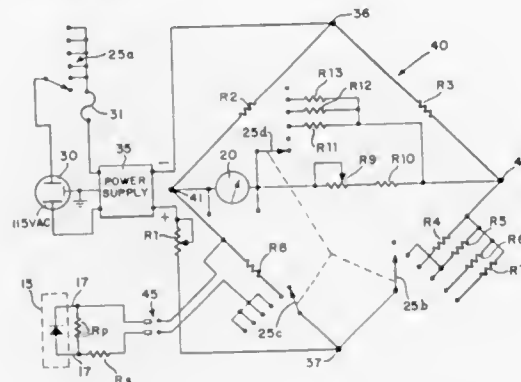
**LINEAR READING THERMOMETER**  
Richard W. Trehan; James A. Riley, and Eddie R. Thomas, Yellow Springs, Ohio, assignors to Kettering Scientific Research Inc., Dayton, Ohio

Continuation-in-part of Ser. No. 29,197, April 16, 1970, abandoned. This application Nov. 17, 1971, Ser. No. 199,479

Int. Cl. G01k 7/22

U.S. Cl. 73—362 SC

9 Claims



A silicon diode is used in a bridge circuit designed to provide linear changes in current through a meter in the bridge in response to changes in temperature on the diode. Variations from linear response in individual diode resistance characteristics as a function of temperature are compensated by a resistor in series with the diode and a second resistor in parallel with the diode, with these resistors being selected so that the resistance versus temperature characteristic of the entire circuit is fixed, thereby providing linear response and allowing interchangeability of diode temperature measuring circuits with a single bridge. All legs of the bridge circuit include resistances of the same order of magnitude to provide maximum sensitivity of the bridge to temperature measurements. In one embodiment one leg of the bridge is provided with a plurality of resistors, one of which is connected at a time in the bridge circuit to maintain the bridge near a balance condition through the entire temperature range of the instrument. In another embodiment, fixed resistors are used in each leg with readout being provided by a digital volt meter.

3,722,284

**DETECTOR OF DYNAMIC GRAVITATIONAL FORCE GRADIENT FIELDS**

Joseph Weber, Chevy Chase; David M. Zipoy, Takoma Park, both of Md., and Robert L. Forward, Oxnard, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

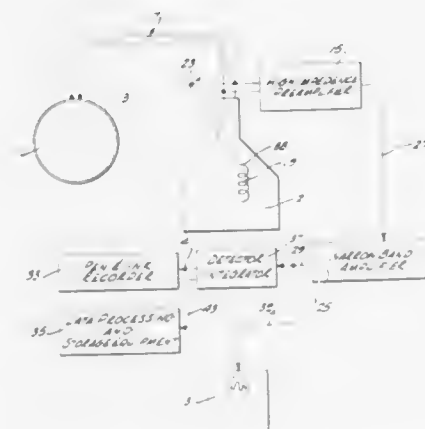
Division of Ser. No. 399,632, Sept. 28, 1964. This application

Feb. 1, 1966, Ser. No. 524,294

Int. Cl. G01m 1/12

U.S. Cl. 73—382

8 Claims



The invention is an instrument for detecting and measuring dynamic gravitational force gradient fields having a characteristic frequency and includes a body of aluminum having dis-

tributed mass including a dynamic mass quadrupole moment responsive to dynamic gravitational force gradients by the excitation of a vibrational resonant mode in the aluminum body. An output is provided by means of at least one electromechanical transducer coupled to the body which, in conjunction with the aforementioned vibrational resonant mode forms an electromechanical circuit which is resonant at a selected frequency corresponding to the characteristic frequency of the dynamic gravitational force gradient.

3,722,285

**ELECTROSTATIC COUPLED DETECTOR OF DYNAMIC GRAVITATIONAL FORCE GRADIENTS**

Joseph Weber, Chevy Chase, Md., assignor to Hughes Aircraft Company, Culver City, Calif.

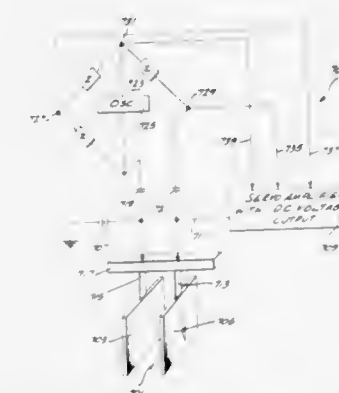
Division of Ser. No. 399,682, Sept. 28, 1964. This application

Jan. 31, 1969, Ser. No. 795,539

Int. Cl. G01v 7/04

U.S. Cl. 73—382

1 Claim



This is a detector wherein a dynamic mass quadrupole arrangement includes two parallel conducting charged plates capable of movement relative to each other. The arrangement is coupled to a dynamic gravitational force gradient having a characteristic frequency, the coupling occurring through a dynamic stress-energy-momentum tensor in the quadrupole arrangement. A bridge-servo amplifier electro-dynamical circuit resonant at the characteristic frequency is coupled to the plates for providing an output signal.

3,722,286

**DYNAMIC GRAVITATIONAL FORCE GRADIENT TRANSDUCER**

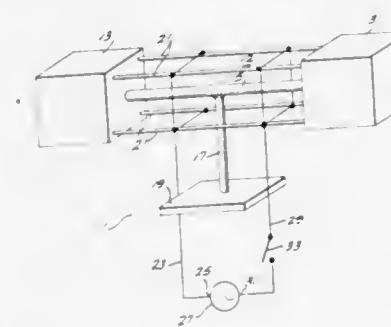
Joseph Weber, Chevy Chase, Md., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Sept. 28, 1964, Ser. No. 399,682

Int. Cl. G01v 7/04

U.S. Cl. 73—382

11 Claims



This is a dynamic gravitational force gradient transducer wherein a dynamic gravitational force gradient having a characteristic frequency interacts with a dynamic stress-energy-momentum tensor in a dynamic mass quadrupole. There is also provided electrical input-output means coupled to the mass quadrupole to form an electro-dynamical circuit which is resonant at the characteristic frequency of the force gradient.

3,722,287

**MAGNETIC COUPLED DETECTOR OF DYNAMIC GRAVITATIONAL FORCE GRADIENTS**

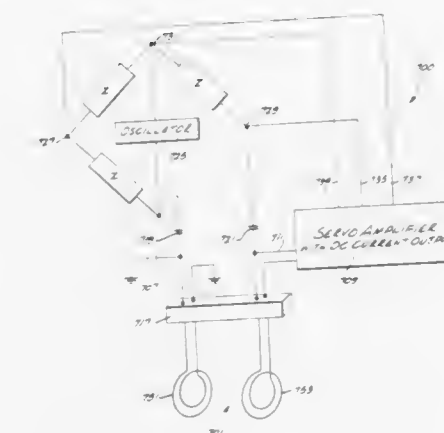
Joseph Weber, Chevy Chase, Md., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Jan. 31, 1969, Ser. No. 795,538

Int. Cl. G01v 7/04

U.S. Cl. 73—382

1 Claim



This is a detector wherein a dynamic mass quadrupole arrangement includes two parallel conducting energized coils capable of moving relative to each other. The arrangement is coupled to a dynamic gravitational force gradient having a characteristic frequency, the coupling occurring through a dynamic stress-energy-momentum tensor in the quadrupole arrangement. A bridge-servo amplifier electro-dynamical circuit resonant at the characteristic frequency is coupled to the coils for providing an output signal.

3,722,288

**ELECTROMAGNETIC COUPLED DETECTOR OF DYNAMIC GRAVITATIONAL FORCE GRADIENTS**

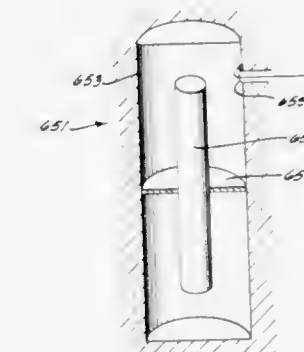
Joseph Weber, Chevy Chase, Md., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Jan. 31, 1969, Ser. No. 796,312

Int. Cl. G01v 7/04

U.S. Cl. 73—382

1 Claim



This is a detector wherein a dynamic mass quadrupole arrangement includes electrons and electromagnetic energy in a re-entrant cavity structure consisting of coaxially disposed inner and outer members of superconducting material. The arrangement is coupled to a dynamic gravitational force gradient having a characteristic frequency, at which frequency the cavity structure is electromagnetically resonant. The coupling occurs through a dynamic stress-energy-momentum tensor in the arrangement, and a coupling loop is disposed in the cavity for coupling out electromagnetic energy propagating in the structure.







operative part of the flexural pivot is secured with an inner race of the bearing so as to permit large angular freedom of movement of one gimbal of the gyroscope relative to another gimbal of the gyroscope about the free axis provided by attaching the other operative part of the flexural pivot to one gimbal of the gyroscope, and an outer race of the bearing arrangement to the other gimbal of the gyroscope so that the deflection of the flexural pivot may in effect be always kept nearly at null so that torque transmitted to the load due to friction at the bearing may be considered of a negligible effect and the bearing substantially frictionless.

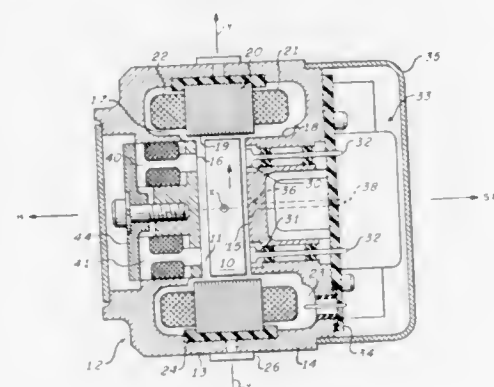
3,722,297

## FLUID BEARING GYROSCOPE

Damon H. Duncan, and Peter E. Jacobson, both of Phoenix, Ariz., assignors to Sperry Rand Corporation  
Filed Nov. 19, 1970, Ser. No. 90,926  
Int. Cl. G01c 19/18

U.S. Cl. 74-5.6

7 Claims



A frictionless, zero hysteresis two axis angular rate sensor of the gyroscopic type wherein a one piece, disk-shaped rotor, generally of the form of a "checker," is electrically spun at high speed and hydrodynamically suspended within a correspondingly shaped cavity in a fixed housing, the rotor constituting the total gas bearing surfaces, the armature of the electric rotor spin motor, the armature of electric pick-offs for detecting precession of the rotor, and the armature of an electric torquer for imposing a rate command for control and self-test purposes; the rotor/cavity wall surface interface being so configured as to maximize the radial support stiffness, the stability of the rotor along the spin axis and the sensitivity of the rotor to angular forces at right angles to the spin axis.

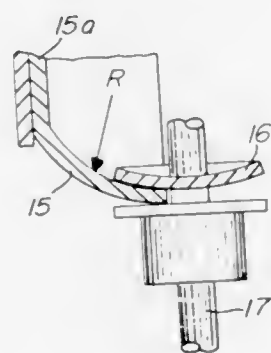
3,722,298

DISENGAGEABLE TUNER CONTROL APPARATUS  
M. Richard Tennerstedt, Wilmette, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed June 14, 1971, Ser. No. 152,639  
Int. Cl. F16h 35/18

U.S. Cl. 74-10.8

6 Claims



There is provided for a radio tuner a disengageable friction drive apparatus which comprises a pair of frictionally engage-

able spherical-segment discs each having the same radius of curvature thereby being able to smoothly engage each other in an operative relationship irrespective of the angle at which the shafts intersect.

3,722,299

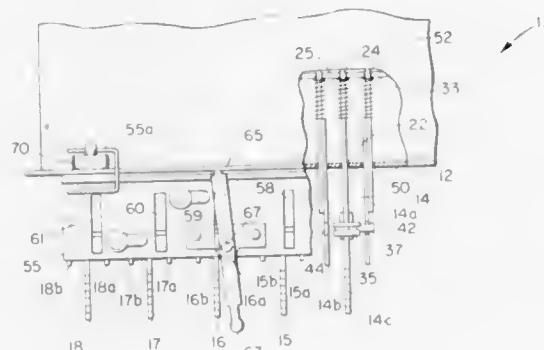
## CAM ACTION TUNING SLIDES

Theodore L. Knight, Newport News, and Raymen F. Emery, Yorktown, both of Va., assignors to The Bendix Corporation, Newport News, Va.

Filed Aug. 18, 1971, Ser. No. 172,696  
Int. Cl. F16h 35/18

U.S. Cl. 74-10.33

3 Claims



A five by ten pushbutton radio receiver tuner includes five pushbutton slides with two tuning slides alternately actuated by each pushbutton slide. An engagement pin carried by a pushbutton slide engages a ramp slot on one or the other of the tuning slides associated with that pushbutton slide to actuate the tuning slide when the pushbutton slide is actuated. Simultaneously, the engagement pin operates against the ramp slot forcing the tuning slide against a vertical stop to thus remove vertical play from the tuning slide.

3,722,300

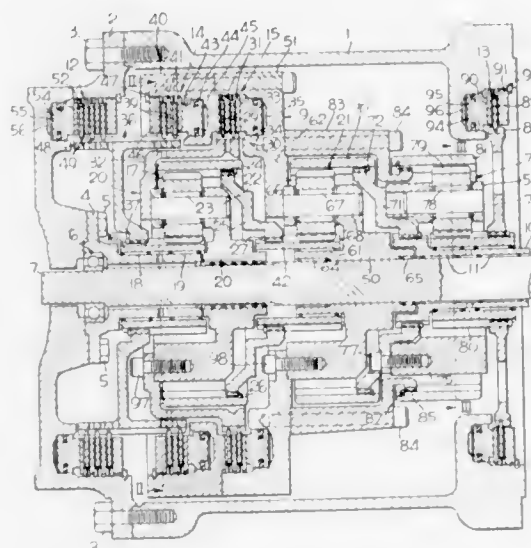
## POWER SHIFT PLANETARY TRANSMISSION

James W. Crooks, Milwaukee, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 22, 1971, Ser. No. 191,717  
Int. Cl. F16h 37/00, 37/06

U.S. Cl. 74-15.63

10 Claims



A power shift planetary transmission having planetary gear-sets and a clutch carrier for selectively providing a multiplicity of power paths at selective speed ratios through the transmission.

3,722,301

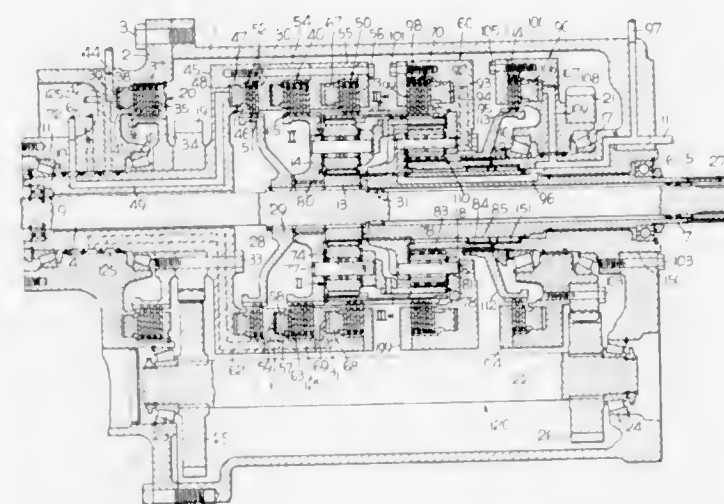
## POWER SHIFT PLANETARY AND COUNTERSHAFT TRANSMISSION

James W. Crooks, Milwaukee, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 22, 1971, Ser. No. 191,719  
Int. Cl. F16h 37/00, 37/06

U.S. Cl. 74-15.63

10 Claims U.S. Cl. 74-96



A power shift transmission having planetary and countershaft gearing with clutch carriers for selectively transmitting power through the front planetary gearset or countershaft gearset with rear clutch carriers for transmitting through the rear planetary gearset to the output shaft.

3,722,302

## DRIVE HAVING IMBALANCED ROTATABLE SHAFTS

Paul Piatkowski, Kiel, and Manfred Birkholz, Schonkirchen, Uber Kiel, both of Germany, assignors to Maschinenfabrik Buckau R. Wolf Aktiengesellschaft, Grevenbroich, Germany

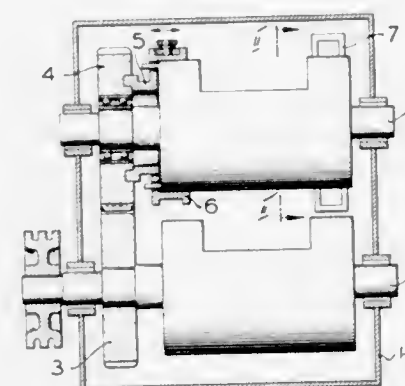
Filed Aug. 18, 1971, Ser. No. 172,726

Claims priority, application Germany, Oct. 23, 1970, P 20 52 036.9

Int. Cl. F16h 33/20

U.S. Cl. 74-61

6 Claims



A housing accommodates a body of liquid and two imbalanced shafts which are journaled for rotation. One gear is mounted on one of the shafts for rotation therewith and another gear meshing with it is mounted on the other shaft for rotation relative thereto. A coupling arrangement is fast with the other shaft and normally engages with the gear thereon so that the shaft turns with the gear, but can be disengaged when the shaft reaches a certain angular position. Projections provided on the circumference of the shaft and entering into the body of liquid will quickly brake the rotation of the shaft when the latter becomes disconnected from its associated gear.

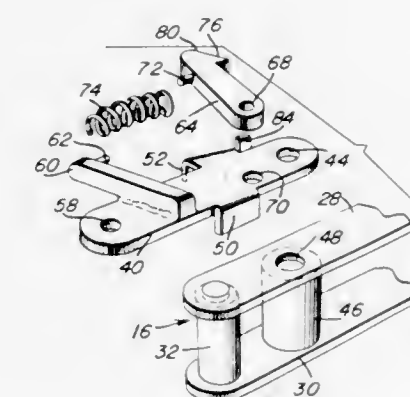
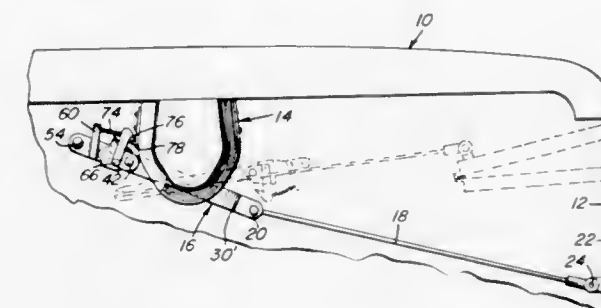
3,722,303

## BUS DOOR OPERATOR WITH POSITIVE LATCH

Wilbur C. Rumph, Marshallville, and William Leon Ragan, Henderson, both of Ga., assignors to Blue Bird Body Company, Fort Valley, Ga.

Filed Oct. 26, 1971, Ser. No. 192,093  
Int. Cl. F16h 21/44

11 Claims



A vehicle door opening operating arm assembly including a handle releasable latch operative to prevent the operating arm for the door to move from the position thereof assumed when the door is closed until such time as a pull is exerted on the handle in a predetermined direction.

3,722,304

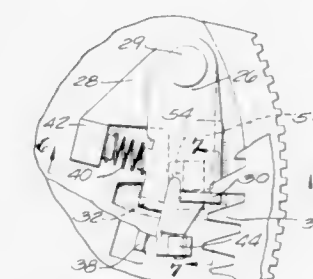
## STEP-BY-STEP DRIVE FOR TIMER

George Obermann, Niles, Ill., assignor to Controls Company of America, Melrose Park, Ill.

Filed Oct. 1, 1971, Ser. No. 185,527  
Int. Cl. G05g 1/00

U.S. Cl. 74-112

3 Claims



The continuously driven drive disc carries a drive pawl and a retracting lever on the same pivot. The pawl is biased against the lever by a compressed spring. The lever is held in retractive position by a tension spring. The lever includes a cam which engages a tab (projecting from the timer end plate) to move the lever to an inactive position against the bias of the tension spring while the drive pawl is restrained from following by reason of engagement of a depending finger with a second tab. Continued rotation of the disc clears the finger from the second tab allowing the compressed spring to drive the pawl into engagement with the internal teeth on the timer



cam drum thus driving the drum until the lever clears its tab and is retracted by the second (tension) spring. As the lever is retracted it picks up the pawl and retracts the pawl and the drive step is completed. The drive is more economical than the usual stored energy step drive but is more expensive than a creep-type drive. It makes possible variations in steps (degrees and frequency) and even continuous (rapid) drive.

3,722,305

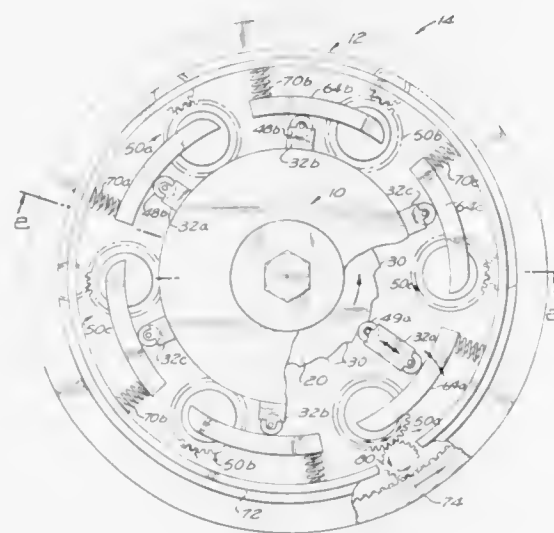
## VARIABLE SPEED PULSE DRIVE

Ronald G. Walters, 6556 Maplewood Rd., Mayfield Heights, Ohio, and Thomas M. Zwitter, 9906 Fairmont Rd., Newbury, Ohio

Filed May 12, 1971, Ser. No. 142,473  
Int. Cl. F16d 27/10

U.S. Cl. 74—125.5

13 Claims



A drive or transmission mechanism including a rotary cam means having a plurality of lobes and adapted to be rotated about a first axis. Engaged by the cam means are a plurality of cam followers biased toward the first axis and constrained against all movement except reciprocal movement generally radially of the axis. Each of the cam followers engages a separate lever means drivingly connected to separate overrunning clutches such that during rotation of the cam, oscillation of the lever means will cause the overrunning clutches to be given intermittent unidirectional movement. The clutches are drivingly connected to a rotary output member which, for example, can be a ring gear or the like. Means are also shown for allowing the lever to shift relative to the cam followers upon variation in the load on the output member. In the embodiment shown they include a mounting for the overrunning clutches which permits them to shift circumferentially relative to the cam followers to vary the effective length of the lever means. Springs acting against the support for the overrunning clutches permit the necessary shifting as the load on the rotary output member varies.

3,722,306

## APRON DRIVE FOR A MANURE SPREADER

Willis R. Campbell, Leola, and Warren H. Brackbill, Paradise, both of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

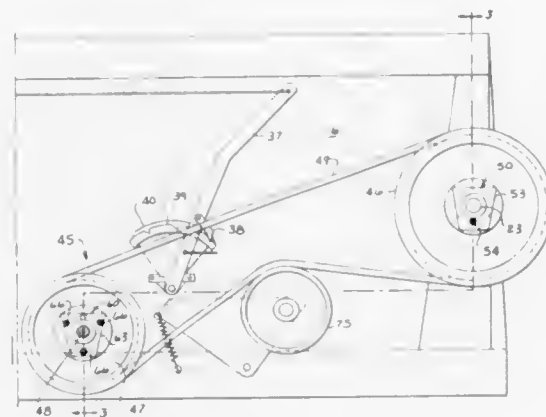
Filed Nov. 1, 1971, Ser. No. 194,234  
Int. Cl. F16h 7/02, 37/00

U.S. Cl. 74—219

14 Claims

A main drive for a manure spreader including a pair of sheaves adapted to be conveniently interchanged between an

input shaft and a propeller or output shaft for maintaining a



relatively constant output speed for two different input speeds from a tractor's PTO.

3,722,307

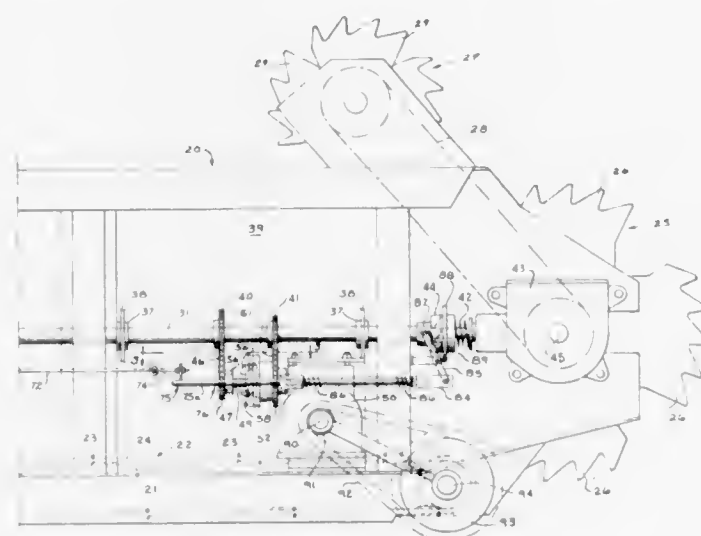
## APRON DRIVE FOR A MANURE SPREADER

Willis R. Campbell, Leola, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.

Filed Nov. 1, 1971, Ser. No. 194,332  
Int. Cl. F16h 7/02, 37/00

U.S. Cl. 74—219

13 Claims



A drive system for a manure spreader having a wagon type body structure with a spreading mechanism mounted transversely the rear thereof and an apron conveyor disposed therein for conveying manure rearwardly into said spreading mechanism. The drive system comprises a propeller shaft mounted on one side of the spreader and having its rearmost end operatively connected to said spreading mechanism through a clutching device. Fixed to and axially spaced on said propeller shaft is a pair of sprockets that are drivingly interconnected to a pair of driven sprockets rotatively journaled on a second drive shaft which is spaced adjacent and extends generally parallel to said propeller shaft and is adapted to drive said apron conveyor. Each of said driven sprockets includes clutch dogs about their inner side which are adapted to engage clutch dogs on the outer sides of a clutch collar keyed to said second drive shaft intermediately between said driven sprockets and slideable therealong for selective engagement with the clutch dogs of the driven sprockets. The clutch collar is actuated by an actuating mechanism that is further operatively connected to said clutching device and particularly adapted to declutch the spreading mechanism without affecting the apron conveyor.

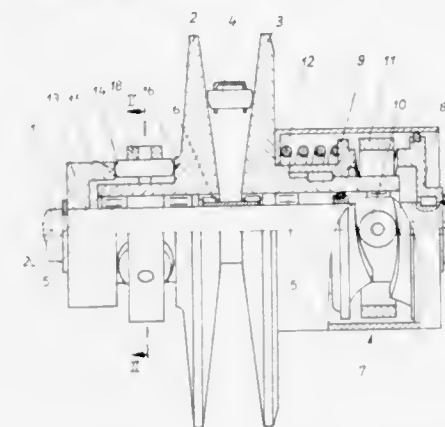
3,722,308

## BEARING OF THE CONICAL DISCS OF AN INFINITELY VARIABLE CONE PULLEY TRANSMISSION

Herbert Steuer, Bad Homburg, Germany, assignor to Reimers Getriebe A.G., Zug, Switzerland  
Filed April 5, 1971, Ser. No. 131,171  
Claims priority, application Germany, April 4, 1970,  
P 20 16 181.3  
Int. Cl. F16h 11/06

U.S. Cl. 74—230.17 M

7 Claims



On the driving and/or driven side of an infinitely variable cone pulley transmission the pulley discs are urged against a shoulder of the transmission shaft by the force of a helical coil spring exerted on the disc pair in axial direction. The annular surface of the shoulder which faces the cone discs and the annular surface of an extension of the hub of the cone disc which faces the shoulder are used as the bearing surfaces or races of a thrust bearing. The thrust bearing comprises roller elements mounted rotatably on a support ring and having the form of oblate spheroids. By this particular form the frictional sliding movement between the roller elements and the bearing surfaces, resulting from the wobble movement of the pulley disc, is turned into a purely rolling motion.

3,722,309

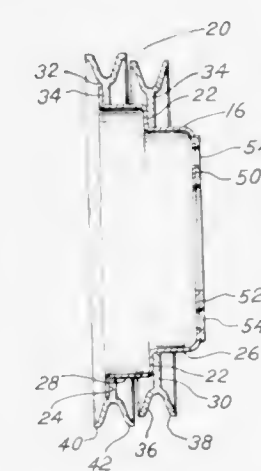
## MULTIPLE GROOVE SHEAVE

S. Ralph Shaffer, Jeffersonville, Ind., assignor to Arrowhead Engineering Corporation, Knox, Ind.

Filed May 28, 1971, Ser. No. 147,895  
Int. Cl. F16h 55/44

U.S. Cl. 74—230.8

7 Claims



A multiple groove sheave in which a hub is formed with a plurality of axially spaced, radially extending, annular surfaces of different diameters, and a plurality of generally plate-like annular members with peripheral belt grooves therein secured to the annular surfaces in axially aligned relationship. The hub is preferably a sheet metal stamping and the grooved members are preferably formed by splitting the peripheral edge and parting the flanges formed by the split to provide the belt grooves. A method involving the steps of forming the hub and grooved members and securing the two parts together is also part of the broader concept of the disclosure.

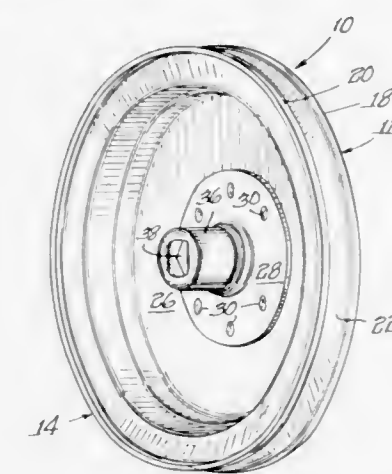
3,722,310

## PULLEY DEVICE

Edward H. Schultz, Jr., Glencoe, Ill., assignor to The Nagel-Chase Manufacturing Company, Chicago, Ill.  
Filed Dec. 6, 1971, Ser. No. 204,899  
Int. Cl. F16h 55/52

U.S. Cl. 74—230.8

10 Claims



The present invention relates generally to pulley devices and more particularly to sheet-metal type pulley devices adapted to accommodate a non-cylindrical drive shaft. The embodiment of the invention disclosed in the present application comprises first and second sheet-metal body members having annular abutting plate sections, and peripheral diverging sections defining an annular belt-accommodating groove. Central integral hub sections extend axially from said plate sections and define a central aperture shaped to accommodate a non-cylindrical shaft. The annular plate section of a third sheet-metal body member superimposes one of the aforesaid abutting plate sections and also defines a central hub section spaced axially from the other hub sections, said plate sections being in fixed abutting relation.

3,722,311

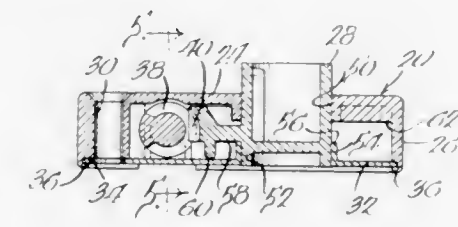
## WINDOW OPERATOR

Lyle M. Northrup, New Hampton, Iowa, assignor to Lynor Engineering, Inc., New Hampton, Iowa

Filed Nov. 26, 1971, Ser. No. 202,153  
Int. Cl. F16h 1/16, 57/02

U.S. Cl. 74—425

7 Claims



An improved window operator including a housing having an open side to be closed by a cover plate. The open side of the housing is provided with a peripheral lip formed of a deformable material and inwardly of the lip is a peripheral ledge on which the cover plate may be seated prior to deforming the lip over the cover plate to retain the same in place.

3,722,312

## METHOD AND NUT FOR PRELOADING BALL SCREW ASSEMBLIES AND METHOD OF MANUFACTURE OF THE PRELOAD NUT MEMBER

Bernard R. Better, and Edward Hain, both of Chicago, Ill., assignors to The Bendix Corporation, Southfield, Mich.  
Filed March 23, 1971, Ser. No. 127,213  
Int. Cl. F16h 55/22, 55/18

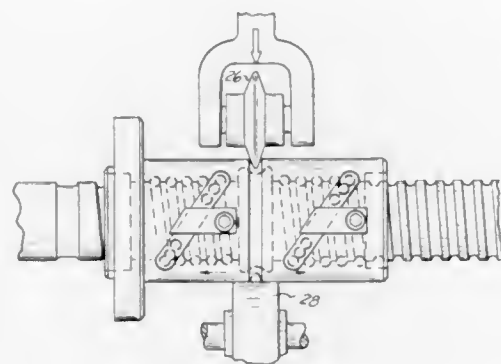
U.S. Cl. 74—459

12 Claims

An improved method and nut for preloading ball screw assemblies in which the preloading is accomplished by axially



offsetting segments of the internal helical grooves of the nut member, the method comprising permanently deforming an intermediate portion of the nut member so as to cause an axial shift of the connected nut member portion and thus result in



axially offset helical groove segments in these portions. The nut member is configured to accommodate readily large permanent deformations. This deformation is produced in the specific process described by rolling a peripheral groove into the nut member.

3,722,313

## PUSH BUTTON SWITCH UNITS

Rudolf Schadow, Königsbacher Zeile 25, Berlin-Frohnau, Germany

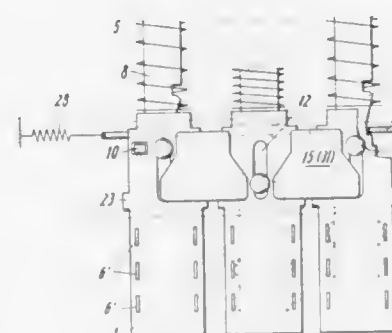
Filed May 10, 1971, Ser. No. 141,852

Claims priority, application Germany, May 25, 1970, P 20 25 504.3

Int. Cl. G05g 13/00

U.S. Cl. 74—483 PB

10 Claims



A push button switch unit comprises a mounting chassis with push button switches, the chassis having a housing plate adjacent to the push button switches on the chassis plate. Flat locking slides are mounted between the chassis plate and the housing plate so as to be able to move side-ways for coordinating the operation of plungers of the switches. The unit includes for each switch a locking pin extending into a hole in the plunger of the respective switch, the hole being perpendicular to the axis of the plunger. An opening is provided in the chassis plate and a slot, corresponding in length to the stroke of the respective plunger, is provided in the switch unit housing plate. The locking pin is arranged to be inserted through the opening in the chassis plate and the slot in the housing plate. The unit further comprises a locking slide adapted to cooperate with the head of the locking pin.

3,722,314

## FOOT PEDAL TRANSMISSION CONTROL

Charles E. Sorenson, Mount Vernon, and Clyde D. Stubblefield, Evansville, both of Ind., assignors to Hahn, Inc., Evansville, Ind.

Filed Feb. 3, 1972, Ser. No. 223,273

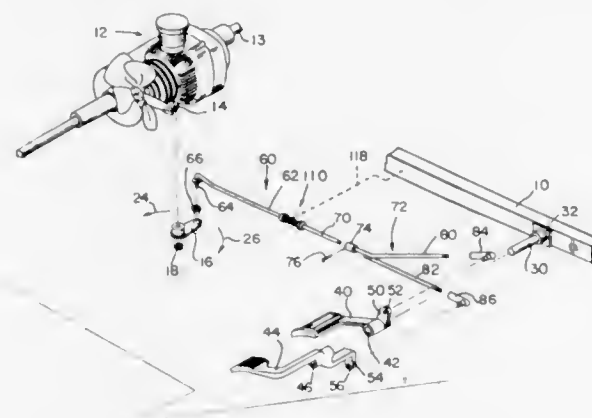
Int. Cl. G05g 1/14

U.S. Cl. 74—512

11 Claims

A control for a vehicle driven through a hydrostatic transmission including a control member having selectable posi-

tions for controlling the flow of fluid to achieve forward, reverse and neutral positions, and to govern the speed of the vehicle, and with the neutral position of the control member being intermediate its forward and reverse positions. The control includes a trunnion on the vehicle spaced apart from the control member with first and second pedals mounted on the trunnion for pivotal movement, the pedals providing first and second lever portions respectively extending upwardly and



downwardly from the trunnion. The lever portions are connected to the control member by a forked link providing a pair of branches having spaced apart distal ends, one distal end being pivotally connected to one lever portion and the other distal end being pivotally connected to the other lever portion. The branches are springlike in nature such that their distal ends can flex relative to each other when the pedals are depressed. Springs act upon the link yieldably to urge the control member to its neutral position.

3,722,315

## HIGH FORCE WITHSTANDING JOINT

Peter Florjancic, St. Martinstr. 12, Garmisch-Partenkirchen, Germany

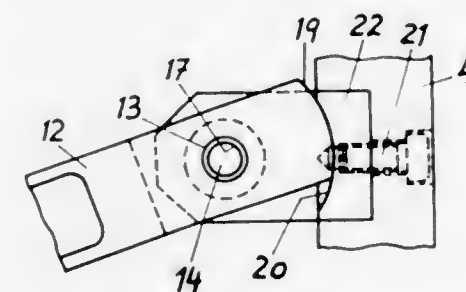
Filed April 7, 1971, Ser. No. 132,148

Claims priority, application Austria, April 24, 1970, A 3787/70

Int. Cl. G05g 1/04

U.S. Cl. 74—520

3 Claims



An improved joint linkage capable of withstanding high forces applied thereto having two pairs of contact surfaces; the first pair of contact surfaces being constructed in such a manner as to be capable of withstanding forces of a small magnitude only and adapted for guiding hinged members in their pivotal movement relative to one another; the second pair of contact surfaces being capable of withstanding comparatively high forces and being operable to do so only when the hinged members are at rest longitudinally relative to one another. A predetermined degree of movement in a direction radial to the joint axis is permitted. The improved joint finds particular application in injection molding closure devices utilizing hinged brace members for transmitting extremely high closing forces.

3,722,316

## OVERLOAD PREVENTION HANDLE

Harold V. Hawkins, Williamsville, and Joseph E. Forys, Lockport, both of N.Y., assignors to Columbus McKinnon Corporation, Tonawanda, N.Y.

Filed Aug. 23, 1971, Ser. No. 174,091

Int. Cl. G05g 1/06

U.S. Cl. 74—524

13 Claims

3,722,318

## PARKING BRAKE OPERATOR LEVER

Seturo Asou, Junichi Sugawara, Tokuhei Tanso, and Katsuji Yashiro, all of Yokohama, Japan, assignors to Otsukakoki Kabushikikaisha, Yokohama, Japan

Filed March 23, 1971, Ser. No. 127,245

Claims priority, application Japan, March 23, 1970,

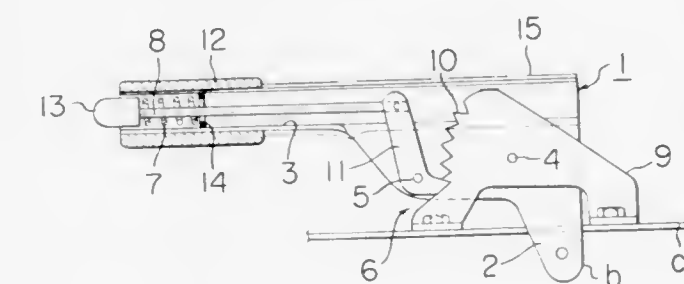
Int. Cl. G05g 5/06

U.S. Cl. 74—535

3 Claims



A handle particularly adapted to prevent overloading of chain hoists operated thereby. The handle is characterized as having an operator grasping extension portion pivotally supported on the main body portion of the handle and a constraining device operable to permit movement of the extension portion relative to the main body portion whenever a hoist overload condition producing operating force is applied to the extension portion.



A parking brake assembly wherein the main lever assembly is longitudinally divided so that the operating components of the assembly can be positioned in one of the divided members and the other half is secured thereto which enables automatic assembly of the components.

3,722,319

## DEVICE FOR OPERATING THE TOGGLE ARM OF CONVENTIONAL LIGHT SWITCH

Alan A. Reznik, and Marion Reznik, both of 1292 Denniston Avenue, Pittsburgh, Pa.

Filed May 3, 1971, Ser. No. 139,628

Int. Cl. G05g 1/06

U.S. Cl. 74—544

2 Claims

3,722,317

## APPARATUS FOR CONTROLLING MOVEMENT BETWEEN RELATIVELY RECIPROCABLE BODIES

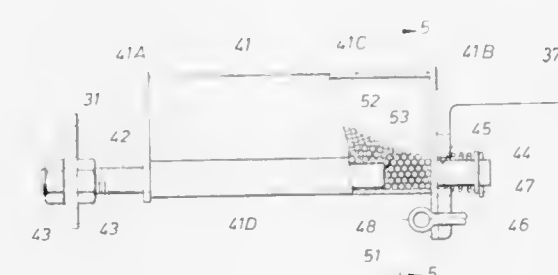
Glenn H. Johnson, Houston, Tex., assignor to Hudson Products Corporation, Houston, Tex.

Filed Aug. 2, 1971, Ser. No. 168,090

Int. Cl. G05g 5/04, 5/06

U.S. Cl. 74—527

15 Claims



A pair of shafts having a flexible belt disposed about pulleys thereon are mounted for relative reciprocation, a fluid actuator is connected between shaft mountings to urge them apart and thereby maintain tension in the belt, and a means is provided for normally preventing movement of the shafts toward one another in the event the fluid supply to the actuator should fail.

A device for operating the control lever of a conventional light switch including a pliable tubular member for engaging the control lever and an elongated control member having a reduced cross-section at one end terminating in an enlargement. The control member extends through a hole in the tubular member and is held captive therein.





3,722,320

## FOOT PEDAL FOR MOTOR VEHICLE

Karl Wilfert, Gerlingen-Waldstadt, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

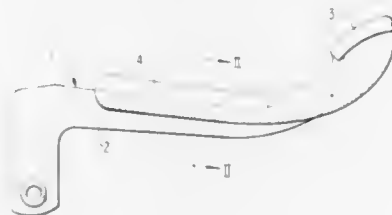
Filed June 29, 1971, Ser. No. 157,831

Claims priority, application Germany, June 30, 1970, P 20 32 159.9

Int. Cl. G05g 1/16

U.S. Cl. 74—560

19 Claims



A foot pedal for motor vehicles which is covered over the largest part of its length with an elastic foamed material at least on the surface of the foot pedal facing the driver.

3,722,321

## METHOD AND APPARATUS FOR TRANSMISSION BREATHING

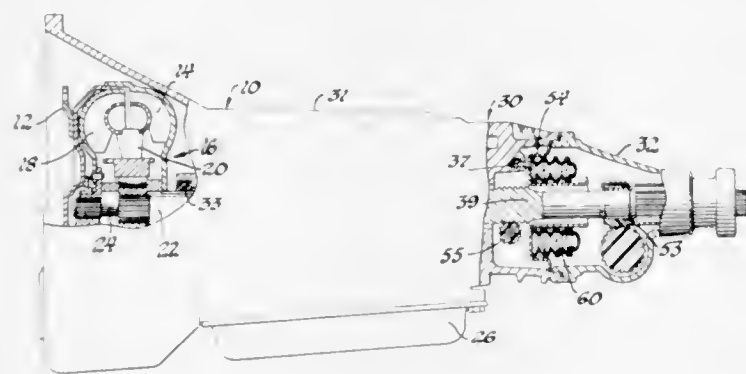
Frank H. Walker, and Richard W. Craig, both of Grand Blanc, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 27, 1971, Ser. No. 193,111

Int. Cl. F16h 57/04

U.S. Cl. 74—606 R

7 Claims



The transmission housing extension contains an expansible and contractable breather bag with the interior of the bag vented to atmosphere to provide a completely sealed breather system thereby providing for the substantial reduction in oxidation of the transmission lubricant. When transmission operating conditions cause the gas inside the transmission to expand, the breather bag is forced to contract and increase the volume inside of the transmission case to accommodate the expansion. When operating conditions are such that the gas within the transmission case contracts, atmospheric pressure will cause the breather bag to expand. Relief valves are provided for the breather bag to prevent the buildup of excessive positive or negative pressures within the transmission.

3,722,322

## SPEED CONTROL DEVICE

Erwin Coepfert, 3306 Monarch Drive, Racine, Wis.

Filed May 5, 1971, Ser. No. 140,362

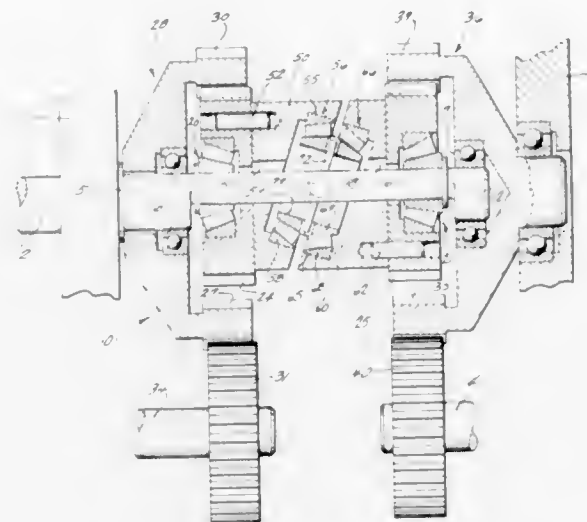
Int. Cl. F16h 37/08

U.S. Cl. 74—675

4 Claims

A speed control device having a first gear member and a second gear member and including an operable means to con-

nect the first gear member and the second gear member together for rotation in the same direction in a manner that



the speed of the slowest gear member will determine the speed of the other gear member.

3,722,323

## TRANSMISSION

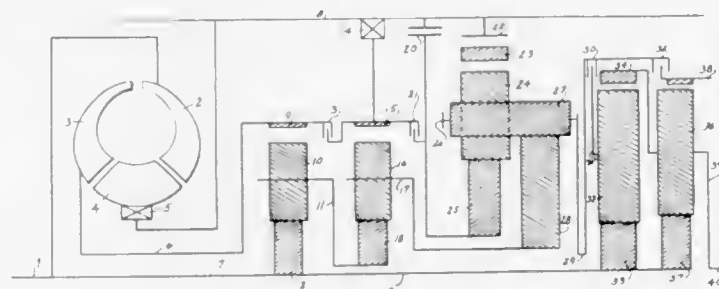
Arthur L. Welch, Star Rt., Wasilla, Alaska

Filed March 16, 1971, Ser. No. 124,764

Int. Cl. F16h 37/06, 57/10, 47/08

U.S. Cl. 74—681

3 Claims



A two stage hydrodynamic and planetary split torque transmission having a first stage of a hydraulic torque converter and a plurality of planetary gearsets and an extension of a driving shaft transmitting hydraulic and direct drive power to a second stage of a planetary split torque transmission mechanism beyond. The torque converter supplies hydraulic power to the reaction members of the first stage gearsets while the driving shaft supplies power directly to the input member of the first gearset, effecting an infinite range of part hydraulic part direct driven gear ratios ranging infinitely from near maximum reduction to direct drive in the first stage. The driving shaft extension supplies power directly to the input members of the second stage planetary transmission mechanism having forward and reverse drive gearsets, while the first stage hydraulic and planetary transmission supplies power of infinitely variable speed and torque to the second stage planetary gearset reaction members. Since ample torque is available from the first stage to provide reaction for a very low ratio second stage planetary mechanism, a transmission having a very wide range of infinitely variable ratios results. A formula for determining split torque ratios in planetary gearsets operating in split torque drive is given.

3,722,324

## HYDROMECHANICAL TRANSMISSION

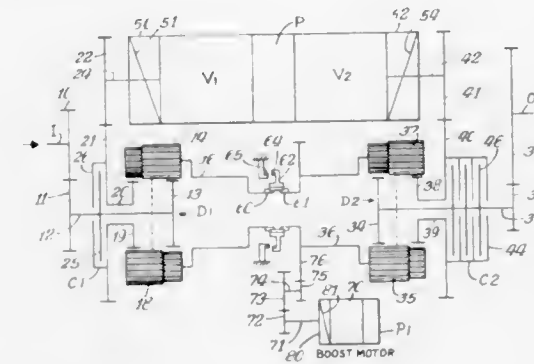
Michael A. Cordner, and Duane H. Grimm, both of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Nov. 1, 1971, Ser. No. 194,338

Int. Cl. F16h 47/04

U.S. Cl. 74—687

16 Claims



A hydromechanical transmission operable in a plurality of modes, comprising, an input shaft, an output shaft, an intermediate shaft, a pair of variable displacement hydraulic units connected in circuit to function as pump and motor, a first three-element differential connected to the input shaft, to one hydraulic unit and to the intermediate shaft, a second three-element differential connected to the intermediate shaft, to the other hydraulic unit and to the output shaft, means for locking up the second differential to rotate as a unit in a first low speed hydromechanical mode of operation, and means for locking up the first differential to rotate as a unit in a second high speed hydromechanical mode of operation. In a preferred embodiment, a hydraulic boost motor is used to aid in driving the second differential in the first mode. Preferably, the intermediate shaft includes a disengageable clutch coupling with means for holding one element of the first differential when the clutch coupling is disengaged, so that all power is transmitted hydraulically.

3,722,325

## TORQUE CONVERTER

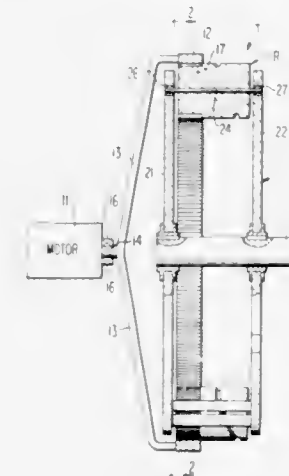
Beverly W. Rogers, Route 1, Box 630, Summerville, S.C.

Filed Aug. 11, 1971, Ser. No. 170,872

Int. Cl. F16h 37/4, 5/42, 1/38

U.S. Cl. 74—751

7 Claims



A torque converter of the mechanical type for transmitting power from power means such as a motor to a driven member from which power take-off may be obtained which includes a rotatably mounted ring gear for rotation by the motor having teeth engagable with a drum having a cam groove rotatably mounted on the driven member with one or more weights being guidably mounted on the driven member and engagable with the cam groove so that rotation of the drum by the ring gear moves the weights in a reciprocating manner at a speed

proportional to the speed of the ring gear so as to impart periodic inertial forces to the driven member for smoothly transmitting torque from the motor to the driven member throughout the entire speed range from rest to full speed.

3,722,326

## VARIABLE SPEED TRANSMISSION

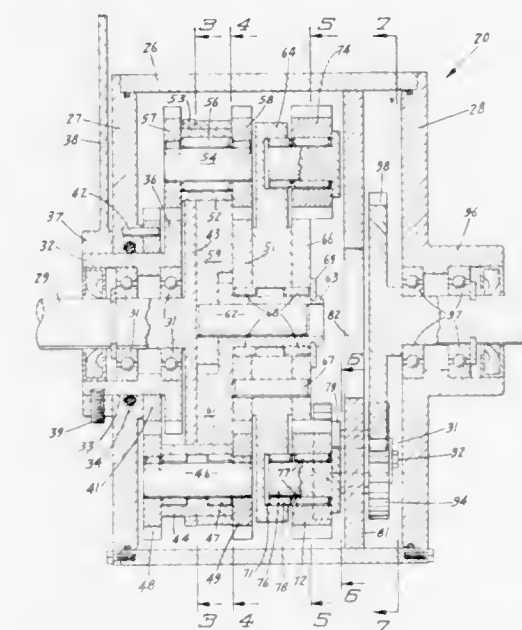
Edward Dorma, 4333 Grimes Avenue, N., Minneapolis, Minn.

Filed June 10, 1971, Ser. No. 151,695

Int. Cl. F16h 5/42

U.S. Cl. 74—752 B

26 Claims



A variable speed transmission having an input drive shaft and an output drive shaft operatively coupled to an eccentrically movable and rotatable structure. A manual or automatic control arrangement connects the input drive shaft to the eccentrically movable and rotatable structure to change the eccentric position of the structure relative to the axis of rotation of the input drive shaft. A drive structure, including one-way drive units, drivably couples the eccentrically movable structure with the output drive shaft. The eccentric or nutating movement of the eccentrically movable means operates the one-way drive units to rotate the output drive shaft.

3,722,327

## PLIER-LIKE CHAMPAGNE CORK REMOVER

Anna Maria Scharwat nee Strassel, 86 Friedberger Landstrasse, Frankfurt, am Main, Germany

Filed April 5, 1972, Ser. No. 241,107

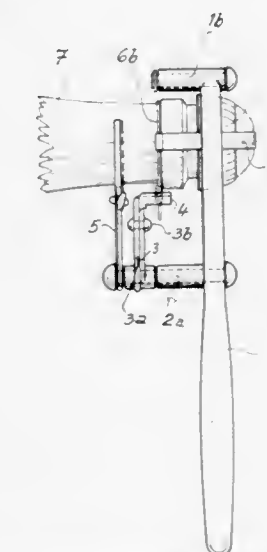
Claims Priority, application Germany, April 6, 1971, P 21 16

768.0

Int. Cl. B67b 7/44; B25b 7/22

U.S. Cl. 81—3.1 R

2 Claims



A plier-like champagne cork remover comprises means for gripping the free end of the cork of a champagne bottle,



means for guiding the neck of the bottle when the cork secured in the bottle by a wire is being removed, and means for cutting through the cork securing wire when the means for gripping the free end of the cork are being moved towards each other, the arrangement being such that the means for guiding the bottle neck and the means for cutting through the wire move in synchronism with the movement of the means for gripping the free end of the cork.

**3,722,328**  
**MARKING NEEDLE FOR A FABRIC MARKING MACHINE**

Erwin Lange, Marbach/Lauter, Germany, assignor to Bullmerwerk Karl Bullmer

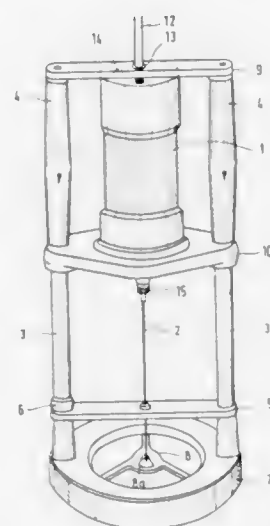
Filed July 8, 1971, Ser. No. 160,820

Claims priority, application Germany, Aug. 21, 1970, G 70 31 433.9

Int. Cl. B43k 5/00

U.S. Cl. 81—9.22

10 Claims



A marking needle for a fabric marking machine has an elongated, hollow needle body with a tip provided with two opposite perforations. A tube filled with marking liquid is inserted into the needle body and is closed at one end by an insert of porous material which extends from the tube past the perforations and into contact with the needle body at the tip. A cap is threaded into the needle body and bears against a spring in turn bearing against the tube to apply pressure thereagainst and cause the insert to be deformed and bulge outwardly through the perforations.

**3,722,329**  
**FASTENER INSTALLATION TOOL**

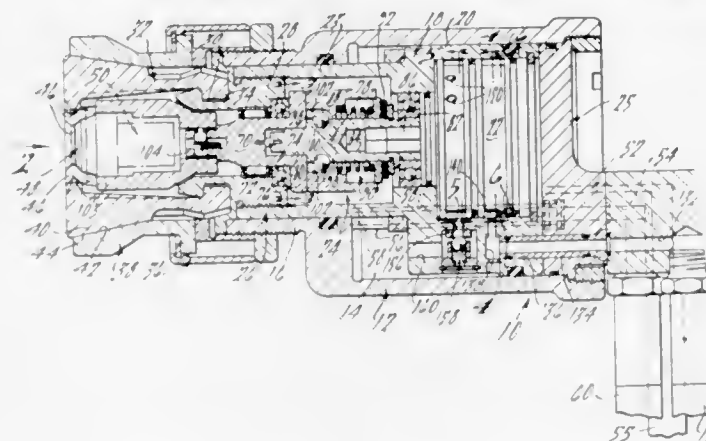
George J. Van Hecke, Detroit, and Albert G. Masinda, Royal Oak, both of Mich., assignors to Huck Manufacturing Company, Detroit, Mich.

Filed May 7, 1970, Ser. No. 35,383

Int. Cl. B23p 19/04; B25b 27/00; B21d 9/05

U.S. Cl. 81—10

17 Claims



In a two piece fastener of the type including a bolt and a nut adapted to be threaded onto the bolt and thereafter crimped

to provide a desired preload a tool for setting the fastener including means for torquing the nut onto the bolt with a preselected torque and thereafter crimping the nut to provide the desired preload.

**3,722,330**  
**TIRE CHAIN APPLICATOR**

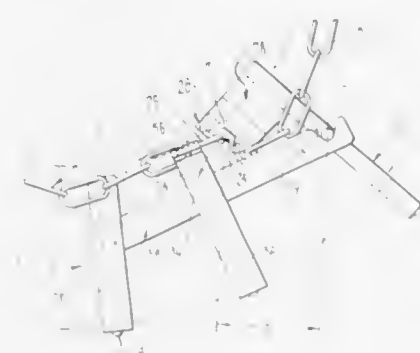
Jan C. Smekens, 40 Corte Dorado, Greenbrae, San Rafael, Calif.

Filed March 29, 1971, Ser. No. 129,099

Int. Cl. B60c 27/06

U.S. Cl. 81—15.8

24 Claims



A tire chain applicator for automatically closing at least the inboard chain strand on a vehicle wheel. A first holder is placed over the tire periphery and ends of the chain are secured to the holder to pull the chain over the tire upon rotation of the wheel. A second holder is secured to the other chain end and can be pivotally supported on a portion of the first holder so that a hook on one end of the inboard strand can be pivoted into engagement with a closed link on the other end of the inboard strand. The readily accessible outboard strand of the chain is tightened, closed and conventionally locked to firmly engage the hook and the link on the inboard strand.

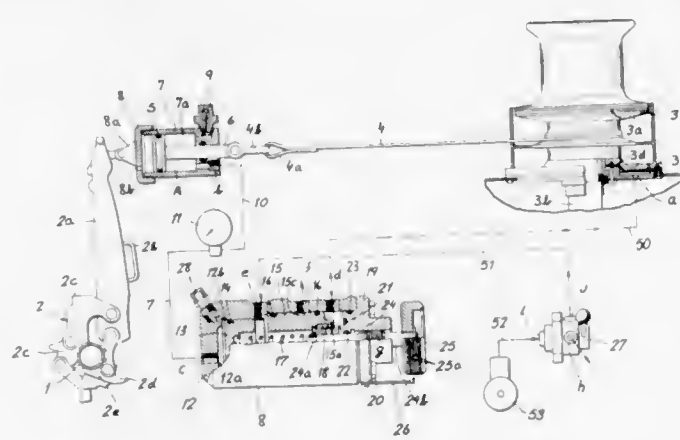
**3,722,331**  
**TORQUE-CONTROLLED PIPE-THREAD TIGHTENER**  
Valentin C. Radulescu, Bucharest, Romania, assignor to IPCUR-Institutul De Proiectari Si Cercetari Pentru Utilaj Petrolier, Bucharest, Romania

Filed June 21, 1971, Ser. No. 154,746

Int. Cl. B25b

U.S. Cl. 81—52.4

5 Claims



A device for threading lengths of drill pipe together with predetermined maximum torque or tightening moment to form a drill string. A mechanical tongs engages the pipe and is angularly displaced by a pneumatic cathead, a hydraulic transducer being provided between the cathead and the tongs for generating a hydraulic signal representing the applied torque. A hydraulically controlled pneumatic relay is responsive to this signal to release the cathead when the predetermined torque is attained.

**3,722,332**  
**APPARATUS FOR SECURING THE BOLTS OF THE REACTOR PRESSURE VESSEL HEAD TO THE REACTOR PRESSURE VESSEL**

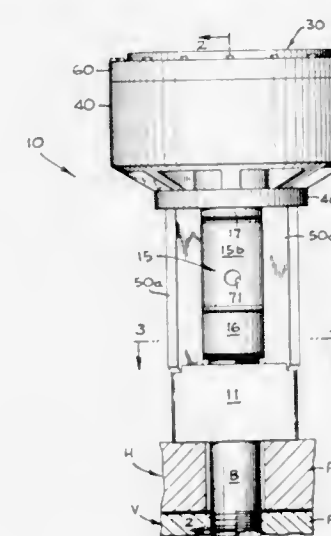
Cecil R. Jones, San Jose, Calif., assignor to Transfer Systems Incorporated, New York, N.Y.

Filed June 1, 1971, Ser. No. 148,617

Int. Cl. B25b 29/02

U.S. Cl. 81—57.38

15 Claims



Apparatus securing a locking bolt of a pressure head to a reactor pressure vessel in which the pressure head flange is urged in one direction and the bolt is tensioned in an opposite direction to reduce the interfacing force between confronting walls of a nut securing the locking bolt and the pressure head flange, while an operator tightens the nut against the pressure head flange. For tensioning the bolt, a cylindrical force transmitting member has its lower end threaded for engagement with the locking bolt and its upper end threaded, but without any pitch, to receive in threaded engagement a puller or lifter rod similarly threaded. The force transmitting member is split axially so that its halves can be displaced radially to facilitate the retaining of the lifter rod in threaded engagement therewith, while rotating the force transmitting member for adjustable threaded engagement with the locking bolt without rotating the puller rod. Axially movable retaining sleeves surround the split force transmitting member for at times to permit separation thereof to retain the lifted rod in threaded engagement therewith while rotating the force transmitting member for adjustable threaded engagement with the locking bolt without rotating the puller rod, and at other times securing the force transmitting member in locking engagement with the lifter rod for movement therewith. For urging the flange in the one direction a force is transmitted through columns and a connector sleeve for application to the pressure head flange. A suitable hydraulic system with pistons initiates the transmitted forces in each direction.

**3,722,333**  
**MULTI-SPINDLE AUTOMATIC LATHES**  
Harold James Gilbert, Coventry, England, assignor to Wickman Machine Tool Sales Limited, The Hill, Coventry, England

Filed Aug. 5, 1970, Ser. No. 61,372

Claims priority, application Great Britain, Aug. 5, 1969, 39,056/69

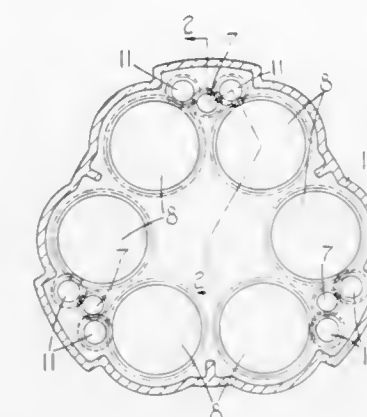
Int. Cl. B23b 19/02

U.S. Cl. 82—29

2 Claims

A multi-spindle automatic lathe in which a spindle drum is indexable in a housing, with a plurality of work spindles being carried by the drum, gearing interconnecting a drive means with the work spindles to provide at least one work spindle speed in one direction of rotation and at least one work spindle speed in the opposite direction of rotation. A pair of

clutches are mounted on each work spindle and are selectively actuatable for drivingly connecting the drive means via the gear-



ing to the work spindle so that each work spindle can be driven in either direction of rotation regardless of the direction of rotation of the other work spindles.

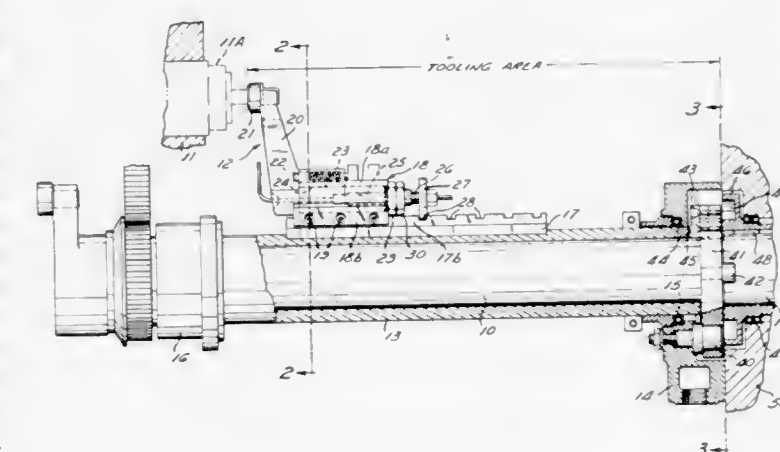
**3,722,334**  
**STOCK STOP IN MULTIPLE SPINDLE MACHINE**  
Karl P. Schubert, Mayfield Heights, Ohio, assignor to Acme-Cleveland Corporation, Cleveland, Ohio

Filed Sept. 15, 1971, Ser. No. 180,697

Int. Cl. B23b 3/36, 3/34

U.S. Cl. 82—34 A

11 Claims



The cover sleeve for the drum shaft at the tooling area in a multiple-spindle machine tool supports the stock stop. A cam-operated mechanism acts between the drum shaft and the cover sleeve for turning the latter to move the stock stop between an inoperative, out-of-the-way position and an operative position for engagement by the workpiece stock which is being fed axially at the loading station in the machine. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

**3,722,335**  
**COUNTING APPARATUS FOR PROCESSING MACHINE**  
Roland J. Labonte, 15731 West Eldorado Drive, New Berlin, Wis., and Smiley H. Jones, 1090 Links Court, Brookfield, Wis.

Filed Dec. 27, 1971, Ser. No. 212,121

Int. Cl. B26f 1/40; B26d 7/28

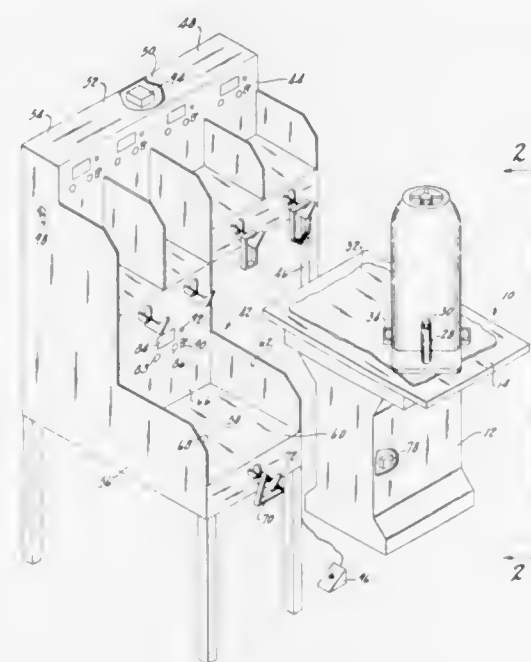
U.S. Cl. 83—57

16 Claims

A processing machine, such as a clicker cutter comprises a fixed platen and a reciprocally movable operating head for delivering a blow to a cutting die placed on sheet material on the platen beneath the head. A console which includes several



stations (one for each differently-shaped piece of material to be cut is adjacent the cutting machine. Each station comprises a storage area for cut pieces; a counter; a movable hook adjacent the storage area on which the die for that station is placed when not in use; a counter readiness or energizer switch operable upon removal of the die from the hook to connect the counter for operation; a first or "in use" signal device (such as a green light) indicating that the die has been removed from its hook; and a second signal device (such as a red light) which indicates when the counter is indicating that a predetermined number of pieces for that station have been



**3,722,337**  
**FLUID-ACTUATED PUNCH PRESS WITH WORKPIECE STRIPPER**

Theodore F. Brolund, Rockford, Ill., and William E. Kuchar, Cherry Valley, Ill., assignors to W. A. Whitney Corp., Rockford, Ill.

Filed Dec. 31, 1970, Ser. No. 103,025  
Int. Cl. B26d 7/06

U.S. Cl. 83—137

3 Claims

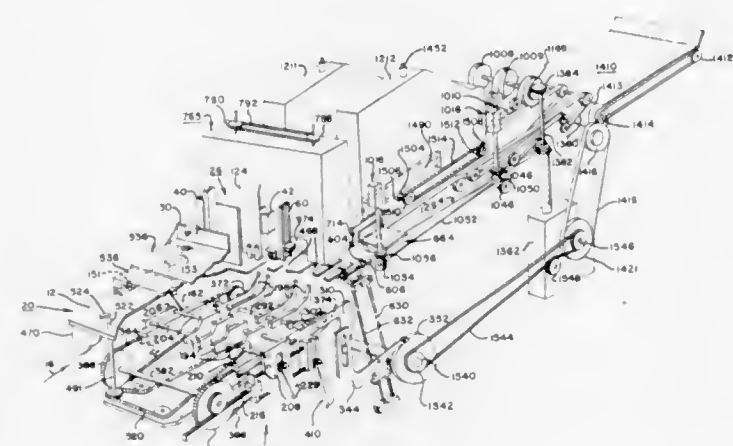
cut. The console further includes an audible alarm which sounds when two or more dies are removed from their hooks at the same time, so that false counting at one or more stations will be avoided. The alarm also sounds to indicate that the second signal device is operating, i.e., that the counter has finished the desired count. A counting switch relay is located on the clicker cutter for effecting operation of the counter at the station which is in operation. Override means, such as an override switch, are provided to permit a cut to be made without being registered on any counter.

**3,722,336**  
**FEED, TRANSPORT AND DELIVERY MECHANISM FOR BOOK TRIMMERS AND THE LIKE**

Ernest J. Sarring, Western Springs, Ill., assignor to North American Rockwell Corporation, Pittsburgh, Pa.  
Filed Feb. 10, 1971, Ser. No. 114,225  
Int. Cl. B26d 7/24

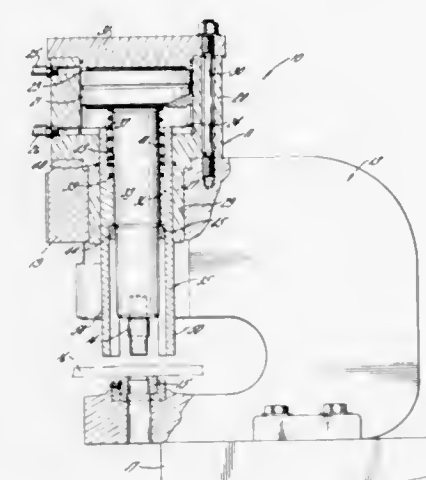
U.S. Cl. 83—63

5 Claims



Apparatus for feeding objects to a transport mechanism and transport and delivery mechanisms for the objects, and, in par-

ticular, apparatus for feeding books to, transporting them through the cutting stations of and delivering them from a two-station, three-knife book trimmer. The feed mechanism includes a hopper for holding books, a prestripper for stripping a book from the hopper and moving it part way to the front knife cutting station and pushers, which continue to feed the book to the first cutting station, with means coordinating the prestrippers and pushers. The transport mechanism includes a plurality of displaceable, e.g. upper transport belts and a plurality of belts in opposition to the displaceable ones, e.g. lower transport belts, which clamp the book, respectively, from above and below. While clamping the book, the transport belts travel with it to the side knife cutting station, halt for side knife trimming, and then move the book beyond the second station to the delivery mechanism. The transport belts travel intermittently so as to be stationary when the book is delivered to the first station and to halt the object at the first and second stations. Displacement means, e.g. for the upper belts, separate the transport belts at the first station to permit a book to be fed between the upper and lower belts, and return means bring the belts together again to clamp the book. The delivery mechanism includes speeder belts for engaging the book from below and speeding it away from the transport belts.



The press includes a fluid-operated actuator for reciprocating a punch and also includes a stripper which is partially telescoped into the cylinder of the actuator so as to be forced downwardly into clamping engagement with the workpiece by the same pressure fluid admitted into the cylinder to retract the punch upwardly out of the workpiece. In addition, the actuator and a spring disposed within the cylinder coact to cause the stripper to clamp the workpiece during punching and to release the workpiece after the punch has been retracted out of the workpiece.

**3,722,338**  
**APPARATUS AND PROCESS FOR THE TREATMENT OF SPENT FUEL**

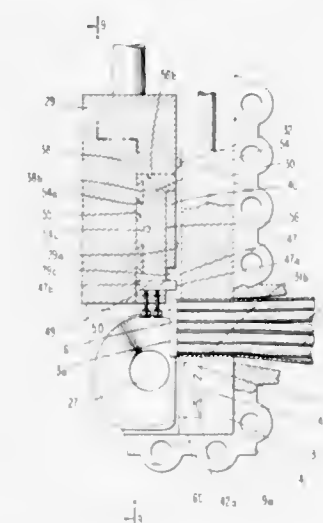
Guy Henry Cherel, Bougival France, assignor to Saint-Gobain Techniques Nouvelles, Courbevoie, France  
Filed Feb. 25, 1970, Ser. No. 13,946  
Int. Cl. B23d 15/04, 35/00

U.S. Cl. 83—278

32 Claims

Apparatus for shearing into sections or fragments, the tubes containing nuclear fuel of combustion elements, and which

are secured together by lateral, longitudinally-spaced tie rods or bands. After removal of the inert ends with which each element is commonly provided, the bundle of tubes, sans ends, is moved longitudinally by steps of 20 to 30 mm each, into a shearing apparatus wherein after each step the bundle of tubes is clamped to a fixed stop or surface and the projecting ends are sheared off by a reciprocating shearing tool to thus form a number of fragments of tube and fuel each. In the prior art when two successive shearing cuts were on opposite sides respectively, of a tie band, the band still held the cut fragments together in a unitary mass of excessive size, capable of



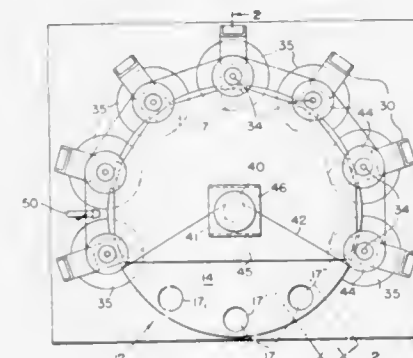
clogging the pipes leading to the tank in which the fuel or the metal of the tubes is dissolved. To obviate that disadvantage the present invention incorporates into the reciprocating shearing tool, a shearing tooth projection fixed therewith and which is spaced ahead of the shearing edge of the tool in the direction of the working stroke. The construction is such that when a tie rod or band is advanced into position to be sheared off on the next stroke of the shearing tool, the projection first engages and shears the band to thus allow the subsequently-sheared fragments of fuel and tubes to disintegrate or separate as the tool completes its shearing stroke.

**3,722,339**  
**ONION SLICING MACHINE**

Emanuel F. Boyer, 4826 Oak Orchard Rd., Albion, N.Y.  
Filed March 19, 1971, Ser. No. 126,137  
Int. Cl. A23n 15/100; B26d 4/04

U.S. Cl. 83—4

2 Claims



Onions to be sliced are placed in pockets formed in a rotary table made up of a plurality of coaxial horizontal discs that are mounted on top of one another to rotate about a common axis. Around the table are disposed a plurality of rotary knives, which are positioned in interleaved relation with the onion holding discs but which are disposed at progressively different vertical positions so that successive knives are interleaved with progressively different pairs of onion transporting discs. As the transport discs revolve, therefore, the knives cut the onions in the pockets into slices.

905 O.G.—34

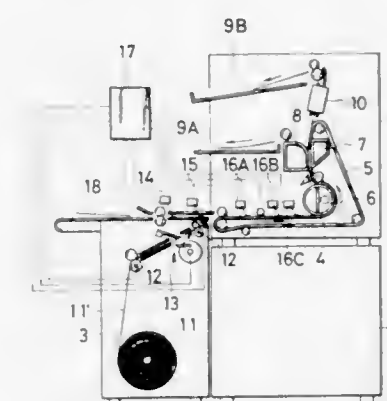
**3,722,340**  
**AUTOMATIC SHEET-FEEDING DEVICE**

Yugoro Kobayashi, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Jan. 28, 1971, Ser. No. 110,510  
Claims priority, application Japan, Feb. 14, 1970, 45/12260  
Int. Cl. B26d 5/20

U.S. Cl. 83—203

6 Claims



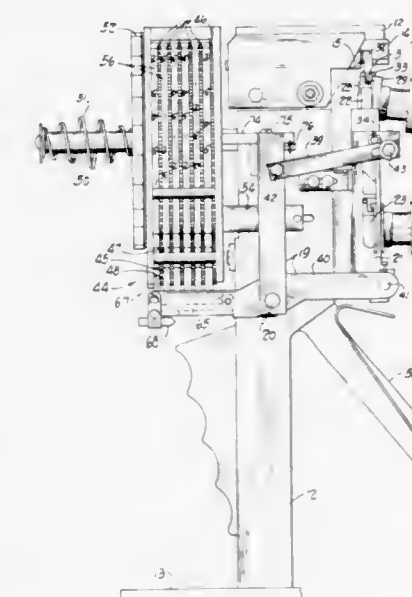
In an automatic sheet-feeding device having utility in a copying machine, there are provided a cutter for cutting a sheet from a web (e.g. a strip of a recording medium) in accordance with the size of another sheet (e.g. an original sheet to be copied), a switch for detecting the trailing end of a moving original sheet, and a plurality of signal switches adapted to be actuated in succession by a signal-transmitting element incident to advance of the original sheet along a defined path past the detecting switch. The positions of the signal switches represent progressively increasing predetermined sheet lengths. Actuation of the detecting switch renders the signal switches effective to actuate the cutter, so that the first signal switch to be actuated by the transmitting element after the trailing end of the original sheet passes the detecting switch produces a signal that actuates the cutter.

**3,722,341**  
**KEY CUTTER**

Philip C. Hungerford, Jr., Cleveland; Robert H. Richens, Bedford Heights, and John L. Gereby, Wickliffe, all of Ohio, assignors to Cole National Corporation  
Filed Jan. 18, 1971, Ser. No. 107,311  
Int. Cl. B26d 7/06

U.S. Cl. 83—413

37 Claims



A key cutter is disclosed which is a hand-actuated machine adapted to cut key blanks in accordance with a preset manufacturer's code which sets the depth of cut of each notch and



the longitudinal spacing between successive notches. Alternatively, the key cutter may be used as a duplicator to cut a blank key in accordance with a master key. This duplicating function is aided by a parallelogram vise assembly which carries both the blank key and the master key. The key cutting machine automatically indexes to the next successive longitudinal position for key notch cutting with each actuation of the cutter actuating machine and the entire machine may be reset to perform the next cycle of operation by moving the carriage in a single direction. This resets both the depth setting means and the cut spacing means. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

3,722,342

# **APPARATUS FOR STRIPPING COVERS FROM PAPERBACK BOOKS AND THE LIKE**

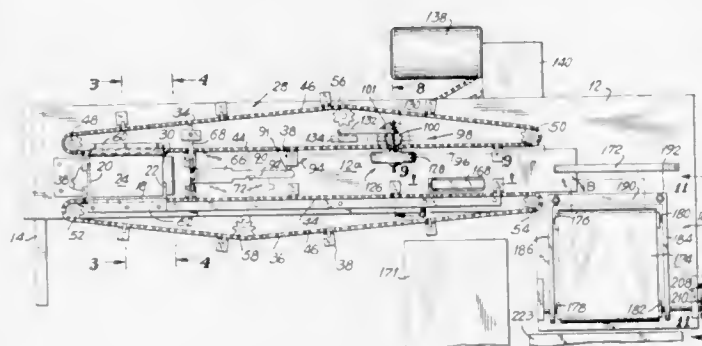
Vincent N. Vulcano, New York, N.Y., assignor to Compu-Sort Systems, Inc., Brooklyn, N.Y.

Filed Nov. 24, 1970, Ser. No. 92,350

Int. Cl. B26d 1/14

U.S. Cl. 83—418

9 Claims



An apparatus for stripping covers from paperback books and the like comprising means for supplying paperback books, means conveying the paperback books serially from the supply to a cover plow for rotating and opening the cover away from the remainder of the book, a cutter for severing the cover from its book adjacent the book binding, means mutilating the paperback books after their covers are removed, and means for depositing the mutilated books in a receptacle.

3,722,343

# **MULTIPLE SAW LUMBER TRIMMER**

Cyrus J. Cornell, Laceyville, Pa.

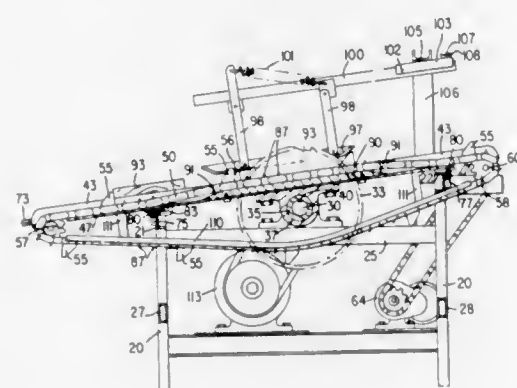
Continuation of Ser. No. 791,986, Jan. 17, 1969, abandoned.

This application June 23, 1971, Ser. No. 156,051

Int. Cl. B27b 25/04

U.S. Cl. 83—422

9 Claims



A lumber trimming saw, the conveyor chains of which are provided with prongs located forwardly of each lumber engag-

ing lug. The prongs are normally positioned below the conveyor rails out of engagement with a piece of lumber. As the lumber is advanced by the chain lugs into proximity with the saw, the chains are elevated to move the prongs into engagement with a piece of lumber while it is advanced past the saw. The prongs serve to anchor an area of the piece of lumber which is not engaged by the chain lugs due to warpage of the lumber. Chain guide and guard members are provided in overlying relation to the lower return runs of the conveyor chain.

3,722,344

# **ELECTRONIC MUSICAL INSTRUMENT HAVING TONE START PITCH FLUCTUATION ARRANGEMENT**

Akira Nakada, Hamamatsu-shi, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

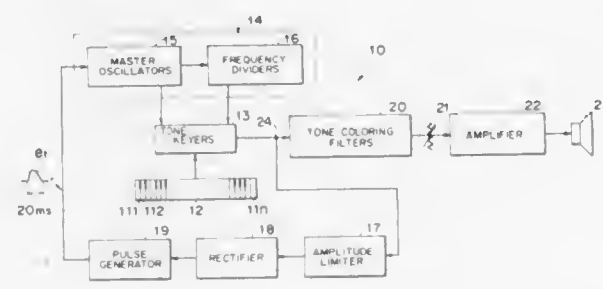
Filed Dec. 23, 1971, Ser. No. 211,602

Claims priority, application Japan, Dec. 26, 1970, 45/119034

Int. Cl. G10h 1/04

U.S. Cl. 84—1.24

5 Claims



An electronic musical instrument including tone generators for generating tone signals each having predetermined tone pitches constituting a musical scale and tone keyers for respectively keying the tone signals, is further provided with a circuit arrangement for fluctuating the pitch of the tone at the start of the tone. The arrangement comprises a detector for detecting the start of the tone signal being played and a pulse generator producing a pulse signal upon receipt of the detected signal and controlling the tone generators to fluctuate the pitches thereof at the start of the tone signals. This simulates the sound of natural musical instruments very closely.

3,722,345

# **STRINGED MUSICAL INSTRUMENT BODY CONSTRUCTION**

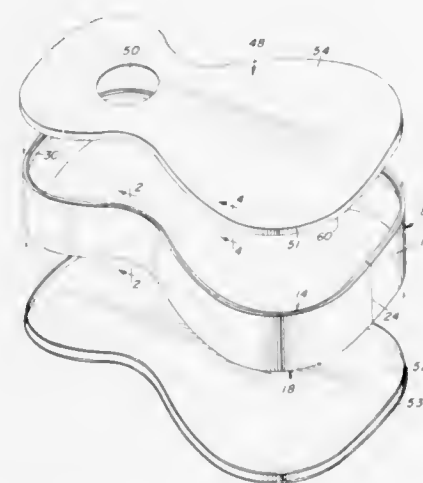
Rudolph Dopera, 1410 Gaylord St., Long Beach, Calif.

Filed Oct. 23, 1970, Ser. No. 83,310

Int. Cl. G10d 3/00

U.S. Cl. 84—291

5 Claims



A structure for the soundbox of a stringed musical instrument is disclosed wherein the peripheral side wall is formed

with channels at its bottom and top edges. The bottom and top of the body of the stringed instrument have flange portions on their peripheral edges which engage the channels on the side wall to form the soundbox. Mechanical and/or chemical means for strengthening the coupling between top and bottom flange portions of the body and the side wall channels is provided.

3,722,346

# **CAPO**

Pete P. Valentino, 6061 N. Wilson, Fresno, Calif.

Continuation-in-part of Ser. No. 81,396, Oct. 16, 1972, Pat.

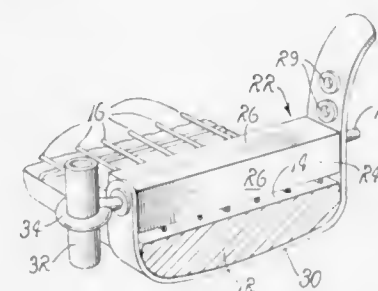
No. 3,680,427. This application Feb. 10, 1972, Ser. No.

225,213

Int. Cl. G10d 3/00

U.S. Cl. 84—318

6 Claims



An improved capotasto, hereinafter referred to as a CAPO, for use in tuning string instruments of the type having a fingerboard including a plurality of transversely oriented frets and a plurality of substantially parallel strings traversing the frets. The device conforms to an elongated bar repositionable along a fingerboard of a string instrument for uniformly varying the pitch of all of the strings, and a pitch pipe integrally coupled therewith for establishing a keynote in tuning the instrument. A particular feature of the invention resides in an improved CAPO having integrated therewith a pitch pipe employable in changing the key of the instrument.

3,722,347

# **PALLET VALVE CONSTRUCTION**

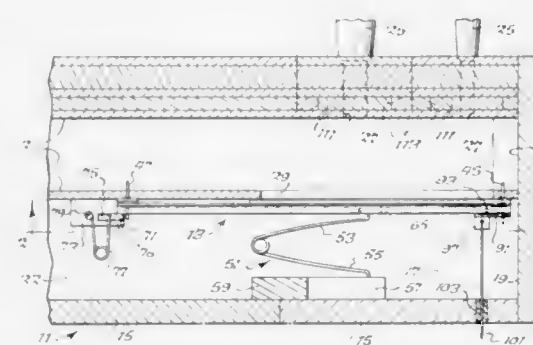
Herman L. Schlicker, 50 Halladay Lane, Tonawanda, N.Y.

Filed Nov. 30, 1970, Ser. No. 93,791

Int. Cl. G10b 3/10

U.S. Cl. 84—342

5 Claims

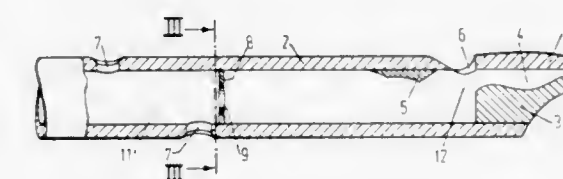


A pallet valve for use in a pipe organ windchest for controlling the flow of air under pressure through an oblong opening in the windchest. The pallet valve comprises an elongated, generally flat, metallic body considerably longer than the opening and pivotally movable at one end about an axis substantially removed from the opening. A pair of laterally spaced, parallel flanges, coextensive with the valve body, depend from one face of the body and serve to reinforce and stiffen it. The other face of the body is provided with a cushion engageable with the area surrounding the opening for sealing the same.

3,722,348  
WIND INSTRUMENT  
Hendrik Visser, Duinweg 37A, Schoorl, Netherlands  
Filed May 1, 1972, Ser. No. 249,182  
Int. Cl. G10d 7/00

U.S. Cl. 84—380

4 Claims



A wind instrument having an embouchure and a resonance passage in which between the embouchure and the resonance passage an antechamber is disposed which is bounded at one end by a plate (tone ring), attached to the wall of the resonance passage transversely of the instrument axis and formed with an aperture, and at the other end by a tongue in the form of one or more raised portions extending from the wall downstream of the embouchure.

3,722,349

# **DRUM PEDAL**

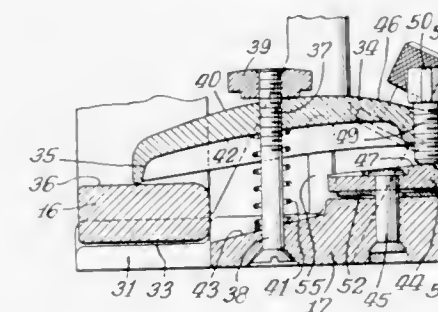
John L. Hoellerich, Wilmette, Ill., assignor to Slingerland Drum Co., Niles, Ill.

Filed Dec. 2, 1971, Ser. No. 204,273

Int. Cl. G10d 13/00

U.S. Cl. 84—422 R

11 Claims



A pedal having improved means for connecting the pedal removably to the counter hoop of an axially horizontal musical drum including a beater adapted to beat the drum as a result of a foot operation of the pedal by the drummer. The pedal includes means for facilitated clamping of the pedal to the counter hoop for quick attachment and release. The clamping means is resiliently mounted to the base of the pedal and includes adjustable means for adjusting the clamping force as desired.

3,722,350

# **METAL DRUM STICK**

Charles P. Cordes, 27 Kenneth Place, Clark, N.J.

Continuation-in-part of Ser. No. 812,747, April 2, 1969, abandoned. This application July 29, 1970, Ser. No. 67,674

Int. Cl. G10d 13/00

U.S. Cl. 84—422 S

7 Claims



The drum stick is comprised of a hollow, cylindrical, metal tube, open at both ends and provided with a straight, cylindrical



cal tip end portion of reduced diameter. A plastic tip is secured to the butt end of the drum stick. A plastic coating or sleeve may be disposed along the cylindrical portion of the drum stick having the larger diameter. Variations in the sound characteristics can be achieved by varying the length of the reduced diameter, cylindrical tip portion. A solid core may be provided in the larger diameter cylindrical portion of the tube.

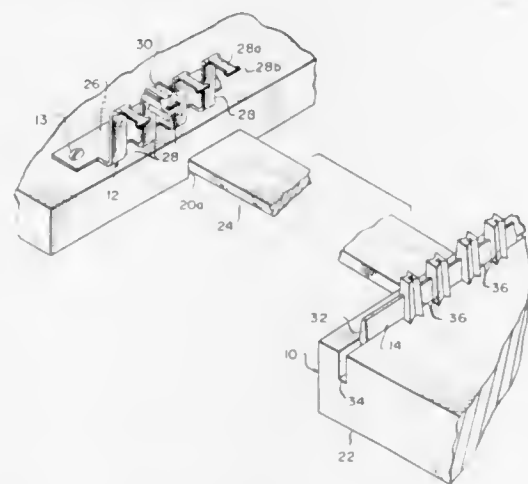
3,722,351

**MUSICAL INSTRUMENT KEYBOARD CONSTRUCTION**  
Irving Allen, Westbrook; Edward T. George, Hamden, and Albert W. Nordquist, Ivoryton, all of Conn., assignors to Pratt-Read Corporation, Ivoryton, Conn.

Filed Dec. 2, 1970, Ser. No. 94,288  
Int. Cl. G10c 3/12

U.S. Cl. 84—423

12 Claims



A musical instrument keyboard includes a wood key bed and a pivot-spacer member for receiving a plurality of keys. The pivot-spacer member has upwardly extending spacer posts for confining the key sticks in a supported position so that transverse forces on the keys, tending to cause a torque to be exerted thereon, will not affect the normal position of the keys. The forward end of each key stick cooperates with side tabs of the associated key cap to form a channel for a guide bushing supported on the key bed, which limits lateral and up and down movement of the keys.

3,722,352

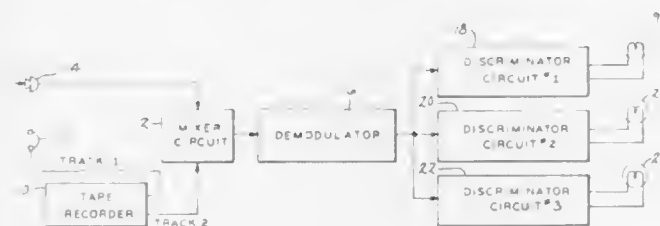
**PITCH MEASUREMENT CIRCUIT**

Elmer A. Ihrke, 4619 N. Cramer St., Milwaukee, Wis., and Walter R. Ihrke, 25 Storrs Heights Rd., Storrs, Conn.

Filed Aug. 16, 1971, Ser. No. 172,051  
Int. Cl. G10g 7/02

U.S. Cl. 84—454

8 Claims



The pitch measurement circuit, in conjunction with a two-track tape recorder and a printed instruction manual, provides a method whereby proficiency in pitch accuracy can be developed. The method is self-instructional in that the student performs into a microphone either vocally or by means of a single-tone musical instrument. The human teacher is absent, and speaks only through the manual and the tape. The student reads the music of the training items from the manual, and performs it against a setting sounded by the tape. Track 1 is an accompaniment to the student's performance. Track 2, which

the student does not hear, contains the melody in coded form, each coded tone being 40 cycles less than the corresponding tone of the melody. The student's performance is sent from a microphone into a mixer circuit which also receives the coded melody from Track 2. The resulting mixture is demodulated, and the low-frequency component is sent to a group of frequency discriminators which by means of lights indicate whether the student is sharp, flat, or on pitch.

3,722,353

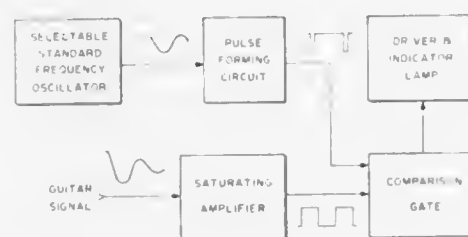
**ELECTRONIC TUNING DEVICE FOR VISUAL TUNING OF STRINGED INSTRUMENTS**

Lawrence A. Westhaver, 13001 Old Stagecoach Road, Laurel, Md.

Filed June 11, 1971, Ser. No. 152,246  
Int. Cl. G10g 7/02

U.S. Cl. 84—454

4 Claims



An electronic tuning device for tuning stringed instruments provides a selectable sinusoidal reference frequency which is converted to pulses of the same frequency. The fading picked-up signal from a string of the instrument is passed to a high-gain saturating amplifier and converted to a sustained square wave which lasts of the order of 5 to 10 seconds as the string signal becomes minimal. The frequency of the square wave is then compared with the pulse frequency by supplying the pulses and the square waves to a comparator gate whose output controls a glow discharge lamp attached to the device. When the string of the instrument is tuned to bring the frequency of the square wave close to that of the pulses, the frequency difference to be minimized is indicated by the observable blink frequency of the lamp. The instrument responds similarly to one octave above the tuned frequency. Provision is also made to deliver the selected reference frequency to the usual musical instrument amplifier to enable aural tuning by a group of musicians.

3,722,354

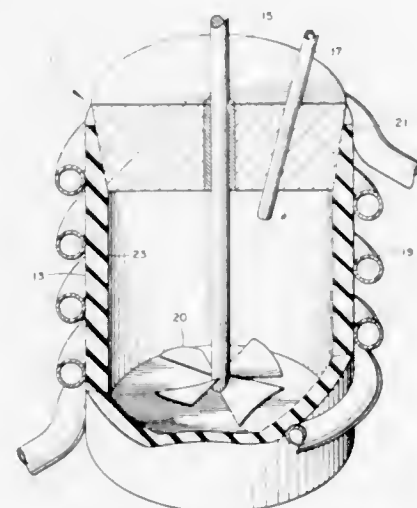
**PROPELLANT CASTING**

Charles H. Herty, III, Waco, Tex., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed Oct. 3, 1963, Ser. No. 314,836  
Int. Cl. C06b 21/02; F42b 9/14

U.S. Cl. 86—1

3 Claims



1. A method of preparing a solid propellant comprising: providing a vessel of polymeric material,

individually pouring the separate ingredients for said solid propellant into said vessel, disposing in said vessel means for mixing said ingredients, mixing said ingredients in said vessel, and curing said ingredients in said vessel.

3,722,355

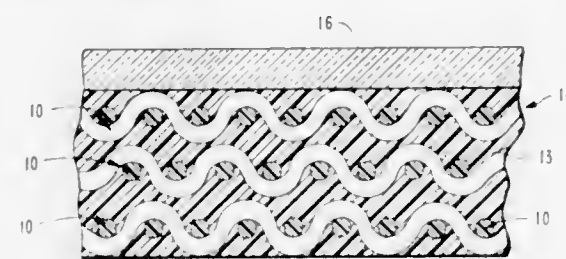
**LIGHTWEIGHT ARMOR MATERIAL**

Harry A. King, Covina, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.

Filed Aug. 3, 1965, Ser. No. 477,671  
Int. Cl. F41h 1/02, 5/04

U.S. Cl. 89—36 A

7 Claims



This disclosure concerns a lightweight armor material which includes a woven fabric of glass and nylon fibers, wherein the individual glass fibers are interlaced with individual nylon fibers so as to provide an interwoven relationship between the glass fibers and the nylon fibers. A woven fabric of this character is especially suitable for use in body armor and may be employed in multiple layers arranged in superposed relation, either with or without a binding resin, to provide a structural material affording protection against a high energy particle, such as a projectile or fragments therefrom. The structural material has a high resistance to the penetration of a high energy particle in relation to its weight which is superior to the penetration resistance of a comparable structure of the same weight but including woven fabric layers of either glass fibers or nylon fibers alone. A hard outer surface plate of a ceramic material may be included as a component of the structural material in one embodiment thereof, enabling the structural material to successfully withstand the direct impact of certain types of projectiles thereagainst by preventing the penetration of these projectiles and thereby protecting personnel from injury and/or equipment from damage.

3,722,356

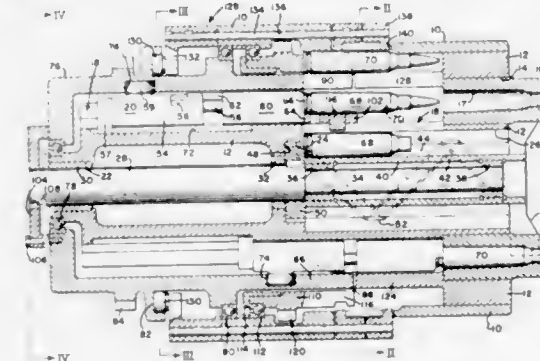
**MACHINE GUN FEEDING MEANS**

Douglas P. Tassie, St. George, and Burton P. Clark, Colchester, both of Vt., assignors to General Electric Company, Burlington, Vt.

Filed Sept. 28, 1970, Ser. No. 76,077  
Int. Cl. F41d 9/02

U.S. Cl. 89—11

31 Claims



An article handling system, such as a machine gun, includes means to receive a series of articles progressively and continuously; means to distribute the articles to a plurality of work stations, to halt each article at a respective work station for a given period, and to withdraw the articles progressively and continuously.

3,722,357

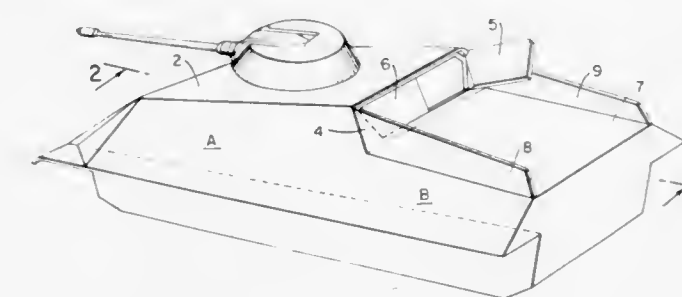
**ARMORED VEHICLE**

Hans-Georg Schallehn, Kassel, Germany, assignor to Rhein-stahl Aktiengesellschaft, Essen, Germany

Filed Sept. 20, 1967, Ser. No. 670,021  
Int. Cl. F41h 7/02

U.S. Cl. 89—36 H

6 Claims



An armored vehicle having a forward personnel compartment which is lined with radiological shielding and an aft engine compartment, the latter having a lesser height than the former so that the personnel compartment has an upper aft wall portion whose height is equal to the difference between the personnel and engine compartments. This upper aft wall portion is provided with one or more doors through which personnel can leave the vehicle, while being protected, to the front, by the vehicle itself. Additional shielding is provided to protect the personnel, while on the top of the engine compartment, from the side.

3,722,358

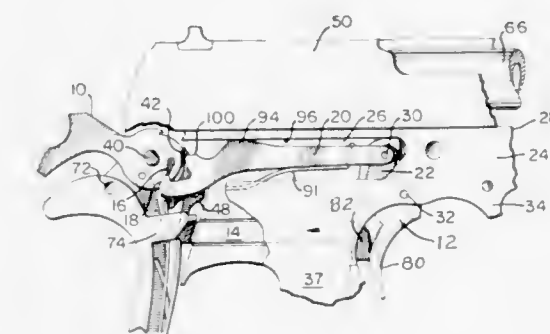
**COMBINED SINGLE AND DOUBLE ACTION FIRING MECHANISMS FOR PISTOLS AND KITS FOR CONVERTING SINGLE-ACTION PISTOLS**

Louis W. Seecamp, 561 Whitney Avenue, New Haven, Conn.

Filed Jan. 14, 1971, Ser. No. 106,367  
Int. Cl. F41c 19/14

U.S. Cl. 89—147

5 Claims



A double-action trigger mechanism for automatic pistols in which the firing mechanism of the original single-action design of pistols, such as the Government Model 1911, is retained and continues to function in the same way as before. Conversion of existing pistols is made feasible by providing a cocking link between the trigger and the hammer which is completely separate from the single-action sear mechanism, thereby retaining the same operation in firing the gun in single-action while adding double-action, that is, the capability of cocking and firing the gun by means of the trigger.



3,722,359

## GEAR SHAPING APPARATUS

Joachim Hans, Hasenbergweg 12, Ettlingen/Baden; Hans Jorgen Ditschler, Albert-Braun-Str. 12f, Karlsruhe, and Gerhard Russler, Ahornweg 4, Bruchhausen, Germany

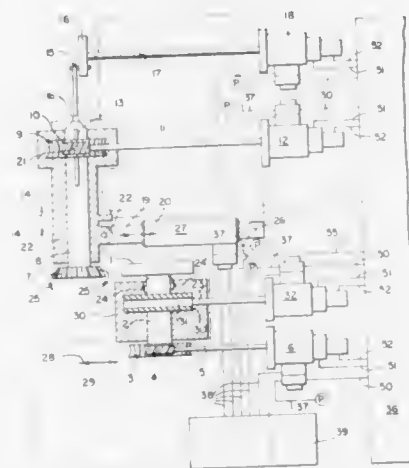
Filed Aug. 30, 1971, Ser. No. 176,055

Claims priority, application Germany, Aug. 29, 1970, P 20 42 929.2

Int. Cl. B23f 1/04

U.S. Cl. 90—7

9 Claims



A gear shaping apparatus in which a work piece to be shaped into a gear and a cutting tool undergo relative rotational movement about their axes, reciprocating movement parallel to their axes, and engaging/disengaging motion whereby their axes move towards and away from each other. A separate continuously operable computer operated control device is provided for causing each of these movements, each of the control devices being operable mechanically independently of the others.

3,722,360

## MEASURING AND LOCATING METHOD

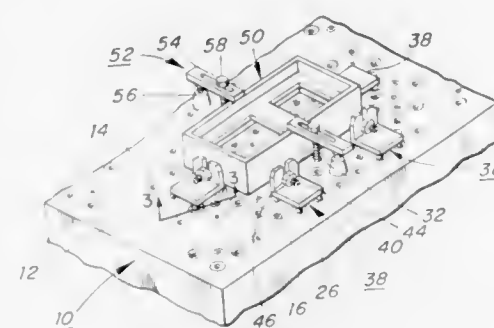
Alexander G. Blakey; Jack S. Adams, and James J. Swarts, all of San Diego, Calif., assignors to General Dynamics Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 821,587, May 5, 1969. This application March 19, 1971, Ser. No. 126,023

Int. Cl. B23b 35/00, B23d 79/00

U.S. Cl. 90—11 C

20 Claims



A method of using a measuring and locating system utilizing a novel surface plate and fixtures associated therewith is disclosed. Basically, a plurality of uniform recesses are formed in a surface. At least one ferromagnetic member having an exterior shape corresponding to the shape of the recesses is placed in a recess and secured to a measuring and/or locating fixture. Magnetic attraction means are provided adjacent to recesses to aid in holding ferromagnetic members in place. The fixture may be easily removed by overcoming the magnetic attraction forces and replaced in exactly the same position. This method is useful for dimensional measurement of workpieces, locating workpieces for automatic machining operations, etc.

3,722,361

## UNIVERSAL MILLING SPINDLE-CARRYING UNIT

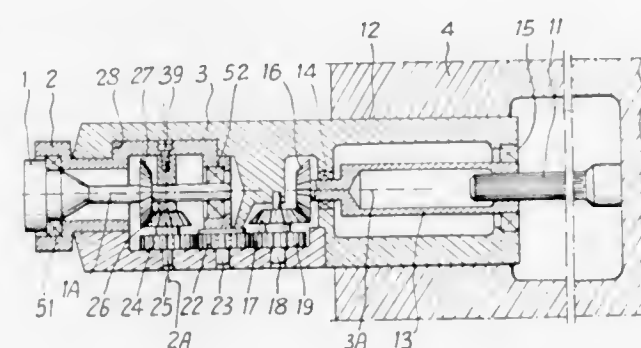
Albert Rinck, Viuz en Sallaz, France, assignor to Societe Anonyme Gambin S. A., Viuz en Sallaz, France

Filed June 28, 1971, Ser. No. 157,385

Claims priority, application France, July 16, 1970, 7026103 Int. Cl. B23c 1/12

U.S. Cl. 90—17

3 Claims



The invention relates to the universal milling units comprising a milling cutter-carrying spindle mounted in a head adapted to pivot in a fork-portion of a cylindrical body pivotally and longitudinally slidable in a bore of a support. The drive for rotating the milling cutter-carrying spindle is ensured from a power shaft coaxial with said body through a transmission which comprises, among others, a bevel gear secured to the milling cutter-carrying spindle and in mesh with a mating bevel gear which is carried by an intermediate shaft coaxial with the pivotal axis of the head.

In a known embodiment of this kind, the aforesaid transmission comprises an intermediate longitudinal shaft one end of which is operatively connected to the aforesaid mating bevel gear through a pair of bevel gears and the other end of which is operatively connected to the power shaft through a pair of cylindrical gears.

In order to avoid the detrimental effects of any torsion to which the intermediate longitudinal shaft is subjected, and also to avoid providing gears of relatively small dimensions such as the gears carried by the longitudinal intermediate shaft, a new structure is proposed in which such intermediate longitudinal shaft is eliminated. For this purpose, the remainder of the aforesaid transmission is constituted solely by a train of cylindrical meshing gears, the first of which is secured to a bevel gear in mesh with a bevel gear secured to the power shaft and the last of which is secured to the aforesaid mating bevel gear in mesh with the bevel gear secured to the milling cutter-carrying spindle.

3,722,362

## INSIDE PIPE BURR REMOVAL TOOL

Ralph W. Pitts, Pleasant Grove, and McKinley B. Thomas, Orem, both of Utah, assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Nov. 1, 1971, Ser. No. 194,277

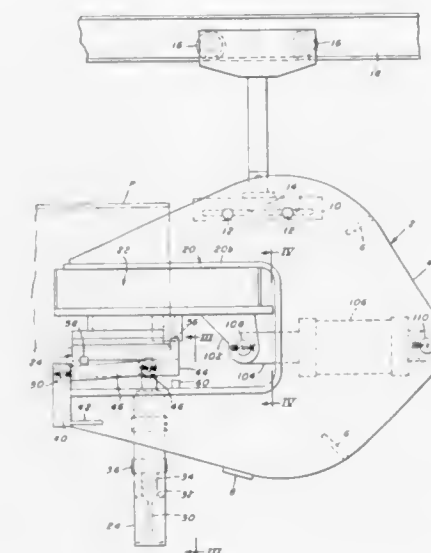
Int. Cl. B23d 1/16

U.S. Cl. 90—24 B

6 Claims

Tool includes a frame having a substantially U-shape opening adjacent one edge for receiving the wall of a welded pipe having an inside burr therealong. The tool is adapted to be suspended in vertical position from an overhead support for movement toward and away from the interior of the end of a pipe and includes a reciprocating tool carriage mounted in its U-shape opening. The carriage is attached to and powered by a pressure fluid cylinder, mounted on the frame, for movement along a way in the U-shape opening. A cutter projects from the tool carriage and is adapted to remove the burr when the tool carriage is moved from a position adjacent the open end of the U-shape opening to a position inwardly of the open end of the opening. A pair of fluid cylinder actuated shoes is

provided on the frame for engaging the outer contour of the pipe so as to clamp it between the pair of shoes and another pair of shoes which depend from the tool carriage and engage



3,722,363

## AUTOMATIC TOOL CHANGER

Robert Z. Hague, Oradell, N.J.; Edwin F. Hantman, New York, N.Y.; Howard H. Laucks, South Hackensack, N.J.; George J. Loos, Parsippany, N.J.; Matthew F. Marsicano, Forest Hills, N.Y., and Alfred J. Mastropole, Saddle River, N.J., assignors to Moog, Inc., East Aurora, N.Y.

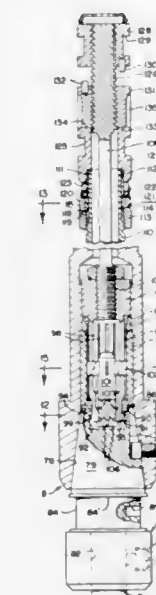
Division of Ser. No. 821,361, May 2, 1969.

Filed Oct. 8, 1970, Ser. No. 79,262

Int. Cl. B23q 5/04

U.S. Cl. 90—11 D

5 Claims



A tool changer is disclosed for automatically removing a working tool after having been used from the spindle of a machine tool such as a vertical milling machine, transferring the used working tool to a rack which stores a plurality of working tools, picking up from the rack another working tool for the next machining operation, transferring such new working tool to the spindle, and operatively mounting such new working tool on the spindle.

3,722,364

## RECIPROCATING FLUID MOTOR

Philippe Durand, St. Denis, France, assignor to Societe Anonyme D.B.A.

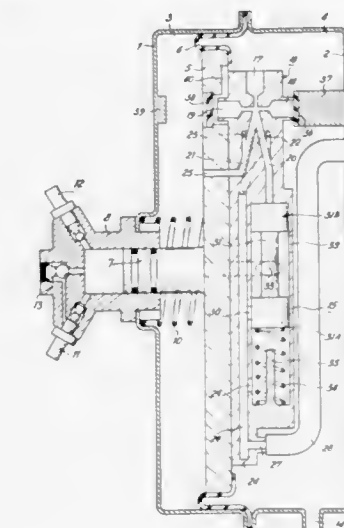
Filed April 8, 1971, Ser. No. 132,373

Claims priority, application France, April 15, 1970, 7013576

Int. Cl. F15b 13/042; F15c 1/10

U.S. Cl. 91—3

4 Claims



the inner contour of the pipe astride the burr. Thus the pipe is firmly held when the cutting tool is moved to cut away the end portion of the inside burr.

A reciprocating fluid motor, notably for operating a pump comprising an enclosure divided into two pressure chambers by a movable wall, said movable wall experiencing a forward stroke and a return stroke and being resiliently urged towards the return position, a control device responsive to the position of the movable wall controlling a distributing valve to alternately communicate one of said pressure chambers with a high pressure equalling the pressure residing at all times in the other chamber, and with a lower pressure. In this motor the control device and the distributing valve are mounted within the thickness of the movable wall, and the control device is a fluidic flip-flop. If air is selected as energizing fluid for the motor, the high and low pressures can be the atmospheric pressure and the vacuum created in the intake manifold of an engine respectively.

3,722,365

## HYDRAULIC PRESSURE APPARATUS

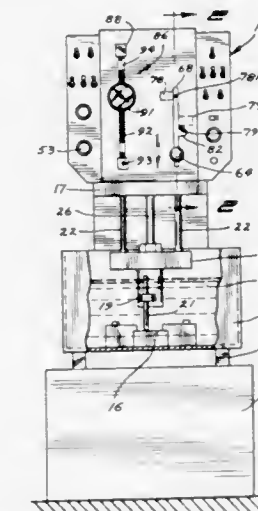
Sven O. Olsson, Edina, Minn., assignor to Essar Corporation, Minneapolis, Minn.

Division of Ser. No. 96,024, Dec. 8, 1970, Pat. No. 3,662,142, which is a division of Ser. No. 819,006, April 24, 1969, Pat. No. 3,604,884. This application Feb. 14, 1972, Ser. No. 225,842

Int. Cl. F15b 21/04; F01b 25/26, 31/12

U.S. Cl. 91—4 A

10 Claims

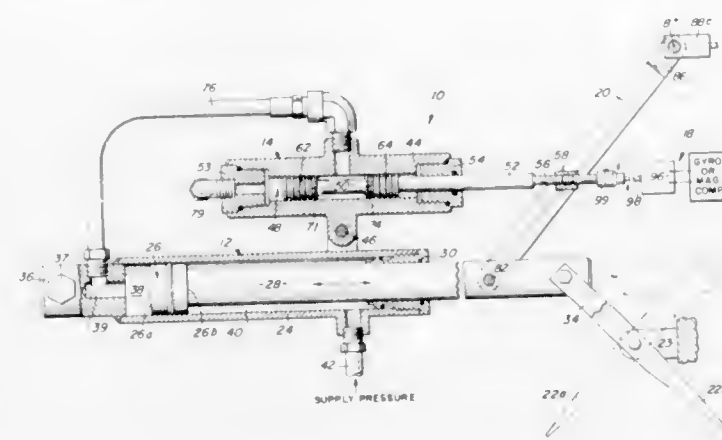


An electrical discharge machining device or EDM machine having a head carrying an electrode which is movable toward



and away from a work piece by a hydraulically operated double acting cylinder. A control valve, combined with a servo solenoid and manually operated lever, is operable to control the flow of hydraulic fluid to the cylinder. A light responsive electrical control operates the servo solenoid in response to the size of the electrical discharge gap between the electrode and the work piece. Interposed in the fluid line to the hydraulic cylinder is a lock valve operable to lock the cylinder and fix the position of the electrode relative to the work piece. The manually controlled lever is operable to engage switches to override the lock valve control during the electrical machining and elevation of the electrode operations of the device. Hydraulic pressure is continuously supplied to the control valve from a pair of liquid storing chambers connected to the control valve with a switching valve. Fluid under pressure in either one of the chambers operates a switching valve to provide a continuous source of hydraulic fluid under pressure to the control valve. The head contains the hydraulic pressure source, control valve, EDM power supply, electric control circuit for the valve and the double acting cylinder.

sensitive power inputs. The system includes a power cylinder, a control valve pivotally mounted thereto, a steering push-pull



cable or rotary input, and a mechanical linkage connecting the input, the spool of the valve and the piston rod of the power cylinder.

3,722,368

## FLUID POWER STEERING UNIT

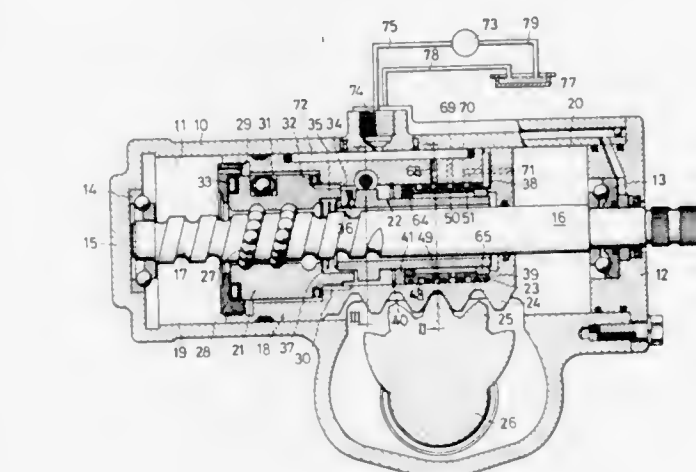
Hideki Suzuki, Anjo, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Aichi Pref., Japan

Filed June 1, 1971, Ser. No. 148,536

Claims priority, application Japan, June 4, 1970, 45/55030

Int. Cl. F15b 9/10

6 Claims



An integral power steering apparatus for the vehicle in which a fluid power piston meshing with a gear sector mechanically connected to the pitman arm accommodates a rotary valve member therewithin which will be actuated to rotate by rotation of a manual steering shaft for controlling the hydraulic pressure supply to assist the piston advancement, whereby a compact and effective power steering unit may be obtained.

3,722,369

## FLUID POWER STEERING GEAR

Tadashi Maekawa; Akira Suzuki, and Shigenori Haramura, all of Kariya, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Aichi-ken, Japan

Filed Feb. 12, 1971, Ser. No. 114,864

Int. Cl. F15b 9/10

8 Claims

U.S. Cl. 91—380

A fluid power steering gear is comprised of a piston installed in a cylinder and defining a pair of opposed fluid chambers therewithin, the piston being formed with rack teeth which are in mesh with the teeth of a gear sector linked to the front wheels of a motor vehicle. A steering nut is rotatably confined in this piston and is operably connected, via a plurality of

3,722,366

## PRECISION ANTI-WHIP RAM TYPE MACHINE

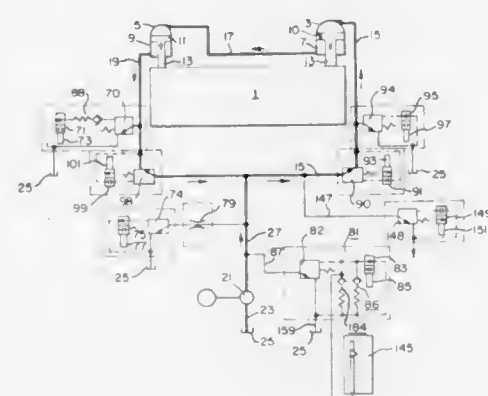
Rolland A. Richardson, Alameda, Calif., assignor to Pacific Press & Shear Corporation

Filed March 22, 1971, Ser. No. 126,671

Int. Cl. F15b 11/16

14 Claims

U.S. Cl. 91—170 R



A hydraulically powered ram type machine employing series connected hydraulic drive motors, drives the ram at faster than normal speed, then through normal speed following engagement with the work, to a slower than normal speed sufficient to assure extreme accuracy in air bending, and, at the same time, preclude whipping of the work.

3,722,367

## STEERING SYSTEM

Raymond Clark, Pewaukee, and Dale A. Knutson, Oconomowoc, both of Wis., assignors to Applied Power Industries, Inc., Milwaukee, Wis.

Filed Nov. 4, 1970, Ser. No. 86,783

Int. Cl. F15b 13/16, 9/10, 15/17

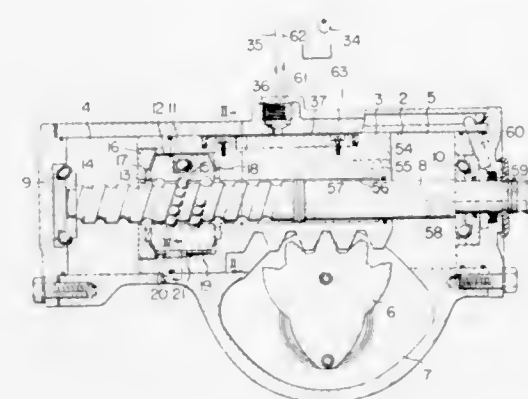
5 Claims

U.S. Cl. 91—367

This invention relates to a power system for accurately moving and holding a relatively large load with relatively small and

endlessly recirculating balls, to a steering shaft. A pair of control valve means, respectively in communication with the aforesaid opposed fluid chambers on both sides of the piston, are also installed in the piston so as to be respectively operated

one end fixed to one of the elements and the other end acting in an angled slot in the other element to obtain a high ratio of



by means of pins secured eccentrically to the end face of the steering nut, thereby to interrelatedly control fluid flow to and from the fluid chambers. A safety device for operation in the event of a malfunction of the fluid power steering gear is also provided.

3,722,370

## HYDRAULIC WHEEL MOTOR UNIT

Neville Frederick Aplin, 3 Gleneagles Drive, Southport, England

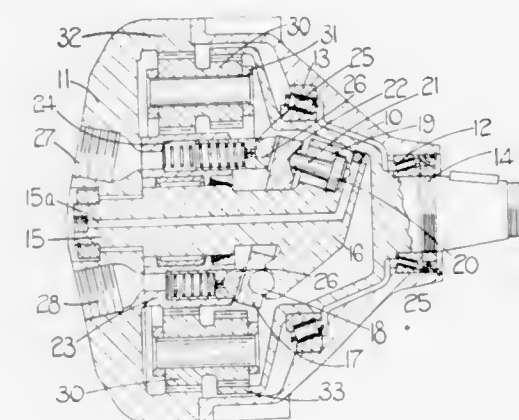
Filed March 23, 1971, Ser. No. 127,121

Claims priority, application Great Britain, March 31, 1970, 15,156/70

Int. Cl. F01b 13/06

5 Claims

U.S. Cl. 91—506



A wheel drive unit includes a housing including an end plate on which there is a spigot. The spigot carries a cam plate for an axial piston type rotor journaled on the spigot. The unit has an output shaft coaxial with the spigot and this shaft is driven by the rotor through an epicyclic reduction gear of which external teeth on the rotor form the sun pinion.

3,722,371

## HIGH RATIO LINKAGE MECHANISM

Robert F. Boyle, Kalamazoo, Mich., assignor to Pneumo Dynamics Corporation, Cleveland, Ohio

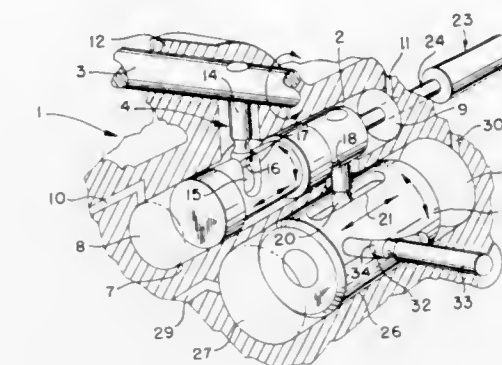
Filed March 12, 1970, Ser. No. 19,038

Int. Cl. F01b 25/26, 31/12; F15b 9/10

U.S. Cl. 92—5 R

9 Claims

Linkage mechanism comprises a close coupling between two or more elements in the form of a drive member having



travel between elements. A position-indicating device attached directly to one of the elements accurately senses the position of both elements.

3,722,372

## HYDRAULIC AXIAL PISTON MACHINE OF THE BENT-AXIS TYPE

Lennart Werner Freese, Jarfalla, Sweden, assignor to General Electric Company

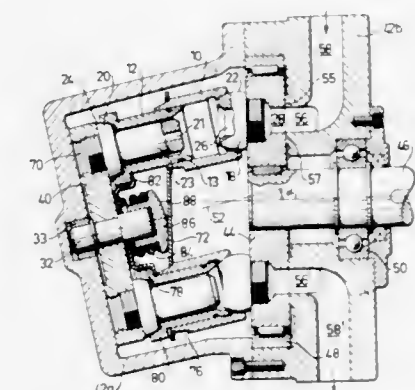
Filed March 26, 1971, Ser. No. 128,257

Claims priority, application Sweden, April 3, 1970, 4598/70

Int. Cl. F01b 13/06

8 Claims

U.S. Cl. 91—504



A hydraulic or pneumatic so called bent-axis piston machine is provided which comprises a number of parallel cylinders arranged equally spaced about a common axis, each cylinder slidably and telescopically receiving a piston in the form of a sleeve forming together with its cylinder a piston-cylinder assembly whose opposite ends engage spherical convex seats provided on respective rotatable support bodies or drive plates, said bodies or plates forming an angle with one another in the manner known in bent-axis machines. Each cylinder and piston is resiliently held in engagement with its cooperating seat by means of a spring-actuated expander device tending to bring each of the piston-cylinder assemblies to extend in order that their seating engagement is maintained. One of the support bodies or drive plates may also be made adjustably slidable in a lateral direction so as to vary the bent-axis angle and thus the displacement of the machine.

## ERRATUM

For Class 92—5 R see:  
Patent No. 3,722,371



3,722,373

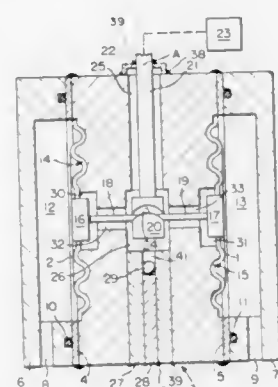
**DIFFERENTIAL PRESSURE RESPONSIVE DEVICE OF WELDED CONSTRUCTION**

Richard G. Beach, Greece; Harry Stultz, Jr., Chili, and Symonds, James A., Penfield, all of N.Y., assignors to Sybron Corporation, Rochester, N.Y.

Filed June 23, 1969, Ser. No. 835,566  
Int. Cl. F01b 19/00; G011 7/08

U.S. Cl. 92—97

3 Claims



A differential pressure responsive device including a body of metal and a pair of metal diaphragms welded around their peripheries to opposite sides of the body. A first bore in the body interconnects the adjacent sides of the diaphragms and receives a connector mechanically interconnecting the diaphragms. A second bore through the body is closed at one end by a third metal diaphragm welded around its periphery to the body. The other end of the bore is closed by a plug assembly. The second bore passes through the first bore and has a rigid bar therein connected at one end to said connector and passes out thereof through said third diaphragm, which is welded to the bar. The space in said body between said pair of diaphragms, and in said bores, is solidly filled with liquid in sufficient volume to maintain tension on the connector over the range of temperatures which may be encountered in use of the device. Flanges clamped to the peripheries of the pair of diaphragms provide for applying pressures to same. Between the flanges and the diaphragm peripheries is sandwiched a welding ring, welded along with the diaphragms to the body.

3,722,374

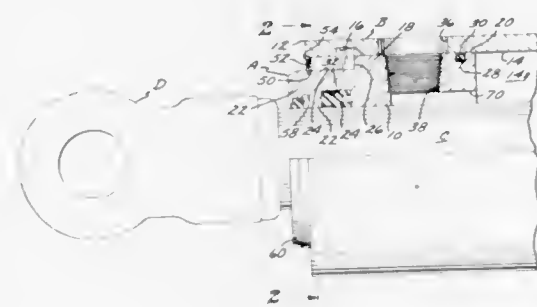
**SEGMENTED RETAINING RING ASSEMBLY**

Richard M. Densmore, 933 McNearney Avenue, South Gate, Calif.

Filed June 14, 1971, Ser. No. 152,660  
Int. Cl. F01b 29/00

U.S. Cl. 92—128

5 Claims



A segmented retaining ring assembly, in which each segment has a generally L-shaped transverse cross section. Each segment includes first and second normally disposed legs, with the first leg when disposed in a first circumferentially extending groove in a cylindrical shell defining an abutment surface, and the second leg when positioned in a second circum-

ferentially extending groove formed in an end piece assembly serving as an appendage for evenly distributing forces in a radial direction to the shell. The end piece assembly reduces the per unit stress on the shell as the former tends to separate from the latter due to a positive pressure within the confines of the shell. This reduction in per unit stress over prior art means of securing an end piece to a cylindrical shell is achieved by distributing the stresses over a greater area.

The segmented retaining ring assembly permits an end piece to be easily mounted on or removed from a cylinder shell, when the shell is of the above described structure.

3,722,375

**SYNTHETIC PLASTIC SLEEVE BEARING HAVING IMPROVED HEAT TRANSFER CHARACTERISTICS**

Ward Sievenpiper, Alden, N.Y., assignor to Automatic Sprinkler Corporation of America, Cleveland, Ohio

Filed April 7, 1969, Ser. No. 813,990

Int. Cl. F16j 15/18; F16c 27/02

U.S. Cl. 92—168

8 Claims



A sleeve bearing of synthetic plastic material wherein the inner and outer bearing surfaces are entirely of the plastic material. A heat conducting, reinforcing element, preferably a perforated metal sleeve, is fixed within the plastic bearing. In one embodiment, the metal sleeve is surrounded by the synthetic plastic material over its entire axial length and is exposed at one end to provide an axial heat transferring surface. In another embodiment, the sleeve is surrounded for a major portion of its length and exposed for a minor portion thereof to provide both radial and axial heat transferring surfaces.

3,722,376

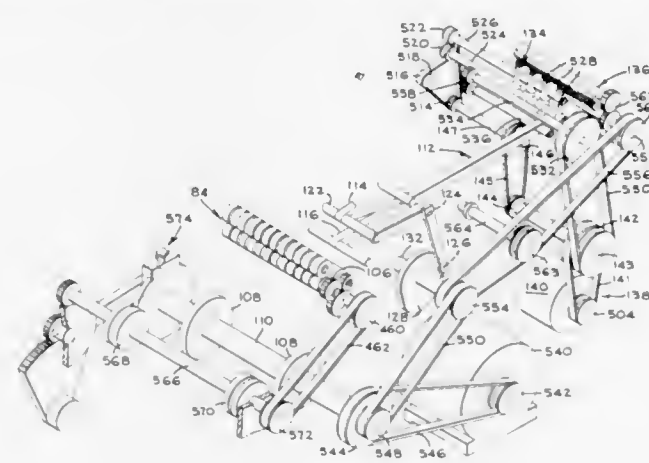
**BAG MACHINE**

Robert J. Wech, Green Bay, Wis., assignor to FMC Corporation, San Jose, Calif.

Division of Ser. No. 760,048, Sept. 16, 1968, Pat. No. 3,663,338. This application Sept. 1, 1971, Ser. No. 176,901  
Int. Cl. B31b 1/94

U.S. Cl. 93—8 R

5 Claims



The bag machine of the present disclosure is of the type which can produce bags made of various thermoplastic sheet

material and can be adapted to make side weld or bottom weld bags. The following description will, however, be confined to the production of side weld bags.

A roll of plastic web is mounted on an unwind stand and traverses a folding board constraining the web to fold along its longitudinal median or along a line spaced from and parallel to the longitudinal median in the event it is desired to produce wicketed bags having a lip with a pair of holes in which is inserted a U-shape wire called a wicket. Downstream of the folding board a gusseter is provided to produce a fold which permits greater expansion at the bottom of the bag. The folded and gusseted web thence comes under the influence of a reciprocating transversely disposed seal and cutter bar which divides the web, at longitudinally spaced intervals, to produce individual bags. The bags are then transported to a table which is provided with devices for arranging the bags into a stack.

3,722,377

**BAGS**

Arthur William Hayes, Port Elizabeth, Republic of South Africa, assignor to P &amp; B Agencies (Proprietary) Limited, Port Elizabeth, Cape Province, Republic of South Africa

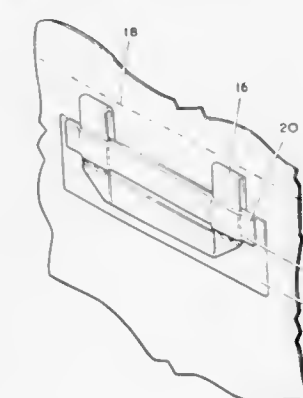
Filed Oct. 1, 1970, Ser. No. 77,152

Claims priority, application Republic of South Africa, Oct. 8, 1969, 69/7084

Int. Cl. B31b 49/04

U.S. Cl. 93—35 H

9 Claims



A method of making a plurality of carrier bags from a length of bag-making material including the steps of providing on the material at least one carrier handle for each bag in a position transverse to the longitudinal axis of the material, and cutting the material into predetermined lengths along lines adjacent to the handles, characterized in that prior to the cutting step each handle is folded back on itself away from the cutting line adjacent it, and releasably held in the folded-over position by means of strips weakly bonded across the folded over handles, or glue spots or inserts of malleable metal provided across the fold-lines.

3,722,378

**INSULATED TRAFFICKED SURFACES**

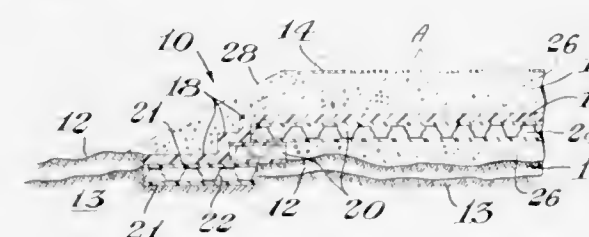
John S. Best, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 4, 1971, Ser. No. 112,635

Int. Cl. E01c 9/00

U.S. Cl. 404—31

21 Claims



Trafficked surfaces built on foundations which remain substantially undisturbed during seasonal climatic cycles, particu-

larly in permafrost and near permafrost regions where considerable disturbance of the ground beneath foundations is otherwise common. The foundations include combinations of insulation layers, heat sinks and/or thermal bleeds which dampen and prevent the cyclic climatic seasonal variations from affecting the earthen support under the foundations, in both cut and fill sections, and in embankments and backfills adjacent the sections.

3,722,379

**METHOD OF CONSTRUCTING AN EXPANSION GAP DEVICE AND LOST CASING FOR SUCH EXPANSION GAP**

Waldemar Koester, Forshach, Germany, assignor to Friedrich Mauer Soehne, Munich, Germany

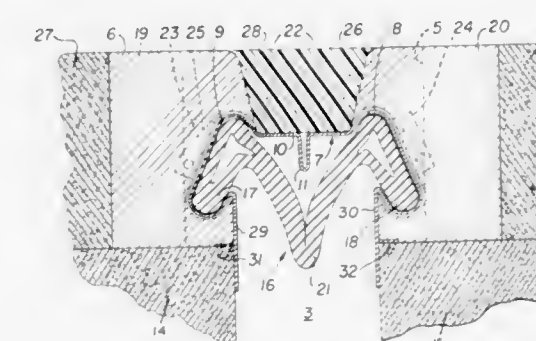
Filed March 10, 1971, Ser. No. 122,788

Claims priority, application Germany, Sept. 19, 1970, P 20 46 400.0

Int. Cl. E01c 11/10

U.S. Cl. 404—68

24 Claims



The present invention relates to a method of constructing an expansion gap between two structural members such as concrete slabs in roads or on bridges. First the concrete slabs are formed with a gap between two adjacent slabs whereupon a surface layer is applied to the slabs to cover the slabs as well as the gap. Thereafter, a recess is formed in the surface layer above the gap but wider than the gap. A lost casing is then inserted into the recess and gap and the space laterally adjacent to the lost casing is filled with a synthetic resin concrete. When the concrete is set, a cross portion of the lost casing which bridges the gap is removed, for example by sawing. An elastic sealing body or strip is inserted either as a unit with the lost casing or it is snapped into position, after said cross portion has been removed, in recesses formed by said lost casing in the synthetic resin concrete. The lost casing is a downwardly open profile with shaped side members for forming said recesses and interconnected by said cross portion.

3,722,380

**VIBRATING ROLLER EARTH COMPACTOR**

Benno Kaltenecker, Kurhausstr. 77-79, Hennef, Germany

Filed Dec. 15, 1970, Ser. No. 98,329

Claims priority, application Germany, Jan. 17, 1970, P 20 01 988.9

Int. Cl. E01c 19/28

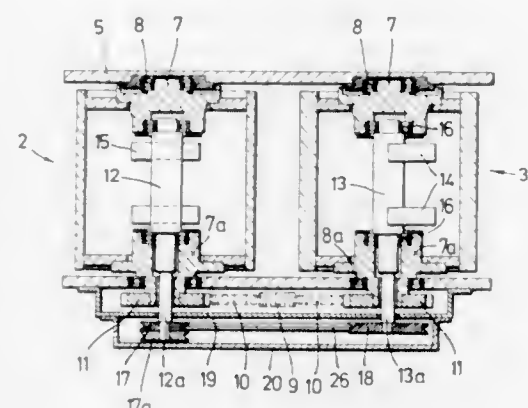
U.S. Cl. 404—117

25 Claims

An earth compactor of the roller type having first and second rollers one behind the other in the direction of travel of the compactor, a vibrator for vibrating the first roller at a first frequency, and a vibrator for vibrating the second roller at a second frequency. The vibrators take the form of eccentrically mounted weights on shafts rotatable at different speeds along the axes of the respective rollers. In one embodiment the eccentric weights and the rollers each have the same size and mass. In another embodiment the slower rotating eccentric weights have a greater mass than the more rapidly rotating weights. In an additional embodiment, the slower



rotating heavier weights vibrate a roller of greater mass than the roller vibrated by the smaller mass faster rotating weight. The rollers are mounted on a rigid frame for rotation and the effect of vibrating the rollers with vibrators operating at dif-



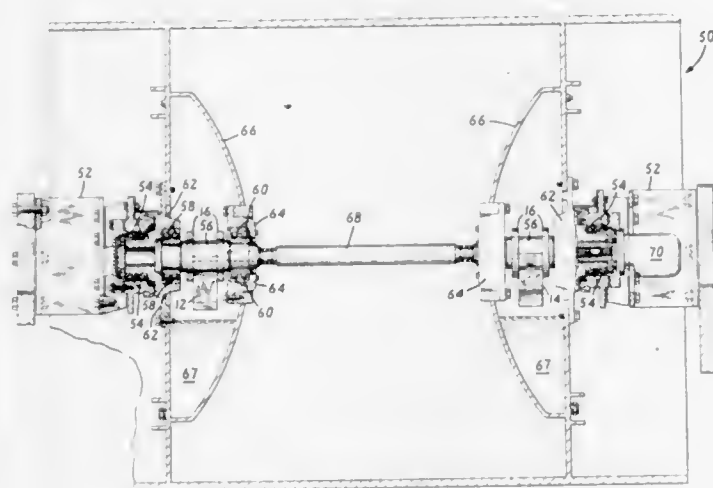
ferent constant frequencies is to vibrationally impact the rollers against the ground in a band of frequencies to insure uniform compaction of the ground regardless of variations in consistency of the earth to be compacted.

3,722,381

**DUAL AMPLITUDE VIBRATION GENERATOR**  
Eskil Tuneblom, Mount Arlington, N.J., assignor to Aktiebolaget Vibro-Verken, Solna, Sweden  
Filed March 4, 1971, Ser. No. 121,036  
Int. Cl. E01c 19/28

U.S. Cl. 404-117

2 Claims



A dual amplitude vibratory mechanism has a pair of eccentric weights mounted on a shaft in such a way that a different amplitude of vibration can be had simply by reversing rotation of the shaft. One of the weights is attached to the shaft and rotatable with it, while the other weight is mounted on the shaft but freely rotatable relative to it. Each weight has a pair of contact surfaces that cooperate with similar surfaces on the other weight, so that when the shaft rotates one of the surfaces on the fixed weight engages the cooperating surface on the free weight, which results in both weights revolving as a single composite eccentric weight, thereby causing the shaft to vibrate. When the shaft rotation is reversed, the other surface on the fixed weight engages its cooperating surface on the free weight, and the weights revolve in that direction as a single composite eccentric weight. The weights are shaped and dimensioned such that they have a combined center of gravity relative to the shaft when one set of surfaces engage each other that is different from the center of gravity when the other surfaces are in engagement, thereby resulting in a different amplitude of vibration when rotation of the shaft is reversed.

3,722,382

**DEVICE FOR OPERATING A FLASH CIRCUIT IN AN AUTOMATIC FLASH CAMERA**

Tatsuo Kobayashi, Kaizuka-shi; Maki Yamashita, Toyokawa-shi, and Hideo Takeuchi, Gamagori-shi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Minami-ku, Osaka, Japan

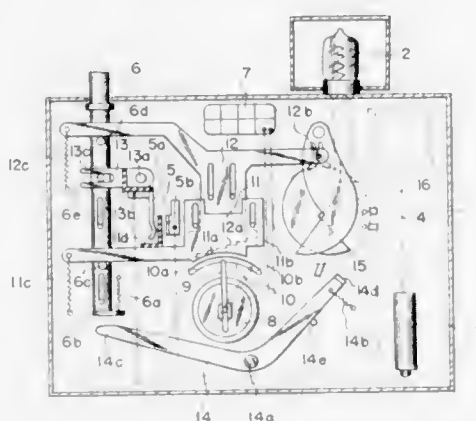
Filed Sept. 24, 1969, Ser. No. 860,749

Claims priority, application Japan, Sept. 30, 1968, 43/84216

Int. Cl. G03b 7/12

U.S. Cl. 95-10 C

3 Claims



A device which actuates a flash circuit in a camera whenever the brightness of the scene being photographed is too low for the taking of pictures by ambient illumination. A switch is arranged on the member which arrests the needle pointer of a conventional galvanometer in an exposure meter circuit.

3,722,383

**UNIQUE WASTE-FREE CAMERA SYSTEM OF THE SELF-DEVELOPING TYPE**

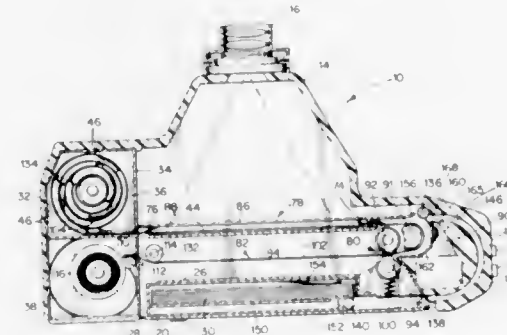
David Van Allen, Malden, Mass., and Frank W. Knight, Salem, N.H., assignors to Polaroid Corporation, Cambridge, Mass.

Filed June 30, 1970, Ser. No. 51,191

Int. Cl. G03b 17/52

U.S. Cl. 95-13

20 Claims



A self-developing type camera adapted to removably receive a two-section cassette. An elongated strip of photographic materials including alternately spaced photosensitive image-recording sheets and process fluid containing pod assemblies is initially housed within the first section of the cassette. An arrangement is provided in the camera for progressively withdrawing the elongated strip from the cassette's first section, sequentially advancing such strip through an exposure station, a processing station and an imbibition station of the camera, and then feeding the expended strip into the cassette's second section. Also, an arrangement is provided for mounting a plurality of discrete image-receiving sheets and sequentially positioning each such image-receiving sheet over an image-recording sheet after exposure of the latter and prior to its introduction into the camera's processing station. A door on the back of the camera facilitates the removal of each image-recording sheet after completion of the processing operation.

3,722,384

**AUTOMATIC COIN OR TOKEN OPERATED APPARATUS FOR TAKING AND DEVELOPING PHOTOGRAPHS**

Luigi Chiesa, Torino, Italy, assignor to Morenar S.A., Fribourg, Switzerland

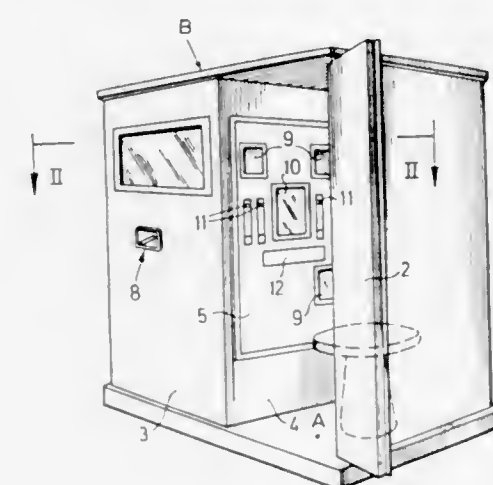
Filed May 21, 1971, Ser. No. 145,727

Claims priority, application Italy, May 23, 1970, 68776 A/70

Int. Cl. G03b 17/50

U.S. Cl. 95-14

9 Claims



A coin or token operated photographic apparatus is of the type having a cubicle for a person to be photographed and adapted to automatically develop, reverse and fix the photograph and then deliver it to the user. The apparatus comprises a cabinet adjacent to the cubicle, the cabinet containing developing, reversing and fixing baths arranged in a circle, and the pieces of photographic paper are put automatically into individual small baskets pivoted on the ends of radial arms supported by a hub plate, the hub plate being intermittently rotated, lowered and raised again to immerse each basket in turn in each bath.

3,722,385

**COMBINED FILM PACK AND STRIP METERING MECHANISM FOR ADVANCING FILM**

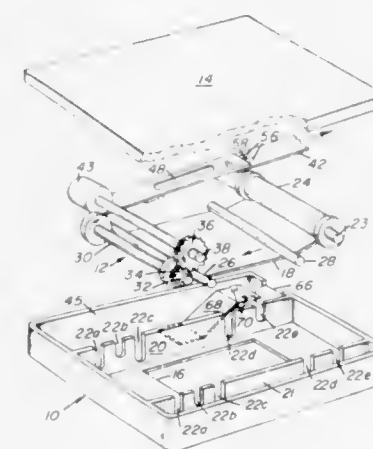
Leonard F. Kamp, Rochester, and William P. Ewald, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed June 24, 1971, Ser. No. 156,252

Int. Cl. G03b 19/04

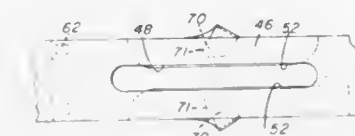
U.S. Cl. 95-22

19 Claims



A film pack having a strip metering mechanism for advancing a roll of film in predetermined increments or steps for use in a camera of the instant processing type which receives conventional film packs and does not have a film roll advancing facility. The metering mechanism comprises a metering strip coupled to a roll of film and having a leader extending out of

the camera which when manually pulled advances the film successive predetermined lengths or increments for exposure. The metering strip comprises interleaved pull tabs having their leading and trailing ends sealed together in overlapped relation. The film pack or camera is provided with a severing



mechanism for at least partially severing the seal between the trailing and leading ends of the pull tabs, and thereby sufficiently weakening the seal to cause the leading pull tab to detach from the succeeding pull tab at the instant that the film has been advanced to locate a predetermined increment of film in a correct exposure position.

3,722,386

**FRAME COUNTER FOR CAMERAS**

Koichi Furuta, Tokyo, Japan, assignor to Nippon Kogaku K.K., Chuo-ku, Tokyo, Japan

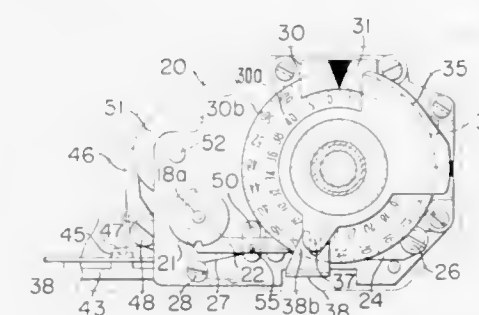
Filed May 3, 1971, Ser. No. 139,624

Claims priority, application Japan, June 9, 1970, 45/49139

Int. Cl. G03b 1/66

U.S. Cl. 95-31 DS

5 Claims



A frame counter for cameras of the type provided with an automatic return film counter, which can display the number of photographed frames for either ordinary film having a thickness of 0.14 mm, and thin film having a thickness of the order of 0.07 mm, thereby enabling any of these different films to be used with the cameras.

3,722,387

**CARTRIDGE ESPECIALLY FOR FILM**

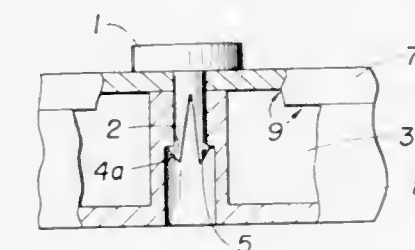
Bernhard Walther, Dessau, Germany, assignor to VEB Filmfabriken, Wolfen, Germany

Filed July 12, 1971, Ser. No. 161,808

Int. Cl. G03b 19/04

U.S. Cl. 95-31 R

5 Claims



The outer wall of a cartridge containing photographic film or the like is combined with, or assembled with the aid of, at least one indicator pin. The head of the pin is so shaped, or otherwise so arranged, as to cause selective responses, dependent on the contents of the cartridge. The pin structure is fastened by resilient action.



3,722,388

## SINGLE-LENS REFLEX CAMERA

Alfred Winkler, Munich, Germany, assignor to Agfa-Gevaert, Aktiengesellschaft, Leverkusen, Germany

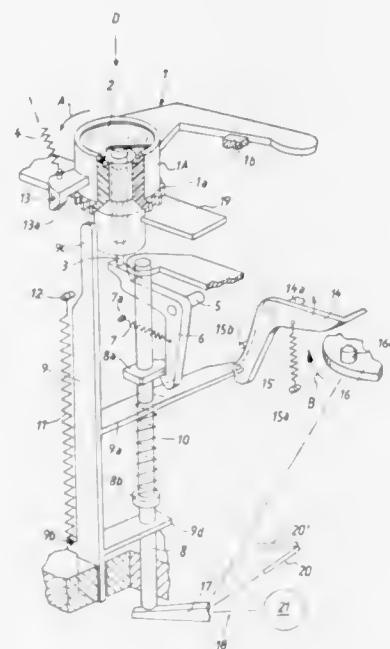
Filed Sept. 23, 1971, Ser. No. 182,984

Claims priority, application Germany, Sept. 25, 1970, P 20 47 363.4

Int. Cl. G03b 19/12

U.S. Cl. 95—31 AC

17 Claims



A single-lens reflex camera wherein the shutter can be opened and the mirror pivoted from the light reflecting position by an actuating mechanism which is operated in response to deformation of a diaphragm forming part of the release device. The diaphragm is mounted in the cylindrical hub of a rapid film transport lever and can operate the actuating mechanism by way of a pin which is coaxial with the lever, a blocking lever and a spring biased rod. The rod can be retracted to its normal position to allow for resetting of the actuating mechanism by a spring-biased member which is cocked by the film transport lever and uncocked by a cam upon completed operation of the actuating mechanism to thereby automatically return the rod to its normal position in which the rod is held by the blocking lever.

3,722,389

## FOLDING CAMERA

Peter F. Costa, Winthrop, and Edward H. Coughlan, Canton, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed May 10, 1971, Ser. No. 141,554

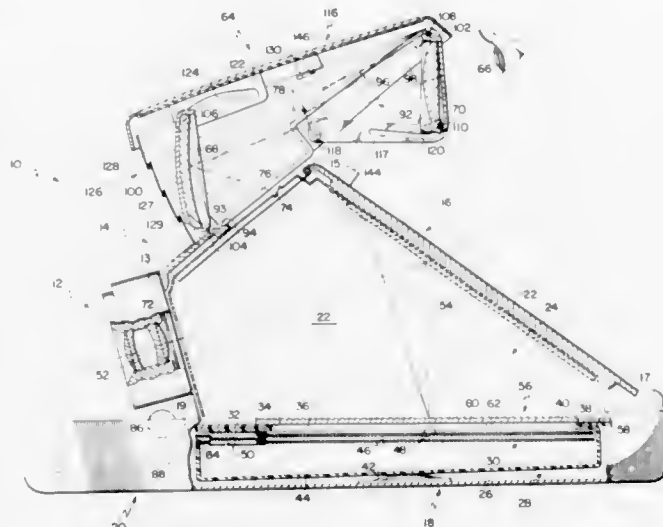
Int. Cl. G03b 17/04

U.S. Cl. 95—39

39 Claims

A compact folding camera including a viewing device for framing a scene to be photographed. The viewing device is mounted on one of a plurality of housing sections coupled for movement between folded and extended positions, and includes first and second optical elements, operatively associable for providing an image of the scene. The optical elements are mounted for movement relative to one another between operative viewing positions and inoperative storage positions. At least one of the optical elements is adapted to be moved between its inoperative and operative positions in response to movement of the housing sections between the folded and extended positions.

tended positions. A collapsible shade cooperates with other components of the viewing device to reduce the admission of



ambient light between the first and second optical elements when they are located in their respective operative viewing positions.

3,722,390

## EXTENSION TUBE FOR PHOTOGRAPHIC LENSES

Werner Schlapp, Asslar, and Otto Boss, Naunheim, both of Germany, assignors to Ernst Leitz GmbH, Wetzlar, Germany

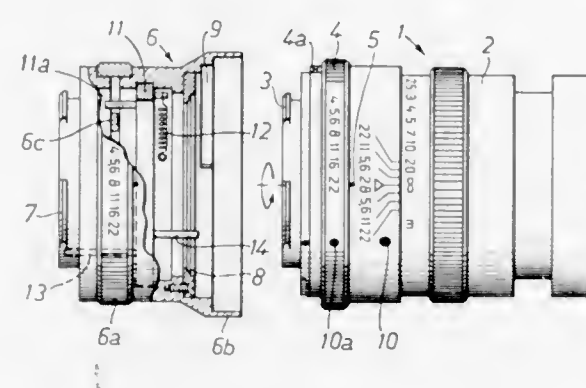
Filed Feb. 15, 1972, Ser. No. 226,467

Claims priority, application Germany, Feb. 25, 1971, P 71 70 072.9

Int. Cl. G03b 3/00

U.S. Cl. 95—45

3 Claims



An extension tube for a photographic lens having a diaphragm preselection ring and a diaphragm blade ring resiliently urged into the position of the smallest diaphragm aperture. The tube is provided with a preselection ring and with an inner ring of its own. Interengaging means on the lens and on the extension tube keep the lens preselection ring arrested in its position of the smallest diaphragm aperture when the lens is mounted on the extension tube. The extension tube inner ring is provided with a first stud on its front and with a second stud on its rear, both studs extending in axial direction. The front stud engages the lens diaphragm blade ring and the rear stud engages a sector gear at one end driving a retarder gear coaxial with a gear of an escape-ment having an anchor jointly functioning as the retarder. The driving lever is pivotally mounted intermediate a free end of the operating lever and the sector gear thereon. A drive spring

3,722,391

## ACTUATING MECHANISM FOR AN ELECTRICALLY CONTROLLED SHUTTER

Kiyoshi Kitai, Tokyo, Japan, assignor to Kabushiki Kaisha Hattori Tokeiten, Tokyo, Japan

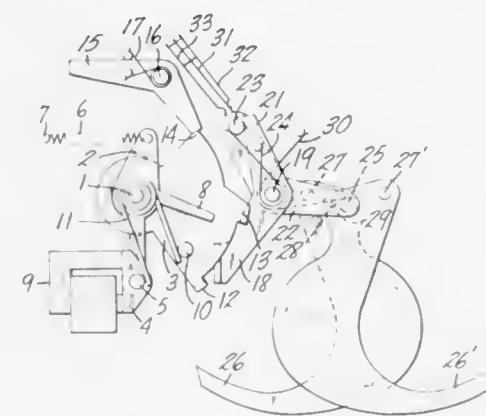
Filed April 30, 1971, Ser. No. 139,128

Claims priority, application Japan, May 1, 1970, 45/36855

Int. Cl. G03b 7/08, 9/08, 9/58

U.S. Cl. 95—53 EB

5 Claims



A camera and shutter in which the shutter exposure time is controlled by a control circuit and the shutter blades are actuated to an open position from a closed position back to the closed position by a mechanism actuated in one direction of movement. The mechanism is reversed in direction only when the shutter is cocked. Two springs cooperate in controlling the movement of a driving plate in one direction. One spring rotates the plate and the other rotates an intermediate control member that stops the driving plate in a shutter-opening position and then is released by the time delay control circuitry of the control circuit so that it allows the driving plate to move under control of its spring in the same direction in closing the shutter that it travelled in opening the shutter.

3,722,392

## CAMERA SHUTTER WITH NOVEL OPERATING MECHANISM

Kiyoshi Kitai, Tokyo, Japan, assignor to Kabushiki Kaisha Hattori Tokeiten, Tokyo, Japan

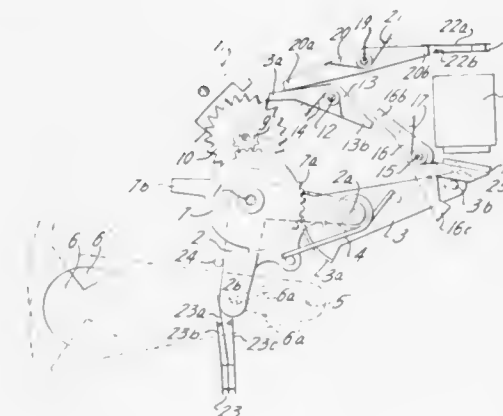
Filed June 7, 1971, Ser. No. 150,612

Claims priority, application Japan, June 5, 1970, 45/48047

Int. Cl. G03b 7/08

U.S. Cl. 95—62

10 Claims



A camera shutter operating mechanism controlled by a light-responsive control circuit and having a retarder retarding the opening of the shutter blades by a blade-operating lever driven by a driving lever and configured as a sector gear at one end driving a retarder gear coaxial with a gear of an escape-ment having an anchor jointly functioning as the retarder. The driving lever is pivotally mounted intermediate a free end of the operating lever and the sector gear thereon. A drive spring

biases the driving lever in a direction for effecting opening and closing of the shutter blades. A pawl is attracted by an electromagnet of the control circuit and this pawl restrains the free end of the driving lever during part of the period of rotation of the driving lever while the shutter blades are being opened and thereafter the driving lever rotates the shutter blade-operating lever in a direction for closing the shutter blades quickly free of the retarding of the retarder when the electromagnet is de-energized by the control circuit after termination of an exposure, the exposure time of which is determined automatically as a function of the brightness of the field or object being photographed.

3,722,393

## PORTABLE CAMERA SUPPORT DEVICE WITH AIMING STRUCTURE

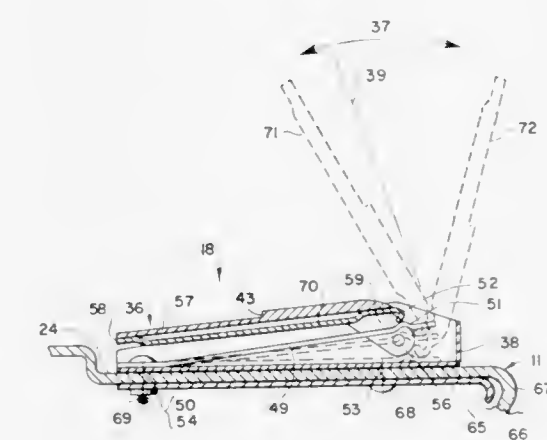
Nolan A. Drevitch, Norwood, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 28, 1970, Ser. No. 101,595

Int. Cl. G03b 17/56

U.S. Cl. 95—86

7 Claims



Support for removably mounting a portable camera. Aiming movement structure for the camera provided in the support about two orthogonally disposed axes. At rest location and situation for the camera on the support providing free use of both hands by camera operator. Support collapsible to storage when not in use. Suitcase storage for camera. Suitcase with built-in identification photograph treatment capability: timing, laminating, cutting, sealing. Console presentation for operation of these capabilities. At rest situation of the camera favorable to film loading and removal.

3,722,394

## DEVELOPING AND WASHING TRAY

Paul J. Sebastian, 2072 Pine Drive, Lancaster, Pa.

Filed Jan. 11, 1972, Ser. No. 217,027

Int. Cl. G03d 1/04

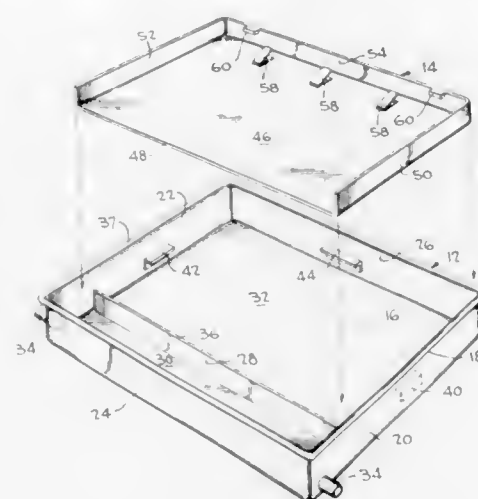
U.S. Cl. 95—95

12 Claims

A developing and washing tray assembly comprising a receptacle having a peripheral wall and an intermediate partition wall defining below the peripheral wall adjacent compartments, one containing a fixing or developing solution, and the other compartment continuously draining or holding a top tray element in a position of non-use. The top tray being three-sided and normally supported in an overlying position to the



compartment containing the solution when in use with the open side of the top tray draining into the drainage compartment and being inclined to continuously drain therein. The



top tray including a handle to facilitate lifting, and a clamp to secure a sheet element being rinsed. The overlying top tray substantially preventing dilution of the developing or fixing solution as the treated sheet element is being rinsed.

3,722,395

**COMBINED INTAKE AND EXHAUST VENTILATOR**  
Germain Courchesne, 167 Chemin du Golf, Drummondville, Quebec, Canada

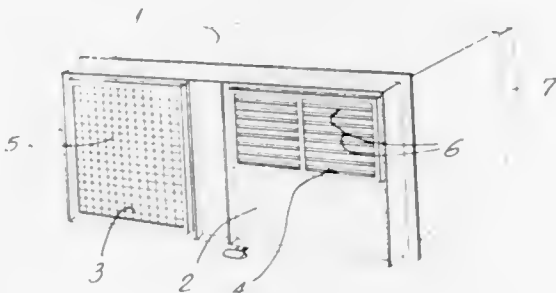
Filed July 9, 1968, Ser. No. 743,423

Claims priority, application Canada, Aug. 3, 1967, 997058

Int. Cl. F24f 13/04

U.S. Cl. 98—33

3 Claims



This invention concerns a combined intake and exhaust ventilator in which any proportion of exhaust air may be recirculated into the room.

3,722,396

**SYSTEM FOR THE VENTILATION OF BUILDINGS**  
Jurgen Eberhardt Peill; Alf Gerritse; Miroslav S. Osmera, all of Canning, N.S., Canada, and Christian Karmark Andersen, Naestved, Denmark, assignors to Nordisk Ventilator Co. Aktieselskab, Naestved, Denmark

Filed Nov. 9, 1971, Ser. No. 197,059

Claims priority, application Canada, Nov. 16, 1970, 98,212

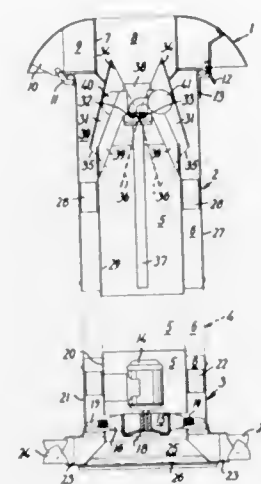
Int. Cl. F24f 7/06

U.S. Cl. 98—33 R

10 Claims

A system for the ventilation of buildings, comprising vertical and concentric exhaust and injection ducts extending from a fan section located in the room to be vented through a damper section comprising adjustable dampers for controlling the ventilation, to a roof hood comprising an outer wall and a partition dividing said roof hood into two separate outlet spaces, one for each duct, said outer wall and partition being

made of a plastic material and being proportioned so as to be packable together with said fan section and damper section, respectively, when shipping said ventilation system. The roof hood may be manufactured by pouring at least said partition from a plastic foam.



3,722,397

**HOPPER DUST HOOD**

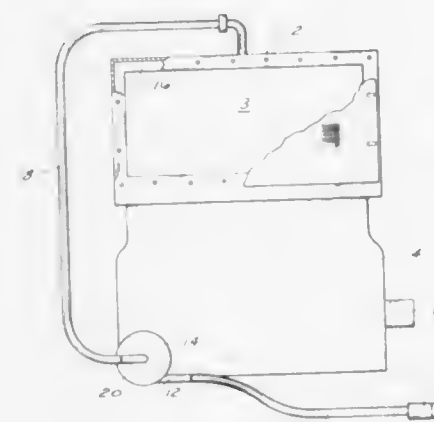
Richard L. Kempthorne, 5701 Bayview Dr., Ft. Lauderdale, Fla.

Filed April 19, 1971, Ser. No. 136,277

Int. Cl. B65g 3/18

U.S. Cl. 98—115 R

3 Claims



A dust removal hood for a portable hopper that receives fibers to be agitated, and fed in a generally uniform mixture through the conduit to a spray nozzle. The dust removal hood collects and transfers the rising fiber dust from the hood area to the spray nozzle. The hood includes a trough or conduit along the top of the hood adjacent the hood opening. A conduit is connected between the hood trough and the intake of the hopper blower. The hopper blower transfers the dust through a transfer hose leading from the hopper to the spray nozzle in order to eliminate dust in the atmosphere and to utilize the fiber dust by discharging the fiber dust into the spray nozzle.

3,722,398

**APPARATUS FOR PRODUCING CEREAL BISCUITS**

James D. Freye, Cary, and Jeffrey G. Poat, Schaumburg, both of Ill., assignors to The Quaker Oats Company, Chicago, Ill.

Filed Feb. 22, 1971, Ser. No. 117,292

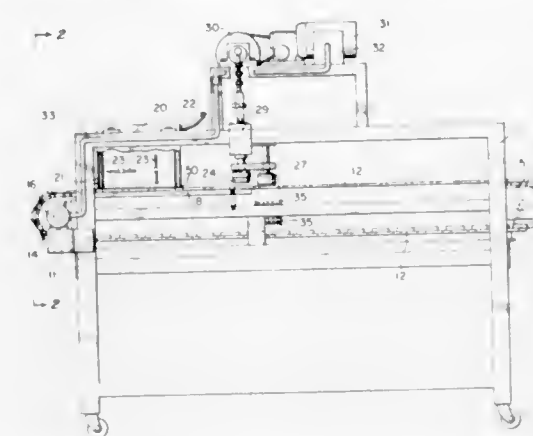
Int. Cl. A23b 9/00; A23l 1/10

U.S. Cl. 425—204

1 Claim

An apparatus is disclosed for producing cereal biscuits or the like. The apparatus includes an endless conveyor comprised of a plurality of equal sized plates having openings from

top to bottom thereof and which move over a platform thus forming open top containers with means included for filling



plurality of expandable taco shell forming means for holding the tortillas during cooking, spaced guide members disposed within the cooking vessel and arranged so as to frictionally engage the taco shell forming means, a conveyor for moving taco shell forming means between the spaced guide members and means cooperating with the taco shell forming means to free the cooked taco shell therefrom.

3,722,401

**APPARATUS FOR PROCESSING EDIBLE FOODSTUFFS**  
Arthur R. Davidson, Lake Oswego, Oreg.; John E. Haubner, Vancouver, and George A. White, Quincy, both of Wash., assignors to Lamb-Weston, Inc., Portland, Oreg.

Division of Ser. No. 730,087, May 17, 1968, Pat. No.

3,642,495. This application Sept. 13, 1971, Ser. No. 180,046

Int. Cl. A47j 37/12

U.S. Cl. 99—407

7 Claims

the thus formed open top containers, compressing the filling therein, and removing the compressed mixture from the openings.

3,722,399

**POPCORN POPPER HAVING AUTOMATIC BUTTERING MEANS**

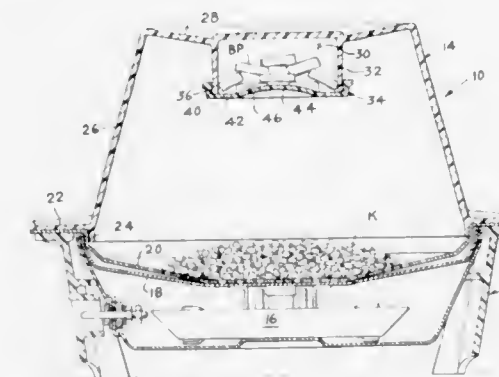
Joseph E. Cole, Cheshire, Conn., assignor to Scovill Manufacturing Company, Waterbury, Conn.

Filed April 23, 1971, Ser. No. 136,892

Int. Cl. A23l 1/18

U.S. Cl. 99—323.8

4 Claims



Popcorn popper has cover with butter-receiving support. Temperature at end of popping melts butter which passes through apertures in support to drip over popped corn.

An apparatus for processing edible foodstuffs having a cylindrical casing and a screw conveyor coaxially disposed within the casing for transporting a food product from one end to a point adjacent the other. A vertical discharge flue is positioned adjacent the discharge end of the casing and is in communication with an opening at the bottom thereof. Heat-exchanging liquid is introduced into the casing through orifices in the bottom to heat or cool the product, as the case may be, and in an amount sufficient to fill the casing to a level above that of the screw conveyor. The liquid entrains the product at a point adjacent the discharge end of the casing causing it to flow through the bottom opening thereof and vertically up through the discharge flue from which it passes over a weir at the top thereof at a level substantially equal to the elevation of the liquid in the casing. The liquid assisted transport thereby achieves elevation of the product without risk of damage thereto.

3,722,402

**BARBECUE GRIDDLE**

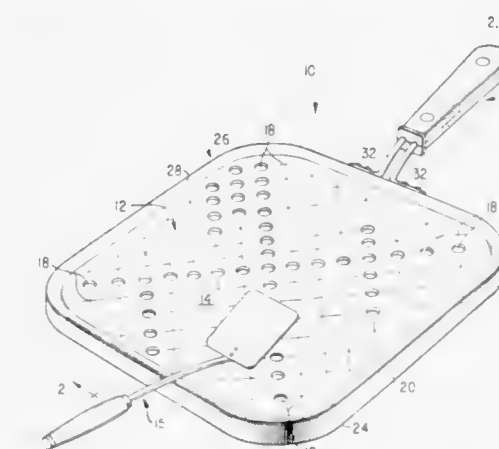
Elizabeth Emmett Plumley, Richmond, Va., assignor to David A. Brown, Richmond, Va., a part interest

Filed Nov. 18, 1969, Ser. No. 877,765

Int. Cl. A23b 1/04

U.S. Cl. 99—467

9 Claims



3,722,400

**TACO SHELL FRYER**

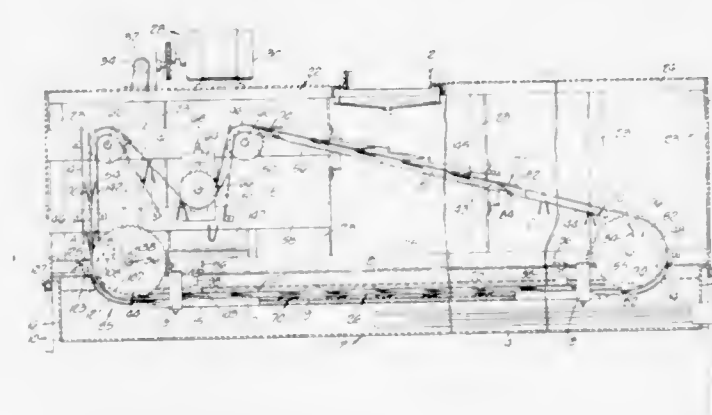
James A. Jimenez, 6252 North Hart, Temple City, Calif.

Filed July 16, 1970, Ser. No. 55,486

Int. Cl. A47j 37/12

U.S. Cl. 99—353

13 Claims



An apparatus for preparing taco shells from uncooked tortillas comprising a cooking vessel for containing cooking oil, a

like and including a heat conductive plate with an upper cooking



ing surface. A plurality of smoking apertures are spaced generally evenly about the plate and extend therethrough from the upper cooking surface to the lower plate surface. A downwardly extending flange defines, together with the lower plate surface, a smoke collection chamber for collecting smoke flowing upwardly from the fire and for directing the collected smoke upwardly through the smoking apertures so as to overlie the cooking surface. The outer periphery of the cooking surface is provided with an upwardly extending retainer means that inhibits grease from flowing over the side of the cooking surface and also serves to prevent food from freely sliding off the cooking surface. A suitable handle may be provided for the griddle.

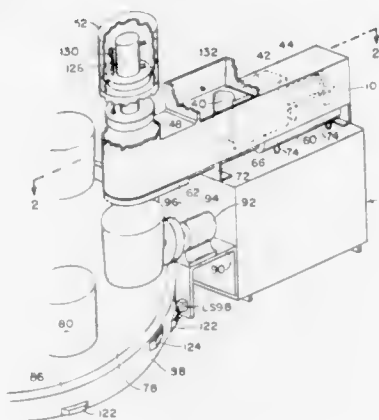
3,722,403

## COMPACTING APPARATUS

Joseph F. Longo, New Canaan, Conn., assignor to International Dynetics Corporation, Norwalk, Conn.  
Filed Oct. 29, 1969, Ser. No. 872,162  
Int. Cl. B30b 15/16

U.S. Cl. 100—49

12 Claims



A compactor comprising a compression chamber, ram means for compressing a slug of material, expulsion means for expelling the slug from the chamber and control means for maintaining continuous sequential operation.

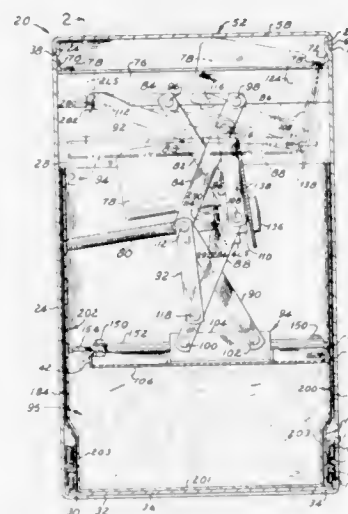
3,722,404

## REFUSE COMPACTOR

Jerry W. Moon, 2735 Alveston, Bloomfield Hills, Mich.  
Division of Ser. No. 148,879, June 1, 1971. This application  
Nov. 24, 1971, Ser. No. 201,839  
Int. Cl. B30b 15/14

U.S. Cl. 100—52

16 Claims



A refuse compactor including a receptacle removably contained within a cabinet wherein refuse is compacted by a ram

to a fraction of its normal volume. The refuse is compacted within a specially constructed bag supported by the receptacle and cabinet, permitting the compacted refuse to be removed as a wrapped package for convenient and tidy disposal. The ram includes a refuse-compressing platen actuated through a toggle linkage to which force is applied by a single screw driven by an electric motor coupled to the screw through a reduction drive. The screw and its motor drive train are carried as a unit by the toggle linkage and move bodily therewith to provide a very compact and high ratio force multiplication system of reliable and inexpensive construction. Additional features relating to control circuitry, a safety lock, and bag, receptacle and drawer construction are also disclosed.

3,722,405

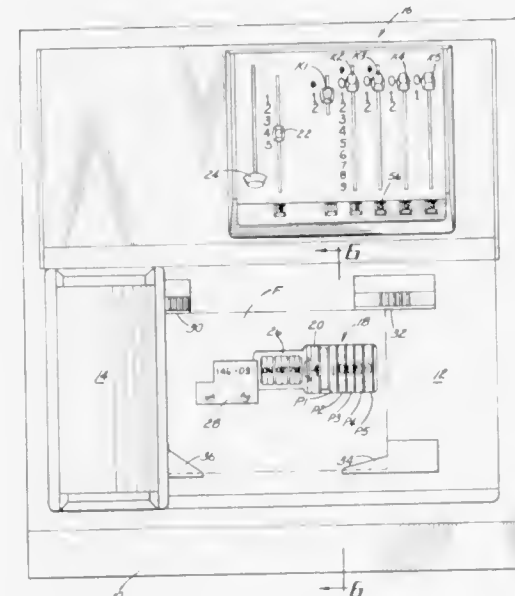
## PRINT WHEEL SETTING AND CONTROL MEANS IN DATA RECORDERS

Donald T. Mahoney, Willoughby, and John A. Maul, Lyndhurst, both of Ohio, assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Sept. 30, 1970, Ser. No. 76,938  
Int. Cl. B41j 29/58; B41f 3/04

U.S. Cl. 101—45

3 Claims



A printing machine for imprinting forms with variable data from manually settable print wheels. The machine is provided with a bed for retaining the print wheels and the form, and includes a platen carriage to perform a printing cycle. The print wheels are selectively positioned by keyset levers movable from a reference datum position for rotating each print wheel to a desired peripheral setting. The machine is intended for printing numerical amounts; usually money values for check or money order imprinting. The number value to which each wheel may be set makes a theoretical setting greater than an arbitrary value maximum. In the example given herein, the print wheels have numbers which could be set up to print a value of 299.99 but for the advantages of this invention which limits the value to 200.00. Therefore, the levers, wheels, and associated structure cooperates to lock one another against further rotary positioning of the wheels to greater values whenever a given maximum is reached.

Secondly, if the keyset levers are not restored to their reference zero position after an imprint, a second operation is prevented.

3,722,406

## VAPOR THERMOGRAPHIC DUPLICATING PROCESS

Doyle L. Strong, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

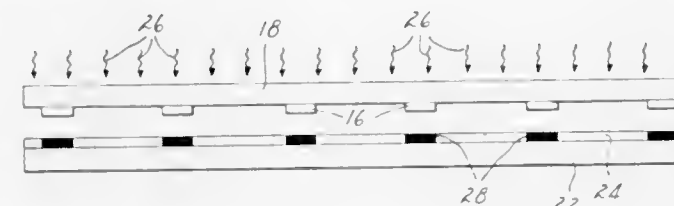
Continuation of Ser. No. 781,195, Dec. 4, 1968, abandoned.

This application July 12, 1971, Ser. No. 161,850

Int. Cl. B41m 5/00; B41c 1/06; B41n 5/00

U.S. Cl. 101—469

6 Claims



Heat activated duplicating process involving the steps of forming a coating on localized areas of a master sheet by transfer thereto from a transfer sheet, the coating being in the form of a discontinuous layer containing light colored normally stably solid, vaporizable first reactive material together with a particulate material and a minor amount of binder, placing the master sheet against a first receptor copy sheet which contains a second reactant material which coreacts with said first reactant to form a visible image, and subjecting the combined sheets to heat to vapor transfer a portion of the first reactant material, whereby an image is formed on the copy sheet, and repeating the heating step with additional receptor copy sheets to form additional copies.

3,722,407

## DELAY ARMING DEVICE FOR SUBMARINE LAID MINES

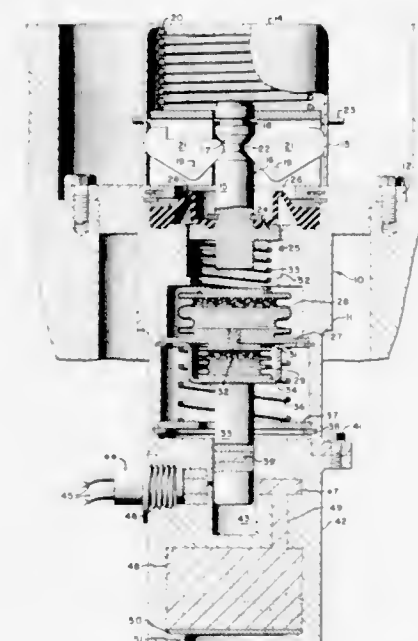
Gordon L. Fogal, and Thomas W. Kennedy, both of Wayne, Pa., assignors to The United States of America as represented by the Secretary of the Navy

Filed June 28, 1957, Ser. No. 668,834

Int. Cl. F42c 15/10

U.S. Cl. 102—16

7 Claims



1. An arming device for a mine comprising a hydrostat, a first oil filled bellows movable by the hydrostat, a second oil filled bellows of less cross-sectional area than said first bellows, a means including baffle having a porous element interconnecting the interior of said first and second bellows to delay operation of the second bellows as the hydrostat operates, said second bellows movable at a faster rate and through a greater distance than said first bellows, a plunger actuable by the second bellows from an initial position of rest to an armed position, and an explosive train arranged transversely within said plunger and movable from a safe position

to an armed position as the plunger is moved to the armed position.

3,722,408

## ANTI-SWIMMER CHARGE

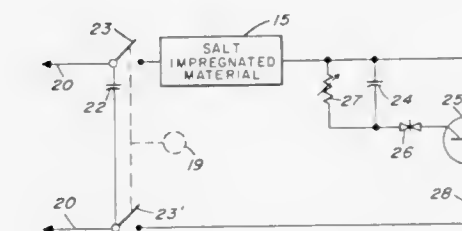
John O. Fox, and Thomas H. Rosling, both of Arlington, Va., assignors to The United States of America as represented by the Secretary of the Navy

Filed Feb. 20, 1970, Ser. No. 18,028

Int. Cl. F42c 3/00, 15/38

U.S. Cl. 102—16

3 Claims



An anti-swimmer explosive charge device having a capacitor for energy storage and a water activated switch. The water activated switch consists of two terminals separated by a salt impregnated insulator. When the insulator becomes wet it conducts current from the energy source to a timing circuit.

3,722,409

## MINE FIRING CONTROL APPARATUS

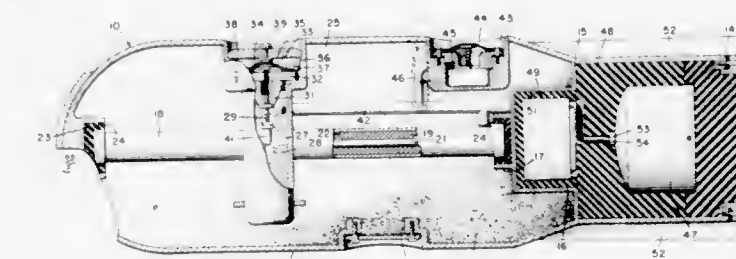
Ralph W. Mann, and Frank B. Johnson, both of Washington, D.C., assignors to the United States of America as represented by the Secretary of the Navy

Filed Aug. 28, 1943, Ser. No. 3,983

Int. Cl. F42b 22/30

U.S. Cl. 102—18

22 Claims



1. In a submarine mine for damaging a vessel, the combination of: a mine, electrical means responsive to a condition having a variable sign and caused by a vessel in motion for producing signals of opposite polarities in accordance with the sign of said condition, a pair of energy storage means, means controlled by said signals for selectively supplying said energy storage means with energy in accordance with the polarities of said signals, and means controlled by one of said energy storage means for firing the mine when the pair of energy storage means are successively supplied with energy within a predetermined period of time.

3,722,410

## METHOD OF PETONATING AN AMMONIUM NITRATE-FUEL OIL COMPOSITION WITH A NUMBER 6 CAP

Gerald L. Hurst, Dallas, Tex., assignor to Kinetics International Corporation, Dallas, Tex.

Filed Oct. 8, 1970, Ser. No. 79,096

Int. Cl. F42d 1/00

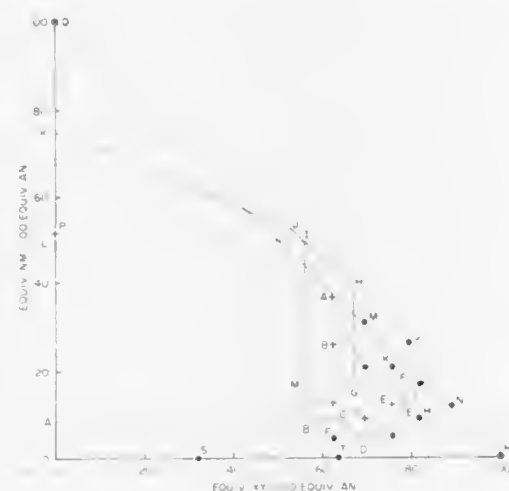
U.S. Cl. 102—23

15 Claims

An economical and effective explosive composition is manufactured by combining appropriate proportions of ac-



tivated ammonium nitrate, a fuel and preferably a sensitizer. The preferred fuel is a liquid hydrocarbon derivative or a liquid or solid hydrocarbon derivative which is soluble in the sensitizer and which has a fuel value greater than that of the sensitizer. The preferred sensitizers are nitroalkane, or dinitroaromatic compounds most preferably nitromethane. The explosive composition is made more effective through an



activation procedure upon the ammonium nitrate. The ammonium nitrate utilized with the present invention is in the form of prills, porous spherical pellets. These prills can be activated by adding a small amount of water to the prills, thoroughly mixing the water so that it is all absorbed, heating the prills to an elevated temperature, evaporating the water from the prills, and then preferably cooling the prills.

3,722,411

## PLASTIC SHOTSHELL WITH SEALING RINGS

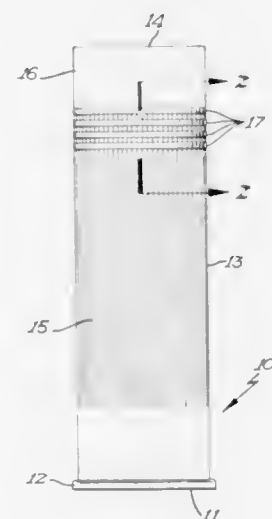
George L. Herter, Waseca, Minn., assignor to Herter's Inc., Waseca, Minn.

Filed Dec. 21, 1970, Ser. No. 100,043

Int. Cl. F42b 5/30

U.S. Cl. 102—43 P

8 Claims



A plastic shotshell case to be loaded with powder and shot charges and wads separating the shot and powder; the plastic case having peripheral ribs or rings at the exterior adjacent the open mouth of the case and effectively sealing the case wall against the shotshell chamber in the barrel of the shotgun; the exterior peripheral surface of the case wall being smooth at a location forwardly of the sealing ribs.

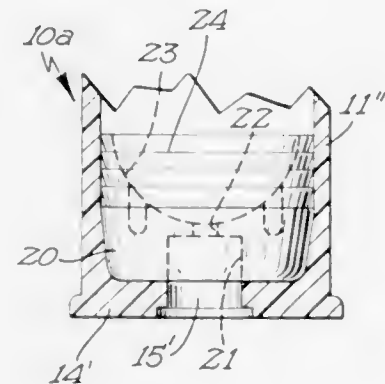
3,722,412  
ALL POLYETHYLENE SHOTSHELL CASE  
George L. Herter, Waseca, Minn., assignor to Herter's Inc., Waseca, Minn.

Filed Jan. 11, 1971, Ser. No. 105,410

Int. Cl. F42b 5/30

U.S. Cl. 102—43 P

1 Claim



A shotshell case entirely of injection molded high molecular, high density polyethylene. The case having a base wall with a base wad thereon in overlying position, or having an integral base wad and base wall.

3,722,413

## ARRANGEMENT IN ROCKETS

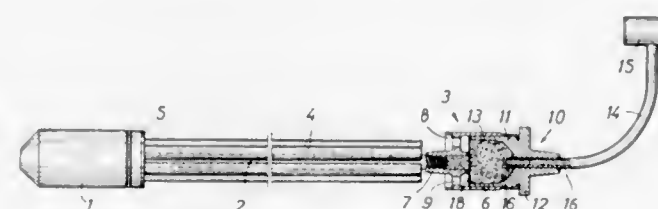
Bjarne Narvesen, and Edvard Troen, both of Raufoss, Norway

Filed Sept. 11, 1970, Ser. No. 71,611

Int. Cl. F42b 13/22

U.S. Cl. 102—49.2

1 Claim



A rocket comprises a head and a firing mechanism including a rod to which a nozzle is secured, a plurality of propellant sticks surrounding the rod and anchored to the head, and the nozzle consisting of a ring and a central hub joined to the ring by a web which defines a number of circumferentially spaced bores, the ring having an rearwardly elongated portion forming at the back of the web an elongated cylindrical space and igniter means mounted in said space.

3,722,414

## HIGH VELOCITY FLIGHT STABILIZED FRAGMENTATION DEVICE

James C. Talley, Dahlgren, Va., assignor to The United States of America as represented by the Secretary of the Navy

Filed Jan. 13, 1966, Ser. No. 520,836

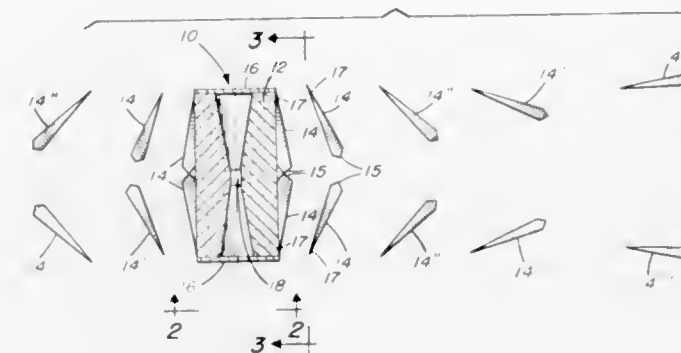
Int. Cl. F42b 13/48, 23/12, 25/00

U.S. Cl. 102—67

3 Claims

There is disclosed an explosive controlled fragmentation device for obtaining high velocity attitude controlled projec-

tion of a plurality of darts. This is accomplished by controlling the thickness of the explosive adjacent the darts so as to obtain



the impulse necessary to turn the darts into a blunt-end forward flight attitude.

3,722,415

## ELECTROSTATIC CONTACT FUZE

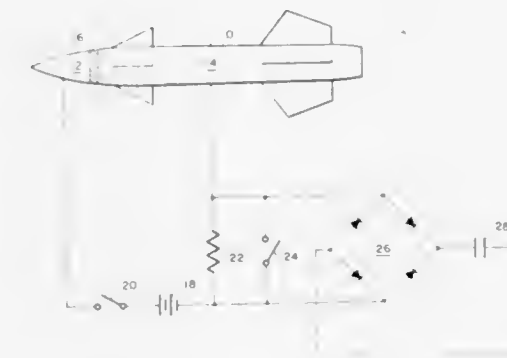
Wilbur B. Lunt, Arlington, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed April 19, 1963, Ser. No. 274,901

Int. Cl. F42c 11/00, 19/06

U.S. Cl. 102—70.2 R

1 Claim



1. A contact fuzing system for use in ordnance which will operate at first contact with a target and does not depend upon deformation or deceleration of the weapon carrying the fuzing system for activation comprising:

- a guided missile having first and second electrical conducting areas being separated by a dielectric material thereby forming two plates of a capacitor,
- an electric power source connected across said first and second conducting areas for charging said areas to a potential inversely proportional to their respective areas,
- a load resistor connected in series with said power source and said conducting areas for producing an output signal voltage when one of said conducting areas is discharged by contacting a target,
- full-wave rectifying circuit means connected across said load resistor for producing a constant polarity output signal when either of said conducting areas is discharged.

3,722,416

## FUZE FUNCTION SELECTION AND FIRING SYSTEM

Wilbur B. Lunt, Arlington, and Maurice H. Brown, Riverside, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed March 12, 1964, Ser. No. 352,429

Int. Cl. F44c 11/00; F42c 13/00, 15/40

U.S. Cl. 102—70.2 R

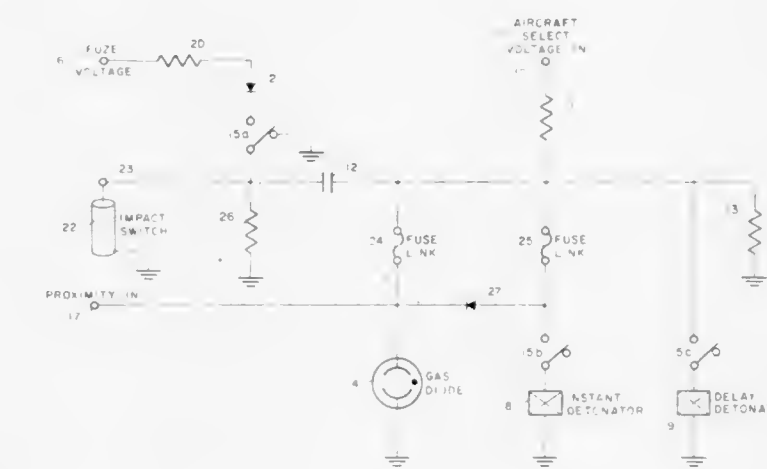
4 Claims

1. In a selective multi-mode fuze firing circuit for a missile:

- a select voltage input terminal means for accepting any one of three select voltages for selecting any one of prox-

imity, impact-instantaneous and impact-delay modes of operation,

- a fuze voltage supply input,
- a proximity signal input,
- an instantaneous detonation means,
- a delay detonation means,
- an impact fuzing means,
- a two-position three-section switch means,
- first and second fuse links,
- a gas diode which will ignite in either direction at a specific potential,
- a firing capacitor,
- the first section being closed to ground and the second and third sections being open in the first position of said three-section switch means,
- first and second charging resistors,
- one side of each of said fuse links, firing capacitor and one side of the third section of said three-section switch means being connected to the select voltage input terminal through said first charging resistor,
- said delay detonation means being connected between the other side of the third section of said three-section switch means and ground,
- first and second diode rectifiers,
- first and second bleeder resistors each connected to a respective opposite side of said firing capacitor,
- the other side of said first fuse link being connected to



said proximity signal input, the cathode of said diode rectifier and one side of said gas diode; the other side of said gas diode being connected to ground,

- the other side of said second fuse link being connected to the anode of said diode rectifier and one side of the second section of said three-section switch means,
- said instant detonation means being connected between the other side of the second section of said three-section switch means and ground,
- said impact fuzing means being connected between the other side of said firing capacitor and ground,
- one side of the first section of said three-section switch means being connected to the cathode of said second diode rectifier,
- the other side of the first section of said three-section switch means being connected to the other side of said firing capacitor for connecting said capacitor to ground when the switch means is in a first position and to the cathode of said second diode rectifier when in its second position,
- said second charging resistor being connected between the anode of said second rectifier and said fuze voltage supply input,
- whereby each of any of said three select voltages applied to said select voltage input terminal will select a particular one of any of proximity, impact-delay and impact-instantaneous modes of operation.







3,722,425

# **METHODS OF SORTING OR SELECTING ARTICLES ON A CONVEYOR PATH AND APPARATUS USED THEREFOR**

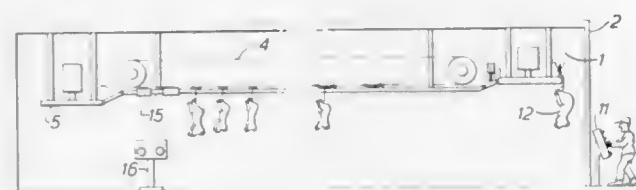
Colin James Allen, 1 Turner St., Dunedin, New Zealand  
Filed Sept. 8, 1970, Ser. No. 70,457

Claims priority, application New Zealand, Sept. 8, 1969, 157715

Int. Cl. B65g 43/08

U.S. Cl. 104—88

5 Claims



The sorting and selecting of articles on a conveyor path in which a code carrying means is associated with an article moving along the conveyor path, a selected code on the code carrying means is set, with the code carrying means and articles associated therewith being moved along the conveyor path until the pre-set code on the code carrying means activates automatically a discharge means to discharge the article associated with the code carrying means from the conveyor path at the preselected position.

3,722,426

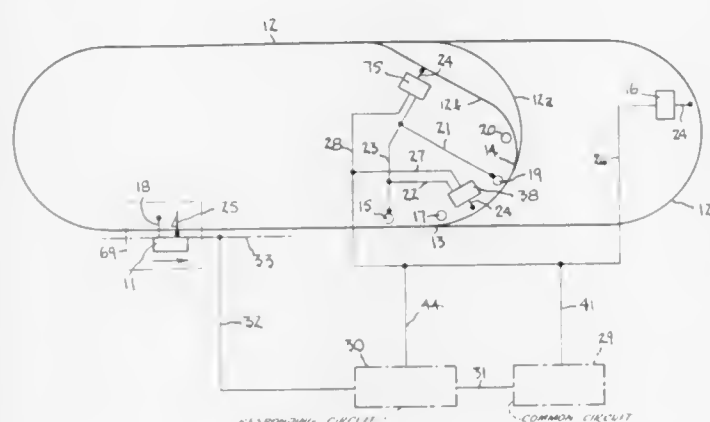
# **AUTOMATED TRACK-GUIDED MATERIAL HANDLING SYSTEM WITH ELECTRICAL PULSE PROGRAMMING**

Egon Beer, 1163 East 332nd Street, Eastlake, Ohio  
Filed April 15, 1971, Ser. No. 134,136

Int. Cl. B611 27/04

U.S. Cl. 104—88

11 Claims



An automated material handling system utilizing a track-guided electrically powered material transporter and a plurality of work stations located in spaced relationship along the track. A common control circuit interconnects all the stations and is activated by an electrical pulse circuit operable from any station for selectively directing movement of the transporter to or from one of the stations along any portion of the track. The system includes safeguard control means for correcting or preventing ineffectual or overlapping programming of the transporter movement.

3,722,427

# **PNEUMATIC TRANSIT SYSTEMS**

Wyly Kenneth Crowder, 3255 Windcroft Drive, Pontiac, Mich.

Filed May 24, 1971, Ser. No. 146,352

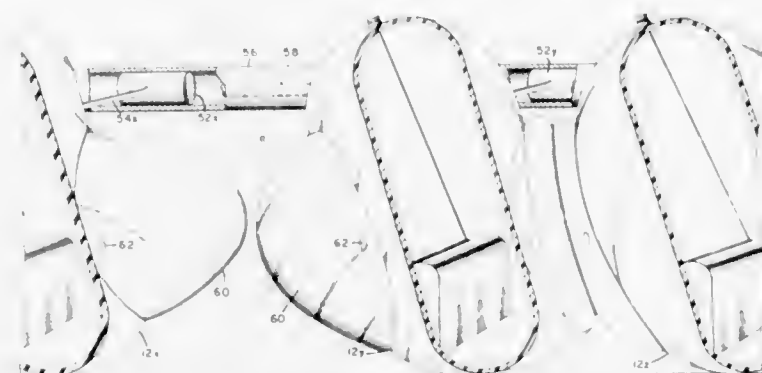
Int. Cl. B61b 13/00

U.S. Cl. 104—155

10 Claims

A pneumatic transit system for vehicles and material handling means in which the propulsion means is a linear air

motor which operates by means of progressive air impulses. The air motor is controlled to provide space monitored acceleration and deceleration for passengers or materials. A structural tube along the travel path provides the two way guide



and air duct with pressurized air expanded down through the linear air motor to silent ambient pressure. Each vehicle has a piston in an air tube to act as a cushion or shock absorber to prevent collision with adjacent vehicles.

3,722,428

# **CONTAINER FOR PNEUMATIC CONVEYANCE OF LOADS ALONG A PIPE CONDUIT**

Adolf Moritsovich Alexandrov, Federativny Prospekt, 6, Korpus 3, kv. 8, Moscow; Ippolit Davidovich Suladze, prospekt Chavchavadze, 11, kv. 41, Tbilisi; Vladimir Efimovich Aglit-sky, Zatsesky val, 6/13, kv. 61, Moscow; Avtandil Semenovich Kakhniashvili, ulitsa Eliava, 37, kv. 41, Tbilisi; Ilya Solomonovich Kantor, Malo-Moskovskaya ulitsa, 31, kv. 45, Moscow; Jury Abramovich Tsimbler, Sojuzny prospekt, 10, kv. 261, Moscow; Matvei Iosifovich Rozenfeld, Borisovskaya ulitsa, 21, kv. 49, Moscow, and Grigory Yasonovich Chidzhavadze, prospekt Chavchavadze, 11, kv. 5, Tbilisi, all of U.S.S.R.

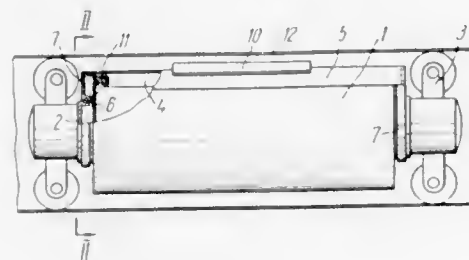
Filed Feb. 12, 1971, Ser. No. 114,862

Claims priority, application U.S.S.R., Feb. 17, 1970, 1401628

Int. Cl. B61d 15/00

U.S. Cl. 105—365

3 Claims



A container for pneumatic conveyance of loads along a pipe conduit, in which a housing mounted on running carriages by means of trunnions is provided with a port located on top in its cylindrical wall which may be closed with a lid. The lid is a portion of the cylindrical wall of the housing, connected with the arms of levers mounted on the trunnions and serving to turn the lid by circumferentially sliding the lid along the housing periphery.

3,722,429

# **INFLATABLE BULKHEAD ASSEMBLY FOR RAILWAY FREIGHT CARS**

Jan D. Holt, Saint Charles, and Garth R. Smith, Saint Peters, both of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Nov. 1, 1971, Ser. No. 194,165

Int. Cl. B60p 7/14; B61d 45/00

U.S. Cl. 105—369 BA

9 Claims



A pneumatic bulkhead assembly for a railway box car suspended by flexible support means from the upper portion of the box car. The bulkhead assembly includes upper and lower bulkhead sections each of a height generally around one-half the height of the car and mounted on the flexible support means in a vertically spaced relation to each other with the lower bulkhead section mounted for a limited resilient movement relative to the upper bulkhead section. Each bulkhead section includes a pair of generally flat faces and a pneumatic bag between the faces to urge the faces outwardly upon inflation.

3,722,430

# **PALLETS**

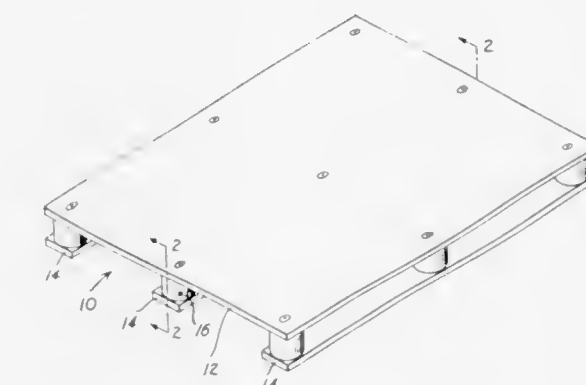
Clifford E. Woodley, Grants Pass, and Herbert S. Carter, Rouge River, both of Oreg., assignors to said Woodley, by said Carter

Filed Dec. 1, 1971, Ser. No. 203,525

Int. Cl. B65d 19/38

U.S. Cl. 108—58

2 Claims



A pallet of great strength and durability is provided at small cost, which comprises an upper continuous, rigid sheet of plywood, chipboard, plastic or other suitable material, and a lower sheet or set of strips of like material. Identical cylindrical chipboard spacers of substantial diameters and uniform thickness, which are not subject to cracking or splitting, are interposed at regular intervals between the upper and lower sheets. The spacers oppose parallel wooden surfaces to the inner faces of the sheets. Metallic eyelets fit centrally through the respective spacers and through sheet portions in contact with each spacer, the eyelets being outturned at their ends and having the outturned end portions pressed into flush relation with the outer faces of the sheets. The prongs of a forklift can be inserted from either end or from either side of the pallet so that the center of mass of the pallet and any load carried by it may be disposed between the prongs of the forklift.

3,722,431

# **SLAT PANEL FURNITURE**

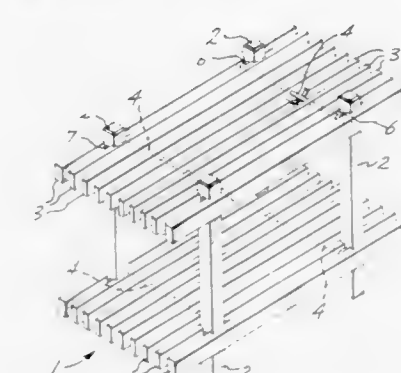
Paul N. Howard, Seattle, Wash., assignor to Howard Manufacturing Company, Kent, Mass.

Filed Dec. 24, 1970, Ser. No. 101,340

Int. Cl. A47b 3/06

U.S. Cl. 108—153

15 Claims



Disclosed are articles of furniture of varying configurations producible in knock-down form consisting of wood dowel and slat grid panels supported by notched wood legs. The panels consist of wood slats joined together and maintained in parallel coplanar relationship by wood dowels passing intersectingly therethrough intermediate the panel ends. The notched segments of the legs are dimensioned to interfit slidably with and between adjacent slats for assembly of legs with a grid panel. The adjacent slats interengaging the leg notches orient the legs to the panel, and by abutting the legs to dowels the latter serve most effectively to maintain the slat spacing constant where the legs react against the slats; also as locating elements for the legs in assembly and as anchor elements for leg fasteners applied to complete an aesthetically and structurally integrated assembly.

3,722,432

# **ANTI-HOLDUP DEVICE FOR COUNTERS**

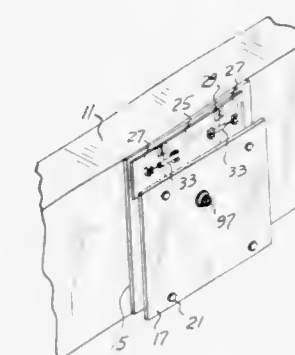
Themis Pervolarakis, 17710 McIntyre, Detroit, Mich.

Filed Dec. 9, 1971, Ser. No. 206,336

Int. Cl. E05g 3/00

U.S. Cl. 109—17

7 Claims



An anti-holdup device for a counter which comprises a backing plate mountable upon the rear wall thereof supporting a pair of upright guide tubes in which normally retracted elevator rods are nested. A shield is secured to the rods and normally positioned below the top of the counter. A detent releasable weight is guideably mounted in elevated position for movement between said tubes; and cables at their one ends are secured to said weight, extend around a pair of pulleys, and at their other ends respectively are connected to said elevator rods. The shield includes a pair of hinged wings normally held in alignment with the shield body by a panel, and spring biased to pivot at right angles thereto when elevated past the panel.

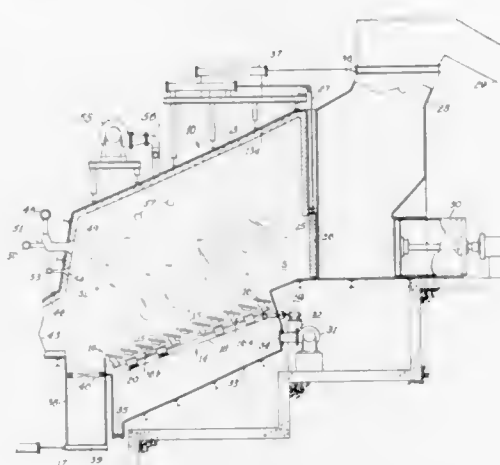


### 3,722,433 METHOD AND APPARATUS FOR WASTE INCINERATION

Ralph J. Kramer, 6180 Olen tangy River Rd., Delaware, Ohio  
Filed May 18, 1971, Ser. No. 144,432  
Int. Cl. F23g 3/00

U.S. Cl. 110—8 R

23 Claims



Waste incineration apparatus and method are provided having two serially connected combustion chambers for incineration of solid, semi-solid and liquid waste material, each of which comprises combustible components. The combustion chambers are relatively positioned so that heated gaseous fluids produced by combustion of substantially only solid and semi-solid waste introduced into the first chamber are discharged into the second chamber for enhancement of combustion of liquid waste introduced into the second chamber. These gaseous fluids which are at a relatively high temperature include those that enable or support combustion of liquid waste and may also include those that are combustible when combined with additional combustion air with these gaseous fluids intermixing with liquid waste entering the second chamber thereby enhancing the combustion characteristics of the liquid waste. Preferably, combustion in the first chamber is carried out in the presence of a substantial amount of excess air resulting in complete combustion and preheating of the remaining combustion air prior to its entry into the second combustion chamber. Alternatively, combustion in the first chamber is controlled by limiting the amount of combustion air admitted to that necessary to effect burning of the solids or semi-solids but not sufficient for combustion of the gaseous fluids evolved as a result of that combustion process thereby forming a combustible gaseous fluid.

### 3,722,434 DIGITAL PATTERN CONTROL APPARATUS FOR TEXTILE MACHINERY

Fred P. Strother, West Point, and James O. Blackstone, Jr., LaGrange, both of Ga., assignors to West Point Pepperell, Inc., West Point, Ga.

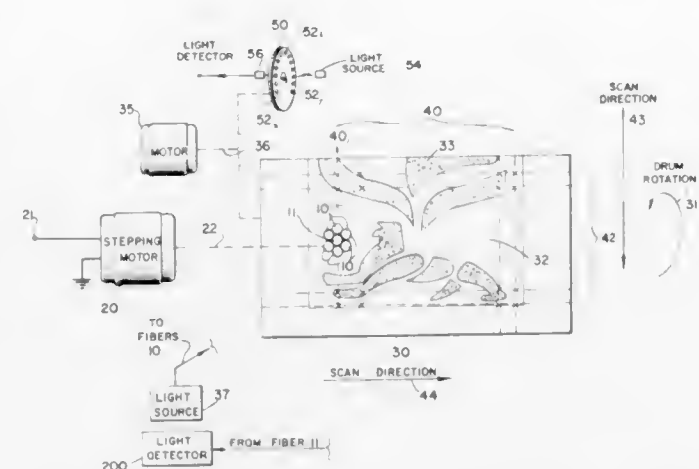
Filed Feb. 23, 1971, Ser. No. 118,030  
Int. Cl. D05c 15/26

U.S. Cl. 112—79 A

14 Claims

Apparatus for developing a pattern in textile goods formed by a tufting operation employs an array of optical fibers to optically scan a replica of the desired pattern. The continuous output scan signal is digitally quantized, and sampled by scan-synchronized strobe circuitry to provide a series of binary information bits descriptive of the scanned pattern with accurate resolution. The serial bits are converted to parallel form, and preserved in a storage medium together with control information as plural bit frames of predetermined format.

Pattern implementing control circuitry operates asynchronously under control of the tufting machine to automatically receive present stitch (row) and next stitch information in corresponding holding registers from the pattern



storage medium. Pattern controllers are responsive to the binary digital information stored in the present stitch register for determining the pattern-defining operations effected by tufting stations disposed across the width of the tufting machine.

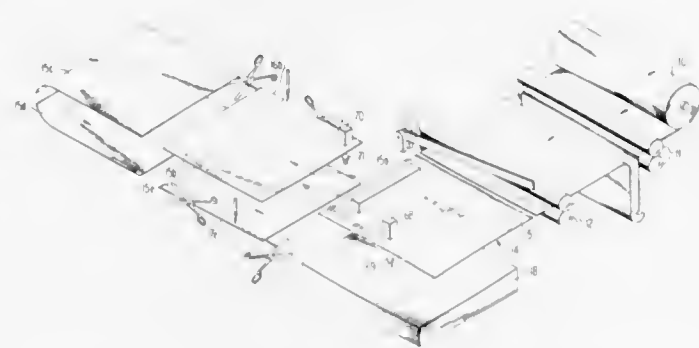
### 3,722,435 CLOTH CUTTING AND HEMMING METHOD AND APPARATUS

Norman E. Elsas, Atlanta, Ga., assignor to Nemo Industries, Inc., Atlanta, Ga.

Filed Jan. 27, 1971, Ser. No. 110,132  
Int. Cl. D05b 19/00

U.S. Cl. 112—121.11

7 Claims



The method and apparatus for fabricating lengths of cloth from a continuous supply of cloth wherein the free end of the supply of cloth is moved onto a cutting platform, prescribed lengths of the continuous supply are cut, and the cut lengths of cloth are then moved in a lateral path with the cut ends disposed generally parallel to the path of travel. One cut end of each of the cut lengths of cloth is hemmed, and the lengths of cloth are then inverted as they are moved through a U-shaped path, and the other end of each length of cloth is hemmed. The hemming function at both ends of the cut lengths of cloth are performed by right handed sewing machines.

### 3,722,436 GARMENT WORKING MACHINE

James L. Strouse, Muscatine, Iowa, assignor to McKee Button Company, Muscatine, Iowa

Filed Feb. 23, 1971, Ser. No. 118,119  
Int. Cl. D05b 19/00

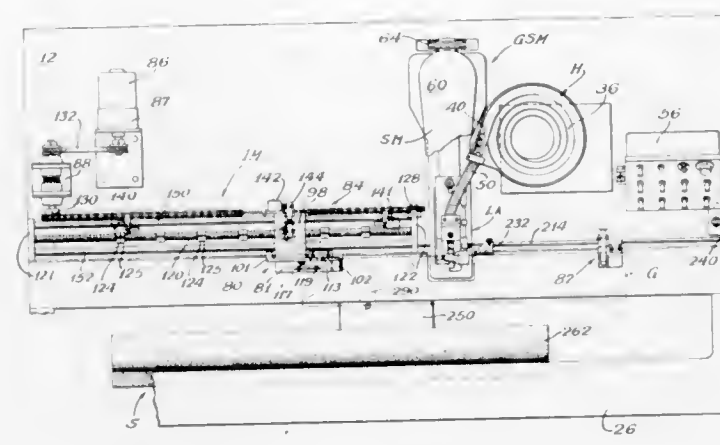
U.S. Cl. 112—121.11

8 Claims

A machine for performing a work operation on a garment, for example, a button sewing operation, including a frame, a button sewing machine on the frame and improved means for

indexing the garment past the button sewing machine in a precise predetermined relationship. The indexing machine includes first adjustable clamping means and second adjustable clamping means and carriage means for moving the clamping

hold the latter temporarily during the rearward movement of the thread gripper, so as to provide an additional length of



means predetermined increments from a first position to a second position to permit buttons to be sewn on the garment at spaced intervals between said two positions corresponding to said predetermined increments.

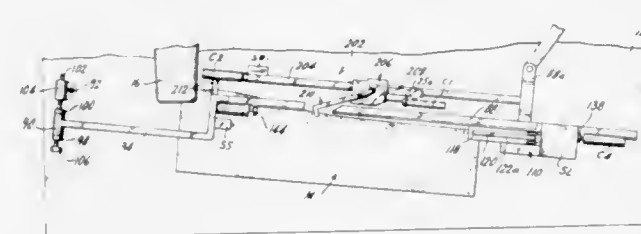
### 3,722,437 INTERMEDIATE CLAMP FOR CONTOUR SEAMER

Paul N. Winberg, 40 Villa Court, Hempstead, N.Y., and Robert W. Winberg, 19 York Place, Williston Park, N.Y.

Filed Nov. 24, 1971, Ser. No. 201,767  
Int. Cl. D05b 21/00

U.S. Cl. 112—121.12

7 Claims



### 3,722,438 SEWING MACHINE WITH MULTI-NEEDLE SUPPORTING ARM

Fidelius Schinzel, Karlsruhe, and Helmut Schwannecke, Ettlingen, Germany, assignors to Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft, Karlsruhe, Germany

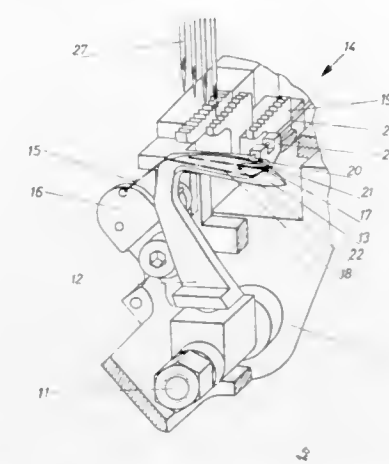
Filed Jan. 15, 1971, Ser. No. 106,677

Claims priority, application Germany, Jan. 21, 1970, G 70 01 852.9

Int. Cl. D05b 1/06

2 Claims

A sewing machine with a multi-needle supporting arm is provided with an oscillating thread gripper moving transversely to the direction of the sewing operation for forming below the throat plate a thread loop into which enter the sewing needles with their upper thread. A horizontal thread spreader fixedly attached to and moving with the material feeder extends with one end provided with a holding tongue into the thread loop to



lower thread on one side of the row of needles which supply the upper thread, said additional length of lower thread is necessary for producing a seam.

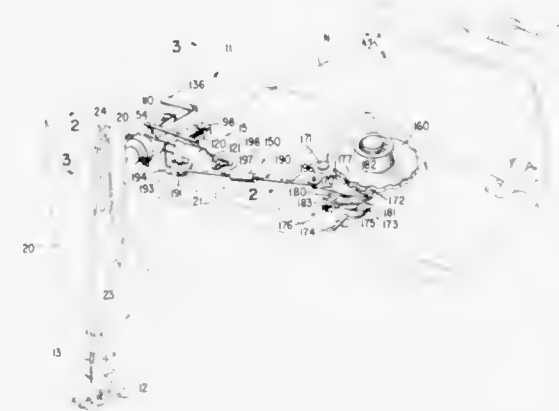
### 3,722,439 PROGRAMMED COLOR STITCHING MECHANISMS FOR SEWING MACHINES

Albert L. Newman, Cleveland Heights, Ohio, assignor to The Singer Company, New York, N.Y.

Filed April 6, 1971, Ser. No. 131,622  
Int. Cl. D05b 47/00

U.S. Cl. 112—254

8 Claims



A pattern cam influenced mechanism for changing the tension which is applied to one or more of the sewing threads being concatenated by a sewing machine between successive stitches or between successive stitch groups. Where a plurality of threads of different color are used in the stitch formation, the arrangement of this invention can result in a pattern cam control of the color of the stitches appearing on the exposed face of the work fabric.

### 3,722,440 ELECTRICALLY CONDUCTIVE THREADS AND METHOD OF MANUFACTURING CLOTHING EXHIBITING ANTI-STATIC PROPERTIES THEREWITH

Yoshikazu Igarashi; Yoshio Bessho; Yoshikazu Kiroku, and Yasuo Takahashi, all of Okayama, Japan, assignors to Kuraray Co., Ltd., Kurashiki City, Japan

Filed March 30, 1971, Ser. No. 129,630

Claims priority, application Japan, April 1, 1970, 45/28720; May 13, 1970, 45/40784

Int. Cl. D05b 1/00

U.S. Cl. 112—262

10 Claims

A method of manufacturing clothing exhibiting anti-static properties is provided comprising preparing said clothing by sewing, weaving or knitting with at least one electrically conductive thread comprising a non-metallic bundle of natural,



semi-synthetic or synthetic filaments, fibers, split fibers or tapes having a shrinkage ratio of less than 15 percent in water at 100°C. and a metallic bundle of iron, nickel, copper, brass, aluminum or stainless steel exhibiting an apparent diameter of  $5 - 100\mu$ , said bundles being combined under conditions which satisfy the relationship:  $S^2 dm \geq df \geq 5$  wherein  $df$  represents the denier of the non-metallic bundle,  $dm$  represents the denier of the metallic bundle and  $S$  represents the specific gravity of the metal, and the weight ratio of the metallic bundle to the non-metallic bundle ranges from 0.1 to 200 wt percent, said bundles being twisted at a tension of less than 80 percent of the strength of the metallic bundle.

3,722,441

# AUTOMATIC FEEDING MECHANISM FOR PERIPHERAL OPERATIONS

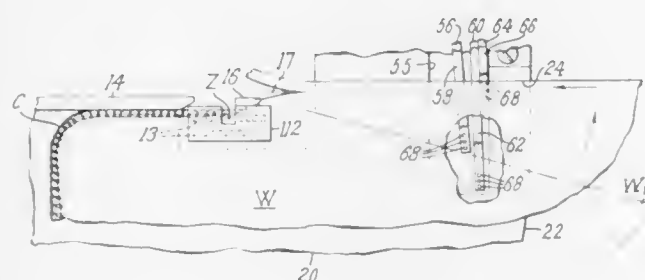
Charles J. Kitchener, and Paul G. Rumball, both of Beverly, Mass., assignors to USM Corporation, Boston, Mass.

Filed Jan. 18, 1971, Ser. No. 107,022

Int. Cl. D05b 27/14

U.S. Cl. 112—205

12 Claims



An electro-pneumatically controlled mechanism is provided, for instance for use with a sewing machine having a rectilinear feed means, to enable the curved and/or straight marginal portions of flexible sheet-like material to be automatically fed and processed continuously through the operating zone of a tool (such as a needle) of the machine. To aid in attaining bias of an edge of the work against an edge gage a work supporting table has an at least partly arcuate periphery over which the work may be draped. A corner sensing means actuates a mechanism for gripping a portion of the work at the proper time and swinging it approximately about a turning center thereby progressively positioning the work relative to the tool. In an illustrative over-edging machine, which is provided with conventional trimming means, a rectangular work piece thus progressively has its successive corners trimmed to a predetermined radius and sewn. A second sensor counts the successive corners turned in order to automatically stop operations when all or a desired portion of a periphery has been processed. A third sensor automatically serves to check pressure of the engagement of a work edge with the edge gage to prevent unwanted buckling or folding of the work edge.

3,722,442

# TUFTED PILE FABRICS AND METHOD OF MAKING SAME

John T. MacIsaac, Jr., and James E. Troy, both of Eden, N.C., assignors to Fieldcrest Mills, Inc., Eden, N.C.

Filed Jan. 29, 1971, Ser. No. 110,967

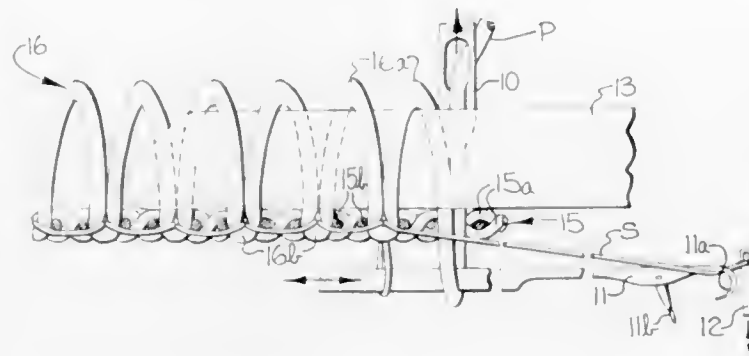
Int. Cl. D05c 17/02

U.S. Cl. 112—410

29 Claims

A tufted pile fabric and method of making the same in which rows of pile tufts are formed extending upwardly from the upper face of a backing fabric or base and have lower bights at least partially positioned above the plane of the lower face of the backing fabric to permit use of less pile yarn for ob-

taining any given height of pile. Also, a plurality of stitching threads are positioned along the lower face of the backing



fabric and portions of the stitching threads are inserted through the lower bights of the tufts to secure them to the backing fabric.

3,722,443

# METHOD OF FORMING A RECTANGULAR HEAT DUCT

Leroy E. Anderson, and Gerald J. Munn, both of Detroit Lakes, Minn., assignors to Manufacturers Systems, Inc., Detroit Lakes, Minn.

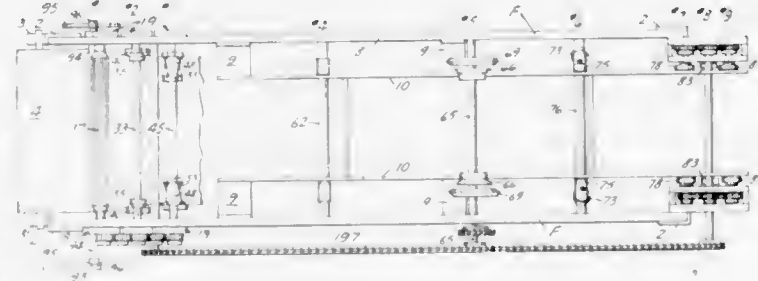
Division of Ser. No. 12,663, Feb. 19, 1970, Pat. No. 3,636,903.

This application Dec. 8, 1971, Ser. No. 205,843

Int. Cl. B21d 39/02

U.S. Cl. 113—54

22 Claims



A machine designed to continuously progress a pair of elongated flat sheets of metal longitudinally through a plurality of cooperative dies which progressively in sequential steps gradually shape the two sheets into a duct having a rectangular cross-sectional configuration. The machine utilizes cooperative rotary dies to shape and form the duct in a continuous operation to a length equal to that of the sheets so that rectangular ducts of any desired length can be produced in an automatic operation by merely inserting into the machine a pre-prepared roll comprised of a pair of sheets of metal of the desired length, the sheets entering the machine at one end and leaving the same at the other end in the form of a continuous rectangular duct.

3,722,444

# STRUCTURE OF UNDER-WATER VEHICLE

Kiichi Muraki, Hirakata, and Tadashi Yoda, Neyagawa, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed April 20, 1971, Ser. No. 135,702

Claims priority, application Japan, April 20, 1970, 45/33029

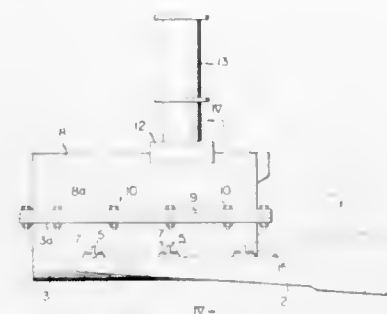
Int. Cl. B63c 7/00

U.S. Cl. 114—16 R

3 Claims

The present invention relates to an under-water vehicle structure comprising connecting, through sealing material,

open end fringe of the upper box whose lower side is opened to the open end fringe of the lower box whose upper side is



opened, said lower box being fixed on the right and left main beams supported on the track-frames.

3,722,445

# UNDERWATER MOLTEN SALT HEAT STORAGE BOILER

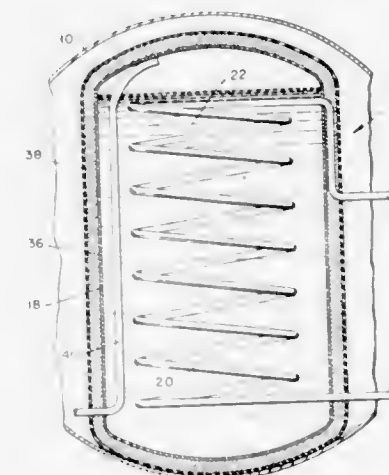
Horace Edmund Karig, Pasadena, Calif., and Gerrit De Vries, Altadena, both of Calif., assignors to the United States of America as represented by the Secretary of the Navy

Filed Oct. 21, 1965, Ser. No. 500,389

Int. Cl. B63g 19/00, 21/06, 21/08

U.S. Cl. 114—16 G

4 Claims



1. An underwater vehicle including apparatus for generating steam for propelling same, comprising:
  - a. a closed thin wall container having a void space at its upper end,
  - b. a meltable salt mixture filling said container below said space, said mixture having substantially zero coefficient of expansion at its solidifying temperature, the solidifying temperature being in excess of 212° F,
  - c. the outside of said container being in contact with and subjected to water at ambient pressure,
  - d. means for pressurizing said space to ambient water pressure whereby the salt mixture, when melted, subjects the inside of said container to ambient water pressure,
  - e. a steam generating coil disposed within said salt mixture having a water inlet at its lower end and a steam outlet at its upper end adapted to extract heat from the salt mixture and cause it to solidify, first at the bottom of the container, and thereafter in succeeding layers thereabove, and
  - f. a source of superheated steam for melting said salt mixture disposed at the surface of the water and means for connecting said coil to same.

3,722,446

# TORPEDO HOMING SYSTEM

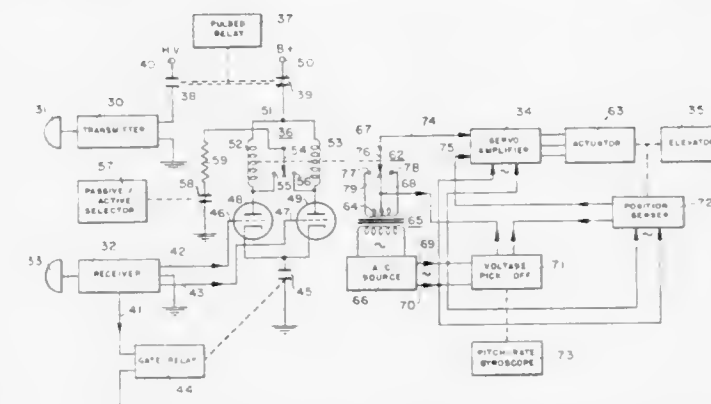
David A. Cooke, Kansas City, Mo., assignor to The United States of America as represented by the Secretary of the Navy

Filed July 6, 1956, Ser. No. 596,366

Int. Cl. F42b 19/01; G01v 1/00

U.S. Cl. 114—23

4 Claims



1. An active-acoustic-homing torpedo, comprising means for cyclically generating and projecting an acoustic search pulse having short duration relative to the cyclic period, means for receiving and converting a resultant target echo to steering command signals having characteristics which define sense and magnitude of target direction angle as referenced to said torpedo, a steering circuit including a relay having a pair of actuation coils and three-position switch means adapted to be thrown from a normal position to a position dependent upon the sense of differential energization of said coils, means for differentially energizing said coils in accordance with and in response to steering command signals which define a target direction angle exceeding a preselected value, means for effecting a torpedo turn in response to a steering control signal, means for providing a steering control signal of sense corresponding to the position to which said switch means is thrown and adapted to effect reduction of said target direction angle, and means for extending the duration of said control signal beyond that of said echo and terminating upon generation and projection of a following acoustic search pulse.

3,722,447

# HOMING MISSILE STEERING SYSTEM

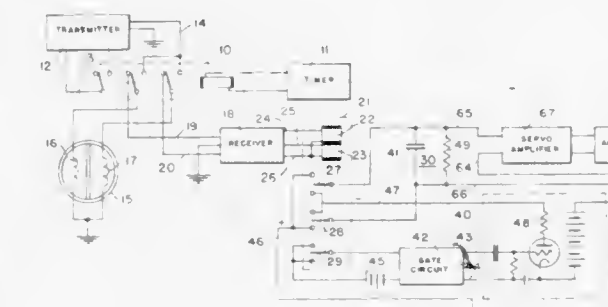
William Altar, and Carl W. Helstrom, Jr., both of Pittsburgh, Pa., assignors to The United States of America as represented by the Secretary of the Navy

Filed April 30, 1957, Ser. No. 656,168

Int. Cl. F42b 19/01; G01v 1/00

U.S. Cl. 114—23

6 Claims



1. In an acoustic homing torpedo of pulse-echo type having means for converting received target echoes to output signals defining the sense of target direction referenced to torpedo heading, in combination, means controlled by said output signals for providing target direction samplings in the form of charge increments which are substantially uniform but of sign corresponding to the sense of target direction, means for



decaying each of said samplings in accordance with a predetermined time-function to provide weighting which favors the most recent sampling, means for providing a continuous algebraic cumulation of the decaying samplings, means for providing a steering command signal having characteristics varying in accordance with the varying sign and magnitude of the said algebraic cumulation, and torpedo steering means controlled by the steering command signal and in accordance with said characteristics thereof to provide target homing action in which the sense and rate of torpedo turns correspond to the varying sign and magnitude, respectively, of said algebraic cumulation.

3,722,448

# DEVICE FOR RAISING SUNKEN SHIPS AND OTHER OBJECTS

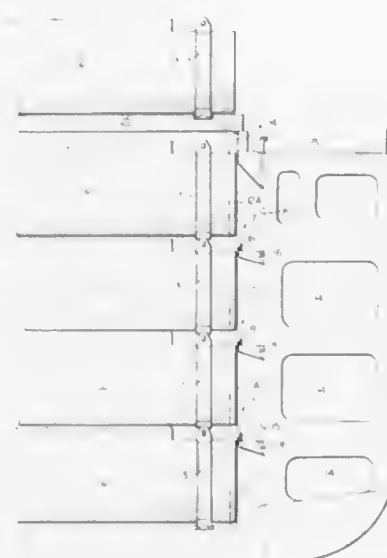
Samuel S. Leonardi, 1245 NW 7th Terrace, Fort Lauderdale, Fla.

Filed Aug. 10, 1970, Ser. No. 62,344  
Int. Cl. B63c 7/24

U.S. Cl. 114—55

6 Claims

wedge blocks secured to the hull and tapered wedges which are dropped between the stack of lighters at each lighter and rigid part of the ships hull.



3,722,450

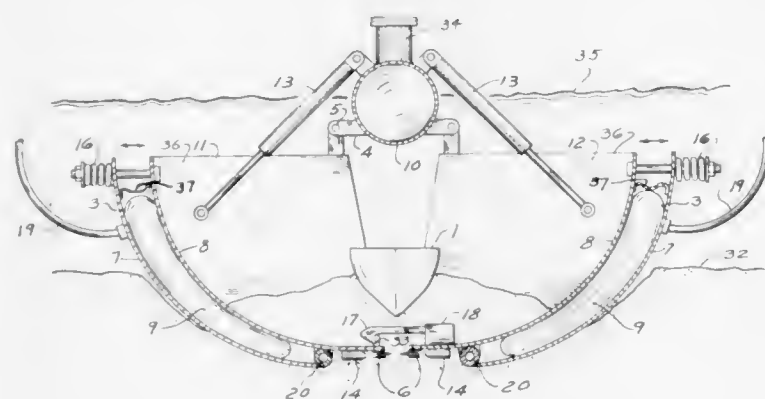
# HIGH SPEED VEHICLE FOR TRAVELING ON WATER

Kunitaka Arimura, One Washington Circle, Washington, D.C.  
Filed May 15, 1970, Ser. No. 37,573

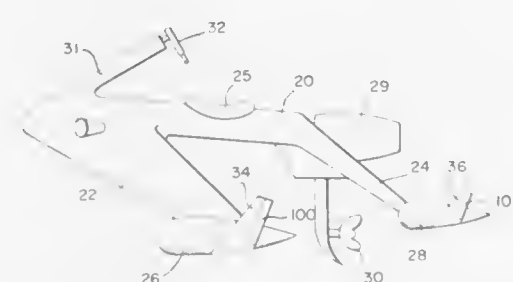
Int. Cl. B63b 1/26

U.S. Cl. 114—66.5 H

16 Claims



A device for raising sunken ships and other objects, in which elongated arcuate buckets, pivoted to a floating supporting member, are placed in position on opposite sides of the sunken ship. A chain saw on the open end of the buckets, assisted by water jets, cuts a path through the silt surrounding the ship, until the buckets meet below the ship, where the buckets are latched together. A plurality of bags, carried by the buckets, are then inflated, providing sufficient buoyancy to raise the ship.



A high speed vehicle for traveling on water is provided. The vehicle includes a body having a plurality of projecting legs for mounting a plurality of pontoons and hydrofoils. In a preferred embodiment the pontoons are slidably mounted on the legs for movement relative to the hydrofoils so that during movement of the vehicle at high speed the pontoons can be raised completely out of the water. The preferred embodiment also includes a plurality of elevators pivotally mounted on the hydrofoils for varying the angle of attack of the hydrofoils relative to the water surface. In addition, the legs of the vehicle are adjustable so that the body of the vehicle can be moved downward toward the water surface during high speed movement of the vehicle to lower its center of gravity and enhance its stability.

3,722,451

# AUXILIARY HOOK STAY

William L. Banks, Jr., 226 Warner Avenue, Roslyn Heights, N.Y.

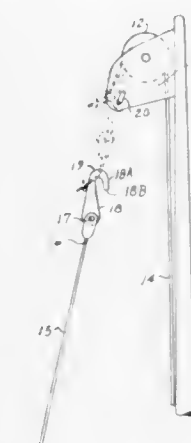
Filed Sept. 21, 1971, Ser. No. 182,425  
Int. Cl. B63h 9/04

U.S. Cl. 114—102

2 Claims

Auxiliary stays for a sail boat and means of mounting same on the mast, in which a stay bracket is provided at the top of the mast. Said stay bracket supporting a pulley over which a halyard is extended from the deck over the pulley and back to the deck. A stay pin being mounted in said bracket but posi-

tioned below the halyard pulley. Said auxiliary stay having a hook affixed to one end of the stay line. The auxiliary stay mounted by affixing the upper end of the hook to the extended end of the halyard and by pulling the opposite end of the halyard, the hook and stay may be raised until the hook abuts



with the mast bracket, the hook riding over the stay pin and by a slight release of the stay line, the hook engages the stay pin and the auxiliary stay is engaged and may be used to put tension or pulling force on the mast. The direction of pull being chosen initially as fore, aft, port or starboard.

3,722,452

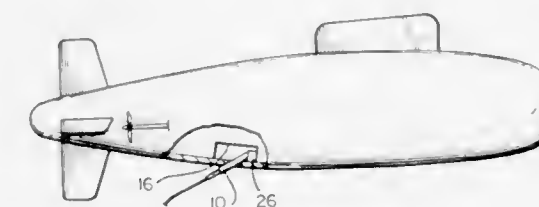
# SUBMARINE TOWING SYSTEM

John F. Wynn, Jr., Landover, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed May 20, 1971, Ser. No. 145,378  
Int. Cl. B63b 21/56

U.S. Cl. 114—235 B

6 Claims



The invention is a system for subsurface tow, deployment and recovery of a submersible vehicle or small submarine by another submarine utilizing a telescopic boom (powered or unpowered), a winch, an oceanographic tow line and a coupling device. The system is designed to be stowed in an existing well of a modern submarine.

3,722,453

# LIQUID TONING APPARATUS

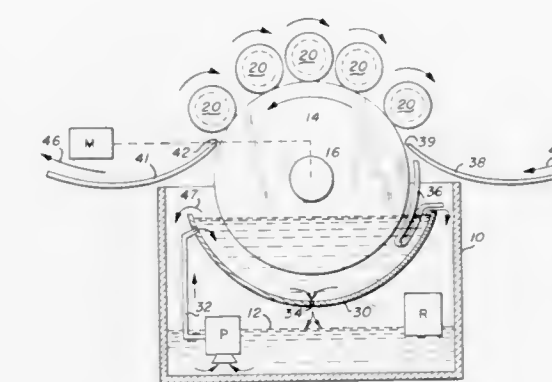
John A. Dahlquist, and Ivor Brodie, both of Palo Alto, Calif., assignors to Photophysics, Inc., Mountain View, Calif.

Filed April 5, 1971, Ser. No. 130,904  
Int. Cl. B05c 1/02

U.S. Cl. 118—246

13 Claims

Liquid toning apparatus is disclosed for developing a latent electrostatic image on the surface of a dielectrically coated sheet of flexible paper. The apparatus comprises a reservoir adapted to contain liquid toner at a predetermined liquid toner surface level. A rotatable cylinder is mounted for rotation about a cylinder axis disposed above and substantially parallel the liquid toner surface level a distance less than the radius of the cylinder whereby a portion of the rotatable cylinder is positioned above the liquid toner surface level, and another portion of the rotatable cylinder is simultaneously positioned beneath the liquid toner surface level. A plurality



of juxtapositioned rollers are mounted adjacent the rotatable cylinder for rotation about a plurality of roller axes disposed above and substantially parallel the cylinder axis with the rol-

3,722,454

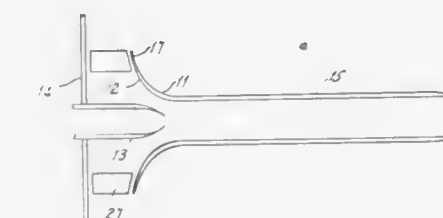
# THRUST AUGMENTER

Richard Silvester, 132 Essex St., Wembly, Australia  
Filed Oct. 28, 1970, Ser. No. 84,754

Int. Cl. B63h 5/14

U.S. Cl. 115—34 R

5 Claims



A device for augmenting the thrust from the prime thrust unit of a vessel wherein the thrust unit is surrounded by a shroud having a flared entrance placed in close proximity to the hull of the vessel so that the velocity of fluid being drawn into the shroud increases thus reducing the pressure of fluid acting on the leading face of the flared entrance to augment the thrust of the prime thrust unit.

3,722,455

# HYDRAULIC POWER TRIM AND POWER TILT SYSTEM FOR A MARINE PROPULSION DEVICE

Eugene C. Carpenter, Galesburg, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Feb. 23, 1971, Ser. No. 118,134  
Int. Cl. B63h 5/12

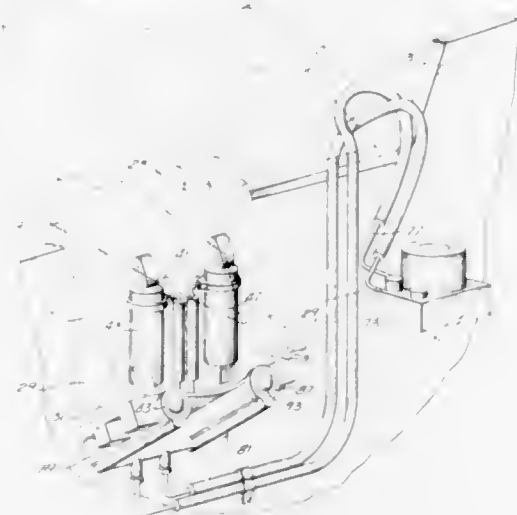
U.S. Cl. 115—41 HT

16 Claims

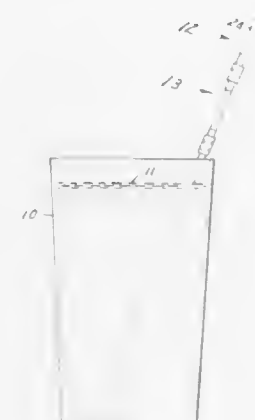
Disclosed herein is an outboard motor including a first extensible hydraulic cylinder means pivotally connected between a transom bracket and a swivel bracket to afford power tilting and, in response to the striking of an underwater obstacle, to afford energy absorption, together with a second extensible hydraulic cylinder means having an extensible part and mounted on the transom bracket with the extensible part positioned for engagement with the swivel bracket to afford



trim adjustment. The disclosed outboard motor also includes connection of the first and second extensible hydraulic cylinder means in parallel relation to an electrically operated reversible hydraulic pump and further includes an electrically operated normally closed valve controlling communication



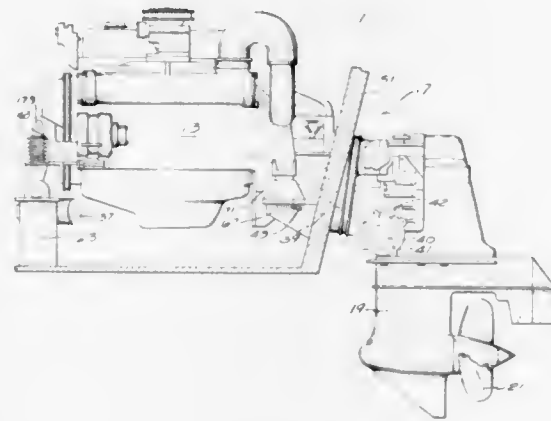
**3,722,457**  
**CODED SWIZZLE-STICK**  
Daniel J. Hartinger, 1658 Mayfield Lane, Madison, Wis.  
Filed Sept. 22, 1971, Ser. No. 182,719  
Int. Cl. G01d 21/00  
U.S. Cl. 116—114 8 Claims



A highball stirring implement having color bands thereon and sleeves slidable thereover indicating, by the position of the sleeves relative to the bands, the type of drink or contents in an associated highball drinking glass.

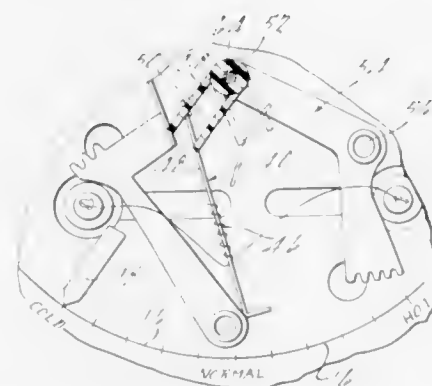
between the trimming hydraulic cylinder means and the hydraulic pump independently of the communication between the tilting hydraulic cylinder means and the hydraulic pump, together with a tilt control switch operable to actuate the hydraulic pump, and a trim control switch operable to actuate the hydraulic pump and to open the normally closed valve.

**3,722,456**  
**STERN DRIVE UNIT PROPELLER TRIMMING ARRANGEMENT**  
Ralph E. Lambrecht, and Harry Najimian, Jr., both of Lake Bluff, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.  
Filed Sept. 1, 1971, Ser. No. 177,070  
Int. Cl. B63h 5/12  
U.S. Cl. 115—41 R 32 Claims



Disclosed herein is the combination of a boat hull and a stern drive unit which includes and is supported by an engine and which further includes a marine propulsion lower unit tiltable vertically and swingable horizontally independently of the engine, together with means mounting the stern drive unit on the boat hull including means for selectively vertically displacing or tilting the forward end of the engine relative to the rear of the engine.

**3,722,458**  
**INDICATOR MECHANISM**  
James A. Chiang, 38218 Avondale, Westland, Mich.  
Filed Nov. 20, 1970, Ser. No. 91,407  
Int. Cl. G09f 9/00  
U.S. Cl. 116—129 1 Claim

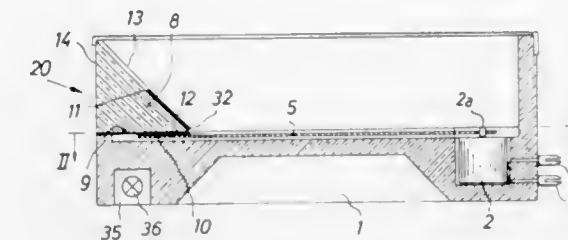


An indicator mechanism particularly useful in an automotive vehicle for indicating various engine operating parameters or conditions, for example, engine coolant temperature and engine oil pressure. The indicator mechanism includes an indicator with means pivotally mounting the indicator freely within the indicator mechanism. An actuating means is mounted in the indicating mechanism and it moves as a function of the parameter or condition to be indicated, and means couple the actuating means and the indicator for causing the indicator to remain in substantially the same position with respect to a scale over a substantial range of movement of the actuating means and, hence, over a substantial range of values of the parameter or condition to be indicated.

**3,722,459**  
**INDICATING INSTRUMENT**  
Willy Kisselmann, Grunwald Near Munich; Fritz Rumpelstein, Munich, and Paul Kopf, Unterhaching, all of Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany  
Filed April 10, 1970, Ser. No. 27,267  
Claims priority, application Germany, April 18, 1969, P 19 883.5  
Int. Cl. G09f 9/00  
U.S. Cl. 116—129 R 16 Claims

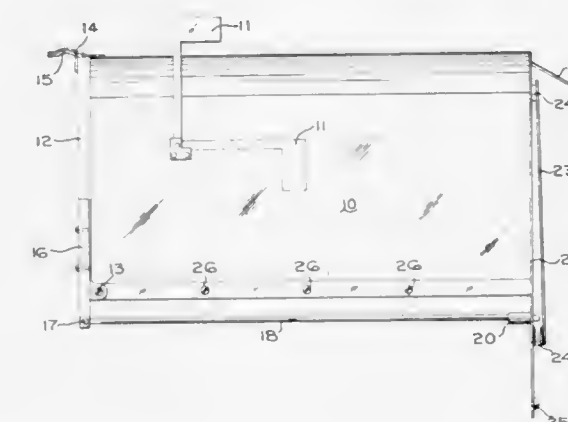
An indicating instrument wherein the housing accommodates a moving-coil instrument whose pointer travels along

one surface of an elongated prism. The one surface carries a straight scale and another surface of the prism is mirrored to reflect the images of the scale and of the tip of the pointer



**3,722,460**  
**MAIL BOX SIGNAL**  
Robert E. James, Sr., 930 N. Phillips Rd., Route No. 7, Lima, Ohio  
Filed May 17, 1971, Ser. No. 143,934  
Int. Cl. G08c 5/00  
U.S. Cl. 116—132 4 Claims

toward the front side of the housing. At least some graduations of the scale constitute openings or cutouts which permit observation of the tip in corresponding angular positions of the pointer.

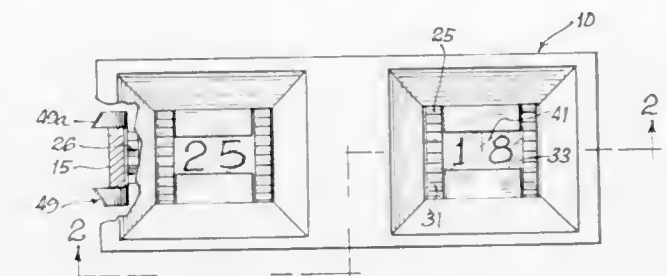


The present invention relates to a rural mail box having a flap held over the back by means of a magnet until released by pressure from a rod actuated by the opening of the mail box door. Depending upon whether the back or the front of the positioned box is facing the residence of the owner, the outer surface of the back and/or the inner surface of the flap, when in upright position, or only the back side of the box, are covered with a highly visible color so as to become readily visible from a distance when the door of the box is opened and the flap moved from its standby position. After removing the mail from the box the flap is manually moved to the standby position where it is held by a magnet until the box is again opened. The contact between the flap and the rear surface of the box is protected from rain, snow, or the like by an overhanging shield.

**3,722,461**  
**SCORING COUNTER**  
David L. Forman, Hewlett, N.Y., assignor to Sutra Import Corporation, Oceanside, N.Y.  
Filed July 7, 1972, Ser. No. 269,522  
Int. Cl. G06c 1/00, 27/00; G06m 1/00  
U.S. Cl. 116—133 5 Claims

A device for keeping the scores of players engaged in competitive games or sports adapted to be flush-mounted on a

suitable support, without the use of tools, for example, on the frame of a pool table. The device is readily assembled with

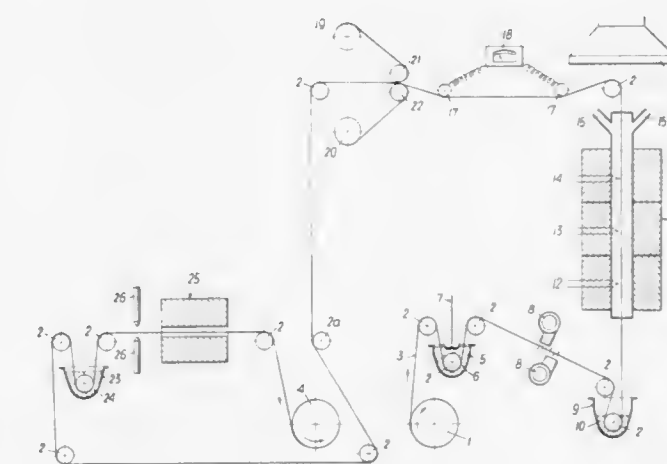


**3,722,462**  
**APPARATUS FOR COATING MATERIALS OF ALL KINDS WITH A PLASTIC COATING, IN PARTICULAR FOR IMPREGNATING WEBS OF INSULATING MATERIAL WITH ELECTRICALLY CONDUCTING PLASTIC DISPERSIONS**

Alfred Pohler, Reutte, and Erich Hayek, Vienna, both of Austria, assignors to Metallwerk Plansee Aktiengesellschaft & Co. KG, Tirol and E. Schrack Elektricitäts Aktiengesellschaft, Wien, both of Austria  
Filed Jan. 13, 1971, Ser. No. 106,097  
Claims priority, application Austria, Jan. 16, 1970, 427  
Int. Cl. B05c 11/00 3 Claims

minimum labor cost, and the components are so designed as to allow the fabrication of counters for any number of players by simple multiplication of parts.

U.S. Cl. 118—5 3 Claims



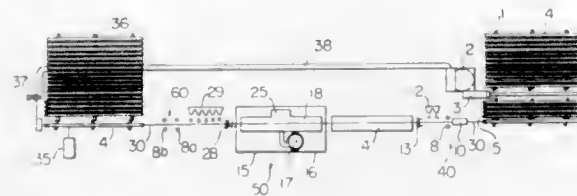
Coating apparatus includes a vertically arranged multi-zone drying oven. The oven is separable along vertical sections thereof for easy access. Each oven zone has an electrical heating means which is controlled by a PID circuit.

**3,722,463**  
**TUBE COATING APPARATUS**  
Masao Kudo; Akihiko Okita; Kenziro Yoshimura, and Nobuo Niwa, all of Wakayama, Japan, assignors to Sumitomo Metal Industries, Ltd. and Ajikawa Iron Works & Construction Company Limited, both of Osaka, Japan  
Filed Aug. 17, 1971, Ser. No. 172,506  
Claims priority, application Japan, Aug. 19, 1970, 45/73063  
Int. Cl. B05c 11/122 7 Claims

A galvanizing apparatus includes means connecting individual lengths of tube sections by assembly of a connector



element therewith, means to convey the assembled sections through a plurality of treating stations, means to thereafter



disconnect the tube sections and to return the connector element to the connecting means.

3,722,464

# APPARATUS FOR COATING AND SEPARATING PELLETS

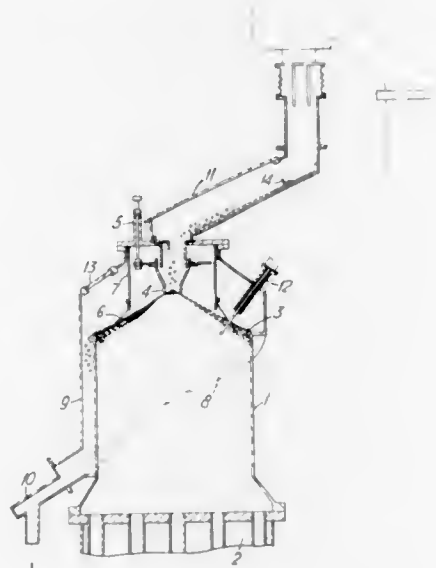
David Evans, Swansea, Wales, assignor to The International Nickel Company, Inc., New York, N.Y.

Filed June 24, 1971, Ser. No. 156,288

Int. Cl. C23c 13/08

U.S. Cl. 118—48

1 Claim



Fully grown nickel pellets are separated from the circulating load in a pellet carbonyl decomposer by discharging the load on to a conical pile of pellets formed between a horizontal circular dam and a circular feed nozzle, a flexible curtain being mounted with its lower edge touching the surface of the pile. The fully grown pellets roll preferentially down the pile and overflow the dam with some undersize pellets, which are separated by screening and returned to circulation.

3,722,465

# SMOOTHING SCRAPER-COATING APPARATUS

Franz Krautzberger, Heidenheim, Germany, assignor to J. M. Voith, GmbH, Heidenheim, Germany

Filed March 16, 1971, Ser. No. 124,843

Claims priority, application Germany, March 17, 1970, P 20 12 598.8

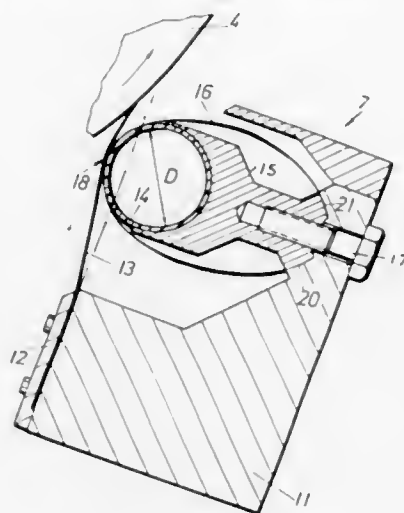
Int. Cl. B05c 11/02, 3/02

U.S. Cl. 118—123

7 Claims

The specification discloses a scraper, or skimming, blade arrangement for controlling the thickness of a layer of coating composition deposited on a running web. The blade extends pivotally attached to the rear of the frame. Part of the bed extends rearwardly the web and has one longitudinal edge fixed to a support beam on the side of the beam which faces the web. An inflatable tube between the beam and the blade is expandable by fluid pressure to flex the blade into operative en-

gagement with the web downstream from the region of supply of the coating composition to the web. A leaf spring element interposed between the tube and the blade serves to distribute



the pressure of the tube along the blade so that the pressure with which the blade engages the web is substantially uniform along the full length of the blade.

3,722,466

# APPARATUS FOR APPLYING AN ADHESIVE ON UPPER MARGIN OF A SHOE UPPER

Boris Zakharovich Krolkov, Nevsky prospekt, 153, kv. 5; Jury Petrovich Krylov, ulitsa Im. Brat'ev Gorkushenko, 7, kv. 92, and Ilya Iosifovich Brod, prospekt Kosmonavtov, 52, korpus 1, kv. 117, all of Leningrad, U.S.S.R.

Filed July 14, 1971, Ser. No. 162,353

Int. Cl. B05c 11/02

U.S. Cl. 118—212

1 Claim



An adhesive-applying apparatus is disclosed, wherein a positively rotated roller, disposed within an adhesive bath, is made up by a pair of truncated cones having their respective smaller faces joined together. The working peripheral surface of these cones has cut therein a helical thread, and the adhesive bath is resiliently mounted, for said roller to engage resiliently the last having the shoe upper supported thereabout, as this last is reciprocated relative to said roller.

3,722,467

# DEPOSITION APPARATUS

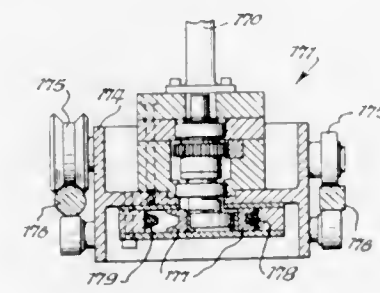
Peter D. Kaspar, Dover, Del., assignor to International Playtex Corporation, Dover, Del.

Division of Ser. No. 705,210, Feb. 13, 1968, Pat. No. 3,625,739. This application Dec. 9, 1970, Ser. No. 96,371

Int. Cl. B05b 15/04, 1/28

U.S. Cl. 118—301

8 Claims



The apparatus includes a deposition arrangement including means to deliver a flowable material which in dry form pos-

sesses elastomeric properties to a foraminous conveyor to provide a continuous foraminous film having elastomeric properties.

The deposition apparatus includes a centrifugal dish-like member adapted to deliver the flowable material in particularized form onto the foraminous forming surface.

3,722,468

# TRANSVERSING MECHANISM FOR ADHESIVE APPLICATION

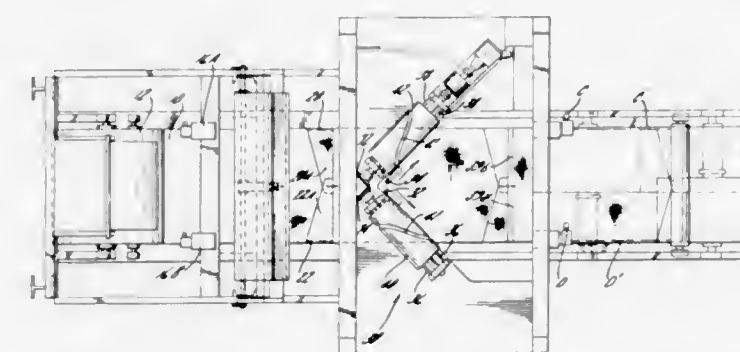
David L. Middleton, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Oct. 26, 1971, Ser. No. 192,011

Int. Cl. B05c 5/00

U.S. Cl. 118—315

9 Claims



An automatic adhesive applicator for applying successive transverse adhesive strips on a continuously moving web. An adhesive dispenser is mounted for reciprocating movement along a predetermined path extending transversely of the continuously moving web. The dispenser includes a rotatable cam follower adapted to engage cam surfaces located in the outer surface of a rotatable cylinder which operates to drive the dispenser back and forth along the predetermined path. The cam surfaces operably drive the dispenser at a constant speed along that portion of the path during which adhesive is dispensed, and return the dispenser at a constant speed along the same portion of the path. At each end of the path, the cam surfaces reverse the direction of the cam follower and therefore the dispenser with harmonic motion to permit reliable high speed operation with minimum stress and wear on the equipment.

3,722,469

# FOAM HEADER ASSEMBLY

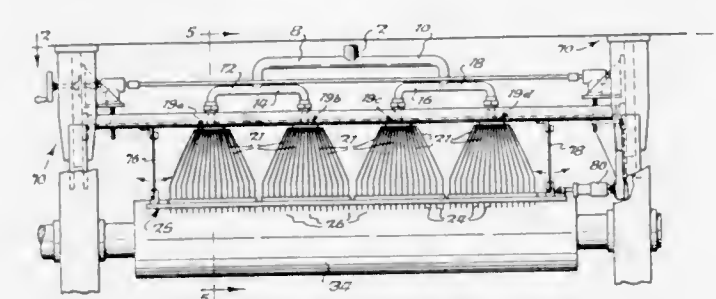
Thomas S. Bartley, Mobile, Ala., and Paul A. Wagenknecht, Stafford Springs, Conn., assignors to International Paper Company, New York, N.Y.

Filed May 19, 1971, Ser. No. 144,924

Int. Cl. B05c 3/12

U.S. Cl. 118—414

5 Claims



Apparatus for distributing coating and impregnates on a web of non-woven fabric, the apparatus including a distribution system in which the length of each branch pipe of the system is equal to the length of each other branch pipe,

desirably the sum of the cross sectional areas of the branch pipes is equal to the cross sectional area of the pipe from which the branches are taken, the discharge ends of all of the branching pipes being arranged in a straight line in the same plane and discharging their contents above the nip between two rolls mounted together below the discharge ends of the branching pipes, between which rolls the web of non-woven fabric passes, and means for reciprocating such discharge ends transversely of the path of travel of said web onto which the coating or impregnate is being applied and parallel to the lengths of said rolls.

3,722,470

# PROTECTING STRUCTURE

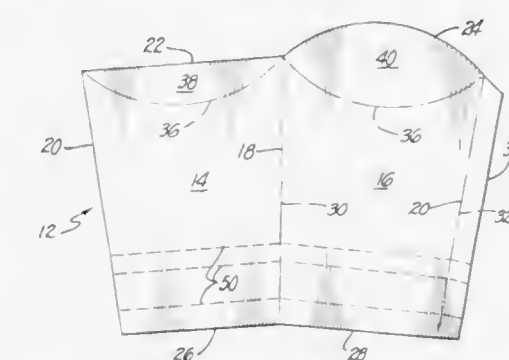
James P. Farrell, Orange, Calif., assignor to Fastmask Company, Orange, Calif.

Filed March 16, 1972, Ser. No. 235,805

Int. Cl. B05b 15/04

U.S. Cl. 118—505

3 Claims



A protecting structure capable of being used to protect door knobs or the like during painting and other operations can be constructed using two sheets of cardboard secured along their side edges so that they can be bowed outwardly from one another. Two adjacent ends of the sheets are divided into terminal portions by curved, scored lines so that the terminal portions can be deformed to extend alongside of one another when the sheets are bowed as indicated. At least one of the terminal portions is formed so that its ends fit against the sheet opposite the sheet upon which it is located when these terminal portions are located alongside of one another so as to hold the structure in an open position in which it can be used.

3,722,471

# TONER METER DEVICE

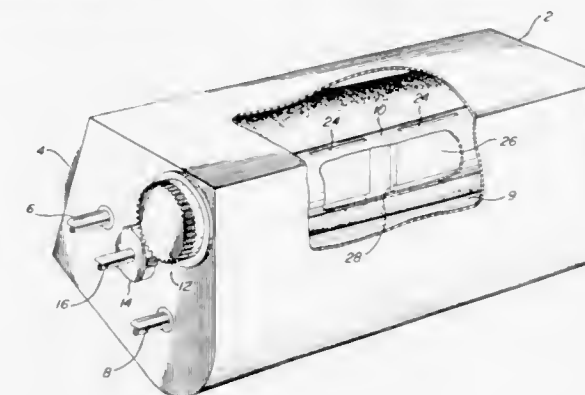
James C. Stoffel, Syracuse University, Syracuse, and John L. Brock, 1068 Pilgrim Pass, Ontario, both of N.Y.

Filed Dec. 23, 1970, Ser. No. 100,981

Int. Cl. G03g 13/00; B05b 5/02

U.S. Cl. 118—637

4 Claims



A cartridge dispenses toner through a plurality of chutes mounted inside the cartridge. The chutes communicate with openings in the body of the cartridge permitting measured amounts of toner to pass therethrough upon rotation of the cartridge by a suitable drive means.



## ERRATUM

For Class 118—246 see:  
Patent No. 3,722,453

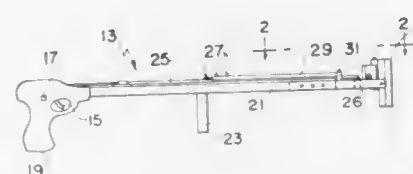
3,722,472

## METHOD FOR BRANDING ANIMALS

Ronald E. Homestead, 2871 South Court, Palo Alto, Calif., and  
Thomas C. Poulter, Los Altos, Calif., assignors to said  
Homestead, by said Poulter

Filed May 21, 1971, Ser. No. 145,707  
Int. Cl. A01k 29/00

U.S. Cl. 119—1



A device and method for explosive branding, comprising a  
formed explosive attached to a block which is pressed against  
an animal to be branded and detonated in this position to form  
a mirror image of the formed explosive on the animal.

3,722,473

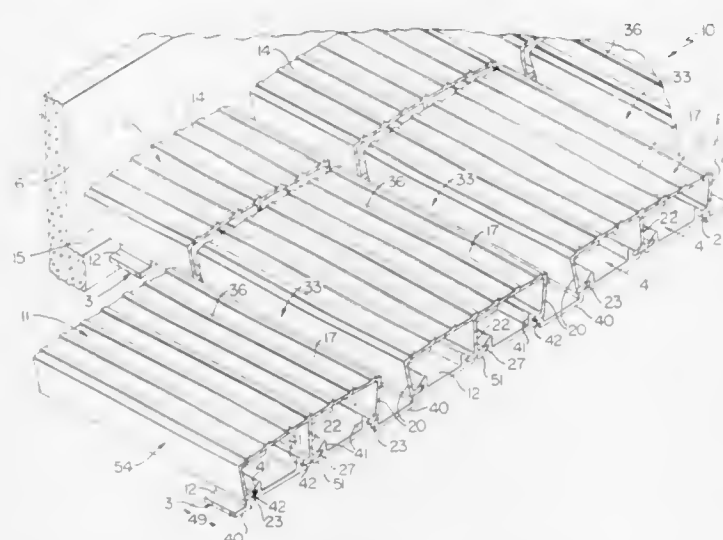
FLOOR CONSTRUCTION AND MEMBER FOR MAKING  
SAME

Donald E. Vickstrom, and George F. Swenck, both of  
Richmond, Va., assignors to Reynolds Metals Company,  
Richmond, Va.

Filed Aug. 13, 1971, Ser. No. 171,528  
Int. Cl. E04c 02/42

U.S. Cl. 119—28

14 Claims



An improved floor construction for an animal enclosure is  
provided and employs a plurality of substantially E-shaped  
channel members each having a bight defining a top load-car-  
rying wall and having three substantially vertical walls defined  
by a pair of downwardly extending side walls with an inter-  
mediate wall arranged between the side walls. Each channel  
member also has a pair of inwardly directed side fastening  
flanges each extending inwardly toward the other from the  
lower edge of an associated side wall and a central fastening  
flange adjoining the lower edge of the intermediate wall. Each  
channel member is made of a resilient material which enables  
the lower ends of an associated pair of its walls to be relatively  
spread apart at a location adjacent a set of associated fasten-  
ing legs provided on an associated connector used to connect  
the channel member to an adjacent member and upon releas-

ing the spread walls the normal resiliency of the channel  
member causes such walls to return to their initial positions so  
that their fastening flanges are hooked around the associated  
fastening legs. The three substantially vertical walls of each  
channel member provide improved support for its top wall and  
enable the forming of a floor construction of maximum area  
using a minimum amount of material for channel members  
and connectors.

3,722,474

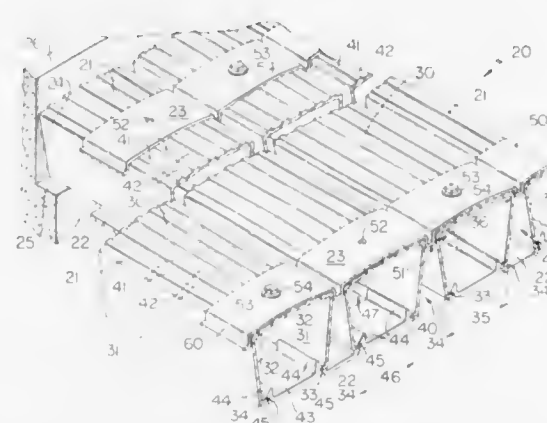
CONNECTOR-SPACER AND FLOOR CONSTRUCTION  
USING SAME

Donald E. Vickstrom, Richmond, Va., assignor to Reynolds  
Metals Company, Richmond, Va.

Filed Aug. 13, 1971, Ser. No. 171,536  
Int. Cl. A01k 01/00

U.S. Cl. 119—28

6 Claims



An improved floor construction and an improved top con-  
nector-spacer or connector for use in such floor construction  
is provided wherein the floor construction is comprised of a  
plurality of channel members arranged in parallel relation and  
has at least one bottom connector fastening the bottom por-  
tions of the channel members together in spaced relation to  
provide a substantially unobstructed passage between each  
immediately adjacent pair of channel members. The top con-  
nector holds the top portions of adjacent channel members in  
spaced relation and such top connector comprises a main  
body which has spacing means extending downwardly  
therefrom and between each immediately adjacent pair of  
channel members and also comprises means for fastening the  
top connector to associated ones of the channel members.

3,722,475

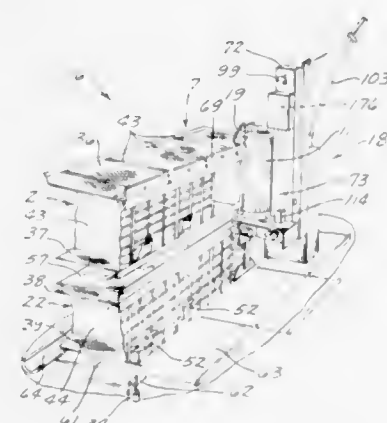
## HUSBANDRY APPARATUS

Francis A. Wittern, Des Moines, and Warren D. Woodley,  
Adel, both of Iowa, assignors to Fawn Engineering, Des  
Moines, Iowa, by said Woodley

Filed Sept. 20, 1971, Ser. No. 181,912  
Int. Cl. A01k 5/02

U.S. Cl. 119—51.11

16 Claims



An automatic apparatus for distributing feed to a receptacle  
in each of a battery of animal cages during one pass of a car-

3,722,478

## TETHER ASSEMBLY

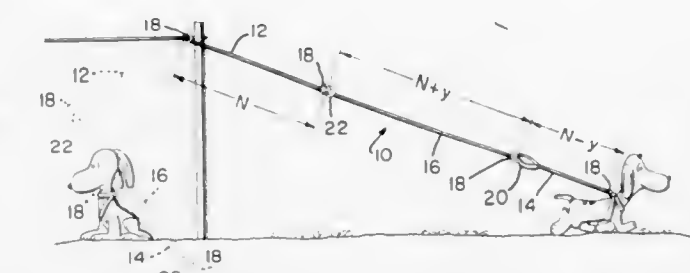
Robert G. Smith, P.O. Box 55, John Ct., Ironia, N.J.

Filed June 9, 1970, Ser. No. 44,759

Int. Cl. A01k 03/00

U.S. Cl. 119—120

7 Claims



3,722,476

## FEEDING BOWL FOR ANIMALS

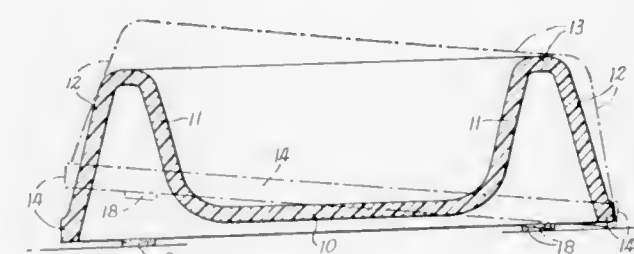
Paul J. Van Ness, and William A. Van Ness, both of 42 Vincent  
Drive, Clifton, N.J.

Filed Sept. 16, 1971, Ser. No. 181,085

Int. Cl. A01k 5/00

U.S. Cl. 119—61

5 Claims



A bowl for feeding animals having bottom and side walls  
and a depending skirt composed of plastic, the walls and skirt  
being relatively thick to provide distributed weight. The skirt  
and side walls have a slope to provide a span which is difficult  
for the animal to grasp in its jaws.

3,722,477

## POULTRY LOADING APPARATUS

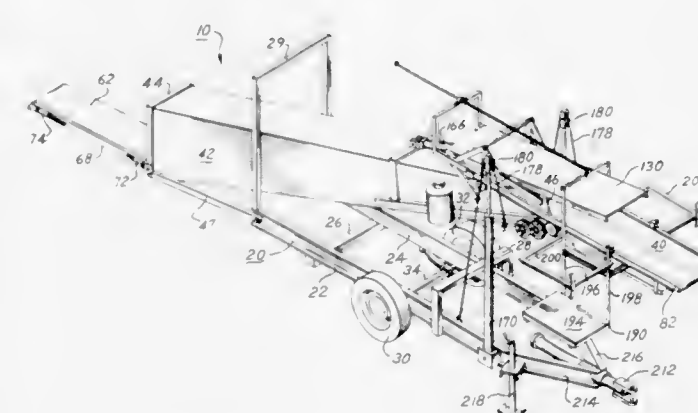
Levon R. Weldy, R.R. 3, Box 175, and Olen Yoder, Jr., R.R. 2,  
Box 201, both of Goshen, Ind.

Filed March 11, 1971, Ser. No. 123,211

Int. Cl. A01k 29/00

U.S. Cl. 119—82

13 Claims



An apparatus for loading poultry into compartments or  
coops in which a main conveyor section delivers poultry to a  
point adjacent the door of the compartment or coop and a  
retractable and extensible telescopic conveyor extension  
delivers the poultry first to the rear of the compartment or  
coop and then progressively outwardly toward the door as the  
compartment or coop is filled with poultry. The retractable  
and extensible conveyor operates on at least two planes dif-  
ferent from the plane of the main conveyor section. The con-  
veyor sections are preferably of the continuous belt type, and  
the belt is continuous from the main section to and throughout  
the extension section. The main conveyor section has a rela-  
tively rigid frame, and the extension section has a retractable  
and extensible section which may be tilted angularly with  
respect to the main section to permit effective positioning of  
the extension section in a compartment or coop. The ap-  
paratus also includes a control station movable independently  
of the conveyors during the poultry loading operation.

3,722,479

STEAM GENERATOR FOR PRESSURIZED WATER  
NUCLEAR REACTOR

Eberhard Michel, Bucher Str. 103, Nurnberg, Germany

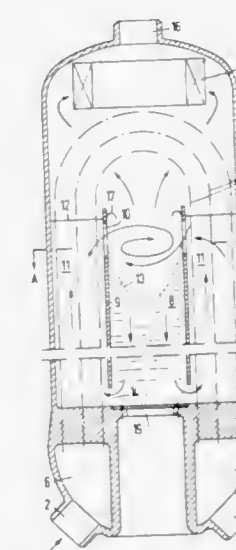
Filed Feb. 22, 1971, Ser. No. 117,551

Claims priority, application Germany, Feb. 26, 1970, P 20  
09 016.8

Int. Cl. F22b 1/16

U.S. Cl. 122—34

9 Claims



In a steam generator for pressurized water nuclear reactors  
having an upright U-tube bundle of heating surface members,  
there is provided in the center of the U-tube bundle, a cylin-  
drical hollow chamber serving as preseparator of a steam-  
water mixture supplied tangentially thereto from a region of  
the generator wherein the vertically extending legs of the U-  
tube bundle are located.



3,722,480

**ROTARY COMBUSTION ENGINE WITH IMPROVED FIRING CHANNEL**

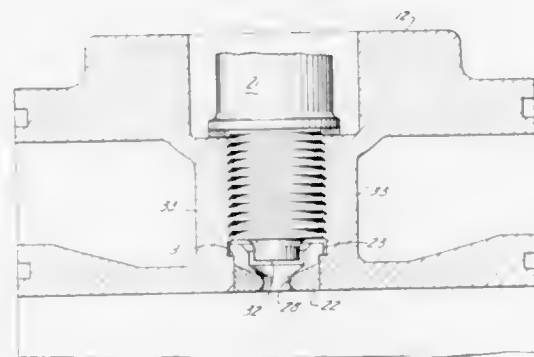
Murray Berkowitz, Woodcliff Lake, N.J., assignor to Curtiss-Wright Corporation

Filed Dec. 20, 1971, Ser. No. 209,996

Int. Cl. F02b 77/00

U.S. Cl. 123—8.01

6 Claims



A rotary combustion engine having in its housing an insert coaxial with the spark plug, to define the shape and volume of the spark plug chamber and of the firing channel between the spark plug and the combustion chamber. The insert is formed of material of high heat resistance and high heat conductivity, and is contoured to provide smooth gas flow and to obviate areas of high heat concentration; the insert has its hoop strength relieved to enhance retention in the housing wall.

3,722,481

**INTERNAL COMBUSTION ENGINE FUEL SUPPLY APPARATUS**

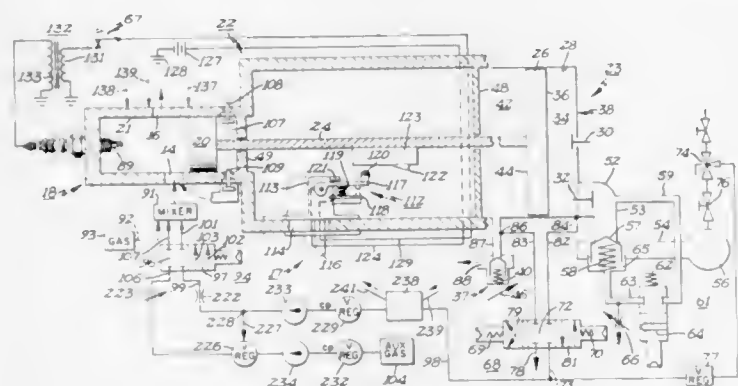
Anton Braun, 6421 Warren Ave., Minneapolis, Minn.

Filed Nov. 12, 1971, Ser. No. 198,165

Int. Cl. F02b 13/06; F02n 7/00

U.S. Cl. 123—46 R

15 Claims



A system for supplying a substantially uniform combustible fuel mixture for an internal combustion engine includes a compressed air supply line and a compressed fuel gas supply line, each having a first end connected to its respective pressurized supply, a metering orifice portion, and a second end connected to an appropriate part of the engine. At least one of the metering orifice portions is adjustable for establishing various desired air-to-fuel ratios for delivery to the combustion cylinder. The system includes a pressure regulating apparatus in at least one of the lines, between its first end and its metering orifice portion for maintaining substantially equal pressures at all times in the respective supply lines immediately upstream of their respective metering portions. The respective supply line pressures immediately downstream of the metering orifices are also kept substantially equal by connection of both supply lines to a common conduit or mixing chamber.

Preferably a pressure regulating valve of the air-loaded or dome-loaded type, which has a controlling pressure chamber and operates in response to changes in fluid pressure in such control chamber, is located in one line and has its control chamber connected to a sensing means so the chamber pressure has a predetermined relationship at all times to the pressure in the other supply line. A temperature control device may also be used in one or both lines to prevent undesired variations in air or fuel gas temperatures which could adversely affect the uniformity of the combustible mixture at different times during operation.

3,722,482

**SCAVENGER MECHANISM FOR TWO-CYCLE INTERNAL COMBUSTION ENGINE**

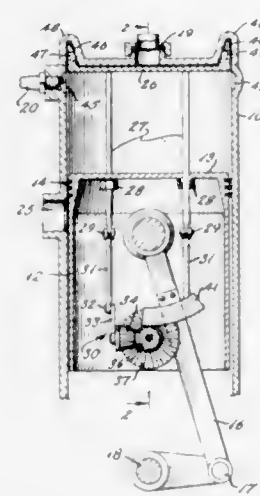
James R. Moore, 623 N. Bellevue Ave., San Dimas, Calif.

Filed July 9, 1970, Ser. No. 53,367

Int. Cl. F02b 33/04

U.S. Cl. 123—66

6 Claims



Apparatus adapted to be operated by the piston rod of an internal combustion engine to remove foul air and unburned fuel from the cylinders substantially at the completion of the power stroke and to introduce a fresh charge of a combustible mixture into the cylinder to be compressed on the compression stroke. The apparatus includes a scavenger plate located within the cylinder which is raised and lowered both independently of and in conjunction with the piston.

3,722,483

**PNEUMATIC VALVE CLOSING MECHANISM**

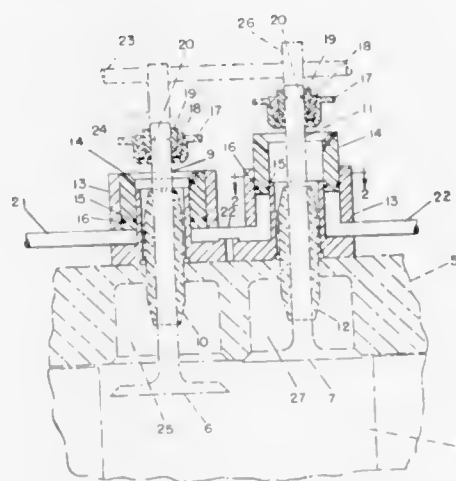
Howard Overby, 900 Dwight, Half Moon Bay, Calif.

Filed Nov. 10, 1969, Ser. No. 875,171

Int. Cl. F011 9/02

U.S. Cl. 123—90.14

3 Claims



This invention consists of an air cylinder that encompasses the upper portion of each valve stem and guide on an internal

combustion engine. The air cylinders are provided with annular pistons. The upper end of each valve stem is provided with a dish-shaped washer that will rest on the top of a piston when the valve is open and will be forced upward by the top of the piston by the air in the cylinder to urge the valve toward its closed position.

3,722,484

**DEVICES FOR CONTROLLING THE VALVES OF INTERNAL COMBUSTION ENGINES**

Amedee Gordini, Viry-Chatillon, France, assignor to S.A. Gordini Automobiles, Viry-Chatillon (Essone), France

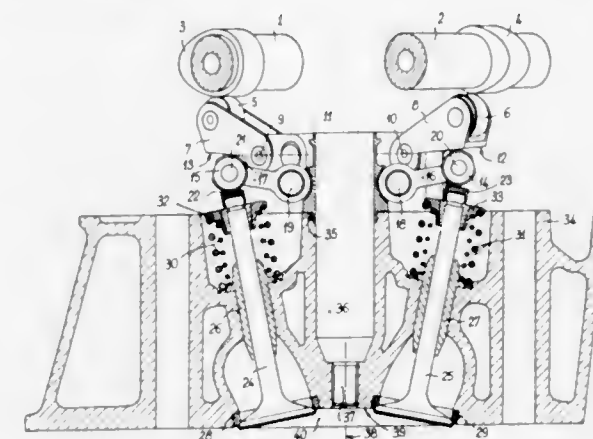
Filed Jan. 14, 1971, Ser. No. 106,390

Claims priority, application France, Jan. 15, 1970, 7001376

Int. Cl. F011 1/04, 1/18

U.S. Cl. 123—90.27

4 Claims



A device for controlling the valves of an internal combustion engine having overhead valves comprises a control cam, and two oscillating rockers for each valve. The free end of each rocker is disposed between the cam and the end of the valve stem. The free end of the rocker in contact with the cam has a roller which is in rolling contact with the cam. The lower planar surface of this rocker is in contact with the spherical head portion at the free end of the other rocker. This spherical free end is in turn in contact with the end or tappet of the valve stem. The rocker in contact with the end of the valve stem oscillates in a plane perpendicular to the axis of the valve. The rocker in contact with the cam oscillates about an axis parallel to the axis of the camshaft. The mid-point of the path of contact between the spherical head portion and the end of the valve stem is disposed substantially along the axis of the valve.

3,722,485

**ELECTRONIC GOVERNOR FOR FUEL-INJECTION TYPE INTERNAL COMBUSTION ENGINES**

Yoshio Ohtani, Higashi-Matsuyama, Japan, assignor to Diesel

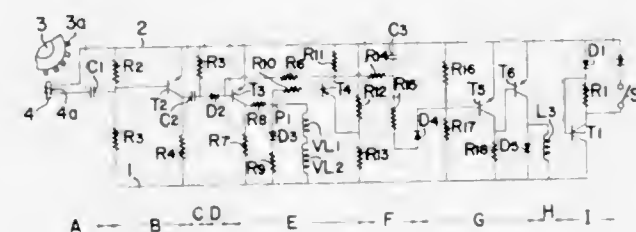
Kiki Kabushiki Kaisha, Tokyo, Japan

Filed March 9, 1971, Ser. No. 122,472

Int. Cl. F02d 5/02

U.S. Cl. 123—102

2 Claims



An electronic governor for fuel-injection type internal combustion engines, in which the number of component parts is minimized, the time constant is enlarged in the output voltage

integrating circuit in order to eliminate the possibility of "hunting" phenomenon and thus to secure a stable state under the low-speed running condition of the engine, the speed regulation, that is, the rate of change in fuel regulating rod position for changes in the rotational speed of the engine is therefore expanded for the low-speed range, and a signal arising from the displacement of the fuel regulating rod is applied, as in positive feedback, to the rotational speed setting circuit in order to narrow the expanded speed regulation, so that a small speed regulation comes into play, under the high-speed running condition of the engine.

3,722,486

**IGNITION TIMING DEVICES FOR INTERNAL COMBUSTION ENGINES**

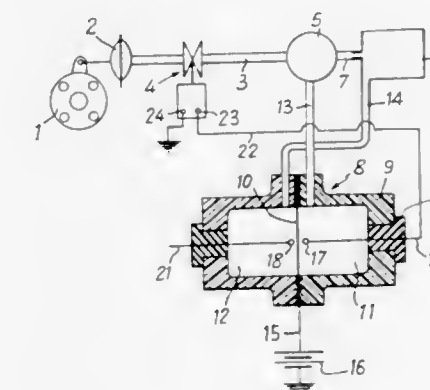
Jean-Pierre Rivere, Billancourt, assignor to Regie Nationale Des Usines Renault, Billancourt and Automobiles Peugeot, Paris

Filed Oct. 29, 1971, Ser. No. 193,779

Int. Cl. F02p 5/04

U.S. Cl. 123—117 A

4 Claims



In this device for automatically adjusting the advance and/or retard of the ignition system of internal combustion engines, a solenoid valve is interposed between the corresponding advance and/or retard control capsule connected to the engine induction manifold and to the distributor of the ignition system, a buffer capacity, an output limiting member interposed between said capacity and said manifold, and a pressure-responsive electric switch connected to said manifold and also to said buffer capacity so as to act in one or the other direction as a function of variations in a differential pressure for closing during a predetermined time period, by means of said output limiting member, and/or said buffer capacity at least one electric contact controlling said solenoid valve.

3,722,487

**APPARATUS FOR COMPENSATION OF THE OPERATION OF A FUEL INJECTION DEVICE FOR AN INTERNAL COMBUSTION ENGINE**

Yasumichi Ohama, Tokyo, and Hiroshi Kogure, Saitama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 3, 1971, Ser. No. 195,181

Claims priority, application Japan, Nov. 30, 1970, 45/104879

Int. Cl. F02m 31/00; F02d 1/04

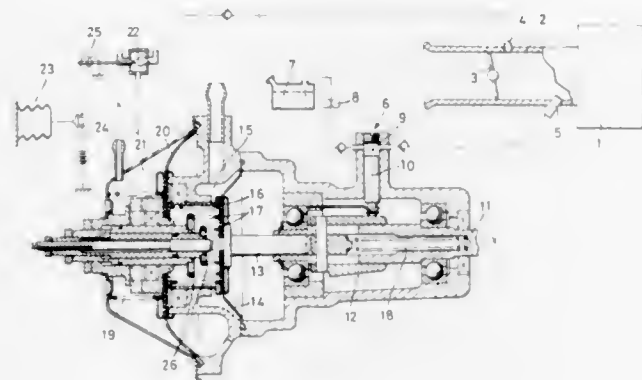
U.S. Cl. 123—140 MP

6 Claims

A fuel injection device for an internal combustion engine is subjected to the action of two spring units mounted in a suction chamber connected to the suction inlet leading to the engine such that the first spring unit becomes inoperative when the engine is under high load while the resilient action of the second spring unit varies with atmospheric pressure change. The suction chamber has front and rear diaphragm walls



against which the second spring unit permanently bears, whereas the first spring unit is fixedly supported at its back end while its front end bears against the front wall when the suction pressure is high during low engine load and loses con-



tact therewith when the suction pressure is low during high engine load. At the back of the suction chamber is a further chamber acting on the rear diaphragm wall and selectively connected by a changeover valve to the atmosphere or to the suction inlet depending on atmospheric pressure.

3,722,488

## CAPACITOR DISCHARGE SYSTEM

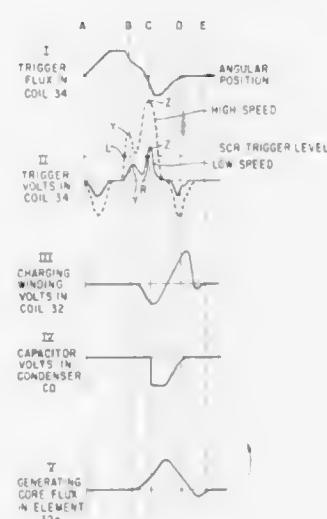
Thomas E. Swift, 69 Field Street, Springfield, and Elwin J. Brayley, 11 Fraser Drive, East Longmeadow, both of Mass.

Filed March 22, 1971, Ser. No. 126,431

Int. Cl. F02p 3/06

U.S. Cl. 123-149 D

3 Claims



A breakerless ignition system of the capacitor discharge type for an engine is disclosed with the energy being supplied by a simplified magneto having a magnetic structure energized by a rotor with a single permanent magnet group to create a charging current for the capacitor and a trigger current to change the conductance state of a silicon-controlled-rectifier to discharge the current stored in the capacitor into an ignition coil to provide the ignition spark in the secondary thereof. The magnetic arrangements between the parts provide an automatic timing advance with increase in speed of the engine. Improved means are provided for temperature compensation by a bifilar winding on the trigger coil of positive temperature coefficient wire of nickel or the like. Anti-reverse rotation protection is also provided.

### 3,722,489 ELECTRONIC RELAY AND IGNITION SYSTEM UTILIZING SAME

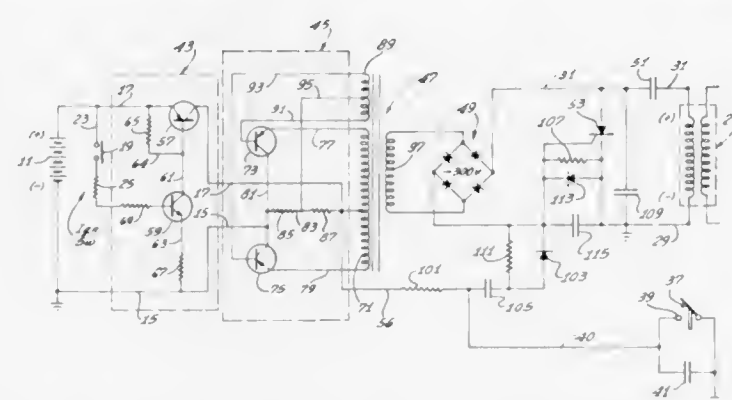
Homer E. Howard, Costa Mesa, Calif., assignor to Howard Associates, Inc., Costa Mesa, Calif.

Filed March 13, 1969, Ser. No. 806,998

Int. Cl. F02p 3/06

U.S. Cl. 123-148 E

11 Claims



This disclosure describes an electronic relay which is particularly adapted for use with a capacitor discharge ignition system to control the supply of current from the battery to the capacitor discharge ignition system. The electronic relay may include first means for at least substantially preventing the flow of electrical energy from the battery to the capacitor discharge ignition means and second means electrically connectible to the ignition switch and responsive to receiving electrical energy therefrom when the ignition switch is closed to permit the flow of the electrical energy from the source of electrical energy to the capacitor discharge means.

3,722,490

## METHOD OF AND APPARATUS FOR INJECTING FUEL INTO A DIESEL ENGINE

Kenji Araya, Kameoka; Akihiro Enomoto, Kyoto; Akira Nishina, Otsu, and Masahiro Yamaguchi, Kameoka, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

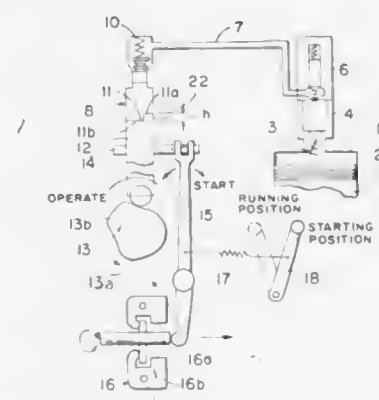
Filed Oct. 31, 1969, Ser. No. 872,825

Claims priority, application Japan, Nov. 15, 1968, 43/83391

Int. Cl. F02b 3/00; F02n 17/00

U.S. Cl. 123-179 L

10 Claims



A fuel injection system for diesel engine effects a two-stage fuel injection for starting the engine and a single stage fuel injection for operating the engine. During start-up, during each piston cycle, a portion of the fuel is initially injected at a first point during the latter half of the suction stroke and the initial half of the compression stroke of each piston, and an additional amount of the same fuel is subsequently injected at a second point near the end of the same compression stroke of each piston. When the engine has reached a predetermined number of rpms the regular operation of the engine continues with the fuel being injected only in a single stage at approximately the same point in the cycle as the second injection of fuel in the start up procedure.

3,722,491

### APPARATUS FOR INSURING AUTOMATIC CLOSURE OF AN ENGINE THROTTLE VALVE UPON RELEASE OF THE ACCELERATOR PEDAL

Noriyuki Maeda, Sengoku, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

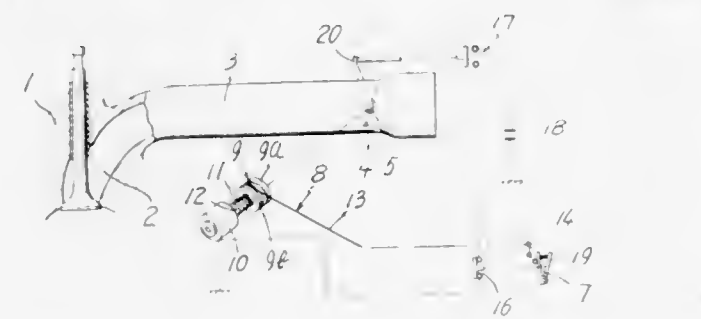
Filed Dec. 15, 1970, Ser. No. 98,379

Claims priority, application Japan, Dec. 16, 1969, 44/100574

Int. Cl. F02b 77/00

U.S. Cl. 123-198 D

9 Claims



An apparatus is provided for insuring closure of a throttle valve in a suction passage in an internal combustion engine when an acceleration member such as an acceleration pedal or the like is released. The throttle valve is urged by a spring to its closed position and a normally closed clutch is incorporated in an operation mechanism which couples the throttle valve and the acceleration pedal. The clutch is opened by an electro magnet when both a first detecting switch is closed upon release of the acceleration pedal and a second detecting switch is closed when the throttle valve remains in its open position.

3,722,492

## APPARATUS FOR FORCIBLY CLOSING AN ENGINE THROTTLE VALVE

Yasuo Shibata, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

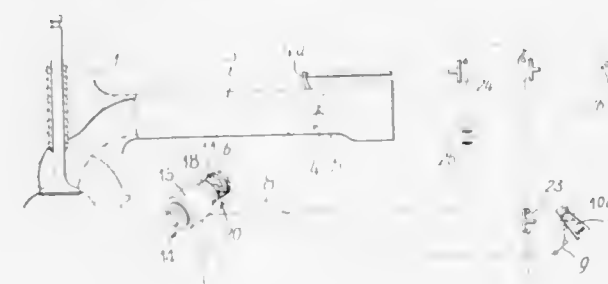
Filed Dec. 23, 1970, Ser. No. 100,965

Claims priority, application Japan, Dec. 26, 1969, 44/104280

Int. Cl. F02b 77/00

U.S. Cl. 123-198 R

9 Claims



An apparatus for forcibly closing a throttle valve in a suction passage of an internal combustion engine, the throttle valve being movable to open and close by an acceleration operation member such as an acceleration pedal or the like. The apparatus for forcibly closing the throttle valve is mounted on one side of the throttle valve, and is operated when the throttle valve is not closed and the acceleration operation member is released from operation. The apparatus for forcibly closing the throttle valve comprises an electromagnetic solenoid with a core which is advanced with rotation when the solenoid is energized, there being a first detecting switch which is closed when the acceleration operation member is released from operation and a second detecting switch which is closed when the throttle valve is in its open position, the two switches being interposed in series in an electrical circuit containing the solenoid and an electric source.

3,722,493

### ROTARY PISTON INTERNAL COMBUSTION ENGINE

Hans Otto Hartmann, Wurttembergstrasse 110, Stuttgart-Unterturkheim, and Karl-Walter Schmidt, Kappelbergweg 14, Beutelsbach, both of Germany

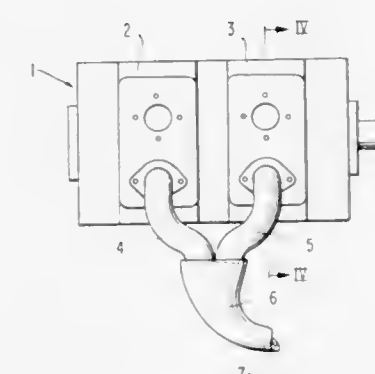
Filed March 10, 1971, Ser. No. 122,691

Claims priority, application Germany, March 11, 1970, P 20 11 574.6

Int. Cl. F02b 53/00

U.S. Cl. 123-8.07

28 Claims



A rotary piston internal combustion engine, particularly of trochoidal construction, which is composed of at least two units, each including a piston and a housing casing, and in which both the inlet channel as also the exhaust channel are arranged in each unit within the area of a zone of the housing casing near the engine axis; the exhaust pipes connected to each exhaust channel are combined at substantially the same height into a common pipe which provides an afterburning effect for the exhaust gases.

3,722,494

## MECHANICAL BALL THROWING DEVICE

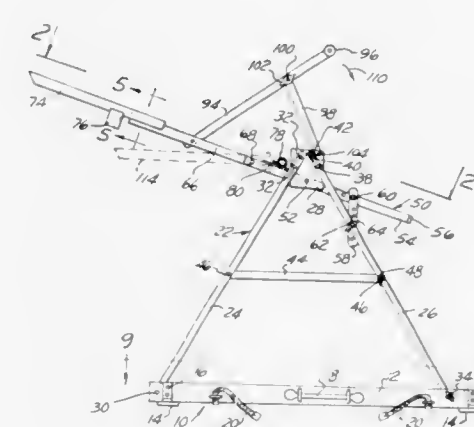
James T. Slevin, 9361 Memorial, Detroit, Mich.

Filed March 8, 1971, Ser. No. 121,898

Int. Cl. F41b 3/02

U.S. Cl. 124-7

4 Claims



A mechanical throwing ball device having a base supporting thereon a pair of spaced frame members. An elongated head, adjustably supported between the frame members, has thereon a pivoted pitching arm. A resilient member is pivotally connected between the rear end of the pitching arm and the elongated head. A cocking arm pivotally attached at one end to the pitching arm, is supported by a link pivotally connected between the pitching arm and the frame. The device is fully collapsible so that it can be compacted to facilitate storage and transportation.



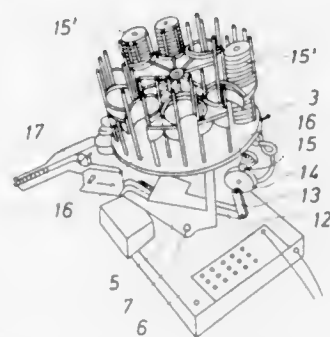
**3,722,495**  
**DRIVE MECHANISM FOR AUTOMATICALLY VARYING**  
**THE VERTICAL AND HORIZONTAL THROWING**  
**ANGLES OF A TARGET TRAP**

Ib Schreiner Hansen, Aaso, 5953 Tranekaer, Denmark  
 Filed Oct. 21, 1970, Ser. No. 82,597  
 Claims priority, application Sweden, Oct. 21, 1969,  
 14432/69

Int. Cl. F41b 3/04

U.S. Cl. 124-9

3 Claims

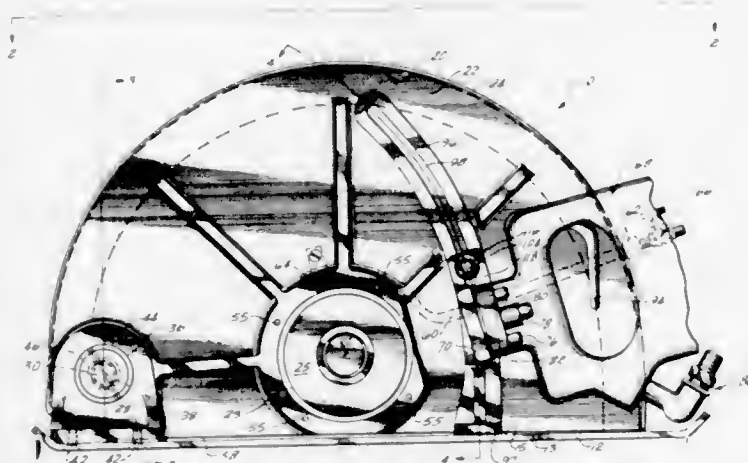


A trap is described for ejecting disc-shaped members, otherwise shown as clay pigeons. The trap has a throwing arm for the clay pigeons, said arm being pivotably mounted on a frame which is oscillated about a vertical axis by an electric motor via a transmission mechanism and is further oscillated about a horizontal axis by another electric motor via another transmission mechanism. The latter mechanism is adapted to control the first-mentioned motor in such a way that this motor is intermittently stopped and started, whereby an irregularity is introduced in the pigeon throwing cycle.

**3,722,496**  
**CONCRETE CUTTING HAND SAW**  
 Albert Schuman, 3424 Marina Drive, Santa Barbara, Calif.  
 Filed Jan. 28, 1971, Ser. No. 110,502  
 Int. Cl. B28d 1/04

U.S. Cl. 125-13 R

2 Claims



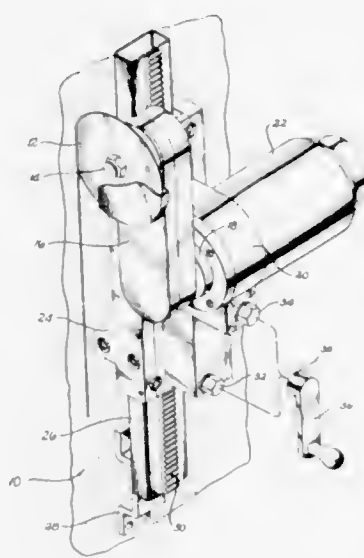
A concrete cutting hand saw has a base plate for engaging a concrete surface to be cut. The saw is driven by a motor having a housing and a rotatable saw blade supporting spindle. A shroud member is adapted to receive a circular saw blade therein and to mount the motor housing thereto with the spindle extending into the shroud member. The shroud member is arranged to enclose opposite sides of the saw blade engaged with the spindle over a substantial portion of the area of the blade. Means connect the shroud member to the base plate for hinging motion about an axis parallel to the spindle axis and spaced therefrom. An elongate shroud guide, having an elongate arcuate slot curved concentric to the hinge axis, is fixed to the base plate. Selectively operable means for fixing the

shroud member at a desired angular position relative to the base plate include a connecting member removably positioned through the arcuate slot and matable with a socket defined in the shroud member. The connecting member is fully releasable from the socket and the slot so that the shroud member is hingeable relative to the base member through an arc greater than that subtended by the slot. In this manner the saw blade may be easily inserted into the shroud member into coaxial alignment with the spindle.

**3,722,497**  
**WALL SAW**  
 James C. Hiestand, Redondo Beach, and Richard O. Theis, Studio City, both of Calif., assignors to Continental Drilling Company, Los Angeles, Calif.  
 Filed April 8, 1971, Ser. No. 132,387  
 Int. Cl. B28d 1/04

U.S. Cl. 125-14

9 Claims



A saw for cutting openings in walls and other flat surfaces is disclosed. The saw is mounted on a trolley which rides on a track attached to the flat surface, and is moved along the track by means of a gear driving device. The saw blade is mounted at one end of an arm. The arm is pivotable about its other end, which is attached to a cylindrical housing around the output shaft of the motor. When the housing is rotated, the end of the arm holding the saw blade is moved up and down for adjusting the depth of cut.

**3,722,498**  
**PORTABLE DEEP FRYER ASSEMBLY**  
 Clyde H. Kimbrough, 449 Brookwood Drive, Auburn, Ala.  
 Filed Aug. 12, 1971, Ser. No. 171,160  
 Int. Cl. F24c 5/20

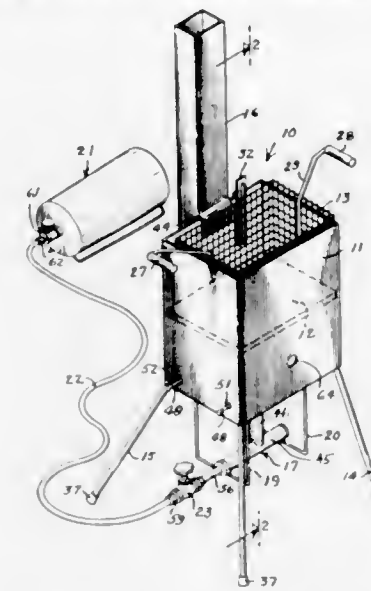
U.S. Cl. 126-38

6 Claims

This deep fryer assembly comprises a plurality of parts which are quickly attachable to one another to make up a deep fryer assembly. The principal part is a vertically extending tube of rectangular section in which is disposed intermediate its height a thick heat plate adapted at the top of the tubular member to contain the cooking oil or shortening and into which a basket can be dropped and lifted out of the oil with its contents after the frying has been done.

The legs are detachably connected, being formed of two parts and such as to fit snugly within the lower open end of the tubular member and retained therein by cleats or clip fasteners. A chimney is detachably connected to the rear of the tubular member and has an opening entering an opening in the flame chute portion of the tubular member. A jet burner is

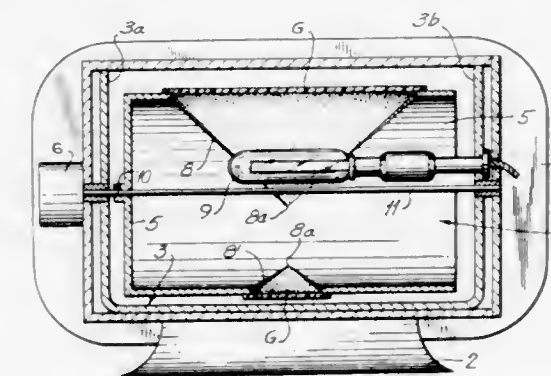
detachably supported and depending from the lower end of the tubular member by U-shaped rod members having elongated ends adapted to be detachably extended through openings adjacent the lower edge of the tubular member. A gas pressure source includes a container having a regulator



uterus to stimulate muscular activity sufficiently to induce menstruation and thereby cause spontaneous expulsion of the nonviable embryo. In one form of the invention, after the body is inserted, it is filled with a substance to effect the distension thereof. In another embodiment, the body is provided with an incrustation and then charged with a pressurized substance before insertion. The incrustation dissolves in the uterus, permitting the substance to expand and distend the body to a size which precludes its expulsion until shedding of the endometrium and discharge of the implantation therewith.

**3,722,501**  
**TRANQUILIZING DEVICE**  
 Rene Derouineau, Moulin de Pelissey, Gradignan, France  
 Filed Feb. 3, 1971, Ser. No. 112,183  
 Claims priority, application France, Feb. 11, 1970, 7004759  
 Int. Cl. A61h 5/00; F21p 3/00; G09f 1/10  
 U.S. Cl. 128-1 C

7 Claims

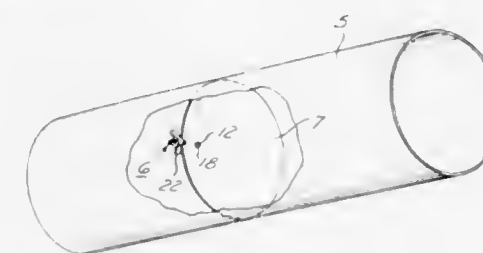


and a hose connection to a shut-off valve on the burner. A hot high pressure blue flame is directed into the lower end of the tubular member and against the thick heat plate. The flame is covered by the depending shield portion of the tubular member and cannot be emitted from the sides of the plate.

**3,722,499**  
**BOLT AND DAMPER CONSTRUCTION**  
 Serge Lukjan, Rte. 2, Evergreen Rd., Frankfort, Ky.  
 Filed March 25, 1971, Ser. No. 128,009  
 Int. Cl. F231 3/00

U.S. Cl. 126-292

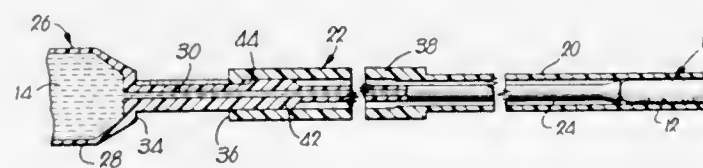
17 Claims



A novel bolt construction is provided that is self-locating and self-locking with respect to a mating portion of a workpiece, particularly a flat-surfaced workpiece such as a plate. The bolt is especially designed for adjustably securing a damper plate within a pipe or duct. The bolt has a cut-away section to receive an edge of a plate and hook or anchoring means to catch or latch the plate. The bolt holds the plate against the side of a duct or the like solely by tension exerted along the bolt.

**3,722,500**  
**ABORTIVE DEVICE AND METHOD**  
 Ralph R. Robinson, P.O. Box 668, Middlesboro, Ky.  
 Filed Dec. 29, 1970, Ser. No. 102,448  
 Int. Cl. A61b 19/00; A61f 5/46  
 U.S. Cl. 128-1 R

9 Claims



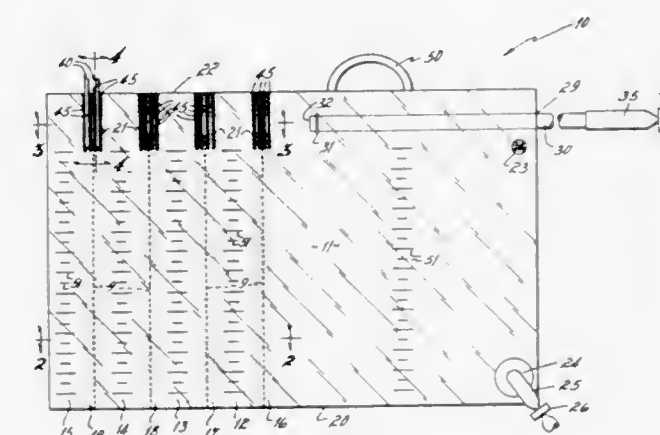
Premature termination of pregnancy is effected by insertion of a hollow, distensible body of elastomeric material into the

The invention relates to a therapeutic device which serves to tranquilize the user by the effect of a timed presentation of a varying size colored image and more particularly includes an internally illuminated cylinder having a pair of spaced triangular openings covered with different colored translucent sheets which are successively moved past a viewing opening to be observed by the viewer.

**3,722,502**  
**MULTIPLE LIQUID SAMPLE COLLECTION APPARATUS**  
 Sidney Besuner, 319 Rossford Avenue, Ft. Thomas, Ky., and Richard L. Pardun, 11391 Kenshire Drive, Cincinnati, Ohio  
 Filed Oct. 18, 1971, Ser. No. 190,143  
 Int. Cl. A61b 5/00

U.S. Cl. 128-2 F

9 Claims



A liquid sample collection apparatus which includes a collection receptacle with a plurality of joined but separable sample collection units. A liquid transmitting tube may be selectively positioned to discharge into a desired collection unit, without exposure to atmosphere and without sample cross-contamination. The tube has an outlet which is insertable



through internal openings to the respective units. When a sample has been collected in one unit, the flow of fluid is stopped and the outlet end of the tube is withdrawn from the particular unit, but remains within the overall receptacle. The opening between the filled unit and its adjacent unit is then sealed, and the filled unit is separated from the receptacle. The whole system remains sealed to external contamination through successive sample collections and separations.

3,722,503

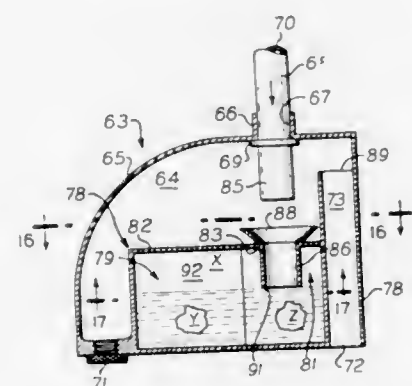
**APPARATUS FOR COLLECTION OF URINE IN FEMALES**  
Jack H. Hovick, Huntington Beach, Calif., assignor to James B. Gambrell, a part interest

Division of Ser. No. 703,700, Feb. 7, 1968, Pat. No. 3,583,388, which is a continuation-in-part of Ser. No. 451,495, April 28, 1965, abandoned. This application Dec. 30, 1970, Ser. No. 102,866

Int. Cl. A61b 10/00

U.S. Cl. 128—2 F

7 Claims



Apparatus for collecting a midstream urine specimen from a female is described which does not require professional help. The apparatus combines a urinary guide having a urinary passageway, means on the guide to align the passageway with the female urethra so that a minimum of labial and vaginal secretions are entrained and a collector which isolates a predetermined initial volume of the micturition so that the urine sample collected for analysis is uncontaminated for all practical purposes.

3,722,504

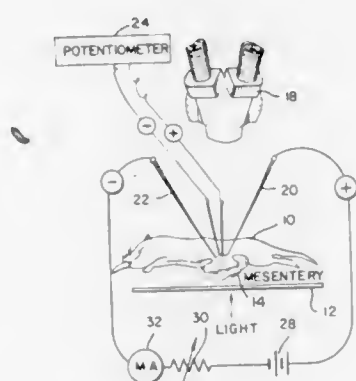
**METHOD OF SCREENING SUBSTANCES FOR USE IN THE TREATMENT OF CIRCULATORY SYSTEM DISEASES**

Philip Nicholas Sawyer, 606 Third St., New York City, N.Y.  
Filed Dec. 23, 1969, Ser. No. 887,649

Int. Cl. A61b 5/04

U.S. Cl. 128—2.1 R

16 Claims



A method as set forth for screening chemical agents and compounds to determine their usefulness in the treatment of circulatory system diseases and to enable distinguishing the anticoagulant and antithrombotic characteristics of the same.

The method consists of a plurality of interrelated steps including the evaluation of the agent or compound on an exposed laboratory animal mesentery. Also included are tests on streaming potential in blood vessels, both in vivo and in vitro. In addition, the method includes checking the effect of the tested substances on electro-osmosis and evaluating the effect of the substance undergoing test on the charge of blood cells. Still further, the test includes checking the effect of the substance on the transport of ions across blood vessel walls and on the sorption and desorption of ions with respect to the circulatory system. In addition, the effect of the substance on destruction of various cells and proteins in blood is determined. The above characteristics are evaluated to determine the antithrombotic, antiatherogenic usefulness of the substance undergoing test.

3,722,505

**ORIENTABLE ELECTROMAGNETIC CATHETER PROBE AND METHOD**

Alexander Kolin, Bel Air, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed July 2, 1970, Ser. No. 52,032

Int. Cl. A61b 5/02

U.S. Cl. 128—2.05 F

11 Claims



An orientable electromagnetic catheter type flow meter and method are provided, which flow meter may be introduced, for example, into a blood vessel to measure the blood flow in the blood vessel, and which is constructed to have a minimal diameter so that it may be introduced percutaneously, for example, into a branch of a larger blood vessel with minimum damage. One embodiment of the flow meter of the invention to be described includes a thin resilient probe having an angled end portion so as to place its pick-up electrodes adjacent the inner surface of the wall of the blood vessel diagonally or diametrically across the blood vessel from one another. The aforesaid flow meter in one embodiment is constructed so that its probe may be easily turned while in the blood vessel to different orientations with respect to an external magnetic field, in order first to establish a proper base line, and then to establish optimal orientation for flow sensing. In another embodiment the external field is turned, and in yet another embodiment the animal or human subject is turned together with the flow probe relative to the external magnetic field.

3,722,506

**ROLLING SEAL SPIROMETER**

Robert D. McMillan, Jr., Houston, Tex., assignor to Airco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 838,725, June 16, 1969, abandoned, which is a continuation-in-part of Ser. No. 646,529, abandoned. This application Oct. 15, 1970, Ser. No. 81,127

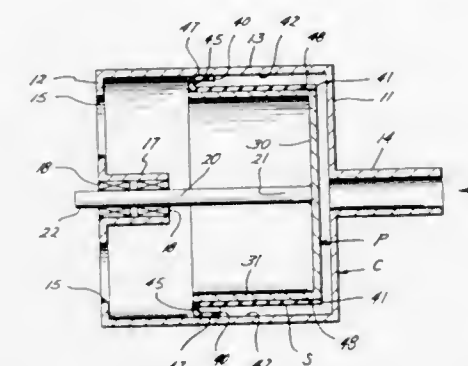
Int. Cl. A61b 5/00

U.S. Cl. 128—2.08

2 Claims

A spirometer for measuring the tidal volume and/or expiratory breathing rate of human lungs including a movable piston positioned within a chamber; the piston being responsive to an

expired breath which enters one end of the chamber. A unique U-shaped rolling seal is provided having extremely minute



friction losses during movement and which effectively seals the area between the external perimeter of the piston and the internal surface of the chamber.

3,722,507

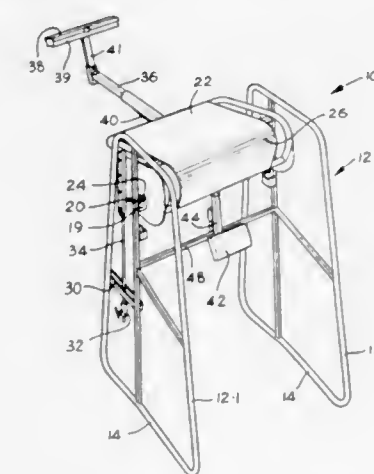
**APPARATUS FOR POSTURAL TREATMENT OF HUMANS**  
Frans Engelbertus Krause, 75 Steyn Street, Hennenman, O.F.S., Republic of South Africa

Filed Sept. 7, 1971, Ser. No. 178,334

Int. Cl. A61f 5/00

U.S. Cl. 128—68

2 Claims



An apparatus for effecting postural treatment of a human by positioning the human in an inverted position at the hip joint on a platform which is pivotally mounted on a supporting structure.

3,722,508

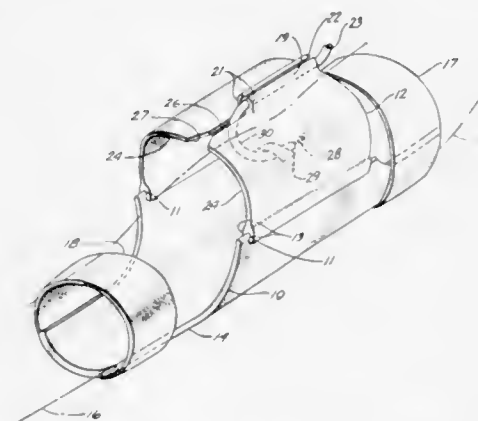
**INFUSION GUARD AND IMMOBILIZER**  
Donald B. Roberts, 355 S. 8th Ave., Pocatello, Idaho

Filed Oct. 26, 1970, Ser. No. 83,898

Int. Cl. A61m 05/00

U.S. Cl. 128—133

13 Claims



A combined immobilizer and guard particularly useful for intravenous infusions or the like is described in several em-

bodiments. The immobilizer is a rigid member having one surface conforming to a portion of a limb spanning a joint, such as, for example, an elbow, wrist or ankle. Velcro hook and eye straps are employed for fastening the immobilizer to a limb or extremity. The infusion guard comprises an arch extending from one side of the immobilizer to the other side and connected thereto by complementary connectors running along the length of the immobilizer and the guard. The guard includes means for clamping an intravenous tube thereto and a slit for passing and protecting the loop of tubing between the clamp and an intravenous needle. The guard prevents either an inadvertent pull on the tubing or a blow at the infusion site from dislodging the needle or causing infiltration.

3,722,509

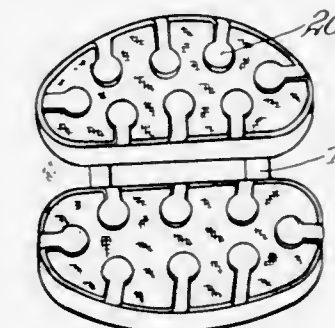
**NASAL FILTERS**

Joseph A. Nebel, 15630 Dobson Avenue, Bolton, Ill.  
Filed Jan. 5, 1971, Ser. No. 104,065

Int. Cl. A62b 23/06

U.S. Cl. 128—140 N

2 Claims



A nasal filter composed of companion pads of porous textile material, each pad secured in a reinforcing peripheral band. Outward base guards are carried by the pads to check their insertion into the nostrils beyond a prescribed extent. The pads are adapted for impregnation with a volatile solution, and valves are applied to the inner surfaces of the pads for the absorption of vapors from the solution on inhalation, but check the emission of such vapors on exhalation. Modified bands have perforations for the passage of vapors in outward direction on inhalation.

3,722,510

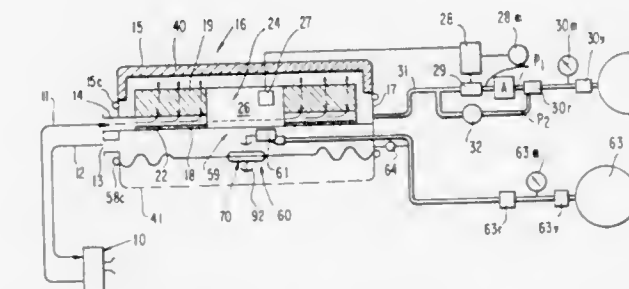
**SAFETY APPARATUS FOR OXYGEN SUPPLY SYSTEM**  
Frederick A. Parker, Broomall, Pa., assignor to Biomarine Industries, Devon, Pa.

Continuation-in-part of Ser. No. 6,387, Jan. 28, 1970. This application June 23, 1971, Ser. No. 155,906

Int. Cl. A62b 7/10, 19/00

U.S. Cl. 128—142

6 Claims



There is disclosed a safety device for use in a pulsed oxygen system for preventing a rapid build-up of partial oxygen pressure causing oxygen toxicity in the event a normally closed (or open) solenoid control oxygen supply valve fails and remains or sticks open. Following the regulator and shutoff valve on the oxygen circuit from a high pressure oxygen supply is a



restricted passageway means which may be either an orifice or a capillary tube. Intermediate the restricted passageway means and the control valve is an accumulator means so that in the event the control valve fails and sticks open, the oxygen is admitted to the gas system at a metered rate. However, this rate is sufficient to supply the gas circuit with adequate oxygen when the valve is pulsed open.

3,722,511

## MOUTHPIECE AND FILTERING SYSTEM

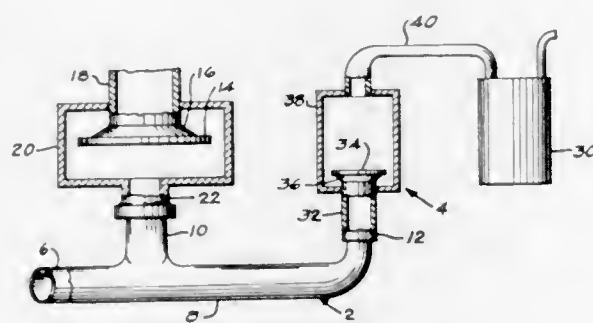
Alvin S. Blum, Coral Gables, Fla., assignor to Ohio Nuclear, Inc., Mentor, Ohio

Filed March 6, 1969, Ser. No. 804,873

Int. Cl. A61b 6/10

U.S. Cl. 128—147

1 Claim



A replaceable mouthpiece and filter system for a gas supply means that includes a replaceable mouthpiece connected to an input means and an output means, and a filtering device connected to the output means for filtering exiting gases. The replaceable mouthpiece includes an input channel and an output channel. The replaceable mouthpiece includes that portion of the system which is common to entering and exiting gases. The filtering means removes radioactive gas from exhaled air, preventing contamination of the environment.

3,722,512

## ONE HAND INJECTOR

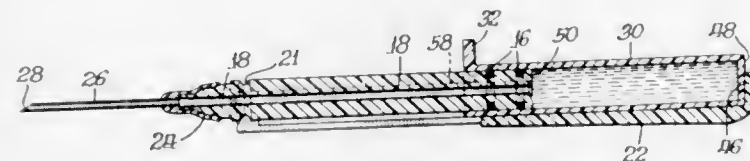
Gary L. Hein, and Roger R. Larson, both of Decatur, Ill., assignors to Lincoln Laboratories, Inc., Decatur, Ill.

Filed Aug. 5, 1970, Ser. No. 61,121

Int. Cl. A61m 5/22, 5/32

U.S. Cl. 128—220

11 Claims



A hypodermic syringe is provided by the combination of an elongated handle which longitudinally supports an elongated cylinder that is slidable along the handle, with the injector needle being connected to a piston that is fixed with respect to the handle and is located within the cylinder. An abutment flange is located on the handle to limit rearward movement of the elongated cylinder to prevent the cylinder from disengaging the piston and to limit the amount of liquid that can be injected into the cylinder. The handle has a split portion for releasable engagement with the mounting for the needle.

3,722,513

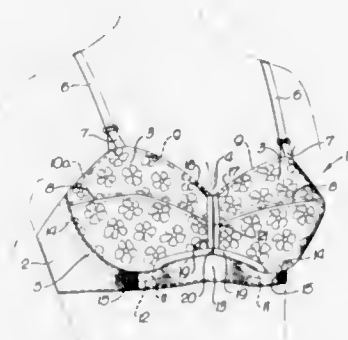
UNDERWIRE BRA HAVING SELF-ADJUSTING FIT  
Olga Erteszek, Los Angeles, Calif., assignor to Olga Company,  
Van Nuys, Calif.

Filed Jan. 24, 1972, Ser. No. 220,227

Int. Cl. A41c 3/00

U.S. Cl. 128—465

8 Claims



An underwire brassiere having increased comfort through responsive adaptability to breast variations, in both cup configuration and location, while affording underwire separation and uplift support characteristics ordinarily associated with an underwire brassiere.

3,722,514

## CORSELET OR THE LIKE

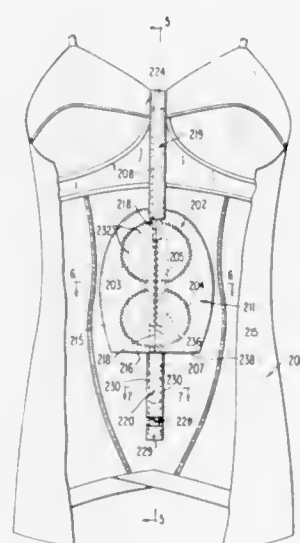
Henry M. Herbener, 803 North Dawson St., P.O. Box 1477,  
Thomasville, Ga.

Filed May 30, 1972, Ser. No. 257,534

Int. Cl. A41c 5/00, 1/08

U.S. Cl. 128—533

11 Claims



A corselet features an abdominal control unit positioned on the front wall thereof for the purpose of maintaining the abdomen flat and for holding up the top frontal edge of the garment. The control unit possesses the ability to perform these functions without restricting the ability of the wearer to twist, bend or stoop and without sacrifice of comfort and convenience. The invention is particularly characterized by economy of manufacturing and the use of a minimum amount of material. This renders the garment structure compact and flexible with a notable absence of bulkiness.

## ERRATUM

For Class 128—334 see:  
Patent No. 3,722,599

3,722,515

## CIGARETTE WITH MODIFIED PAPER WRAPPER

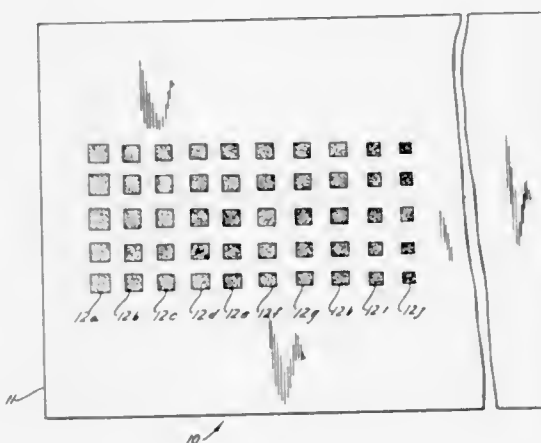
Martin Lance Reynolds, Anchorage, Ky.; James R. Hammer-smith, Jeffersonville, Ind., and Harlie A. Parish, Jr., Louisville, Ky., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed March 13, 1972, Ser. No. 234,210

Int. Cl. A24d 1/02

U.S. Cl. 131—15 B

3 Claims



An improved cigarette is prepared through use of modified cigarette paper as a wrapper. The wrapper is treated in preselected areas with a burn control additive comprising a mixture of potassium chlorate and sodium chlorate in a molar ratio of from 2.6:1 to 1.0:1. When the burning coal reaches the area of treatment, the treated area is burned away, allowing for the passage of air through the opening created during smoking of the cigarette. The mixture of potassium chlorate and sodium chlorate provides for a more stable treatment, particularly when the cigarettes having the thus treated wrapper are stored under conditions of high humidity.

long to permit the user's scalp to breathe. Natural or artificial hairs are attached to the netting which is attached to the user's

head by glueing individual living hairs to the edge of the netting.

3,722,518

## FINGERNAIL CLIPPER CONTAINER

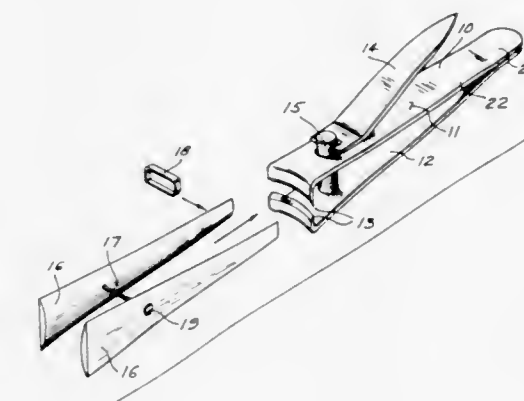
Frank E. Fravel, Springfield, Ohio, assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed May 19, 1972, Ser. No. 254,917

Int. Cl. A45d 29/04

U.S. Cl. 132—75.6

3 Claims



A fingernail clipper container which may be mounted on a conventional fingernail clipper so as to retain the cuttings and prevent their being scattered about during the clipping process. The container consists of two flat members which are mounted on each open side of a conventional open side fingernail clipper, with both side members being joined by an elastic or spring member that retains the side members in position without interfering with the normal movement of the clipping bars. A rectangular ring may be also employed to fasten the container sides to the clipper.

3,722,516

## SMOKING TOBACCO PRODUCT AND METHOD OF MAKING THE SAME

Koichiro Suwa, Minato-ku, Tokyo-to; Haruki Satoh, Nishi-ku, Yokohama-shi, and Atsuo Shida, Shinagawa-ku, Tokyo-to, all of Japan, assignors to Japan Monopoly Corporation and Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed Feb. 9, 1971, Ser. No. 114,070

Int. Cl. A24b 03/12, 15/00

U.S. Cl. 131—17 R

6 Claims

The addition of dihydroxyacetone to tobacco enhances its natural flavor characteristics. Additionally it modifies the tobacco odor so as to subdue irritating and disagreeable odor characteristics. Amino acids further enhance the effect. Effective amounts of the dihydroxyacetone and the amino acid are such that each is present in an amount of 0.01 to 1.0 percent by weight of the tobacco.

3,722,517

## HAIR PIECES

Rene Molinario, Paris, France, assignor to S. A. Molinario, Paris, France

Filed June 11, 1971, Ser. No. 152,308

Int. Cl. A41g 5/00

U.S. Cl. 132—5

12 Claims

A hair-piece having a base of resilient, flexible netting, the meshes of the netting having sides between 2 mm and 10 mm

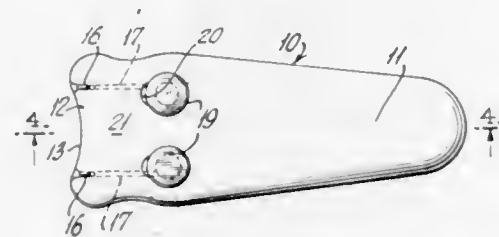


3,722,519

**FALSE EYELASH APPLICATOR**

Norman Epstein, R.D. No. 2, Carmel, N.Y.  
 Filed Aug. 21, 1968, Ser. No. 754,240  
 Int. Cl. A45d 40/26  
 U.S. Cl. 132—88.7

3 Claims



A hand-held device having a blunt, slightly concave blade at one end adapted to hold down an eyelid by its lashes and a pair of finger-operated grippers adapted to advance a false eyelash to the eyelid for adhesion thereto.

3,722,520

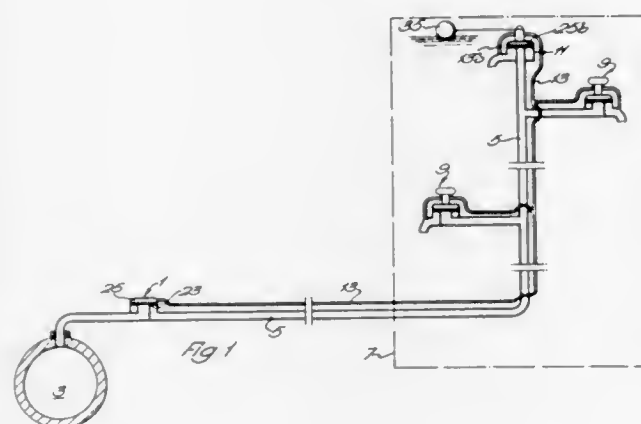
**APPARATUS FOR AND METHOD OF CONTROLLING FLOW OF FLUIDS IN A PIPELINE**

Eric Guy Brian Gledhill, Sutton, England, assignor to F. W. Talbot & Company Limited, Winchester, England  
 Filed Feb. 3, 1971, Ser. No. 112,271  
 Claims priority, application Great Britain, Feb. 10, 1970, 6411/70

Int. Cl. F17d 1/00

U.S. Cl. 137—1

16 Claims



A method and apparatus for controlling the flow of fluid in a supply pipe to a premises such as a water supply pipe or a gas supply pipe in which a small bore high pressure tubing is provided preferably alongside the standard supply pipe and communicates between a main stopcock arranged to control the flow of fluid from a water or gas supply into the premises supply pipe and the various control valves in the premises, the main stopcock and the control valves each preferably being provided with an apertured diaphragm providing the only means of communication between the small bore tubing and the supply pipe whereby, when one of the control valves is opened, pressure is released in the small bore tubing to lift the diaphragm off the seat of the main stop cock to permit flow of fluid through the main stop cock into the supply pipe and vice versa. It is envisaged that instead of relying upon pressure signals to open and close the main stopcock electrical signals could be used. Clearly, by fitting such apparatus into a domestic water or gas supply, water or gas will only flow into the domestic system through the main stopcock when required thereby preventing wastage of water or gas in the event of a leak in the pipeline between the main stopcock and the premises.

3,722,521

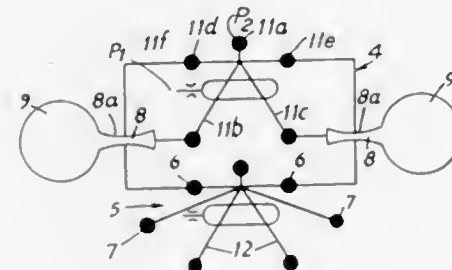
**FLUIDIC APPARATUS, MORE PARTICULARLY FOR THE DETERMINATION OF PRESSURE RATIOS**

Guy Edward Davies, Fareham, and Christopher Guy Scott Wilson, Cowplain, both of England, assignors to Plessey Handel und Investments A.G., Zug, Switzerland  
 Filed June 1, 1971, Ser. No. 148,774  
 Claims priority, application Great Britain, June 2, 1970, 26,589/70

Int. Cl. F15c 1/12

U.S. Cl. 137—81.5

8 Claims



In order to produce a sequence of square-wave pressure pulses of a duty cycle ratio corresponding to the ratio of two input pressures, the lower one of the two input pressures and the pressure at the tapping of a Venturi, the outlet of which is also connected to the lower pressure, and to the inlet of which the higher one of the two pressures is applied via a fixed orifice, are applied to one pair of inputs of a double-input bistable fluidic switch whose other pair of inputs are connected to the output of a fluidic oscillator producing a triangle-waveform output and operated by the higher one of the input pressures.

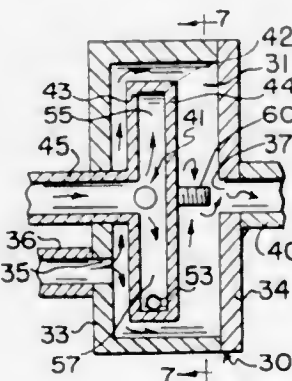
3,722,522

**VORTEX FLUID AMPLIFIER WITH NOISE SUPPRESSER**

James E. Randall, Worthington, Ohio, assignor to Ranco Incorporated, Columbus, Ohio  
 Filed June 10, 1971, Ser. No. 151,698  
 Int. Cl. F15c 1/16

U.S. Cl. 137—81.5

6 Claims



A fluid vortex amplifier has a pin disposed in the position of the eye of a fluid vortex at the outlet of the vortex chamber so that the pin stabilizes the eye of the vortex and reduces the noise otherwise generated.

3,722,523

**GAS WATER HEATER**

Norio Kawabata, Kawanishi-shi; Masahiro Indo, Osaka, and Nobuhiko Nishibayashi, Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan  
 Division of Ser. No. 794,746, Jan. 28, 1969, abandoned. This application Oct. 14, 1970, Ser. No. 80,733

Int. Cl. F23n 1/00

U.S. Cl. 137—94

3 Claims

This invention relates to a gas water heater wherein a diaphragm for opening a gas valve utilizing the water flow is

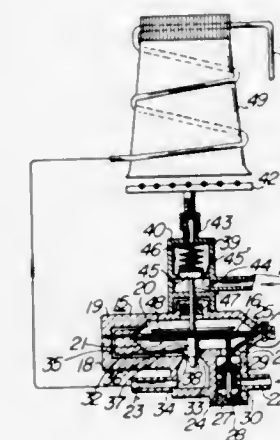
3,722,525

**FLUID SWITCHING VALVE**

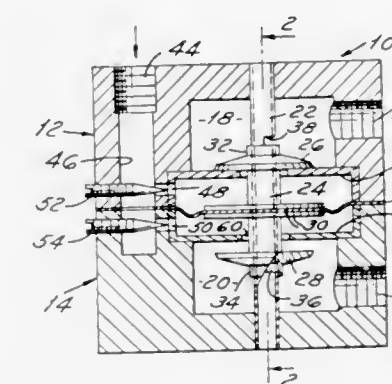
Peter C. Eppe, 20490 Balfour, Harper Woods, Mich.  
 Filed April 14, 1971, Ser. No. 133,845  
 Int. Cl. F16k 11/02

U.S. Cl. 137—106

6 Claims



provided in the Venturi portion to automatically regulate the aperture of the Venturi portion corresponding to the variation of amount of water flow, intended for automation of water amount control and promoting the enlargement of range of adjusting water temperature and simplification of operation.



A flip-flop valve which automatically reverses in response to flow conditions or pressure supply to assure distribution selectively of pressure to selected outputs. A central control element subject to pressure in the system is supplemented by side elements which provide pressure area imbalance at selected times in the operation in response to dynamic flow conditions in the valve to cause reversal of direction to output ports.

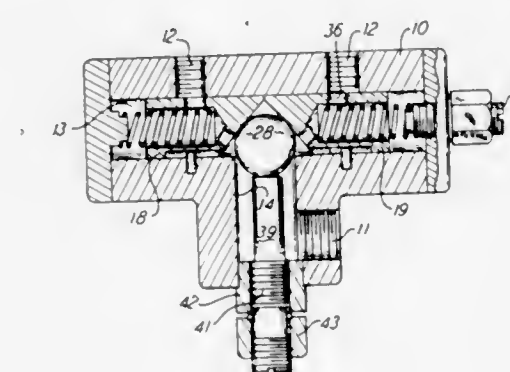
3,722,524

**FLOW DIVIDER VALVE**

Roger F. Engelmann, Racine, Wis., assignor to J. I. Case Company, Racine, Wis.  
 Filed April 30, 1971, Ser. No. 138,923  
 Int. Cl. G05d 11/00

U.S. Cl. 137—101

8 Claims



A valve body having an inlet opening and two outlet openings and an intermediate chamber. Two spools are slidably disposed in the chamber and have fluid passageways which move relative to the valve body outlet openings for varying the flow through the outlet openings. The spools are spring-biased and the spring pressure is adjustable. Also, a spool control member is disposed in the body for adjustably setting the limit position of the spools relative to their sliding movement for limitly setting the amount of flow through the valve.

3,722,526

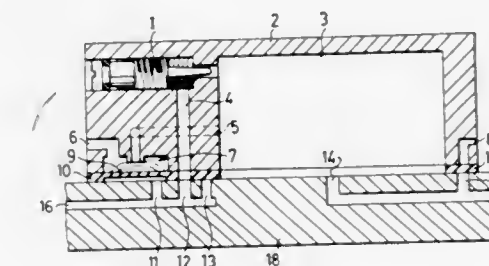
**PNEUMATIC TIMING MEANS**

Karl Gosta Henningson, Handen, Sweden, assignor to Atlas Copco Aktiebolag, Wacka, Sweden  
 Filed Sept. 11, 1970, Ser. No. 71,491  
 Claims priority, application Sweden, Sept. 19, 1969, 12937/69

Int. Cl. F16k 21/04

U.S. Cl. 137—107

15 Claims



A pneumatic timing means, which is particularly suitable for use as a delay device or a pulse device at the output end of pneumatic control circuits, especially such pneumatic control circuits which are of the integrated fluidistor type. The pneumatic timing means has very few movable parts, which makes it very reliable, and its exhaust or draining path is very short and has very little flow resistance in the open condition, which makes the exhaustion or draining after each operation of the timing means very quick. The timing means includes first and second diaphragms, preferably integrally formed, for selectively opening and closing the exhaust channel and the output channel, respectively.



3,722,527

## GAS LIFT VALVE APPARATUS

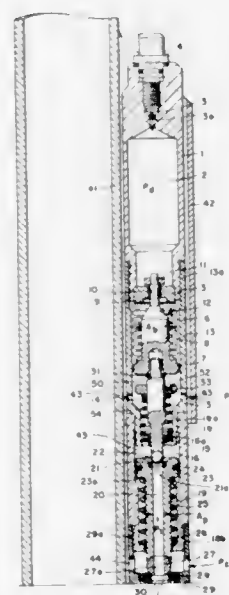
Henry Wayne Blackwell, Venus, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed March 11, 1969, Ser. No. 806,070

Int. Cl. F04f 1/08

U.S. Cl. 137—155

6 Claims



A gas lift valve used with well tubing, said valve employing a bellows means, pilot valve, and a power valve, the pilot valve being unconnected with the bellows means and differentially operated with a spring assist.

3,722,528

## ARRANGEMENT FOR QUIETLY INFLATING SAFETY GAS BAGS IN MOTOR VEHICLES

Ernst Fiala, Braunschweig-Querum, Germany, assignor to Wolf-Dieter Klink, Danziger Weg, Germany

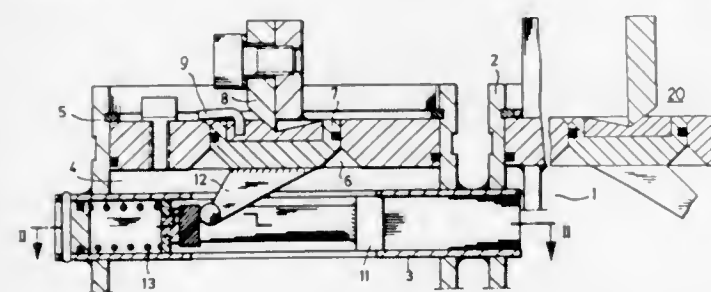
Filed Sept. 21, 1971, Ser. No. 182,490

Claims priority, application Germany, Sept. 21, 1970, P 20 46 515.0

Int. Cl. F16k 31/00

U.S. Cl. 137—255

4 Claims



An arrangement for quietly inflating safety gas bags in motor vehicles from a source of compressed gas. The source has at least two pressure vessels separated from each other and each of the vessels has a discharge outlet. A valve is mounted at each of the discharge outlets for controlling the passage of gas therethrough respectively. A release mechanism is mounted at the vessels for opening the valve of one of the vessels after the valve of the other vessel opens.

3,722,529

## VEHICLE FUEL TANK

Tsuneaki Arakawa, 14-24, 2-chome, Tokyo, Japan

Filed Aug. 3, 1970, Ser. No. 60,239

Claims priority, application Japan, Aug. 14, 1969, 44/76693

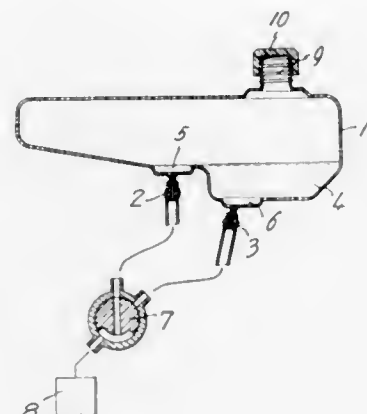
Int. Cl. F17c 3/00

U.S. Cl. 137—266

4 Claims

A fuel tank is provided which is blow molded for the simultaneous and integral formation of a hollow body including a

multi-level bottom wall with pipes depending from different levels of the wall and being integrally formed therewith. Wells are provided which encircle the upper end portion of these



pipes. In addition, a charging pipe is provided at the top of the tank. A valve is connected to the pipes depending from the bottom wall for selectively using the same.

3,722,530

## PIPELINE BY-PASS FLOW CONTROL SYSTEM

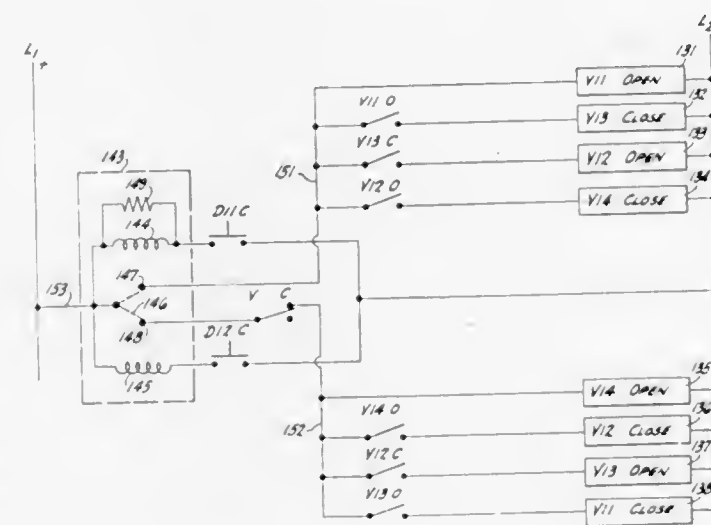
Lyle R. Van Arsdale, and Francis M. Lathrop, III, both of Houston, Tex., assignors to M &amp; J Valve Company, Houston, Tex.

Continuation-in-part of Ser. No. 719,338, April 8, 1968, abandoned, and a continuation-in-part of Ser. No. 796,619, Feb. 14, 1969, abandoned. This application Feb. 1, 1971, Ser. No. 111,351 The portion of the term of this patent subsequent to Nov. 16, 1988, has been disclaimed.

Int. Cl. B08b 9/04

U.S. Cl. 137—268

1 Claim



A system and method for ensuring continual movement of clean-out devices or product separating spheres past the pumping stations of pipelines. Valve controlled branch lines connect through flow-tees with the by-pass portion of the line. The valves of the branch lines are controlled by means including sphere detectors to provide an operating cycle for opening and closing the valves in such a fashion as to cause continual movement of clean-out devices or spheres through the by-pass line section.

3,722,531

## ELECTRO MAGNETIC VALVE

Willem Jan Verhart, Molenstraat Prov. N-Holland, Netherlands, assignor to Martonair Limited, Twickenham, England

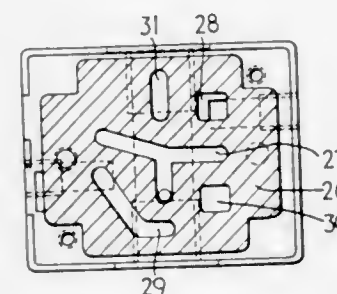
Filed Jan. 27, 1972, Ser. No. 221,355

Claims priority, application Netherlands, March 23, 1971, 7103843

Int. Cl. F16k 11/00

U.S. Cl. 137—271

6 Claims



A valve including a housing defining a chamber having an outlet for delivering a pressurized fluid supply or transmitting a fluid pressure signal to an external position. The chamber is connected with two ports in a wall of the housing alternatively opened and closed electromagnetically. A plate abuts the housing wall and has an inlet and exhaust ports therein. A gasket is positioned between the plate and the housing wall and has apertures therein by which each of the ports in the housing wall is connected with one or other of the ports in the plate, the apertures in the gasket being so arranged that the connections between the ports in the housing wall and the plate respectively are interchangeable by inverting the gasket.

3,722,532

## RAIN WATER DRAIN PIPE OR SIMILAR FOR A BUILDING

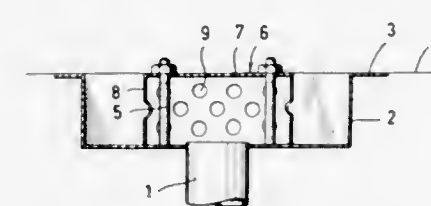
Olavi Ebeling, Tempelkatu 21, and Risto Lunden, Pakilantie 49, both of Helsinki, Finland

Filed Jan. 20, 1971, Ser. No. 108,049

Int. Cl. E04d 13/04

U.S. Cl. 137—357

2 Claims



A rain-water outlet for a roof comprising a vertical pipe and a trough fixed to the upper end of said pipe. A cover is fastened in the trough above the inlet end of said pipe. The cover forms a closed surface larger than the inlet opening to cause water to flow radially in the trough to said inlet opening and to prevent axial section of air into the pipe.

3,722,533

## PROTECTIVE CAP

Edward A. Connolly, Williamsville, N.Y., assignor to Fraser Sweatman, Inc., Lancaster, N.Y.

Filed Dec. 2, 1971, Ser. No. 204,193

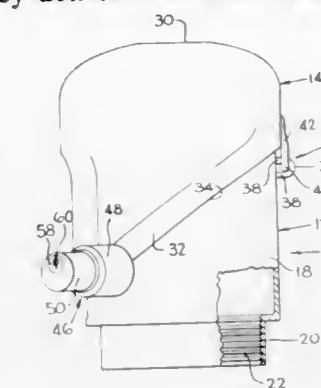
Int. Cl. F16k 35/00

U.S. Cl. 137—382

5 Claims

A protective cap for gas cylinder valves including a base and a cover pivotally mounted on the base forming an enclosure

therewith. A concealed locking mechanism is provided on the cover and is key activated to insert a locking pin through



aligned openings in the base and cover to lock the latter in a closed position.

3,722,534

## FLOW CONTROL VALVE SYSTEM WITH RAPID CLOSING VALVE

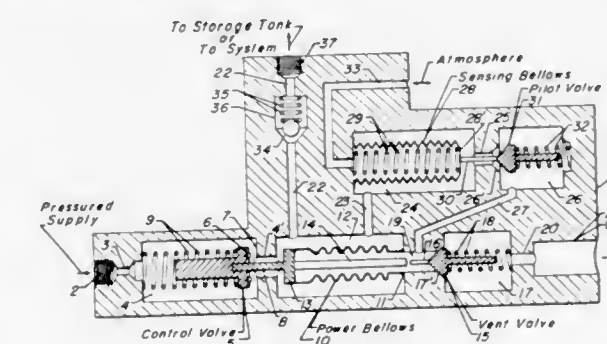
Theodore R. Breunich, Stamford, and August J. Hildenbrandt, Jr., Fairfield, both of Conn., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Oct. 12, 1971, Ser. No. 188,276

Int. Cl. F16k 31/12, 17/02

U.S. Cl. 137—488

9 Claims



A flow control system providing for rapid closure of an inlet valve through the use of power control bellows or diaphragm means and auxiliary sensing bellows, pilot valve and vent valve means. The sensing bellows is precalibrated to move responsive to reaching a predetermined pressure level and then trigger a partial retraction of the control bellows and an opening of a vent valve which latter action effects a rapid closing of the main inlet valve.

3,722,535

## POSITIVE AND NEGATIVE PRESSURE RESPONSIVE RESERVOIR BREATHER

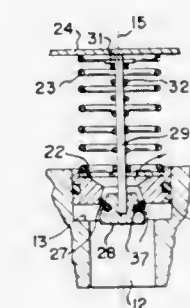
Ray J. Raupp, Lake Orion, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed May 26, 1971, Ser. No. 146,941

Int. Cl. F16k 45/00, 17/00

U.S. Cl. 137—493.4

2 Claims



The invention is directed to a breather for the reservoir of a hydraulic system. Pressure surges occasioned by the flow of



large volumes of fluid into and out of the reservoir during the operation of the system are prevented. The breather is responsive to both positive and negative pressure changes, and accordingly maintains a relatively constant pressure within the reservoir. A first pressure responsive member is spring-biased and linearly moved to expel air from the reservoir in response to positive pressure buildups within the reservoir. A second pressure responsive member is carried by the first member and is spring-biased to move relative to the first member to admit air into the reservoir in response to negative pressures.

3,722,536

## MONITOR PRESSURE REGULATOR ASSEMBLY

George Edward Hill, Fullerton, Calif., and Bruce Warren Tomlin, Glen Ellyn, Ill., assignors to The Singer Company, New York, N.Y.

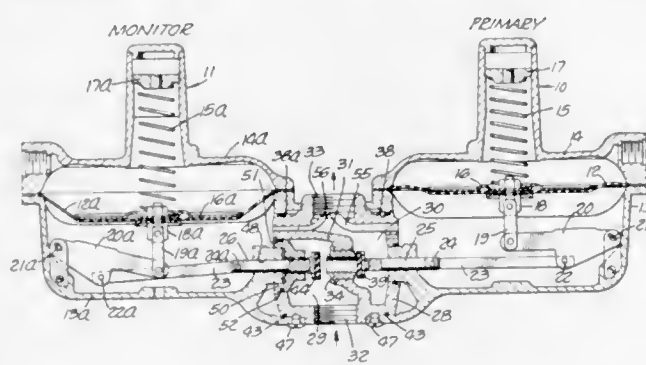
Continuation of Ser. No. 61,916, Aug. 7, 1970, abandoned.

This application Dec. 17, 1971, Ser. No. 209,172

Int. Cl. F16k 17/02

U.S. Cl. 137—505.46

1 Claim



A central member connects two duplicate pressure regulator assemblies of the spring-urged diaphragm type, and this central member contains an orifice piece having a bore with a seat at each end of the bore. Separate valve heads each operated by one of the pressure regulator assemblies close against one of the seats, respectively. The central member has an inlet communicating with one of the seats and its respective valve head, and also has an outlet communicating with the other seat and its respective valve head. Pitot tubes establish communication between the outlet and pressure chambers on one side of each diaphragm. The regulator assembly operating the valve head on the downstream side of the orifice piece normally regulates gas pressure at the outlet, but, upon failure of that regulator assembly, the other regulator assembly automatically takes over control.

3,722,537  
SIGHT GLASS

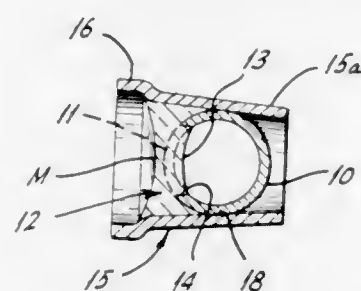
David A. Gregerson, Richmond, and Gerald J. Selm, Connersville, both of Ind., assignors to Philco-Ford Corporation, Philadelphia, Pa.

Filed April 8, 1971, Ser. No. 132,313

Int. Cl. G01f 23/02

U.S. Cl. 137—559

5 Claims



A sight glass to permit observation of refrigerant flowing in a refrigeration system. The glass is installed directly in the refrigerant flow line, rather than in a coupling or component connected into the line.

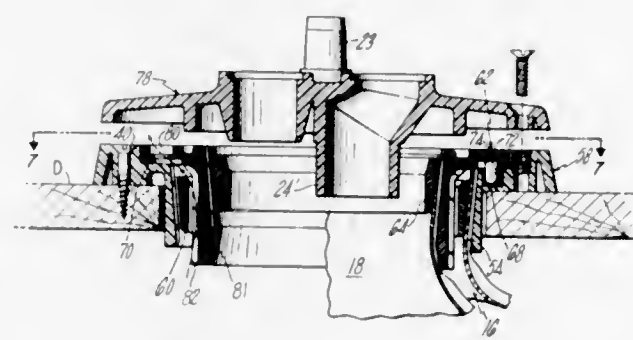
3,722,538  
BLIND CAVITY HOLDING SUMP  
Walter A. Gezari, Killingworth, Conn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 24,789, April 1, 1970. This application March 10, 1971, Ser. No. 122,721

Int. Cl. A47j 41/00; B65d 25/18

U.S. Cl. 137—588

14 Claims



A sanitary holding sump which can be formed in a blind cavity such as a toilet sump below an interior deck of a boat. The sump is formed with a laminated construction including two plastic bags, one within the other, and an intermediate plastic foam filler which has been cured to a rigid state. The top of the sump is sealed to the bulkhead and includes a ducted two-part cover plate for receiving and discharging waste material. The sump is formed below an interior deck by installing a first plastic bag connected to a first flange through an aperture in the interior deck, then placing a charge of foaming plastic resin in a substantially liquid state in the first bag, and then installing a second plastic bag connected to a second flange which covers the first flange. The inner bag is then pressurized internally, displacing the foaming resin in the outer bag and distributing it substantially evenly throughout the entire cavity or space between the two bags. Some expansion of the outer bag is accomplished by means of the foaming action of the resin. The resin eventually sets in its foamed state to provide the structural rigidity of the sump.

3,722,539

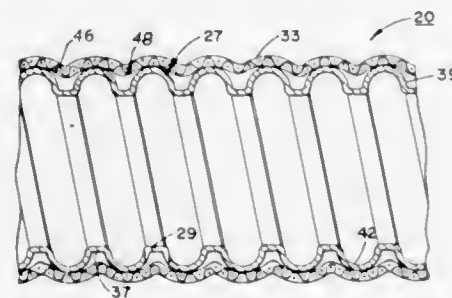
FLUID FEED CONDUIT FOR PROCESSING APPARATUS  
Henry Schmidt, Jr., Hinsdale, Ill., assignor to Industrial Filter & Pump Mfg. Co., Cicero, Ill.

Filed Dec. 4, 1970, Ser. No. 95,297

Int. Cl. F16l 9/06

U.S. Cl. 137—590

8 Claims



A fluid distributing and collecting conduit for transferring liquid under pressure to and from materials confined within a processing vessel comprises a thin walled, helically convoluted rigid tube having a plurality of spatially disposed orifices located in the bottom of the external helical groove. A fine mesh sleeve is tightly fitted over the tube to prevent said material from entering said tube.

3,722,540

## SECTIONAL CONTROL VALVES

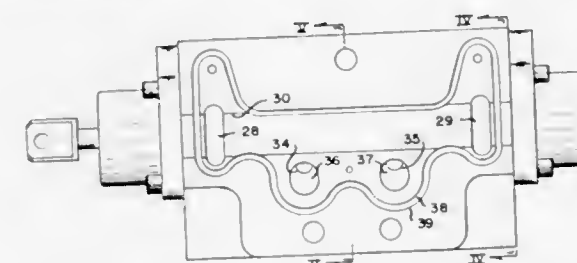
Joseph N. Mazur, Poland; Edward J. Ratkay, Canfield, and Robert F. Hodgson, Mahoning, all of Ohio, assignors to Commercial Shearing & Stamping Company, Youngstown, Ohio

Filed May 20, 1971, Ser. No. 145,219

Int. Cl. F16k 11/00

U.S. Cl. 137—596

5 Claims



A sectional control valve is provided made up of a plurality of control sections between an inlet manifold and an outlet manifold, the sections having interconnecting high pressure passages and low pressure passages which connect with one another at the junction of the sections, each control section having service passages means for connecting a fluid motor and a movable valve element to control communication of its service passage means with its high and low pressure passages, said sections having substantially flat mating surfaces at their junctions, a relief groove extending lengthwise of this section through at least one of said flat mating surfaces parallel to the movable element and intersecting the low pressure passages, said high pressure passages intersecting the flat mating surfaces spaced from said relief groove and continuous low pressure seal means surrounding the low and high pressure passages and intersecting the relief groove adjacent its ends.

3,722,541

## CONTROL VALVE

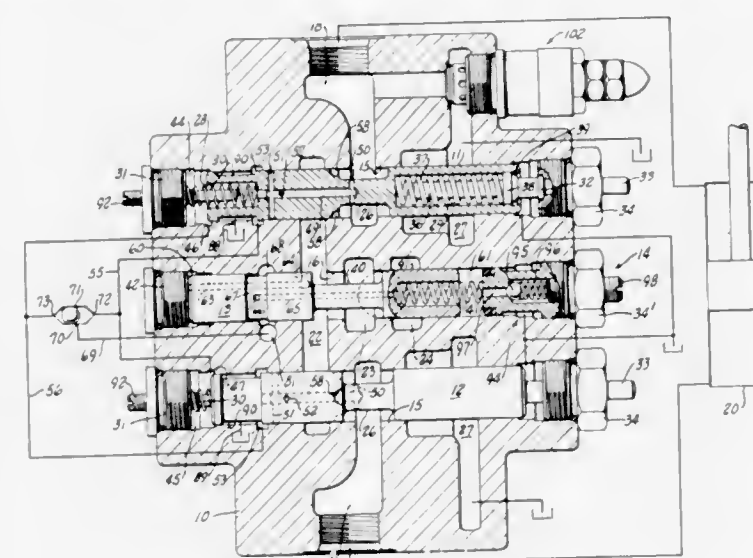
Raud A. Wilke, Brookfield, Wis., assignor to Koehring Company, Milwaukee, Wis.

Filed Dec. 8, 1971, Ser. No. 206,026

Int. Cl. F16k 11/07, 11/10

U.S. Cl. 137—596

22 Claims



A sectional control valve having a pressure compensating valve to control fluid flow to each of a pair of service passages which provide for connection of the valve with the opposite sides of a reversible fluid motor. A separate valve spool for each service passage is movable to feed and vent positions to communicate its service passage with either pressure fluid supply or return passage means. Each valve spool is automatically actuated to its vent position by a hydraulic actuator that is energized by pressure fluid flowing to the service passage.

governed by the other valve spool, in the feed position of the latter. Grooves in the opposite faces of the valve section provide portions of the control passages for the hydraulic actuators associated with the valve spools and the compensating valve plunger.

3,722,542

## PRESSURE BIASED POWER TAKE-OFF VALVE

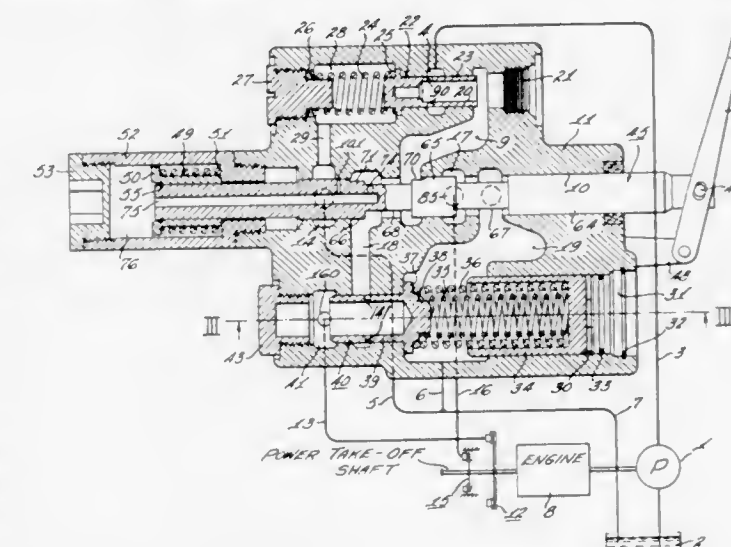
Ralph W. Matthews, New Berlin, and Nicholas W. Semeniak, Milwaukee, both of Wis., assignors to Allis Chalmers Corporation, Milwaukee, Wis.

Filed Nov. 23, 1971, Ser. No. 201,292

Int. Cl. F16k 11/10

U.S. Cl. 137—596.1

10 Claims



A pressure control valve for a power take-off clutch and brake which is pressure biased to a clutch operating position when the valve is initially positioned in the clutch operating position.

3,722,543

## PRESSURE COMPENSATED CONTROL VALVE

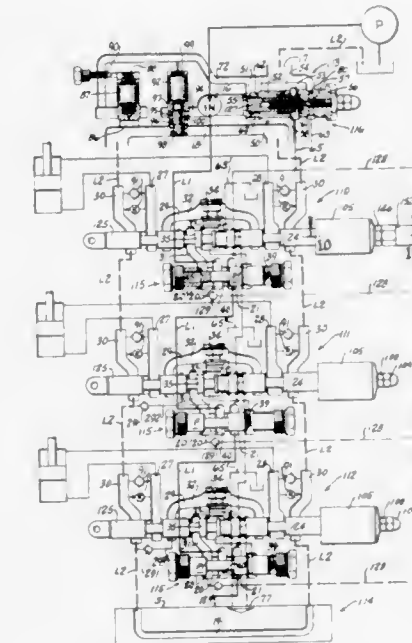
Francis H. Tennis, Oconomowoc, Wis., assignor to Hydraulic Industries, Inc., Gartland, Wis.

Filed Nov. 2, 1971, Ser. No. 194,825

Int. Cl. F16k 11/10, 11/07

U.S. Cl. 137—596.12

50 Claims



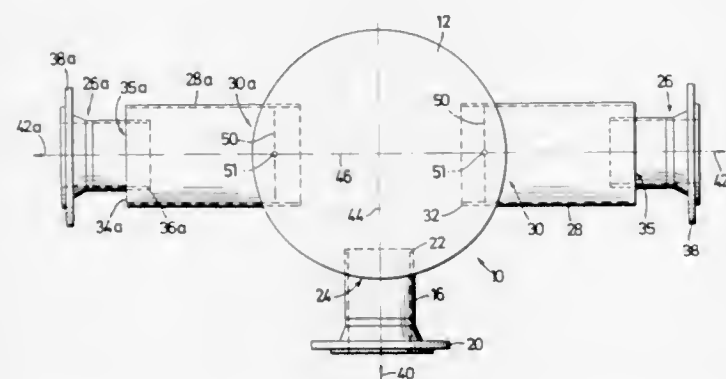
Each spool of a control valve has its own pressure compensated flow controlling mechanism, and a single unloading valve serves to divert the pump output to tank when all of the valve spools are in neutral positions. In a control valve of sec-



tional construction, pressure signals necessary for operation of the flow controlling mechanism and/or the unloading valve are obtained through pilot passageways having portions formed as grooves in the surfaces of the sections at their junctions. The flow controlling mechanisms can be provided with pressure responsive valve plungers which adapt their respective spool sections for parallel operation, or for series-parallel operation, or even a mixture of both; and with a minimum of modification, series operation is also made possible.

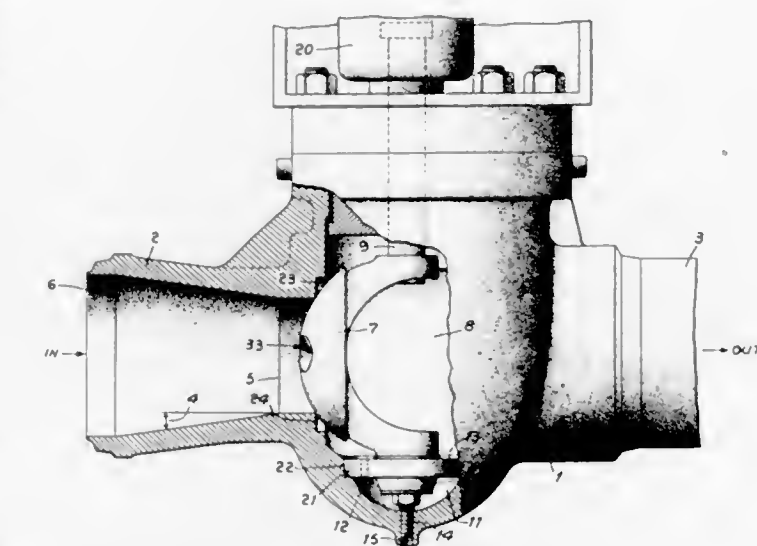
a plurality of overlapping cones having different base diameters, and it provides, in combination with a circular arc cutout

**3,722,544**  
**PNEUMATIC CONVEYING SYSTEM**  
Martin Westenberg, Klosterstrasse 34, Frechen, Germany  
Filed April 7, 1971, Ser. No. 131,921  
Claims priority, application Germany, May 5, 1970, P 20 21 847.7  
Int. Cl. F16k 21/00  
U.S. Cl. 137—608 6 Claims

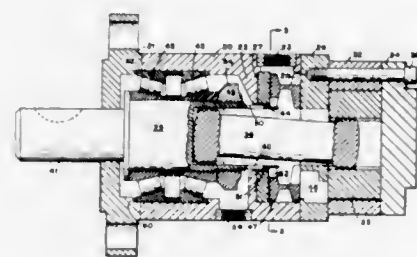


A pneumatic conveying system has a receptacle provided with at least two apertures having inclined axes. A first tubular element is seal-tightly mounted in one of the apertures and a portion — which may be of one piece with or separate from the remainder of said first tubular element — surrounds the aperture in the interior of the receptacle. A second tubular element is also seal-tightly mounted in the other of these apertures. It includes one tubular member of a larger diameter and an inner end portion of which — of one piece with or separate from the remainder of the one tubular member — surrounds the aperture in the interior of the receptacle, whereas the outer end portion of this one tubular member has a transverse wall provided with an opening. Another tubular member of a smaller diameter has an inner end portion — again either of one piece with or separate from the remainder from the other tubular member — which interiorly surrounds the opening in the transverse wall.

**3,722,545**  
**MODULATING BALL VALVE**  
Romeo Furlani, Providence, R.I., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.  
Filed Oct. 18, 1971, Ser. No. 189,857  
Int. Cl. F16k 3/32  
U.S. Cl. 137—625.3 10 Claims  
A modulating ball valve wherein a rotatable plug supported by trunions journaled along an axis transverse to the direction of flow of the fluid to be controlled is provided with an indentation on the surface thereof. The indentation is formed as



**3,722,546**  
**FLUID PRESSURE DEVICE HAVING OUTSIDE-INSIDE ROTARY VALVE MEANS**  
George V. Woodling, 22077 W. Lake Road, Rocky River, Ohio  
Filed July 27, 1971, Ser. No. 166,547  
Int. Cl. F16k 11/02  
U.S. Cl. 137—625.21 7 Claims  
In said plug and a tapered inlet aperture in the casing of said valve, a desired fluid flow characteristic.

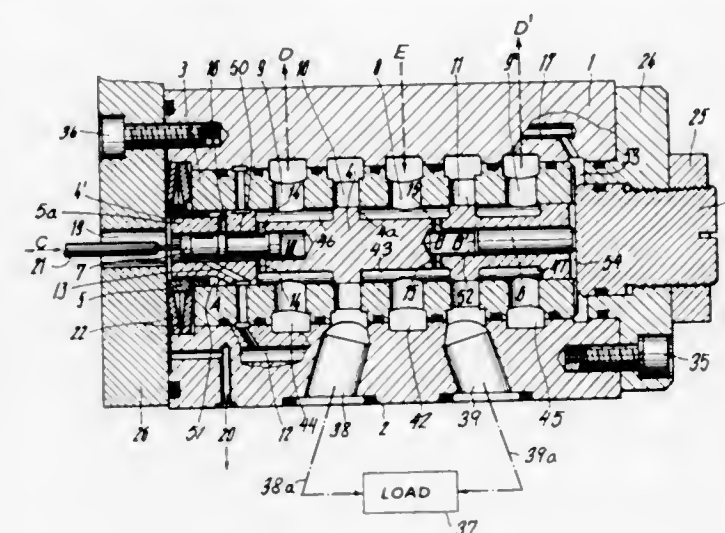


Fluid pressure device including housing means having first and second fluid port means and operable fluid pressure means secured to said housing means. Fluid flow between said operable fluid pressure means and said first and second fluid port means is controlled by outside-inside rotary valve means rotatively supported by hollow shaft means. Said rotary valve means has on the outside thereof outside fluid chamber means in constant fluid communication with said first fluid port means and has on the inside thereof inside fluid chamber means in constant fluid communication with said second fluid port means through said hollow shaft means which has an unrestricted fluid passageway.

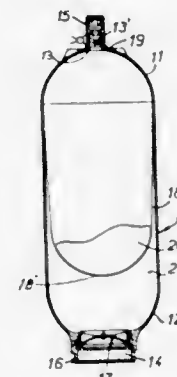
**3,722,547**  
**PILOT VALVE**  
Lothar Kirstein, Bad Kreuznach, Germany, assignor to Jos. Schneider & Co. Optische Werke, Bad Kreuznach, Germany  
Filed Oct. 18, 1971, Ser. No. 190,219  
Claims priority, application Germany, Oct. 21, 1970, P 20 51 582.6  
Int. Cl. F16k 11/00  
U.S. Cl. 137—625.23 10 Claims  
The working piston of a pilot valve has an extremity formed with an axial bore which receives a pilot piston with two or three heads defining one or two peripheral recesses included

in a throttled path for the controlled admission of high-pressure fluid to a peripheral shoulder on that extremity. An oblique passage, forming part of that fluid path, extends in the region of the peripheral shoulder within the body of the work-

surface of an adapter that is connected to the end of the pipe. Each of the locking arms is pivotally connected through a link

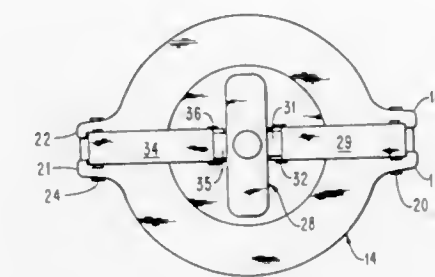


**3,722,548**  
**PRESSURE VESSEL**  
Jacques H. Mercier, 49 rue de Naples, Paris, France  
Filed Oct. 13, 1971, Ser. No. 188,971  
Claims priority, application France, Oct. 30, 1970, 7039179  
Int. Cl. F16l 55/04  
U.S. Cl. 138—30 17 Claims  
The selected position of the working piston is maintained by countervailing fluid pressure acting upon a land of this piston, the effective area of that land being half that of the peripheral shoulder which in a state of balance is subjected to half the countervailing fluid pressure.



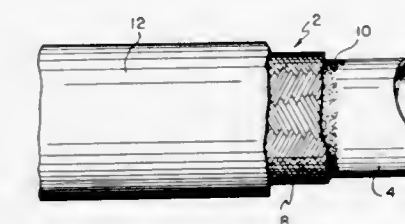
The present invention relates to a pressure reservoir comprising a rigid envelope having two ports, a flexible separator in the form of a bladder disposed in the interior of the said envelope and dividing it into two compartments for fluids which are respectively in communication with said ports, the bladder being adapted to move to the vicinity of one of the said ports, which is equipped with a strainer device or screen against which the bladder abuts in operation.

**3,722,549**  
**CAP AND LOCKING MEANS THEREFOR**  
Fred A. Wilson, Florence, Ky., and Lindol H. Sprague, Deer Park, Ohio, assignors to Dover Corporation, Cincinnati, Ohio  
Continuation of Ser. No. 821,290, May 2, 1969, abandoned.  
This application March 19, 1971, Ser. No. 126,365  
Int. Cl. F16l 55/10  
U.S. Cl. 138—89 9 Claims  
A cap for closing the end of a pipe has a pair of locking arms pivotally mounted thereon for cooperation with an inclined



to a single movable element whereby movement of the single movable element moves both of the locking arms into engagement with the inclined surface of the adapter simultaneously.

**3,722,550**  
**COMPOSITE TUBING AND METHOD FOR MAKING THE SAME**  
Richard A. Matthews, Chagrin Falls, Ohio, assignor to Samuel Moore and Company, Mantua, Ohio  
Filed March 10, 1970, Ser. No. 18,272  
Int. Cl. F16l 11/04  
U.S. Cl. 138—137 5 Claims



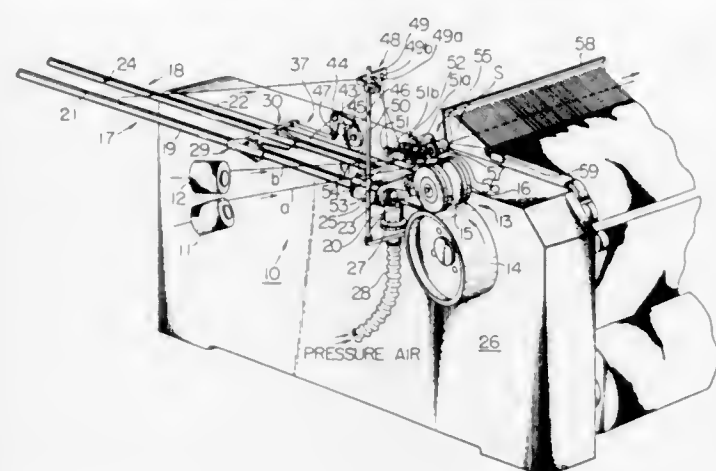
A composite tubing product and method for making the same, the tubing includes an elastomeric polyurethane inner core tube having a peripheral zone of elastomeric, adhesively activated core tube material on the outer surface of the tube, a stranded reinforcement layer elastomerically secured to the core tube by the adhesively activated material, and an outer sheath disposed around the reinforcement layer. In another form, an additional reinforcement layer may be disposed around the first reinforcement layer, and such additional layer is generally free of securement to the first layer.

**3,722,551**  
**METHOD AND APPARATUS FOR PREPARING WEFT YARN IN A SHUTTLELESS LOOM**  
Yokio Mizuno, and Shigenori Tanaka, both of Kodaira, Tokyo, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan  
Continuation-in-part of Ser. No. 848,253, Aug. 7, 1969, abandoned. This application May 10, 1971, Ser. No. 141,682  
Int. Cl. D03d 47/34  
U.S. Cl. 139—127 P 11 Claims

A method and apparatus for preparing a plurality of separate weft yarns each to be inserted into its individual separate sheds of arrayed warp yarns in a shuttleless loom. The method is carried out by inserting a plurality of different weft yarns, each in two consecutive steps, into the individual separate sheds of warp yarns whereby different or differently colored weft yarns may be picked. The apparatus includes a



plurality of storage means for storing loops of weft yarns to be inserted into the shed of warp yarns, and a plurality of engaging means associated with the plurality of storage means for



engaging the loops of the weft yarns at timed intervals to cause each of the weft yarns to be successively picked into the sheds of the warp yarns in two consecutive insertions.

3,722,552

#### HYDRAULIC WEFT INSERTER DRIVE IN WEAVING MACHINES

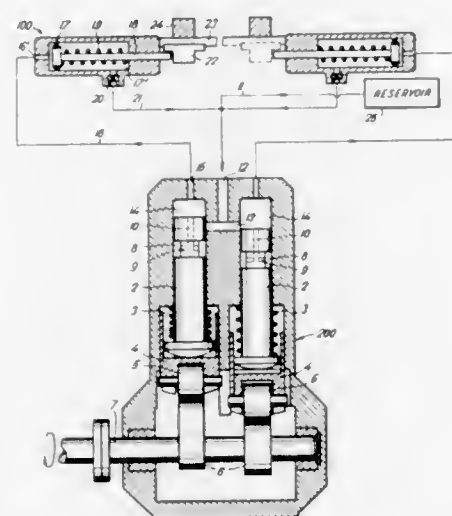
Jaromir Indra, and Vaclav Opatril, both of Brno, Czechoslovakia, assignors to Elitex, Zavody Textilního Strojirenství Generalni Rediteislvi, Liberec, Czechoslovakia  
Filed July 14, 1971, Ser. No. 162,344

Claims priority, application Czechoslovakia, July 17, 1970, 5039/70

Int. Cl. D03d 49/34

U.S. Cl. 139—144

11 Claims



The present invention relates to hydraulic weft inserter drives for weaving looms.

Each of a pair of hydraulic units is located at opposite ends of a guideway along which the weft inserter is slidably movable. Each hydraulic unit contains a piston whose shaft is extendable in a direction along the guideway in a direction along the guideway on the application of hydraulic pressure on the piston in its normally retracted state. A double pump is operated in synchronism with the loom, each half of the pump being connected to a corresponding hydraulic unit, in such a way that hydraulic pressure is alternately applied to each of the hydraulic units by out of phase operation of each of the pump halves. Biased to retract inside the hydraulic units, the driving pistons of the corresponding hydraulic units are alternately extended, each driving piston being extended in an opposite direction along the guideway, to contact the weft inserter and urge it to move towards the other end of the guideway.

#### 3,722,553 WIRE TYING APPARATUS INCLUDING TIMING AND STOPPING MECHANISM

Benjamin M. Bartilson, Columbus, Ohio, assignor to The United States of America as represented by the Secretary of the Army

Filed June 17, 1971, Ser. No. 154,110

Int. Cl. B21f 7/00, 15/04

U.S. Cl. 140—93 A

3 Claims



An improved apparatus for tying a relatively stiff tie wire around a cluster of wires or cables by means of counterrotating discs having wide slots which enable the discs to be placed down around the cluster of wires to be tied. The apparatus has a timing mechanism for providing a predetermined number of revolutions of the wrapping discs and a stopping mechanism for stopping the discs at a specified point to insure that the slots will be aligned when the tie is completed thereby facilitating removal of the apparatus.

3,722,554

#### APPARATUS FOR CONNECTING THE FREE ENDS OF A TWISTED WIRE JOINT TO AN ELONGATE MEMBER

Willy Vanderfaellie, Heestert, Belgium, assignor to N. V. Bekaert S.A., Zvevegen, Belgium

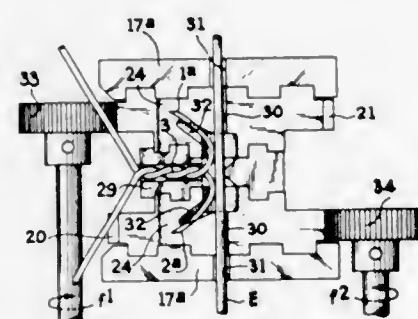
Filed July 29, 1971, Ser. No. 167,249

Claims priority, application France, July 31, 1970, 7028373

Int. Cl. B21f 27/14, 33/02

U.S. Cl. 140—115

4 Claims



A method and apparatus for the connection of free ends of wire extending from a twisted wire joint to an elongate member are disclosed wherein the free ends are first bent back in opposite directions and on opposite sides of the twisted wire joint and thereafter the bent free ends of the wire, but not the twisted joint, are wound in opposite directions around the elongate member.

3,722,555

#### BREAKER FOR PLASTIC FORM TIES

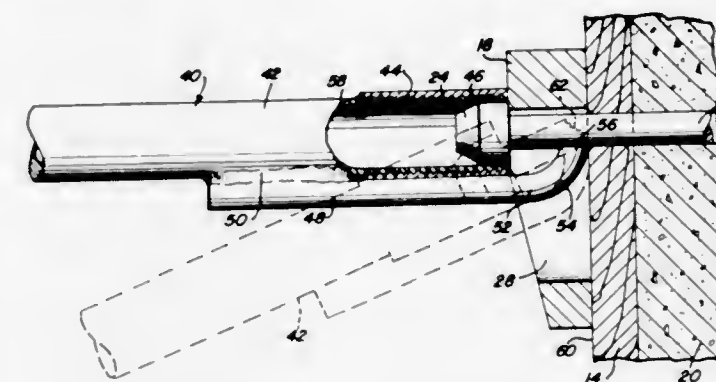
Delwin F. Voelsch, Watertown, S. Dak., assignor to Schull Construction Co., Watertown, S. Dak.

Filed Jan. 6, 1972, Ser. No. 215,793

Int. Cl. B21f 9/00; F16g 11/00

U.S. Cl. 140—123

7 Claims



An elongated lever defining an endwise outwardly opening tie rod head receiving recess at one end and having an extension projecting endwise outwardly from one side of that one lever end terminating outwardly in a laterally inwardly directed end portion spaced outwardly of the recess and terminating radially outwardly of the center axis of said recess.

3,722,556

#### ROLLING PIPE LINE ASSEMBLY, SYSTEM AND METHOD

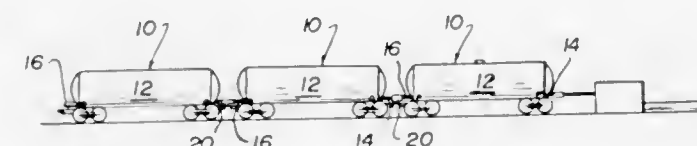
William Jeffers, 6235 W. 8th Place, Oak Lawn, Ill., and James Michael Jeffers, 105 Twin Oaks Drive, Joliet, Ill.

Filed Aug. 19, 1971, Ser. No. 176,765

Int. Cl. B65b 1/04, 3/04

U.S. Cl. 141—2

16 Claims



A rolling pipe line system and method is disclosed comprising a plurality of wheeled tank cars, each of the tank cars being provided with one pipe extending outwardly from adjacent one end and another pipe extending outwardly from adjacent the other end thereof, and connector means for interconnecting adjacent pipes extending outwardly from adjoining tank cars thereby to establish fluid communication as between adjoining tank cars throughout the complete series of such tank cars. The system and method permits the loading, transporting and unloading of a fluid from the interconnected tank cars without the necessity of loading and unloading each of the tank cars individually.

3,722,557

#### APPARATUS FOR ADDING MEDICAMENTS TO A SEALED EXPANDABLE PARENTERAL FLUID CONTAINER

James A. Huggins, Libertyville, Ill., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed March 3, 1971, Ser. No. 120,412

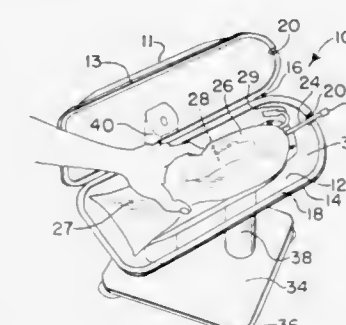
Int. Cl. B65b 31/04, 31/03

U.S. Cl. 141—59

18 Claims

A rigid chamber formed by a pair of hinged members which are shaped to receive an expandable container such as a plastic bag of parenteral fluid contains a first opening which is selectively connected to a source of vacuum and a second

opening through which a sealed tubular port on the container may be placed so that it will be accessible from the exterior of the chamber to permit the connection thereto of a vial containing a material such as a medicament to be added to the bag. The chamber is pivotally mounted for movement between a horizontal bag loading and unloading position and a vertical position for adding medicaments. The vacuum supply to the chamber is automatically controlled by a valve built into the pivotal mounting so that in the horizontal position of the



chamber the vacuum is shut off and in the vertical position it is actuated. The arrangement makes it possible to add the contents of vials containing not only freely flowing liquid additives but also very viscous ones as well as powdered or granular materials. The system can also be operated in such a way that the contents of a plurality of medicament vials or syringes can be added to the bag even though the volume of the material to be transferred from the plurality of medicament containers is greater than the initial free air volume in the bag.

3,722,558

#### VACUUM NOZZLE

Paul W. Worline, Oak Ridge, Tenn., assignor to Acraloc Corporation, Oak Ridge, Tenn.

Filed Dec. 10, 1970, Ser. No. 96,940

Int. Cl. B65b 31/04; F16k 23/00

U.S. Cl. 141—65

8 Claims



A nozzle affixable to the line from a vacuum source and adapted for use in evacuating thin film packages containing food products such as meats, cheeses, and the like. The nozzle comprises an elongated cylindrical tube terminating at one end in means for connecting it to a vacuum line, and terminating at the other end in a hollow valve element. The tube is mounted in a housing, which terminates at its forward end in a nozzle tip. A portion of the inside surface of the nozzle tip is configured to serve as a seat for the hollow valve element. The nozzle tip has at least one perforation, one end of which forms an opening in the exterior surface of the nozzle tip and the



other end of which forms an opening in the interior surface of the nozzle tip rearwardly of said seat. The tube is shiftable, with respect to the housing, between an open position wherein the hollow valve element is spaced from the seat portion of the nozzle tip and a closed position wherein the hollow valve element abuts the seat portion of the nozzle tip. Means are provided to bias the tube to its closed position.

3,722,559

# OPTICAL MONITORING CHAMBER UNIT FOR TONER DENSITY CONTROLS

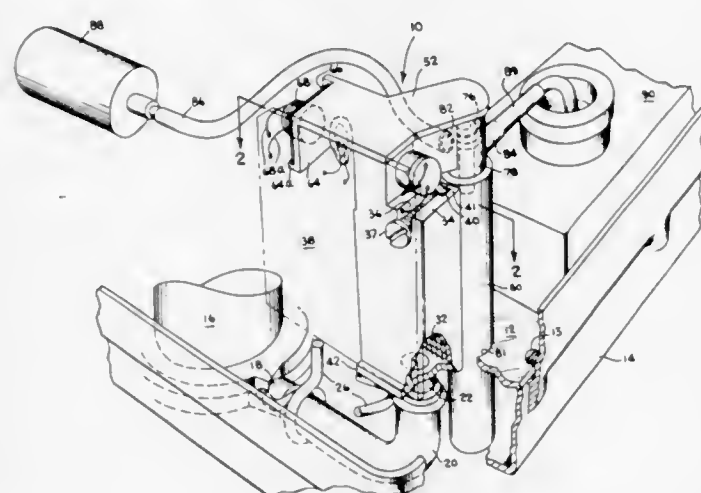
Lionel B. Hoffman, Wyckoff, N.J., assignor to Pitney Bowes-Sage, Inc., Hawthorne, N.J.

Filed April 7, 1971, Ser. No. 131,950

Int. Cl. B65b 3/04

U.S. Cl. 141—98

4 Claims



A unit included in a toner density control (TDC) for electrostatic photocopiers incorporates an optical monitoring chamber, a filter chamber, and a venturi suction chamber for selectively introducing toner replenisher to a developer liquid pumped therethrough. A circuit board is detachably clamped to the unit and mounts a lamp and a pair of photocells in operative positions relative to the monitoring chamber.

3,722,560

# DISPENSING HEAD AND CONVEYOR

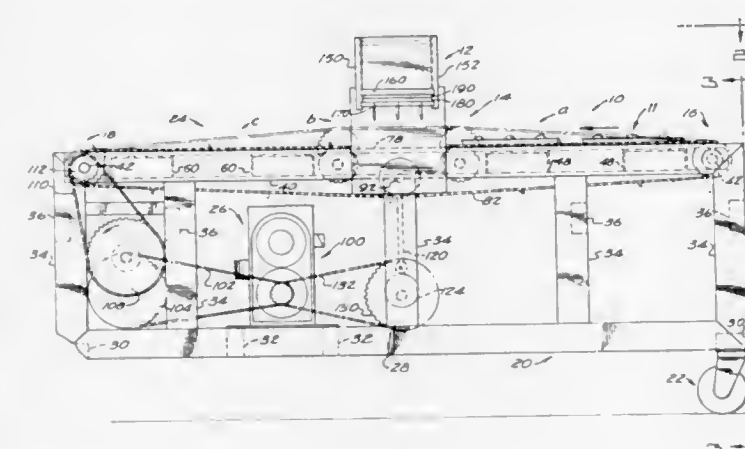
Richard L. Morine, Mentor, and James J. Hokes, Lakewood, both of Ohio, assignors to Fedco, Inc., Mentor, Ohio

Filed March 29, 1971, Ser. No. 128,805

Int. Cl. B65b 43/52

U.S. Cl. 141—172

9 Claims



A dispensing apparatus and conveyor particularly suitable for use in bakeries for depositing fillings and the like into or on bakery products, or for supplying batter to pans. The apparatus broadly includes a combined dispensing head means

and conveyor means which are actuated in timed relationship. The dispensing head means is located at a first position and arranged for discharging predetermined quantities of fluent material in a downward direction. The conveyor means passes beneath the dispensing head means and functions to move material receiving surfaces or products past the head means. At least one section of the conveyor extends generally horizontally under the depositing head means. Additionally, the conveyor section is provided with power means adapted to reciprocate it vertically upward toward the dispensing head means. Control means are interrelated between the reciprocating conveyor section and the dispensing head section so that the dispensing head functions while the material receiving surfaces are being, or have been, raised by the reciprocating conveyor section. The specification also discloses a dispensing head assembly adapted to dispense a plurality of discrete quantities of fluent material simultaneously. The assembly comprises first and second spaced plate members with the first member having a plurality of outlet orifices formed therethrough and the second plate member having a plurality of inlet orifices. A third plate member is positioned between the first and second plates for reciprocation relative thereto. The third plate member also has a plurality of openings formed through it and these openings define a plurality of closed, movable chambers. Positioned in each of the chambers is a piston or pusher member which divides the chambers into first and second chamber portions. The piston members and the third plate member are connected with actuating means adapted to simultaneously move all of the first and second chamber portions to alternately connect them with selected inlet and outlet orifices. Further, second actuating means are provided for reciprocating the third plate member independently of the first actuating means and the pusher members so that the third plate can be moved intermediate the movements produced by the first actuating means.

3,722,561

# SUPPORT FOR FLEXIBLE CONTAINER

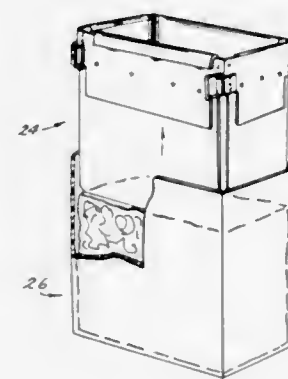
Timothy W. O'Leary, Chevy Chase, Md., and Stephen Hopkins, Washington, D.C., assignors to Compakager Corporation, Washington, D.C.

Filed June 30, 1971, Ser. No. 158,210

Int. Cl. B65b 39/00

U.S. Cl. 141—316

7 Claims



A support sleeve for a flexible bag-like container is provided having a rigid collar portion and a plurality of independently flexible wall portions depending from the collar portion; the support frame is adapted to be inserted into the flexible container to maintain the mouth and body of the container open so that material may be deposited therein and compacted in a material compressing unit.

3,722,562

# METHOD AND DEVICE FOR STRAIGHTENING BEAMS

Charles D. Stegmuller, Moosa Canyon Road, Bonsall, Calif.

Filed April 9, 1971, Ser. No. 132,691

Int. Cl. B27

U.S. Cl. 144—309

3 Claims



This invention relates to a method and device for straightening twisted wooden beams and the like and involves the use of clamping and twisting devices to straighten said beam together with a wrapped tensioning guy attached adjacent to each end of the straightened beam to hold the same in a tense position.

3,722,563

# METHOD OF MASS-PRODUCING SKIS AND AN APPARATUS THEREFOR

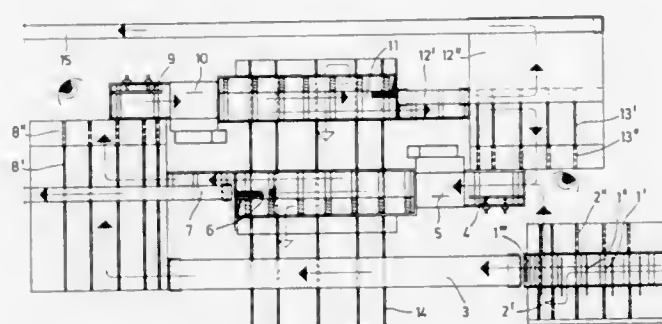
Engelbert Schober, Bannholzstrasse 302, Vaduz Liechtenstein, Austria

Filed April 6, 1971, Ser. No. 131,696

Int. Cl. B27d 3/00

U.S. Cl. 144—317

11 Claims



The instant invention relates to an improved automated method of mass-production of skis which are mainly wooden in construction and an apparatus therefor. The method uses planks of wood cut from timber in such a way that the longitudinal surface of the planks is substantially parallel to the course of the wood grains thereby utilizing to the best advantage the inherent fibrous property of wood. The method further comprises combining and dividing said planks into blocks and subsequently sheets of required sizes for the construction of skis. Sheets so procured are next preheated and an adhesive applied thereto to form sheet packs; the sheet packs are transferred to a press machine wherein as the packs travel they are continuously subjected to a high pressure, at the same time applying further heat where necessary. The sheet packages emerging are transferred next to a machine where the required operations such as planing, selective edge trimming by milling, and grinding are performed by a group of

3,722,564

# TRAVEL CASE

Alexander Croon, Hans-Carossa-Strasse 5, Stockdorf near Munich, Germany

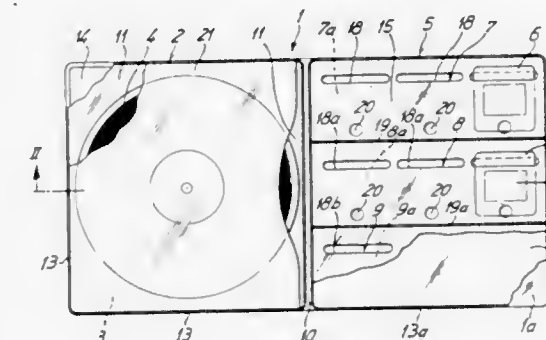
Filed March 6, 1970, Ser. No. 17,057

Claims priority, application Germany, Dec. 18, 1969, G 69 48 981.2; March 10, 1969, G 69 09 483

Int. Cl. A45c 11/18

U.S. Cl. 150—39

6 Claims



A travel case for a phonograph record and photographic transparencies in which a generally rectangular, transparent sheet defining first and second portions provided by a transverse fold therebetween, with the first portion including a first juxtaposed cover joined thereto along three edges of the sheet to provide a pocket for receiving a record and the second portion a juxtaposed cover means joined to the sheet along three edges thereof and along one line at right angles to the transverse fold to define at least two vertically spaced horizontal rows of compartments, and each of the compartments being open adjacent its top and adapted to receive therein a photograph transparency.

3,722,565

# BARBED T-NUT

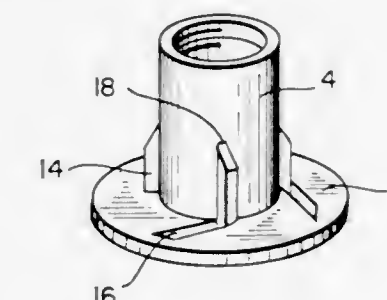
Robert E. Miller, Jr., Bronxville, N.Y., and Anthony J. Balchunas, Rahway, N.J., assignors to Robert E. Miller & Co., Inc., New York, N.Y.

Filed Aug. 2, 1971, Ser. No. 168,115

Int. Cl. F16b 39/00

U.S. Cl. 151—41.73

2 Claims



A T-nut for driven insertion into a preformed axial bore in the bottom of a wooden furniture leg or the like comprises a flange extending radially outward from the lower end of an internally threaded barrel. The flange has, struck out from wholly within its perimeter, a series of equidistantly spaced barbs which are upstanding in contact with the barrel surface and become embedded in the surrounding wood when the barrel is driven up into the bore.



### 3,722,566 TIRES

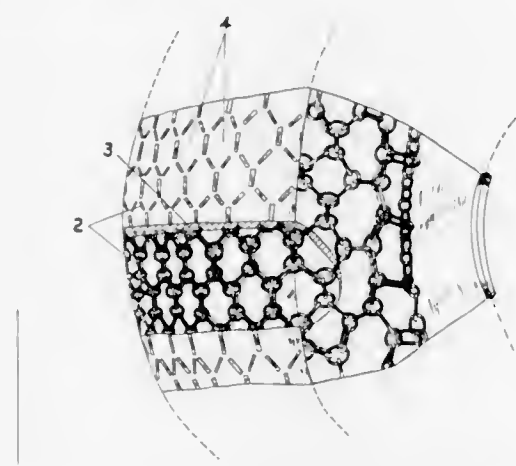
Hans Otto Dohmeier, Transvaal Province, Republic of South Africa, assignor to Dome Inventions (Proprietary) Limited  
Filed March 1, 1971, Ser. No. 119,541

Claims priority, application Republic of South Africa, March 2, 1970, 70/1340

Int. Cl. B60c 7/22

U.S. Cl. 152—169

13 Claims



The invention relates to a heavy duty tire and more particularly a pneumatic tire for use with earth moving equipment, wherein there is embedded in at least the tread portion metal elements conveniently in the form of armouring chain, said elements bonded or adhesively fixed to the rubber, ensuring simultaneous wear of both rubber and reinforcing elements.

### 3,722,567 RADIAL-PLY PNEUMATIC TIRE

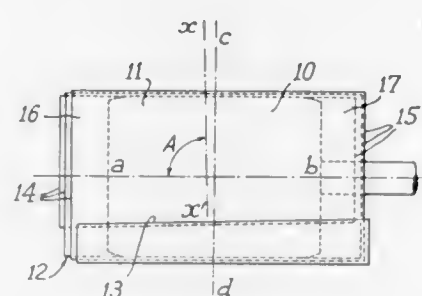
Emile Jean Delobelle, (92) Colombes, France, assignor to Pneumatiques Caoutchouc Manufacture Et Plastiques Kleber-Colombes, Colombes, France

Division of Ser. No. 702,031, Jan. 31, 1968, abandoned. This application Dec. 15, 1970, Ser. No. 98,360

Int. Cl. B60c 9/02

U.S. Cl. 152—354

3 Claims



This invention relates to radial-ply tires having a reinforced breaker layer and a carcass that comprises a plurality of superimposed layers of cord fabric and the invention consists in helically winding a strip of carcass fabric of constant width and constituted of substantially transverse cords, on a cylindrical drum, thereby helically shifting the side edges of the strip and thus obtaining in the beads of the finished tire a staggering of the edges of the layers of carcass. In one embodiment, a first strip of carcass fabric of constant width is helically wound and the side parts of said strip are folded from the inside to the outside around the bead wires, whereafter a second helically wound strip of the fabric is superimposed on the first strip but the side parts of the second strip are folded from the outside to the inside around the bead wires. The edges are preferably helically displaced.

### 3,722,568 LOWER SIDEWALL REINFORCEMENT FOR A RADIAL TIRE

Luigi Maiocchi, Milan, Italy, assignor to Industrie Pirelli S.P.A., Milan, Italy

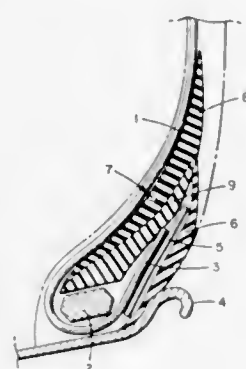
Filed Oct. 26, 1971, Ser. No. 192,152

Claims priority, application Italy, Oct. 28, 1970, 89568 A/70

Int. Cl. B60c 15/06

U.S. Cl. 152—374

9 Claims



An improved radial tire is disclosed which contains a rubber filling over the bead core wherein the rubber filling consists of two structural shapes being adjacent to one another. One shape is formed from a low hardness compound while the other is made from a high hardness compound with the latter shape being directed towards the axially outer zone of the bead. A sheet of a hard compound is placed in the axially outermost position of the bead adjacent to a strip of metal cord fabric which in turn is placed next to the high hardness structural shape. This structure prevents the metallic cord fabric from detaching itself from the tire which occurs when conventional radial tires are subjected to normal service conditions. It also prevents separation between the rubber filling and the carcass plies when the tires are subjected to severe service conditions.

### 3,722,569 INNER TUBE SEALING MEANS

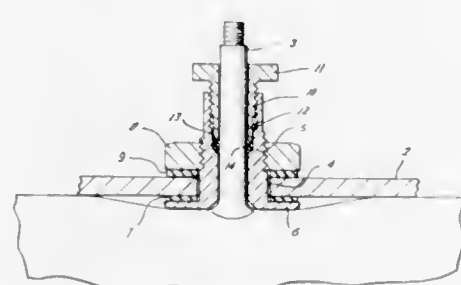
George W. Hughes, 3405 Ennis, Houston, Tex.

Filed March 11, 1971, Ser. No. 123,247

Int. Cl. B60c 29/00

U.S. Cl. 152—429

3 Claims



A means for sealing the air within a tire casing and locking the valve stem in position on the rim so that air escaping from the inner tube will not leak from the casing.

### 3,722,570 TIRE CHANGER

John D. McKenney, South Laguna, Calif., assignor to Royal Industries, Inc., Pasadena, Calif.

Filed March 10, 1971, Ser. No. 122,983

Int. Cl. B60c 25/06

U.S. Cl. 157—1.28

7 Claims

A tire changer having fixed bead breakers arranged to be operative on opposite faces of the same half of a wheel to ef-

fect the squeezing action for bead breaking in the fashion of ice tongs. One of the bead breakers is automatically actuated and the other bead breaker is adapted to be manually positioned adjacent the wheel rim and the tire to slide therebetween in response to the movement of the automatically actuated bead breaker. Chucking means is provided for automatically positioning and holding inflated tires of varying



sizes on the tire changer in proper relationship with the bead breakers without resorting to any manual adjustments to accommodate tires of different sizes. The chucking means includes a movable wheel chuck adapted to be positioned in unison with the conventional rotary motor to position the rotor shaft in the center of the wheel. The rotary motor accommodates a tire tool for effecting the disengagement of the tire around the complete outer periphery of the wheel.

### 3,722,571 SELF-STORING AWNING

John D. Knight, Mantua, and Andrew J. Darula, Lakewood, both of Ohio, assignors to The Astrufs Company, Cleveland, Ohio

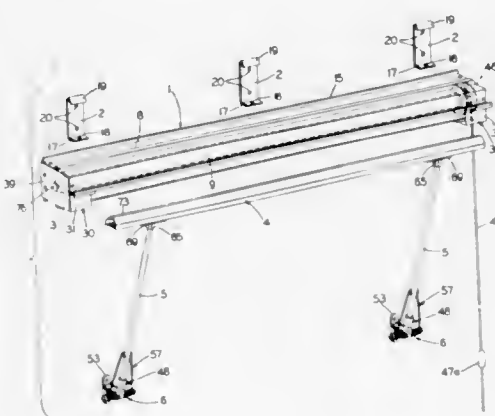
Continuation of Ser. No. 803,714, March 3, 1969, abandoned.

This application Sept. 21, 1970, Ser. No. 73,851

Int. Cl. E04f 10/06

U.S. Cl. 160—68

5 Claims



A self-storing awning including a frame having a hood portion for attachment above a window, a roller in the hood, rope means for rotating the roller, a fabric awning having one end portion rolled upon the roller, a front bar attached to the other end of the awning fabric, awning arms longitudinally adjustably attached at their upper ends to the front bar, hinge means at the lower ends of the arms for hingedly attaching them to a wall at either side of the window, and spring means urging said awning arms outward.

### 3,722,572 COMBINED WINDOW AND LOUVER CONSTRUCTION

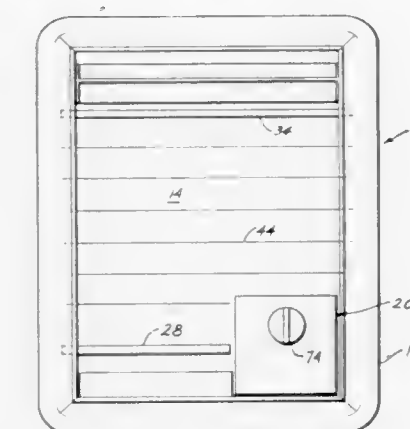
Alvin R. Hall, Cherry Hill, N.J., assignor to Hardis Bros., Inc., Pennsauken, N.J.

Filed March 12, 1971, Ser. No. 123,688

Int. Cl. E06b 9/264

U.S. Cl. 160—107

10 Claims



A combined window and louver construction for adjustable sun control. An adjustable louver arrangement is placed within the space between the glass panes of a double pane hermetically sealed insulating window. The louver arrangement is constructed by interconnecting a series of louver slats by pairs of vertical, multistrand stainless steel cables. Eyelets are attached to the cables to engage small holes in the edges of the slats. Control and orientation of the slats is accomplished by synchronous, vertical, opposing travel of the inboard and outboard cables.

### 3,722,573 SHADE ROLLER

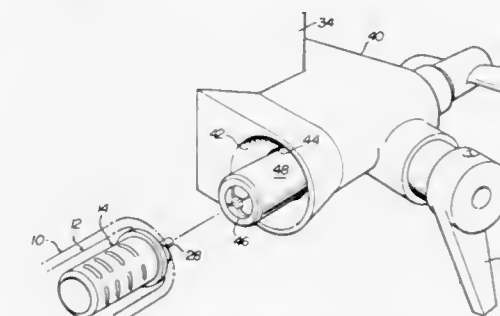
Martin H. Stark, 1301 Wheeler, Saginaw, Mich.

Filed Dec. 15, 1969, Ser. No. 885,065

Int. Cl. A47h 1/13

U.S. Cl. 160—326

3 Claims



A window shade roller assembly including a shade roller fabricated of laminated paper and an end unit of molded construction to be received in the roller and having provisions for adjusting the length of the assembly. The dimensions and configuration of the roller assembly enable it to be used in conjunction with standard window shade cutting machines.

### 3,722,574 PROCESS OF MAKING MAGNESIUM OXIDE CORES

John R. Anderson, Bloomfield, N.J., and James S. Perron, Deep River, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed June 29, 1971, Ser. No. 158,128

Int. Cl. B22c 1/02

U.S. Cl. 164—41

3 Claims

Magnesium oxide is utilized as a water soluble core for producing hollow superalloy parts by investment casting techniques. The core can be formed by mixing slurries of magnesium oxide and magnesium oxychloride, allowing the mixture to harden and then firing the body to form the corresponding oxide.



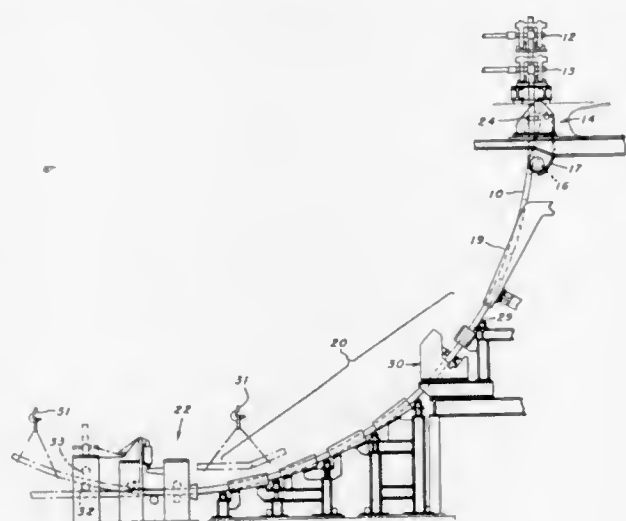
3,722,575

**METHOD FOR REMOVING AN ABORTED CASTING FROM A CONTINUOUS-CASTING MACHINE**

Gottfried Hofmann, Brentwood Borough, and George F. Schwartz, Hampton Township, both of Allegheny County, Pa., assignors to United States Steel Corporation  
 Division of Ser. No. 71,037, Sept. 10, 1970. This application  
 May 25, 1972, Ser. No. 256,662  
 Int. Cl. B22d 11/12

U.S. Cl. 164—70

3 Claims



A method for removing an aborted casting from a continuous-casting machine, in which machine the product is bent from the vertical to the horizontal. The aborted casting is cooled, notched, bent, moved downwardly, and removed. Apparatus is disclosed for restraining the descent of the aborted casting, and for controlling the depth of notches.

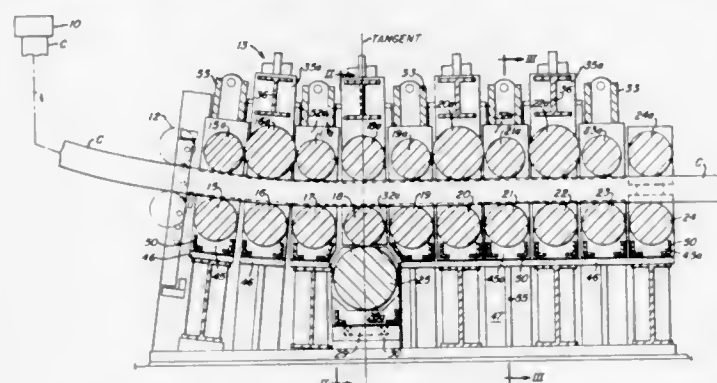
3,722,576

**METHOD AND APPARATUS FOR STRAIGHTENING CONTINUOUS CASTING**

Francis Gallucci, North Huntingdon Twp., Westmoreland County, Pa., assignor to United States Steel Corporation  
 Filed Aug. 16, 1971, Ser. No. 171,834  
 Int. Cl. B22d 11/12

U.S. Cl. 164—282

8 Claims



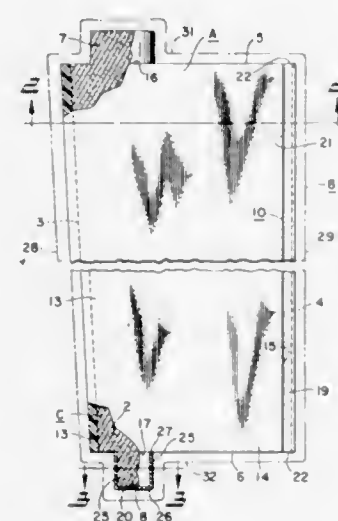
A method and apparatus for straightening castings formed in a continuous-casting operation. After a partially solidified casting emerges from a continuous-casting mold, it travels through bending rolls and a curved roll rack which change its direction of travel from vertical to horizontal, but the casting acquires a curved set and must thereafter be straightened. The straightening apparatus of the present invention includes lower and upper series of rolls closely confining a casting, yet avoiding excessive forces such as would damage the casting, which may still have a liquid core. The apparatus has a critical combination of driven and idler rolls of varying diameters, which afford the necessary mechanical strength at reaction points, yet maintain minimum spacing between rolls in each series and allow standardization of the drives for the driven rolls.

**EXPANSIBLE SHELL MOLD WITH REFRACTORY SLIP COVER AND THE METHOD OF MAKING SAME**

John M. Webb, Cleveland, Ohio, assignor to Edward J. Mellen, Jr., East Cleveland, Ohio  
 Filed April 20, 1971, Ser. No. 135,557  
 Int. Cl. B22c 9/10

U.S. Cl. 164—366

15 Claims



A refractory shell mold for precision metal casting made by a "lost-wax" process and having a core anchored in the shell by attaching portions, at least one of which portions is covered by a small molded refractory slip cover. Such slip cover may be placed on the core in the wax pattern die before the pattern is formed. It is formed to close tolerances to position the core with a degree of accuracy not attained by previously known methods.

3,722,580

**PRESSURE MAINTAINING DEVICE AND METHOD FOR PRESSURIZED WATER REACTORS**

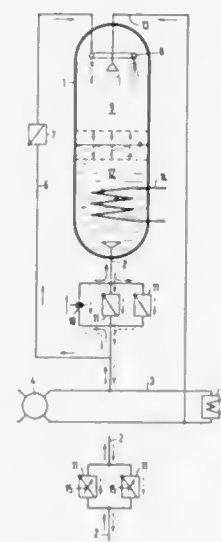
Gerhard Frei, and Maximilian Hintergraber, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany  
 Filed July 16, 1970, Ser. No. 55,352

Claims priority, application Germany, July 19, 1969, P 10 36 844.6

Int. Cl. F24f 3/14

U.S. Cl. 165—1

10 Claims



Method of automatically maintaining pressure in a pressure maintaining device of a pressurized water reactor includes

spraying into a steam chamber of the pressure maintaining device in response to increase in pressure in the device or to increase in power output of the reactor, at least a partial flow of water flowing in a pressure water line from the reactor to a steam generator, and additionally spraying into the steam chamber continuously and constantly a lesser flow of water flowing in a line from the steam generator back to the reactor; and device for carrying out the method.

3,722,579

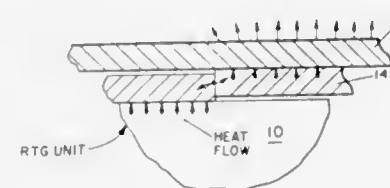
**HEAT TRANSFER SYSTEM FOR RADIOISOTOPE GENERATORS**

Robert D. Hitchcock, Ventura, and Gene P. McMahan, Oxnard, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy  
 Filed March 5, 1971, Ser. No. 121,327

U.S. Cl. 165—47

Int. Cl. F28f 13/00

3 Claims



A device to dissipate heat from a radioisotope generator mounted in a separate housing which is designed to protect the generator from excessive water pressure. The device includes a pair of split elongate heat transfer cylinders positioned around the generator within the housing. One of the cylinders is in a contiguous relationship with the generator while the other cylinder is contiguous only to the housing. Both cylinders are in an end abutting relationship so as to provide a path for the flow of heat to the housing.

3,722,580

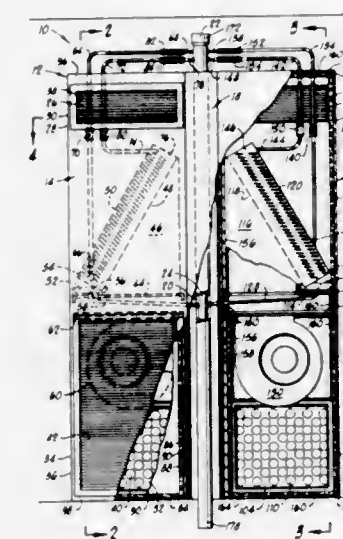
**MODULAR HEATING AND COOLING APPARATUS**

Alvin Stanley Braver, Oklahoma City, Okla., assignor to International Air Conditioning, Oklahoma City, Okla.  
 Filed April 29, 1971, Ser. No. 138,523

U.S. Cl. 165—50

Int. Cl. F24f 3/08

11 Claims



A heating and cooling apparatus for installation in a multiple-story building structure comprising a plurality of vertically stacked heating and cooling units forming a vertical tier extending upwardly through the building structure with one heating and cooling unit located at each floor level for heating or cooling two horizontally adjacent room areas separated by

a common vertical partition within which partition the heating and cooling unit is installed. Each heating and cooling unit includes an independent room unit for heating and cooling a respective room area adjacent thereto, the room units being separated from one another within the housing by a riser duct carried by the housing and extending the full height thereof. Each independent room unit comprises a discharge air vent and a return air vent communicating between the room unit and the room area to be heated and cooled, a heat exchanger coil for heating or cooling air passing thereover carried within the unit intermediate the return air vent and the discharge air vent, and a motor-driven blower for drawing air from the room area through the return air vent and blowing the air over the heat exchanger coil and discharging the heated or cooled air through the discharge air vent back into the room area. The riser duct carries a supply riser pipe, a return pipe and a condensate drain riser pipe each of which is sized and positioned in the riser duct such that the upper end of each riser pipe may be connected to the lower end of the respective riser pipe in the heating and cooling unit installed next above to form continuous riser pipes extending upwardly through the entire vertical tier. The heat exchanger coil of each room unit is connected at one end thereof to the supply riser pipe adjacent thereto and is connected at the opposite end thereof to the return riser pipe adjacent thereto whereby heated or chilled fluid heat transfer medium may flow through the coil from the supply riser pipe and back to the return riser pipe. Means are disclosed for collecting and returning moisture which condenses on the heat exchanger coils to the condensate drain riser pipe.

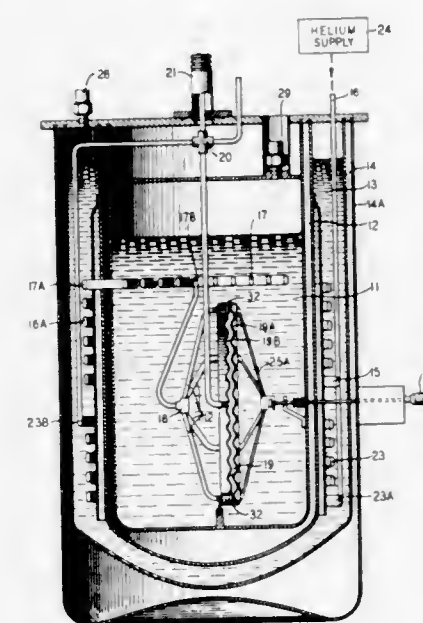
3,722,581

**HEAT EXCHANGER WITH ADJUSTABLE CONDUIT TRANSIT SIZE FOR CARRIER**

Harold Alfred Sauer, Hatboro, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.  
 Filed Oct. 23, 1970, Ser. No. 83,284  
 Int. Cl. F28f 27/00

U.S. Cl. 165—96

12 Claims



In a heat exchanger employing either a liquid or a gas carrier and particularly adapted for operation in the cryogenic range, efficiency is markedly enhanced and a simple means of temperature programming and control is provided by the use of a heat exchanger conduit with a rectangular cross section together with a means for adjusting the conduit transit width.



3,722,582

## END CONNECTOR FOR HEAT EXCHANGERS

Ulf F. Rinecker, San Francisco, Calif., assignor to Envirotech Corporation, Menlo Park, Calif.

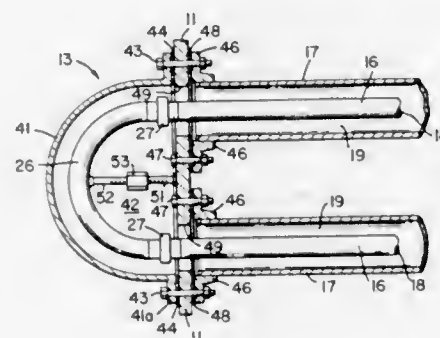
Continuation of Ser. No. 849,622, Aug. 13, 1969, abandoned.

This application April 14, 1971, Ser. No. 134,024

Int. Cl. F28f 9/00

U.S. Cl. 165—143

9 Claims



End connector for double tube heat exchangers having parallel sets of concentric tubes forming inner and outer flow passageways. U-shaped return passageways are provided for both of the flow passageways, and these return passageways are in close proximity to each other to enhance heat transfer between them. The end connector is removably mounted to facilitate installation and servicing of the system in which it is used.

3,722,583

## REFRIGERATED AIR DRYER

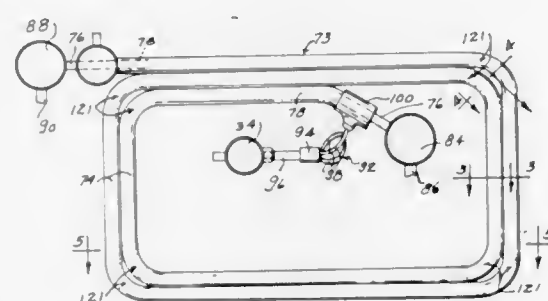
Martin Fiedler, Wooddale, Ill., assignor to Arrow Pneumatics, Inc., Chicago, Ill.

Filed Feb. 22, 1971, Ser. No. 117,265

Int. Cl. F28d 7/12

U.S. Cl. 165—156

9 Claims



A refrigerated air dryer for compressed air systems wherein water vapor and other contaminants are removed from said air by means of controlled condensation. The disclosed system utilizes a novel pump-down arrangement wherein a major portion of the refrigerant may be removed from the cooler coils when the system is not in use, thereby preventing damage due to refrigerant expansion. Further, the coil assembly for the disclosed system utilizes a novel, dual-passage coil construction and method of assembly. More specifically, regarding this latter point, inner and outer tubular members are employed, with a selected section of the inner tubular member collapsed partially during forming to effect engagement of said inner tubular member with said outer tubular member and thereby properly supporting said inner tubular member within said outer tubular member.

3,722,584

## APPARATUS AND METHOD FOR DRILLING UNDERWATER

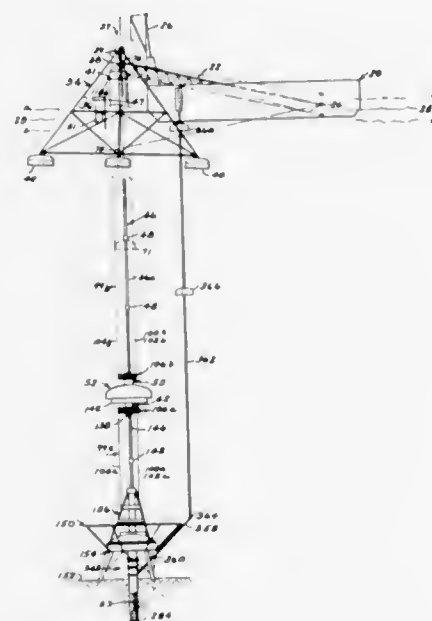
Arthur John Nelson, 3304 Shasta Drive, San Mateo, Calif.

Filed Aug. 13, 1970, Ser. No. 63,507

Int. Cl. E21b 7/12

U.S. Cl. 166—5

13 Claims



A system forming a well through the floor of a body of water obviating the conventional conductor pipe used to; encase the drill string, seal off the well from the water and convey slurry for return to a vessel at the water surface. Instead to have an integral drill string uninterrupted by an immersed drilling station fixedly positioned adjacent the floor and adapted to provide continuous boring of the well hole corresponding to the full extent available of a lengthened string suspending above from an immersed support station controlling the bit pressure in the hole as that support descends with penetration. An independently supported articulative conduit in fluid communication between a fluid supply aboard the vessel and the hollow string, and an independently supported remote conduit in fluid communication between the vessel and a diverting assembly terminating the well annulus completes a fluid circuit by which hole borings are removed for processing. The diverting assembly accommodates sealed entry of the bared string, has a diverter directing flow from the well annulus to the remote conduit and has terminating means sealing off the annulus to a mitigated well condition at the seal. A system to line the bored hole concurrent with reassembly of the string is conducive to furtherance of the expeditious penetration system.

3,722,585

## APPARATUS FOR ALIGNING AND CONNECTING UNDERWATER FLOWLINES

Bobby H. Nelson, and Benton F. Baugh, both Houston, Tex., assignors to Vetco Offshore Industries, Inc., Ventura, Calif.

Filed Jan. 12, 1971, Ser. No. 105,919

Int. Cl. E21b 43/01

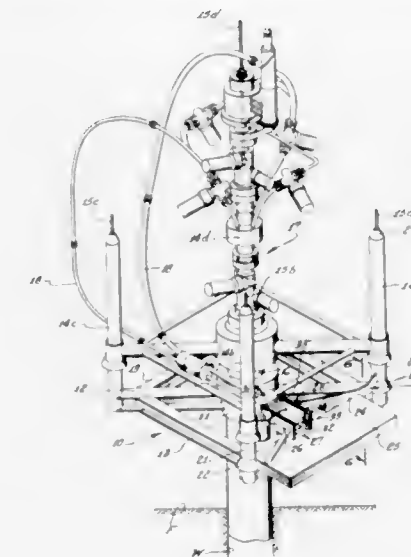
U.S. Cl. 166—6

24 Claims

One or more flowlines are to be connected to one or more companion flowline loops extending from a Christmas tree disposed at the upper end of a well bore extending into the formation from the floor of an ocean, or other body of water, at which a flowline guide structure has been installed. Prior to effecting the connection, the end portions of the flowlines are attached to a flange or hub, which is then releasably secured to a carrier at a flowline or pipeline barge, the carrier and flowlines being lowered from the barge toward the well bore where the coupling hub or flange is attached to an alignment

device on the flowline guide structure, which aligns the hub and flowlines with a companion hub secured to the ends of the flowline loops. The carrier is removed and a clamp and seal running tool lowered through the water to position its seal as-

inner assembly is rigidly supported. To remove the inner assembly, it is first additionally supported with a hoist, then the conduit necks are withdrawn from the recesses by a manual lift on a control cable (which reverses the actuator) and the inner assembly is lifted out with the hoist. The casing fitting and the drop fitting, which includes the actuator, comprise the invented pitless well adapter.



sembly between the aligned flowline hub and flowline loop hub and to relatively pull the hubs against the seal assembly and clamp it therebetween, the running tool then being released.

3,722,586

## PITLESS WELL ADAPTER

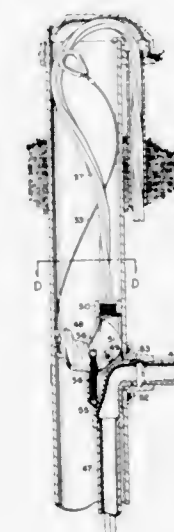
John Gordon Baker, Evansville, Wis., assignor to Baker Manufacturing Company, Evansville, Wis.

Filed Oct. 4, 1971, Ser. No. 186,090

Int. Cl. E21b 33/03

U.S. Cl. 166—85

14 Claims



In the case of a jet pump water system two round holes are cut in the well casing below the frostline. A casing fitting is attached fluid-tight to the casing around the two holes. The casing fitting has pressure and suction cylindrical recesses located beyond the inner wall of the casing, coaxial with the casing holes. Pressure and suction pipes are connected to the pressure and suction recesses and extend horizontally below the frostline into a dwelling to a pump and a water delivery conduit. A drop fitting has pressure and suction conduit necks which fit fluid-tight into the pressure and suction recesses. An inner assembly has drop and jet diffuser fittings at the top and bottom respectively of pressure and suction drop pipes. The inner assembly is lowered into the well with the pressure and suction conduit necks pointed in the direction of the conduit recesses. When the necks reach approximate alignment with the recesses an actuator automatically inserts the necks into the recesses and rigidly locks them in. Thus, the pressure and suction pipes and drop pipes are coupled fluid-tight and the

3,722,587

## WELL HEAD CASING SEAL

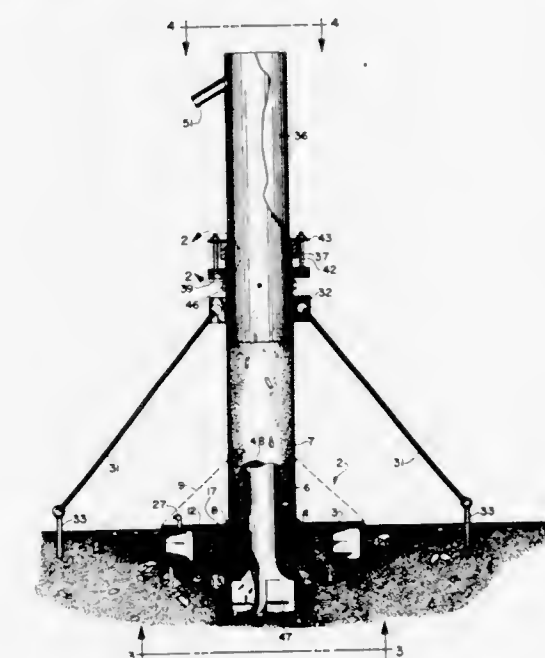
Simon J. Diaz, 307 Center St., McAllen, Tex.

Filed Nov. 8, 1971, Ser. No. 196,355

Int. Cl. E21b 33/02

U.S. Cl. 166—88

9 Claims



Presented is a structure for sealing the opening around a well head to prevent the inadvertent spillage or escape while permitting the recovery and recycling of drilling fluids during the drilling operation.

3,722,588

## SEAL ASSEMBLY

Jack W. Tamplen, R.R. 2, Celina, Tex.

Filed Oct. 18, 1971, Ser. No. 190,085

Int. Cl. E21b 33/128

U.S. Cl. 166—123

17 Claims



A seal assembly, for setting at a predetermined depth in a conduit penetrating subterranean formations, having an elon-



gate mandrel; an elongate tubular surface; an expansible tubular seal element; supporting and compression means for compressing the seal; slips; collet latch for releasably maintaining a set position; interconnection and release means for releasably connecting with a setting tool; connection means for connecting with a terminal device; and characterized by one or more of the desirable features as follows: (1) a bypass means for bypassing fluid when the seal element is not set and blocking flow of fluid once the seal element has been set; (2) a balancing chamber and piston for reducing the force the collet latch is required to sustain; and (3) a safety means for preventing unsetting of the retainer means as long as the differential pressure across the seal is too great. Specific and preferred structures are also disclosed.

3,722,589

# WELL PRODUCTION TESTING AND FLOW CHARACTERISTIC EVALUATION METHODS USING SMALL DIAMETER TUBING

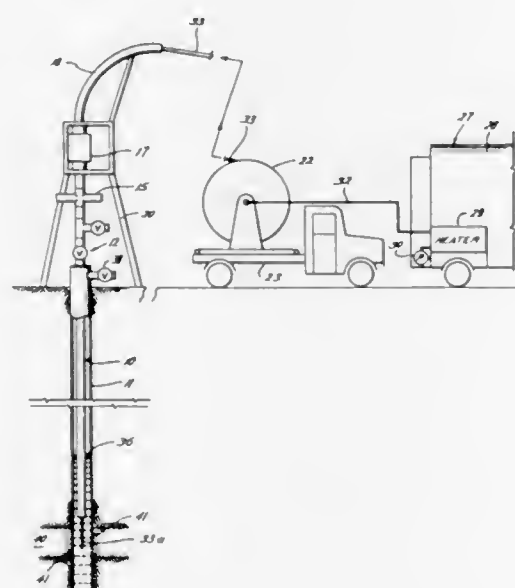
Arthur W. Smith; Ray A. Plummer, and Charles Wayne Johnson, all of P. O. Box 3047, Houston, Tex.

Division of Ser. No. 873,932, Nov. 4, 1969, abandoned. This application April 28, 1971, Ser. No. 138,140

Int. Cl. E21b 43/00, 49/00

U.S. Cl. 166—250

8 Claims



Well methods using small diameter tubing introduced into and withdrawn from the well by an injector apparatus. The tubing is introduced into and withdrawn from the well by the injector from a tubing-holding reel. The methods include the introduction of an inert gas such as nitrogen through the small diameter tubing. Other gases may also be introduced through the small diameter tubing. The methods are especially suitable for use in petroleum wells, but may if suitable be used in water wells. The small diameter tubing is hung in the well with its lower end adjacent the formation to be tested, and injection of gas through the tubing lifts a layer of uncontaminated reservoir fluid to the surface. Continued gas injection accomplishes formation flow characteristic evaluation.

3,722,590

# METHOD OF MOBILITY CONTROL IN MISCIBLE DISPLACEMENT PROCESS

H. R. Froning; Syed H. Raza, and Warren S. Askew, all of Ankara, Turkey, assignors to Amoco Production Company, Tulsa, Okla.

Filed June 1, 1971, Ser. No. 149,062

Int. Cl. E21b 43/22

U.S. Cl. 166—273

12 Claims

In displacement by water of a solvent substantially miscible with both water and petroleum through a petroleum-contain-

ing reservoir, the mobility of the drive agent is controlled by generating a weak, mobile foam at or near the trailing edge of the solvent slug. Foams found to be suitable for this purpose, and which do not result in plugging the reservoir, are characterized by the fact that they have a maximum viscosity of not more than about 1,000 cps and when confined in a column over a 20-minute period decrease in volume to not more than one-third of the foam present at the beginning of said period.

3,722,591

# METHOD FOR INSULATING AND LINING A BOREHOLE IN PERMAFROST

Orwin G. Maxson, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed April 12, 1971, Ser. No. 133,373

Int. Cl. E21b 33/14

U.S. Cl. 166—295

4 Claims

A borehole penetrating a subterranean region is insulated and lined by hardening in place a hardenable, flowable composition consisting essentially of a hardenable, flowable, adhesive cement and a divided, solid, closed-cell material wherein the closed-cell material can comprise as much as about 80 volume percent of the hardenable, flowable composition and wherein the hardened material forming the liner has a hydrostatic crush strength of about 200–5,000 psi, or more. More particularly, syntactic foams are formed in situ to line boreholes penetrating permafrost.

3,722,592

# PARAFFIN DEPOSITION INHIBITION IN OIL

Salim M. Bucaram, Plano, and Alfred L. Mortimer, Richardson, both of Tex., assignors to Atlantic Richfield Company, New York, N.Y.

Filed Dec. 14, 1971, Ser. No. 207,987

Int. Cl. E21b 43/00; C09k 3/00

U.S. Cl. 166—304

30 Claims

A method for inhibiting the deposition of paraffin in liquid oil either in the oil well, gas wells, etc., or on the earth's surface by utilizing a stable aqueous emulsion of polyethylene wherein the polyethylene is branched at least in part and has a molecular weight in excess of 6,000, the emulsifier being selected from the group consisting of anionic, nonionic, and cationic emulsifiers.

3,722,593

# LIMITING CONTAMINATION IN WASTE DISPOSAL WELLS

Fred H. Poettmann, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Continuation-in-part of Ser. No. 873,669, Nov. 13, 1969, Pat. No. 3,606,925. This application March 29, 1971, Ser. No. 129,180

Int. Cl. B65g 5/00

U.S. Cl. 166—305 D

13 Claims

Contamination of underground aquifers by waste materials injected through disposal wells is limited by injecting a mobility buffer ahead of the waste material. The mobility buffer is an oil-external or water-external micellar dispersion having sufficiently low mobility to inhibit fingering of the waste material. A more favorable mobility ratio can be achieved by injecting a series of consecutively mobility graded dispersions into the aquifer.

3,722,594

# WELL METHODS USING SMALL DIAMETER TUBING

Arthur W. Smith; Ray A. Plummer, and Charles Wayne Johnson, all of P. O. Box 3047, Houston, Tex.

Continuation-in-part of Ser. No. 873,932, Nov. 4, 1969, abandoned. This application May 20, 1971, Ser. No. 145,476

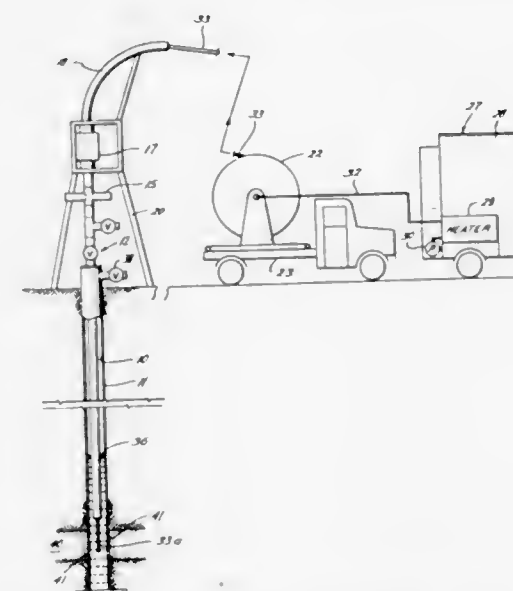
Int. Cl. E21b 21/00, 43/25, 43/27

U.S. Cl. 166—305 R

9 Claims

Well methods using small diameter tubing introduced into and withdrawn from the well by an injector apparatus. The

tubing is introduced into and withdrawn from the well by the injector from a tubing-holding reel. Liquids in the well are removed by gas injection as the tubing is introduced. The methods include displacements, fluid injections such as injections of acids, corrosion inhibitors, surfactants, plastics, cement, drilling fluids, alcohols, other solvents, or other chemicals used for treatments in wells and at formations or reservoirs penetrated by wells. The methods also include methods



for the dewatering or drying of pipelines, shafts, ducts, vents, or the like. In most cases, the methods include the introduction of an inert gas such as nitrogen through the small diameter tubing. Other gases may also be introduced through the small diameter tubing. The methods are especially suitable for use in petroleum wells, but may if suitable be used in water wells.

3,722,595

# HYDRAULIC FRACTURING METHOD

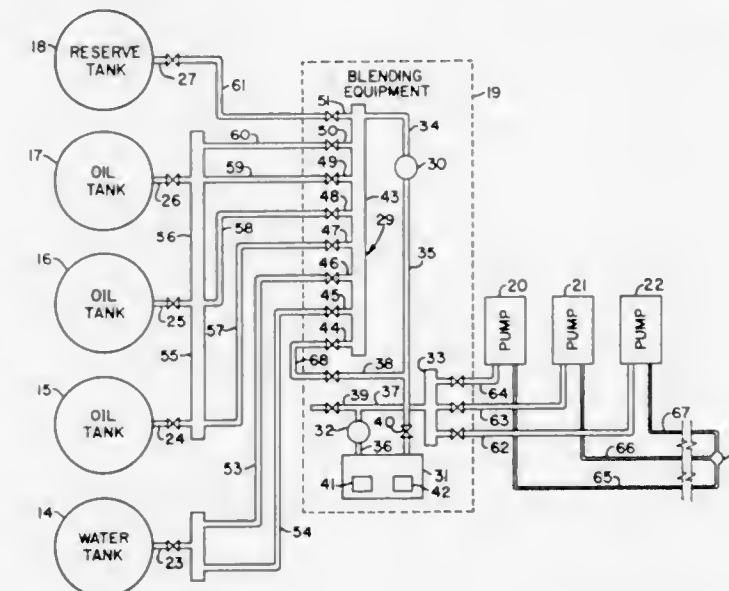
Othar M. Kiel, Houston, Tex., assignor to Esso Production Research Company, Houston, Tex.

Continuation-in-part of Ser. No. 76,887, Sept. 30, 1970, abandoned. This application Jan. 25, 1971, Ser. No. 109,415

Int. Cl. E21b 43/26

U.S. Cl. 166—308

9 Claims



A fracturing method wherein an emulsified fluid is injected into a subterranean formation under sufficient pressure to open a fracture in the formation. The fracturing method is performed by continuously passing the liquid used as the external phase through a conduit to establish a turbulent flow stream, introducing the liquid used as the internal phase into

the flow stream at a plurality of locations to progressively increase the concentration of the internal phase, and continuously injecting the emulsion into the formation under sufficient pressure to open a fracture therein. The method can be employed in water external or oil external systems.

3,722,596

# FIRE PROTECTION SYSTEM

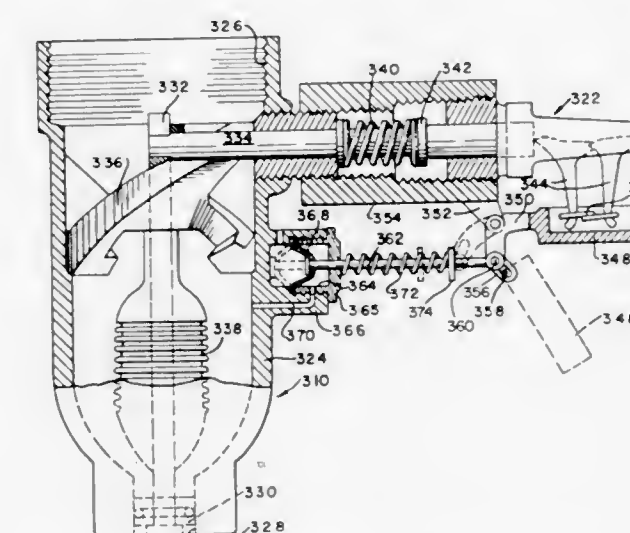
William L. Livingston, Sharon, Mass., assignor to Factory Mutual Research Corporation, Boston, Mass.

Division of Ser. No. 72,333, Sept. 15, 1970, Pat. No. 3,653,444, which is a continuation-in-part of Ser. Nos. 864,612, Oct. 8, 1969, Pat. No. 3,645,338, and Ser. No. 885,501, Dec. 16, 1969, abandoned. This application Jan. 10, 1972, Ser. No. 216,845

Int. Cl. A62c 37/08

U.S. Cl. 169—1 A

19 Claims



A method of fire protection in which extinguishant is delivered to a plurality of discharge heads located in the space to be protected from fire. The number of heads that are opened to deliver extinguishant in response to a fire situation is limited to those located in the immediate vicinity of the fire. In this manner the opened heads are not robbed of valuable extinguishant, and water damage to materials located in areas remote to the fire is minimized. A discharge head utilized in the above method.

3,722,597

# FIRE PROTECTION SYSTEM WITH TIME RESPONSIVE DISCHARGE HEADS

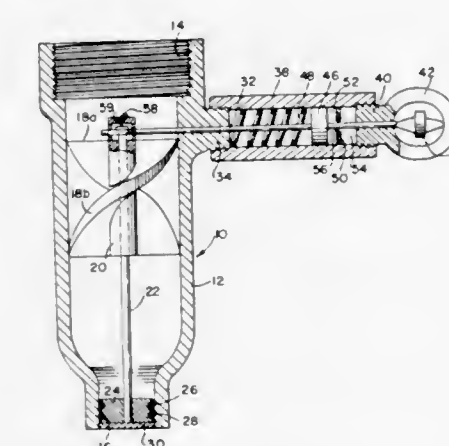
Raymond Friedman, Needham, Mass., assignor to Factory Mutual Research Corporation, Norwood, Mass.

Filed Aug. 5, 1971, Ser. No. 169,241

Int. Cl. A62C 37/08

U.S. Cl. 169—38

16 Claims



A fire protection system for buildings and the like in which a plurality of extinguishant discharge heads are mounted in an



elevated position in the building and are connected to a source of extinguishant. A thermal responsive device is responsive to a fire developing in the building and is adapted to place one or more of the heads in an operable condition for a predetermined time period. The heads that are placed in an operable condition are adapted to be opened in response to a predetermined system condition occurring within the time period.

3,722,598

## TORSION BAR DRAFT LOAD ADJUSTER

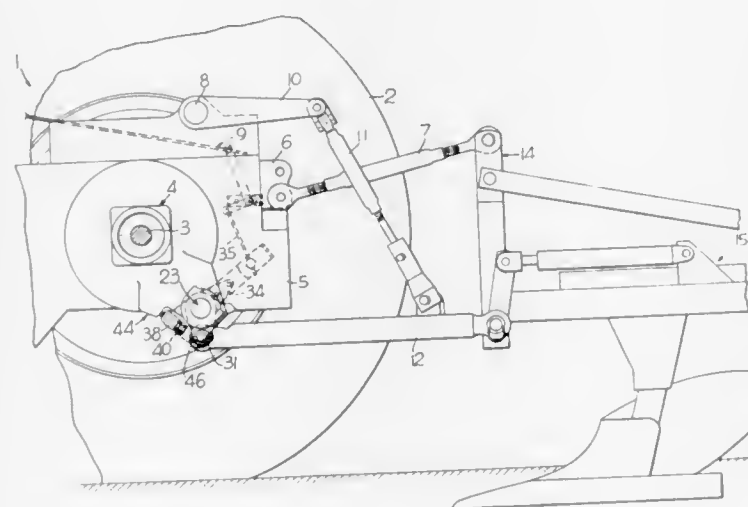
Donald E. Peterson, Milwaukee, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Dec. 24, 1970, Ser. No. 101,323

Int. Cl. A01b 63/112

U.S. Cl. 172-10

6 Claims



A draft load sensing mechanism for a vehicle having a torsion bar with means for presetting the minimum draft load and load range sensed by the draft load sensing mechanism.

3,722,599

## FLUOROCYANOACRYLATES

Jerry E. Robertson, North Oaks; Joseph Kenneth Harrington, Edina, and Elden H. Banitt, Woodbury Township, Washington County, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

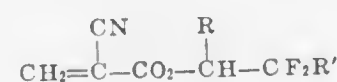
Continuation-in-part of Ser. No. 687,111, Dec. 1, 1967, Pat. No. 3,639,361. This application Aug. 17, 1971, Ser. No. 172,603

Int. Cl. C08f 3/42

U.S. Cl. 128-334 R

11 Claims

Fluorinated cyanoacrylates having the formula:



wherein R is hydrogen, methyl or ethyl, R' is fluorine,  $-\text{CF}_3$  or  $-(\text{CF}_2)_n\text{H}$ , and  $n$  is an integer from 1 to 3 have been found to be useful biological adhesives which when applied as monomers to adherends rapidly polymerize, e.g., in the presence of even small amounts of moisture, to form strong bonds. The monomers polymerize to films and can be used biologically as hemostatics and tissue adhesives.

3,722,600  
METHOD FOR DRIVING PILES AND LIKE ELEMENTS INTO THE GROUND

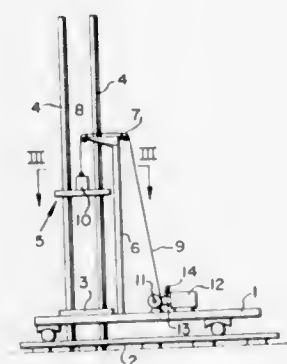
Hiroshi Hirata, Tokyo, and Hiroshi Toyoda, Shizuoka, both of Japan, assignors to Asahi Giken Kabushiki Kaisha, Tokyo, Japan

Filed May 28, 1971, Ser. No. 147,802

Int. Cl. E02d 7/02

U.S. Cl. 173-1

2 Claims



Several piles or like elongated elements are driven into the ground simultaneously by a vibrator carried by a platform which is clamped to the several piles. The piles are themselves outside the path of the vibrator. The platform is shifted along the piles from time to time whereby piles of any length may be driven into the ground by an apparatus arranged closer to the ground than the upper ends of the piles in their initial positions.

3,722,601

## DRILLING EQUIPMENT WITH DETACHABLE TRANSPORTER

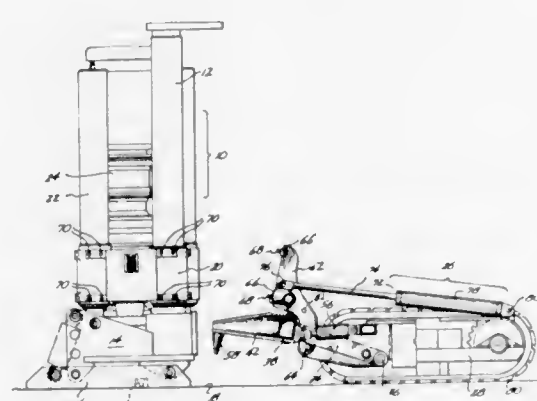
Harold T. Klein, Bellevue, and Harold H. West, Seattle, both of Wash., assignors to The Robbins Company, Seattle, Wash.

Filed Nov. 1, 1971, Ser. No. 194,664

Int. Cl. E21c 11/02

U.S. Cl. 173-28

18 Claims



A drilling rig is removably mounted onto a base emplaced at the drilling site. A transporter includes a lifting mechanism attachable to any one of the four sides of the drilling rig. The lifting mechanism is usable to swing the drilling rig between a use position on the base and a transport position on the transporter. The transporter carries a brace arm assembly which projects forwardly from the transporter to be positionable over the base. Hydraulic means on the transporter is used for forcing the brace arm assembly downwardly against the base during use of the lifting mechanism. The brace assembly may also be used for lifting the drilling rig vertically upwardly from the base prior to swinging it downwardly into its transport position.

3,722,602

## RAM OPERATED DIAMOND CORE DRILL PRESS

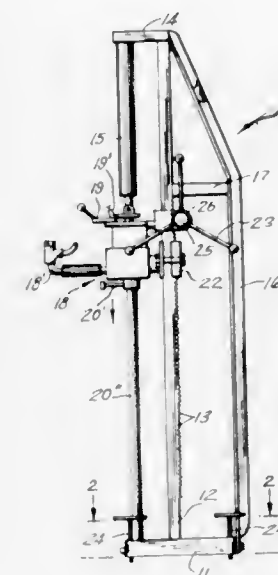
Mark C. Rogers, 4411 Moraga Avenue, San Diego, Calif.

Filed Aug. 4, 1971, Ser. No. 168,823

Int. Cl. E21c 5/00, 11/00

U.S. Cl. 173-32

3 Claims



A hydraulic or air operated drill press. This device is composed primarily of hydraulic or air operated cylinder which provides pressure for a diamond core bit for drilling underwater holes.

3,722,603

## WELL DRILLING APPARATUS

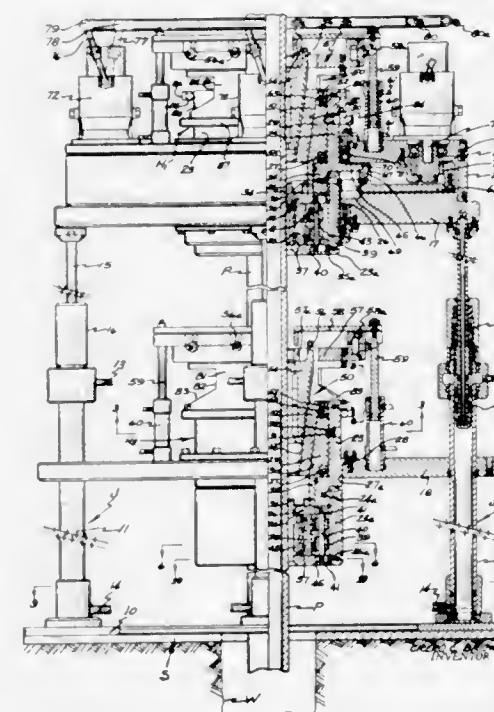
Cicero C. Brown, c/o Brown Oil Tools, Inc. P.O. Box 19236, Houston, Tex.

Filed Sept. 16, 1971, Ser. No. 181,067

Int. Cl. E21b 19/16

U.S. Cl. 173-159

5 Claims



A fluid pressure-operated snubber device for use in drilling wells, generally in place of rotary table and drawworks systems commonly employed for rotary drilling. The device comprises a stationary lower snubbing member and rotatable and vertically reciprocable upper snubbing member operable for rotating drill pipe for drilling a well and for running the drill pipe into and out of the well. Each of the snubbing members includes a set of pipe-gripping wedges movable into and

out of pipe-gripping engagement by fluid pressure-operated means and a set of cam actuated shoes for applying torsional forces to the pipe string for rotating the same in drilling and in making-up and breaking-out the sections of the pipe string when running into and out of the well.

3,722,604

## PROBE

Goodwin F. Leshner, 115 Sante Fe, Houston, Tex.

Filed Jan. 21, 1971, Ser. No. 108,414

Int. Cl. E21b 11/00

U.S. Cl. 175-19

1 Claim



A device for penetrating the earth to locate buried matter, such as a pipe line, and the like, consisting of a plurality of connecting sections terminating at one end in a handle and at the other end having a spherical member of greater outside diameter than the outside diameter of the respective sections.

3,722,605

## APPARATUS AND METHOD FOR DETERMINING RELATIVE ORIENTATION OF TWO WELLS

Carroll E. Isham, Buena Park, Calif., assignor to Scientific Drilling Controls, Costa Mesa, Calif.

Filed Feb. 3, 1971, Ser. No. 112,328

Int. Cl. E21b 47/00, 7/04

U.S. Cl. 175-40

17 Claims



The relative positioning of two wells is determined by receiving at a subsurface location in one of the wells sound emanating from the second well, and determining the direction of the second well from the first by reference to the direction of approach of the sound.



3,722,606

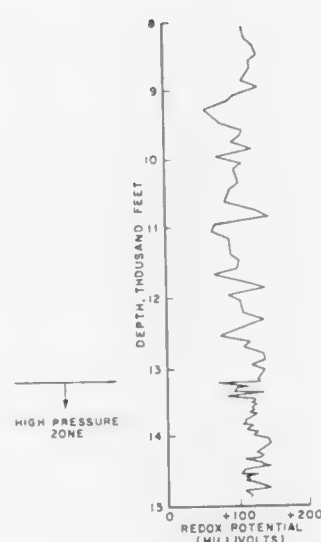
**DETECTING ABNORMAL FORMATION PRESSURE DURING DRILLING OF A WELL**

Walter H. Fertl, and R. J. Cavanaugh, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Aug. 16, 1971, Ser. No. 171,902  
Int. Cl. E21b 47/00

U.S. Cl. 175—41

8 Claims



An early warning detection method for predicting abnormal formation pressure in subterranean rock strata before it is drilled. The technique is to measure, on a sample removed from the well bore, the tendency of an atomic particle to escape from the environment, such as the pH or redox potential, while the well is being drilled, in the normally pressured rock strata existing above the abnormally pressured formations. When variations are observed in the rate of change of escape tendency with depth, drilling procedures are altered to meet the requirements of the formation which is about to be penetrated by the drill bit.

3,722,607

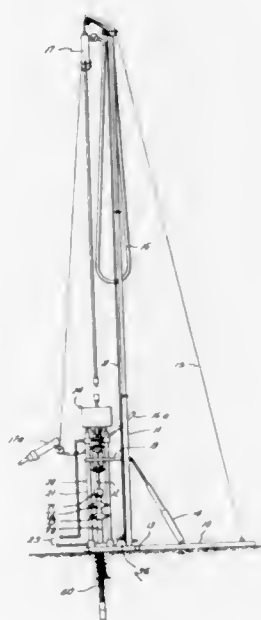
**METHOD FOR DRILLING A WELL**

Jack H. Ray, Houston, Tex., assignor to Tenneco Oil Company, Houston, Tex.

Filed April 8, 1971, Ser. No. 132,323  
Int. Cl. E21b 7/00; E21c 5/00, 1/00

U.S. Cl. 175—57

3 Claims



A method for drilling an oil or gas well or the like which does not utilize a conventional derrick and rig which requires

several operators and extensive moving equipment and the like, but rather the drilling is carried out with a minimum of simplified equipment. The invention contemplates mounting a generally up and down travelling rotary table over a well bore site. It includes the step of suspending a drill string from the rotary table and holding the drill string therein against downward movement relative thereto, with the drill string having drill collars and a drill bit on the lower end thereof. The rotary table is simultaneously rotated and lowered to effect drilling of the well bore while flowing a drilling fluid through the drill string. Thereafter, rotation of the rotary table is terminated and the rotary table disengaged from the drill string while supporting the drill string at a point below the rotary table. The drill string is held against rotational and downward movement during this supporting step. An additional section of pipe is placed in the rotary table and held therein against rotational and downward movement relative thereto. The lower end of the additional section of pipe is connected with the drill string by lowering and rotating the rotary table. Thereafter, the drilling operation is resumed by rotating and lowering the rotary table. In certain instances, the drill string may be held against both up and down movement while being supported at the position below the rotary table and likewise may be supported against both up and down movements relative to the rotary table at certain times.

3,722,608

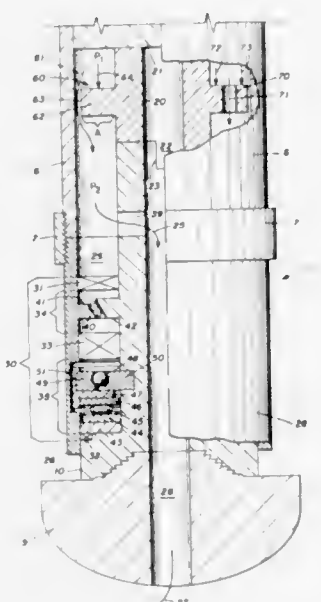
**WELL DRILLING**

Joseph H. Faulk, Dallas, Tex., assignor to Atlantic Richfield Company, New York, N.Y.

Filed Aug. 4, 1971, Ser. No. 168,835  
Int. Cl. E21b 3/08, 7/00

U.S. Cl. 175—65

8 Claims



A downhole drilling tool employing a downhole motor which drives a shaft carrying the drill bit, and thrust means both for causing a pressure drop in the drilling fluid in the vicinity of the shaft and for applying the force created by the pressure drop to the shaft thereby increasing the total force applied to the bit. A method for reducing bearing wear while drilling with a downhole motor when bit weight for drilling is applied to the shaft of the downhole motor from a housing, the shaft communicating with the housing through bearings, comprising passing drilling fluids between the shaft and housing, causing a pressure drop of the drilling fluid, and applying the force resulting from the pressure drop to the shaft.

3,722,609

**DRILLING TOOL AND BEARING SYSTEM**

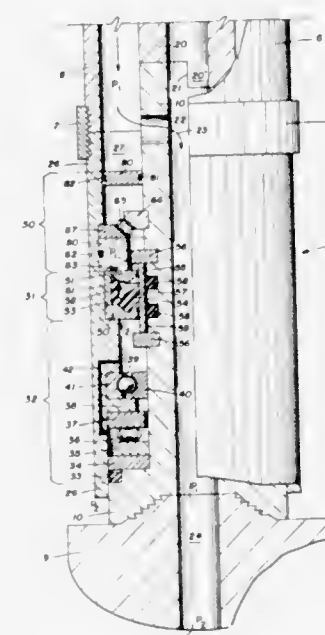
Lloyd R. Kern, Irving, and John H. Striegler, Richardson, both of Tex., assignors to Atlantic Richfield Company, New York, N.Y.

Filed Aug. 9, 1971, Ser. No. 170,079

Int. Cl. E21b 3/08

U.S. Cl. 175—92

8 Claims



A bearing system in an annulus between a shaft and a housing, the bearing system containing a seal means, and the seal means contacting a sealing surface means which maintains full sealing contact with the seal means notwithstanding lateral displacement of the shaft. A downhole drilling tool employing the above bearing system together with a downhole motor operably connected to the shaft of the bearing system, the other end of the shaft being adapted to carry a drilling bit.

3,722,610

**DRILLING EQUIPMENT, ESPECIALLY FOR DRILLING IN EARTH OR LOOSE ROCK**

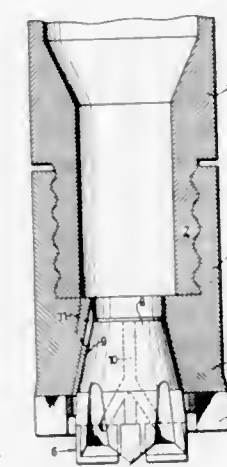
Karl Harald Hornsten, Sollentuna, Sweden, assignor to Nya Asfalt AB, Stockholm, Sweden

Filed Feb. 17, 1970, Ser. No. 11,955

Claims priority, application Sweden, Feb. 28, 1969, 2841/69  
Int. Cl. E21b 9/35, 17/04

U.S. Cl. 175—386

3 Claims



A compound drill bit consisting of an outer ring-shaped drill bit and an inner central drill bit which is detachably connected to the outer drill bit in a manner to permit simultaneous operation when impact and rotational forces are applied. The impact and rotational forces are transmitted to them both through a casing which is attached to the outer ring-shaped drill

bit. The two drill bits are so interconnected as to make it possible to expel the inner drill bit from the outer drill bit while both drill bits and the casing are positioned in the bore hole produced by them. Means are provided for passage of flushing fluid between the inner and outer drill bits.

3,722,611

**PATIENT SCALES**

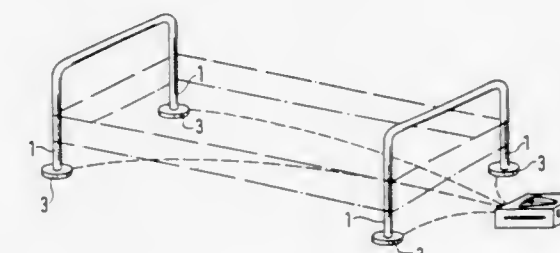
Erikki Tapio Tirkkonen, Kajavarannantie 3 as. 5, Helsinki 20, Finland

Filed Feb. 3, 1971, Ser. No. 112,111

Claims priority, application Finland, Feb. 5, 1970, 316/70  
Int. Cl. G01g 19/52

U.S. Cl. 177—144

3 Claims



The invention disclosed is a device for weighing a patient confined in bed by using weight detecting elements or load cells disposed between each of the standard legs of the bed and the floor. The weight detecting elements are positioned in communication with a counting and indicating means for identification of the weight of the patient.

3,722,612

**CHAIN DRIVEN VEHICLES**

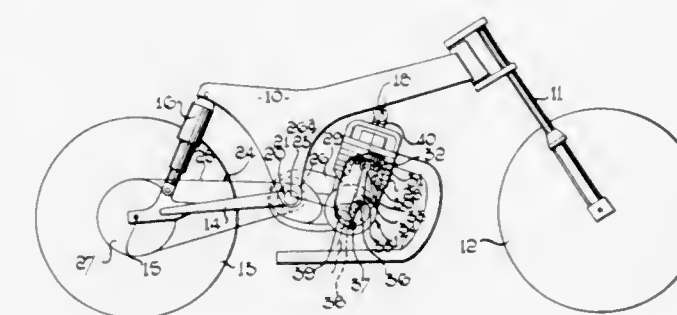
Alec Arnold Constantine Issigonis, Edgbaston, Birmingham, and Bernard Hooper, Wordsley, near Stourbridge, both of England, assignors to Norton Villiers Limited, Wolverhampton, England

Filed June 17, 1970, Ser. No. 46,916

Int. Cl. B60k 5/12, 5/06

U.S. Cl. 180—32

3 Claims



The specification discloses a chain driven motor cycle in which the driven road wheel is mounted on a swinging fork which is pivotally mounted on the motor cycle frame or power unit so that the fork cannot twist about an axis normal to its pivot axis. The power unit is pivoted to the frame and the balance of the moving masses of the power unit is such that the reciprocating masses are substantially unbalanced and cause the power unit to oscillate about its pivot axis, such oscillations being damped by resilient means between the power unit and frame. The power unit is preferably mounted at or adjacent its instantaneous center of rotation with respect to the out of balance forces produced by the reciprocating masses so that the impulsive forces caused thereby are substantially not transmitted to the frame. The invention is also applicable to snowmobiles.



3,722,613

**POWER DRIVEN MATERIAL HANDLING TRUCK**

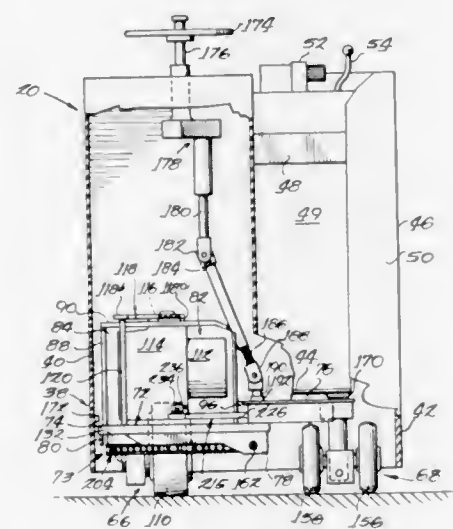
Donald Jack De Priester; David C. Horney, both of Muscatine, and Robert H. Mangels, Buffalo, all of Iowa, assignors to Hon Industries Inc., Muscatine, Iowa

Filed Dec. 21, 1970, Ser. No. 100,191

Int. Cl. B60k 17/30

U.S. Cl. 180—52

9 Claims



Disclosed herein is a material handling truck of the stand-up rider type having four support wheel units, including two steerable support wheel units, one of which comprises a power driven traction wheel. The two steerable wheel units are mounted on a rigid subframe joined to the main frame of the truck for pivotal movement about a longitudinal axis so that the wheels can accommodate to uneven terrain and thereby maintain the traction wheel in effective contact with varying subjacent surfaces. The second steerable wheel unit comprises a pair of spaced wheels which have independent horizontal tilting movement about a mounting axis spaced below the axis of rotation of these wheels to minimize any tendency of this wheel unit to cock. A telescoping universal drive connects a steering wheel on the vehicle with a sprocket chain on the subframe for steering the traction wheel. An interesting compensating linkage system on the subframe provides positive steering movement of the other steerable wheel unit.

3,722,614

**METHOD AND APPARATUS FOR CAUSING CONSTANT TRAVELING SPEED OF AUTOMOTIVE VEHICLES**

Naoji Sakakibara; Yasuhiro Kawabata, and Korehiko Tsukuba, all of Kariya, Japan, assignors to Aisin Seiki Kaisha, Kariya-shi, Japan

Filed Aug. 5, 1970, Ser. No. 61,373

Claims priority, application Japan, Aug. 6, 1969, 44/62164; Aug. 9, 1969, 44/63168

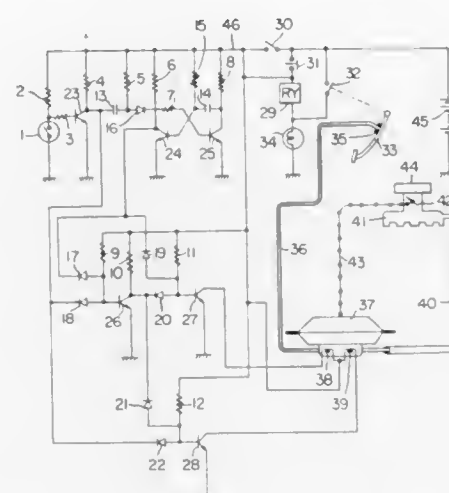
Int. Cl. B60k 31/00

U.S. Cl. 180—105 E

6 Claims

A method and an apparatus for causing constant traveling speed of automotive vehicles, in which the travelling speed of a vehicle is sensed as a pulse width, this pulse width is compared with a pulse width corresponding to an adjustable predetermined desired value, thereby to produce a difference pulse width, and a servomotor is driven for a period of time proportional to said difference pulse width. The method and apparatus utilize further a system which actuates so that when variation of the vehicle speed occurs after determination of a predetermined speed, this predetermined speed is temporarily varied within a suitable range in response to magnitude of the

speed variation in such a manner that difference between the actual speed and the predetermined speed of the vehicle



becomes large. Furthermore, a servo-motor mechanism adapted to the method and apparatus is disclosed.

3,722,615

**VEHICLE DOOR LOCKING SYSTEM**

Masashi Okada, Kariya; Yoshichi Kawashima, 16, Kamurocho-2-chome, Gifu, and Hisami Mitsueda, Mie-ken, all of Japan, assignors to Nippondenso Co., Ltd., Kariya-shi, Japan

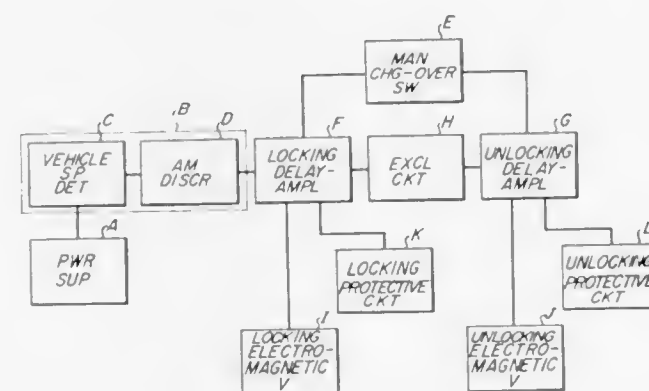
Filed July 19, 1971, Ser. No. 163,837

Claims priority, application Japan, Sept. 2, 1970, 45/76890

Int. Cl. B60r 21/00

U.S. Cl. 180—112

1 Claim



A system for locking vehicle doors wherein the doors of a vehicle, especially, an automobile are locked or unlocked by the operation of a manual switch in order to prevent theft, for example, and in addition they are automatically locked when the vehicle speed reaches a predetermined level, thereby securing the safety of passengers.

3,722,616

**DIRECTIONAL LOUDSPEAKER SYSTEM**

Bobby R. Beavers, Garden Grove, Calif., assignor to LTV Airtec, Inc., Anaheim, Calif.

Filed Dec. 14, 1970, Ser. No. 97,960

Int. Cl. G10k 13/00; H04r 1/28

U.S. Cl. 181—31 B

2 Claims

A loudspeaker system includes a loudspeaker mounted in an enclosure, the enclosure having a front port for exiting the sound energy radiated by the front of the speaker cone and a port, or ports, or other areas for exiting the sound energy radiated by the rear of the speaker cone which is out of phase with the front radiation. The port, ports or areas through which the energy from the back cone surfaces is radiated is made acoustically resistive so as to delay the sound energy in

3,722,618

**SANDWICH DECK CONSTRUCTION**

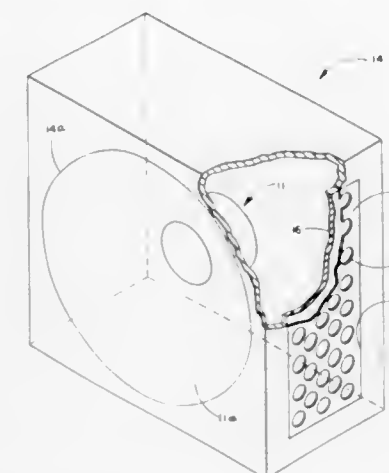
Max E. Butterfield, Peoria; Richard H. Hoerr, East Peoria; Alan L. McLees, Washington, and Frederick D. Proksch, Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 28, 1970, Ser. No. 101,635

Int. Cl. F16f 7/00

U.S. Cl. 181—33 G

9 Claims



speaker cone effectively cancels out sound arriving from the front of the speaker cone at regions to the rear of the enclosure. This minimizes the effective acoustical energy to the rear of the loudspeaker system so as to make for a forwardly directed sound radiation pattern.

3,722,617

**FLAT DIAPHRAGM FOR SOUND TRANSDUCERS**

Jose Juan Bertagni, 1027 Hernandarias St., Buenos Aires, Argentina

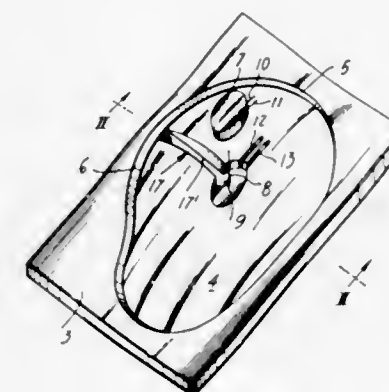
Filed May 31, 1972, Ser. No. 258,335

Claims priority, application Argentina, June 8, 1971, 236069; June 8, 1971, 236060

Int. Cl. G10k 13/00; H04r 7/00

U.S. Cl. 181—32 R

11 Claims



Flat diaphragm for sound transducers having a flat front face and rear face defining a central figure portion connected to an electromagnetic assembly and surrounded by a marginal vibration damping portion of larger thickness than the adjacent peripheral zone of said figure portion, an endless channel member in said diaphragm, surrounding said figure portion to better acoustically separate said figure portion from said marginal vibration damping portion and if certain tones are to be emphasized a substantially straight metal band resting on said figure portion arranged between said electromagnetic assembly and said endless channel member.

3,722,619

**ACOUSTIC DECOUPLER**

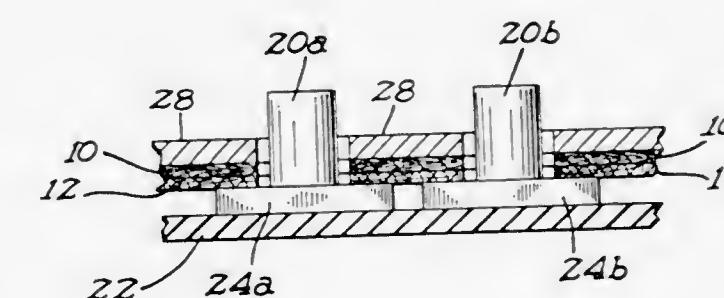
Roland W. Higgs, Orchard Lake, Mich., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed April 26, 1972, Ser. No. 247,706

Int. Cl. E04b 1/84

U.S. Cl. 181—33 G

2 Claims



An acoustic decoupler which isolates both shear and longitudinal acoustic waves comprises first and second layers of precompressed balsa wood. The first and second layers lie in substantially parallel planes. The unidirectional grain structure of each of the first and second layers is aligned with the substantially parallel planes, and the unidirectional grain structure of the first layer is aligned essentially perpendicular to the unidirectional grain structure of the second layer.



3,722,620  
SILENCER

James Brian Erskine, Norton, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

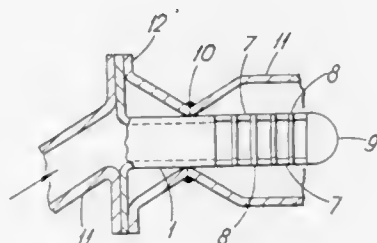
Filed July 19, 1971, Ser. No. 163,835

Claims priority, application Great Britain, July 28, 1970, 36,505/70

Int. Cl. F01n 1/08, 7/18

U.S. Cl. 181—57

10 Claims



A gas flow conduit consists of inner and outer flow sections whose end portions overlap. Communication between the sections is afforded by slots in the wall of the overlapped inner section. This design controls the pattern of gas flowing through it and leads to, for example, a reduction in acoustic noise and to better gas flow measurement.

3,722,621  
LADDER BENCH

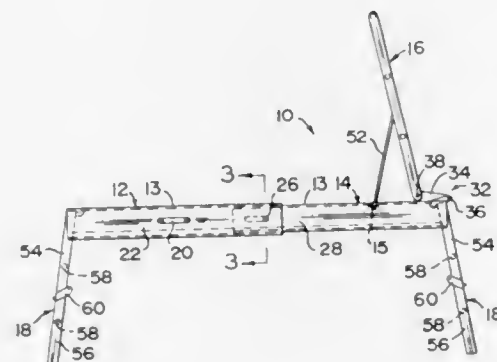
Mattie Lou Jones, 1913 N. Dale Mabry, Tampa, Fla.

Filed June 1, 1971, Ser. No. 148,712

Int. Cl. E04g 1/30

U.S. Cl. 182—118

12 Claims



A device comprising a substantially horizontal telescopically arranged bench surface mounted on ladder-like supports located at each end of the bench. These ladder supports are extendable so that the bench may be raised to scaffold height. In addition these supports are hinged to the bench such that the drive may be collapsed for storage or transporting. Also attached to the bench is a single ladder-like extension collapsibly mounted on a double action hinge.

3,722,622  
FOLDING AND COLLAPSIBLE LADDERS

Edgar A. Luring, Forest Point, Island View Road, International Falls, Minn.

Filed March 18, 1971, Ser. No. 125,689

Int. Cl. E06c 1/383

3 Claims



A folding and collapsible ladder wherein the rungs are pivotally attached to the side rails and adjacent rungs are attached to the side rails in different planes, i.e., adjacent rungs are offset. To collapse or fold the ladder into a narrow but slightly longer mass, the rungs fold down like a closing parallelogram until the rungs are substantially parallel to the side rails. Rigidity of the ladder is provided by one or more braces pivotally attached at one end to one side rails and the opposed end of the braces provided with fastening means to removable secure the braces to the other side rail.

3,722,623  
PRELIMINARY LUBRICATION DEVICE

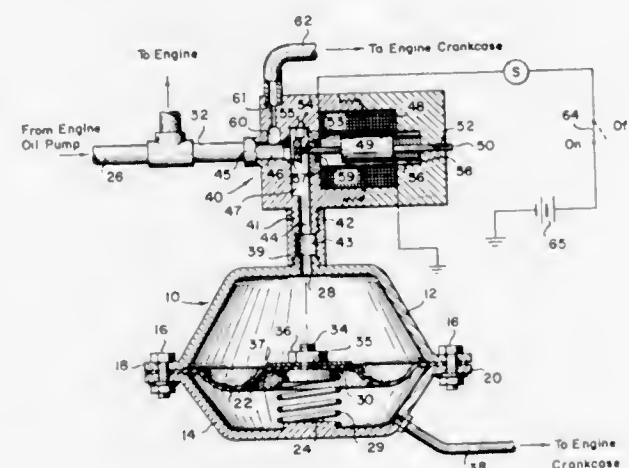
Donald E. Waldecker, Fairfax, Va., assignor to RAM Enterprises, Incorporated, Falls Church, Va.

Filed May 25, 1971, Ser. No. 146,640

Int. Cl. F01m 7/00

U.S. Cl. 184—6.3

11 Claims



A device for providing adequate lubrication to lubricant pump-including, pressure-lubricated equipment during start-up of the equipment.

3,722,624  
BEARING SEAL AND OIL TANK VENTILATION SYSTEM

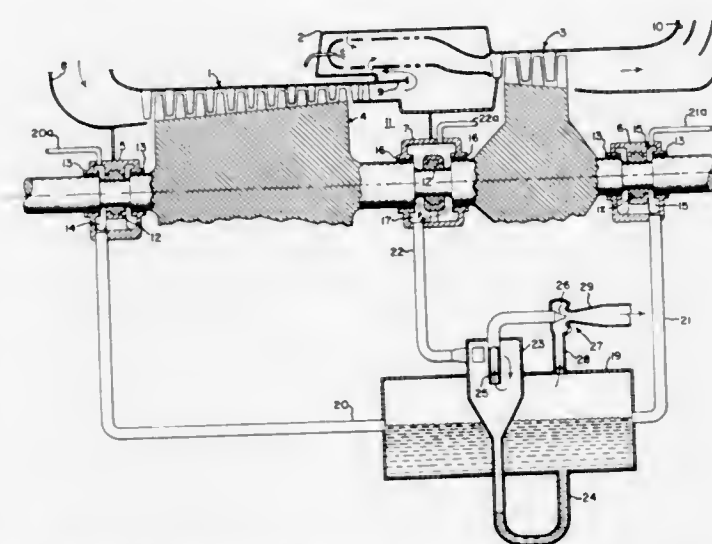
Bruce O. Buckland, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed June 7, 1971, Ser. No. 150,378

Int. Cl. F16n 39/00

U.S. Cl. 184—6.11

9 Claims



High pressure leakage air into a bearing housing in a gas turbine drives an eductor pump which ventilates the oil tank and removes oil vapor from the other bearing housings while providing a seal.

3,722,625  
LUBRICATING DEVICE FOR PNEUMATIC TOOLS

Alfred Mathes, Hauptstrasse 30, 6382 Friedrichsdorf, Germany

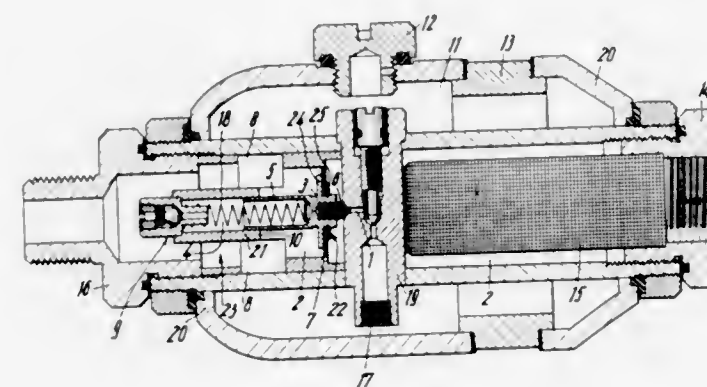
Filed Dec. 17, 1971, Ser. No. 209,258

Claims priority, application Germany, Dec. 22, 1970, P 20 63 157.6

Int. Cl. F16n 7/34

U.S. Cl. 184—55 A

7 Claims



A lubricating device for pneumatic tools, in particular pulsating pneumatic tools such as pneumatic nail drivers and the like. The device consists of an oil pressure chamber surrounding an air pressure chamber through which latter chamber air under pressure is adapted to pass. The oil pressure chamber communicates with the air pressure chamber by means of a valve chamber and valve assembly with opening and closing of communication between the two chambers being controlled by air pressure differential, with communication between the two chambers being closed when the tool is not being operated and there is no air flow. The communication between the two chambers being open during air flow passage and means are provided to retard closing of the communication after cessation of air flow through the device to the tool.

3,722,626  
CAR PORT OIL DRIP MAT

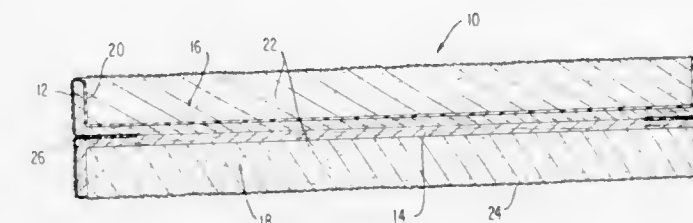
Louis J. Stack, 704 S. Magnolia St., Albany, Ga.

Filed July 16, 1971, Ser. No. 163,386

Int. Cl. F16n 31/02

U.S. Cl. 184—106

9 Claims



A car port oil drip mat constituted by a frame including a peripheral upstanding flange and an intermediate partition dividing the area bounded by the flange into upper and lower pan-like compartments, each of the compartments being filled with a particulate absorbent material and the whole enclosed within a fabric envelope, the upper pan-like compartment rendered oil-resistant by a plastic lining or the like to retain oil that drips from a vehicle while the bottom portion constitutes a blotter for absorbing previously dripped oil.

3,722,627  
TWO-COLUMN LIFTING PLATFORM

Heinz Fricke, Pfungstadt, Germany, assignor to Gebr. Hofmann KG, Maschinenfabrik, Darmstadt, Germany

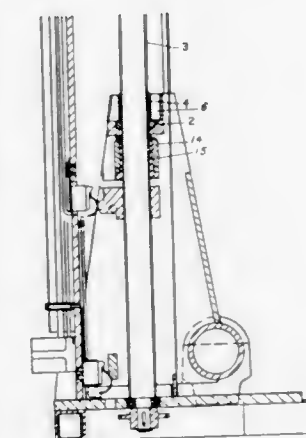
Filed Oct. 22, 1971, Ser. No. 191,878

Claims priority, application Germany, Oct. 28, 1970, P 20 52 869.2

Int. Cl. B66f 7/14

U.S. Cl. 187—8.41

8 Claims



There is disclosed a two-column lifting platform with spindle-operated lifting carriage, e.g., for use in lifting motor vehicles, for example, for the purpose of inspection and maintenance, which comprises a carriage forming or carrying a platform for supporting the vehicle to be lifted, and two columns for moving the carriage vertically. At least one column comprises a threaded spindle carrying a nut secured to the lifting carriage, rotation of the spindle thus displacing the carriage. The carriage is also guided in its vertical movements by suitable lateral guide means. The spindle passes through a stepped bore in the lifting carriage, wherein a ring of oil-absorbent material is fitted in the stepped bore so that the inside peripheral face of the ring lies in an oil-transferring relationship against the periphery of the spindle and the ring is held in position by a flange sleeve which is pressed into the stepped bore and which defines a space for containing lubricating oil, the flange portion of the flange sleeve having one or more openings through which oil can flow to saturate the ring.



3,722,628

## ELEVATOR CONTROL SYSTEM

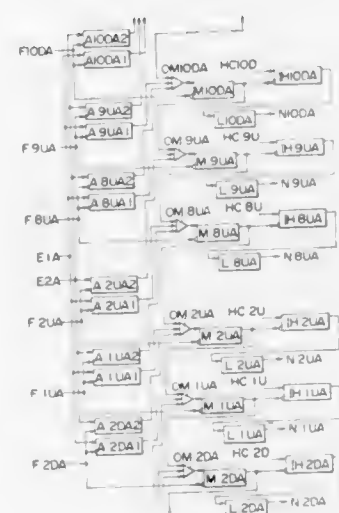
Takeo Yuminaka; Isao Inuzuka; Tatsuo Iwasaka, all of Katsuta, and Toshio Ochi, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed April 6, 1971, Ser. No. 131,701

Claims priority, application Japan, April 8, 1970, 45/29348

Int. Cl. B66h 1/18

U.S. Cl. 187—29 R



In operating a plurality of elevator cars serving a plurality of floor landings, an elevator control system in which the response of a succeeding car to hall calls from predetermined forward floors is limited when the space between the succeeding car and a preceding car is shortened. As a result, the succeeding car catches up with the preceding car and leads it.

3,722,629

DEVICE FOR INDICATING THE ACTUATED POSITION OF A MANUAL BRAKE AND OF THE WEAR OF THE BRAKE LINING, ESPECIALLY FOR MOTOR VEHICLES

Manfred Totschnig, Wolfsburg, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

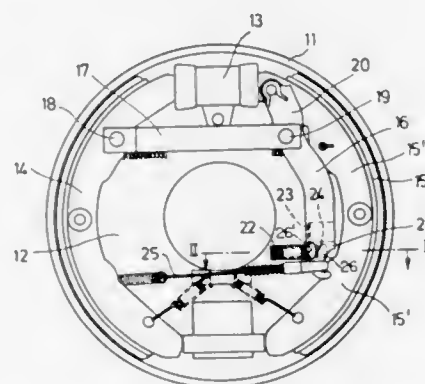
Filed April 8, 1971, Ser. No. 132,284

Claims priority, application Germany, Oct. 31, 1970, P 20 24 661.1

Int. Cl. F16d 66/02

U.S. Cl. 188—1 A

9 Claims



In a brake having a plurality of relatively movable brake elements, a device for selectively moving the brake elements manually and/or by foot relative to each other, and an adjusting device to adjust the distance between the brake elements upon their wear, a device for indicating when the brake elements have been actuated manually and when a predetermined wear between the brake elements has been exceeded, the indicating device includes a force transmitting arrangement associated with the manual moving device and with the adjusting device and adapted to move along a predetermined path upon actuation by the two last-mentioned devices, and an electric contact located in the above path and actuated by the

force transmitting device upon movement thereof along the above path, the contact forming part of a signal circuit becoming energized upon actuation of the contact.

3,722,630

EMERGENCY STOPPING DEVICE FOR A WHEELED VEHICLE

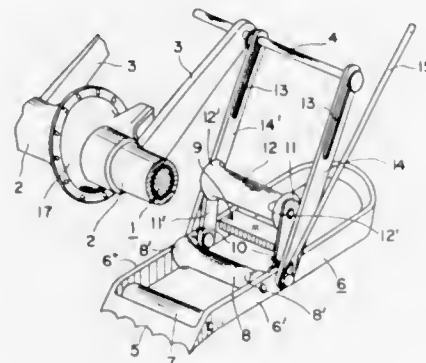
Manzo Wakabayashi, 7-13, 2-chome, Nishirokugo, Tokyo, Japan

Filed March 9, 1971, Ser. No. 122,426

Int. Cl. B60t 1/04

U.S. Cl. 188—4 R

1 Claim



Emergency stopping device comprises a frame mounted to swing between a position in the path of travel of a rear wheel and a position clear thereof. There is a sliding connection between the frame and its support so that the wheel can ride up on it, and the frame is provided with rollers which permit the wheel to rotate thereon while the vehicle forward motion of the vehicle is braked by friction between the frame and the road.

3,722,631

VEHICULAR CHOCK

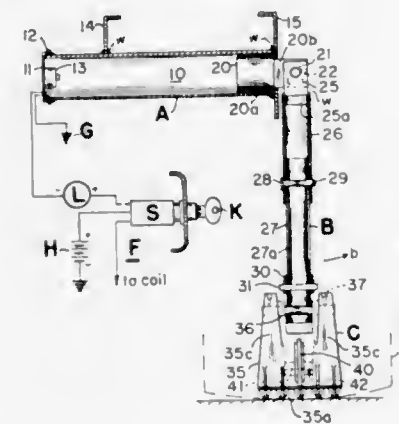
Walter B. Lowrie, 104 Newkirk Avenue, Glenshaw, Pa.

Filed Aug. 20, 1971, Ser. No. 173,398

Int. Cl. B60t 1/04

U.S. Cl. 188—4 R

16 Claims



A tire-engaging wheel-blocking or chocking device for a motor vehicle has three parts comprising an overhead tubular assembly for mounting on the under side of the vehicle adjacent a wheel that is to be chocked, a collapsible-expandable suspended arm assembly that is swingably and rotatably carried by a stub shaft for movement within a stowing tube of the mounting assembly when the vehicle is to be operated, and a chock assembly which is bifurcated at its back end and swung from a lower end of the arm assembly. The arm assembly is made up of a pair of telescopically mounted and guided arm members. A finger lift means is pivotally carried by the bifurcated back end portion of a chock shoe of the chock assembly for engaging a road surface to tilt the shoe to release it from a cooperating chocking position with respect to an associated wheel assembly.

3,722,632

TRAVELLING CARRIAGE MECHANISM FOR AERIAL CABLE CARS

Fritz Feuz, Canton of Bern, Switzerland, assignor to Von Roll AG, Werk, Bern, (Canton), Switzerland

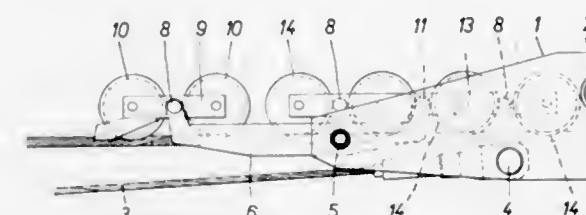
Filed Feb. 24, 1971, Ser. No. 118,395

Claims priority, application Switzerland, Dec. 17, 1970, 18749/70

Int. Cl. B61h 9/02

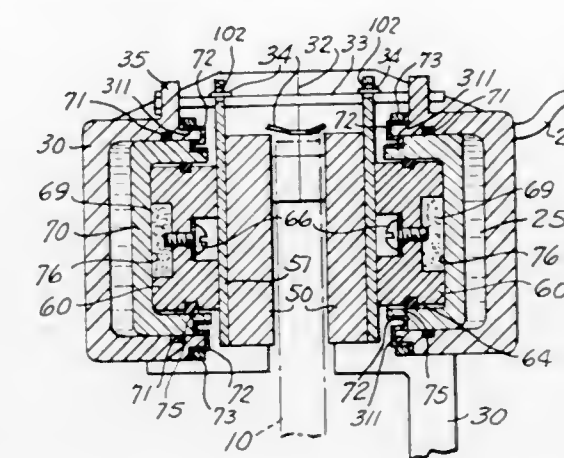
U.S. Cl. 188—42

5 Claims



A travelling carriage mechanism for aerial cable cars or the like, especially for swinging aerial cable cars, equipped with brake means, which is manifested by the features that there is provided a travelling support carriage and a travelling brake carriage which carries the brake means and which is hingedly connected with one end of the travelling support carriage.

the transverse adjacent surfaces of the piston and the intermediate member so that vibrations from the brake pad are thus not transmitted to the piston and brake squeal is effectively eliminated.



3,722,635

AUTOMOTIVE WHEEL BRAKE MECHANISM FITTED WITH AUTOMATIC BRAKE GAP ADJUSTER

Tatsumi Torii, and Haruo Miyajima, both of Kariya, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Aichi Pref., Japan

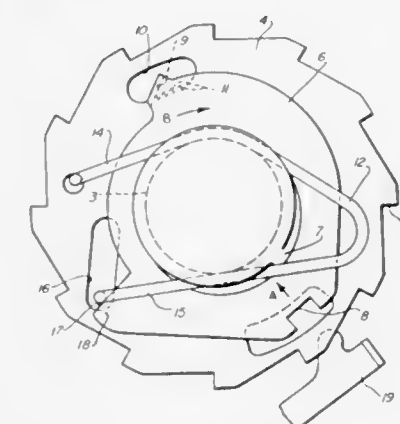
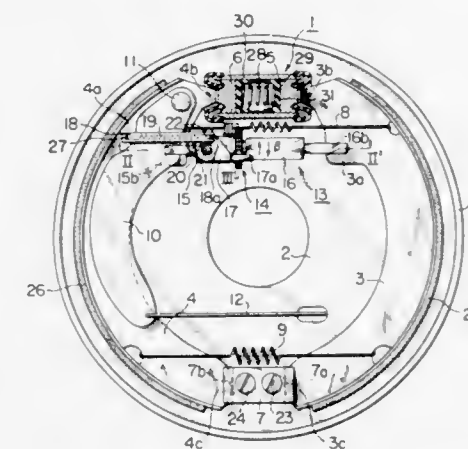
Filed Jan. 29, 1971, Ser. No. 111,062

Claims priority, application Japan, Feb. 2, 1970, 45/9448; Feb. 2, 1970, 45/9449

Int. Cl. F16d 65/54

U.S. Cl. 188—79.5 P

6 Claims



3,722,633

CARRIAGE BRAKE DEVICE

Karl Wenderoth, Hohenweg 31, Germany, assignor to Adlerwerke vorm. Heinrich Kleyer A.G., Frankfurt, Germany

Filed May 10, 1971, Ser. No. 141,651

Claims priority, application Germany, Dec. 19, 1970, P 20 62 755.8

Int. Cl. F16d 63/00

U.S. Cl. 188—68

4 Claims

A U-shaped slip ring frictionally engages a boss on an escapement wheel to decelerate a freed carriage before it strikes a stopping abutment. The spring normally rotates with the escapement wheel. However, when the carriage is freed, the spring is held stationary and exerts a braking force on the escapement wheel.

This invention relates to a wheel braking mechanism comprising an automatic brake gap adjuster, which is especially advantageous for use in automotive service.

A representative conventional automotive wheel brake assembly fitted with an automatic brake gap adjuster comprises generally: a rotatable brake drum adapted for unitary revolution with a wheel to be braked of an automotive vehicle; a backing plate fixedly mounted on a stationary part of an axle for said wheel; a pair of brake shoes pivotally mounted on said backing plate and expandable towards and against said drum; an expandable hydraulic actuator mounted on said backing plate and adapted for engaging with one end of each of said shoe; a stationary anchor mounted on said backing plate and adapted for engaging with other end of each of said shoes; back spring means adapted for release of pressure contact of said brake shoes with said brake drum; and an automatic brake gap adjuster arranged in proximity of said hydraulic actuator and between said brake shoes.

The characterizing feature of the invention resides in the provision of a parking lever pivotally mounted with its one end on one of expandable; mechanical expansion means for

3,722,634

DISC BRAKE ANTI-SQUEAL MEANS

Takeo Ogasawara, Nagoya, and Masakazu Ishikawa, Toyota, both of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagoya-shi, Aichi-ken and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan

Filed Sept. 18, 1970, Ser. No. 73,358

Claims priority, application Japan, Sept. 29, 1969, 44/78019

Int. Cl. F16d 65/00

U.S. Cl. 188—73.5

16 Claims

A disc brake of simple construction wherein an intermediate member is interposed between the brake pad and the brake actuating piston. Anti-friction means extends between



expanding said shoes and in cooperation with said parking lever; first spring means provided between automatic gap adjuster and either of said shoes; screw shift means; a ratchet wheel means, said screw shift means and said ratchet wheel means being comprised in said automatic adjuster; and second spring means one end of which is operatively connected with either of said shoes, said second spring means providing its force in actuating direction of said automatic adjuster.

3,722,636

## AUTOMATIC HOLDING DISK BRAKE

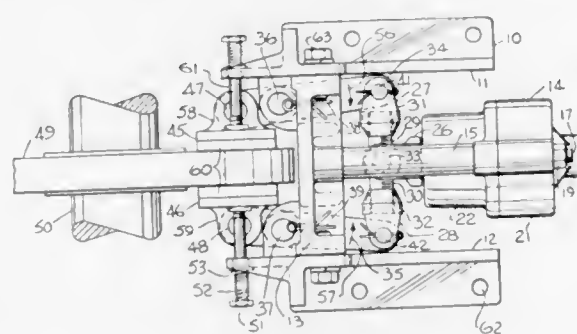
Jack R. Kobelt, 235 East 5th Avenue, Vancouver, British Columbia, Canada

Filed April 23, 1971, Ser. No. 136,873

Int. Cl. F16d 65/24

U.S. Cl. 188—170

7 Claims



This disclosure pertains to that class of braking devices known as disk brakes, and more particularly to disk brakes which are automatically actuated by a fluid to hold or release a shaft, the fluid itself being energized directly or indirectly by the machine of which the aforementioned shaft is a part. A preferred embodiment of the invention is disclosed in detail wherein a disk is mounted on a propeller shaft coupled to a geared transmission, two brake shoes of the invention being actuated by a coil spring to hold the disk and actuated to release the disk by a fluid power cylinder interconnected with the lubrication system of the geared transmission. The aforementioned brake shoes are interconnected with the coil spring and power cylinder such that a small spring force generates a large brake holding force and, conversely, a small fluid pressure releases the brake.

3,722,637

## SELF-ADJUSTING DISC BRAKE ASSEMBLY

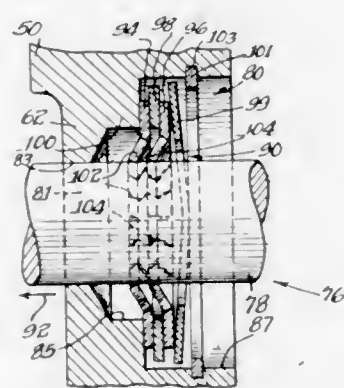
Osborn A. Kershner, St. Joseph, Mich., assignor to Lambert Brake Corporation, St. Joseph, Mich.

Filed Sept. 10, 1970, Ser. No. 71,022

Int. Cl. F16d 65/54

U.S. Cl. 188—196 P

7 Claims



The invention relates to a self-adjusting brake assembly for retarding the rotational movement of a shaft or axle having a plurality of rotary disc members mounted for both rotational movement therewith and axial movement relative thereto. The assembly includes a plurality of fixed discs carried by a

stationary housing, and an actuator plate hydraulically movable so as to force the disc members into frictional engagement with the fixed discs in order to stop the shaft or axle. The assembly is provided with automatic adjuster means for maintaining constant the distance required for moving the actuator plate into engagement with the disc members and discs.

3,722,638

## POWER ABSORBER

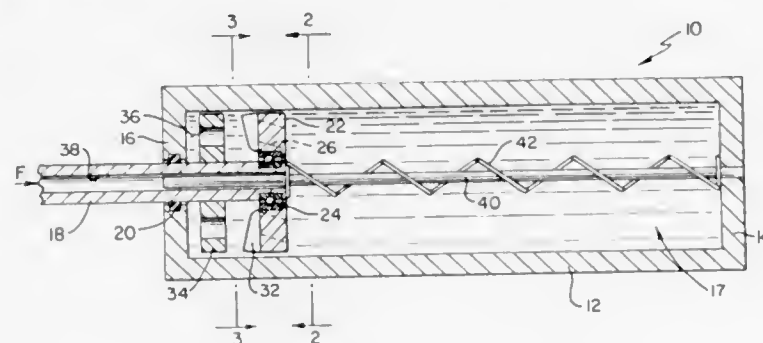
John W. McClure, Charleston, S.C., assignor to Auco Corporation, Charleston, S.C.

Filed Aug. 27, 1971, Ser. No. 175,565

Int. Cl. F16f 9/19, 13/00

U.S. Cl. 188—280

3 Claims



A power absorber combining the properties of a fluid filled dashpot with those of a rotating disk in fluid as employed in water brakes is disclosed. The power absorber provides absorption through the use of a rotating rotor which is moved linearly through the fluid medium.

3,722,639

## SHOCK ABSORBER INCLUDING NOISE REDUCING MEANS

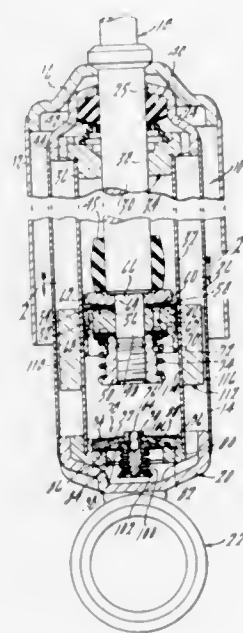
Johan H. Keijzer, Hasselt; Francois J. G. Meuleman, Bettincourt, Waremm; Louis J. Jossa, and Jozef J. Stas, both of St. Truiden, all of Belgium, assignors to Monroe Belgium N.V., Truiden, Belgium

Filed March 3, 1971, Ser. No. 120,558

Int. Cl. F16f 9/32

U.S. Cl. 188—315

2 Claims



A generally ring-shaped member adapted to be installed within the fluid reservoir of a hydraulic direct-acting telescopic shock absorber for damping mechanical vibrations and/or controlling the flow of hydraulic fluid during operation of the shock absorber and thereby reducing the noise produced during operation of the shock absorber.

3,722,640

## FLUID AMPLIFIED LIQUID SPRING SHOCK ABSORBERS WITH IMPROVED PISTON HEADS

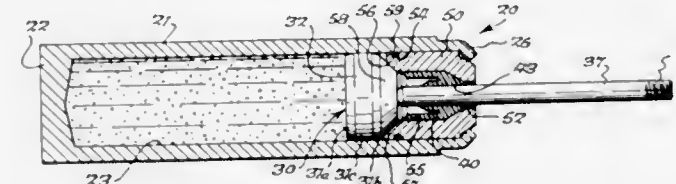
Paul H. Taylor, 3877 E. River Rd., Grand Island, N.Y.

Filed March 26, 1971, Ser. No. 128,266

Int. Cl. F16f 9/19

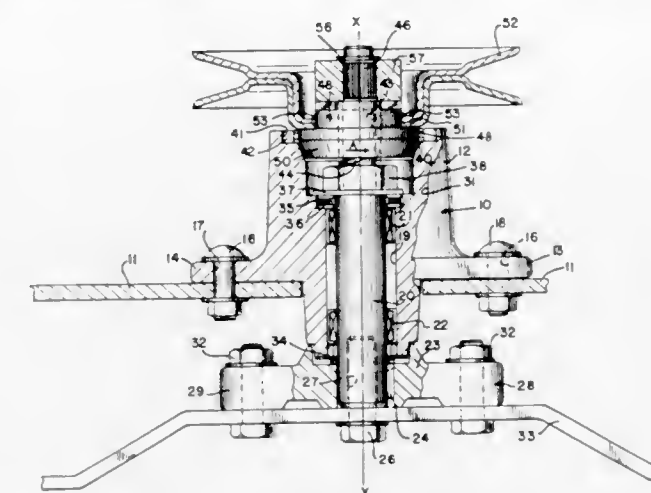
U.S. Cl. 188—316

7 Claims



A highly efficient, low cost liquid spring shock absorber capable of fluid amplification and the generation of square energy waves and having a uniquely shaped piston head is provided for use in vehicle bumpers, automotive shock absorption systems and the like.

when mechanical power flows from the drive to the shaft, the mechanism being operable to produce a self-actuating braking



force on the shaft when the power flow is interrupted thereby preventing extended free-wheeling of the shaft.

3,722,643

## VEHICLE CLUTCH WITH GEAR SYNCHRONIZING BRAKE

Reiner Kempf, 8702 Hettstadt, and Hans-Walter Riese, 8721 Dittelbrunn, both of Germany, assignors to Fichtel & Sachs AG, Schweinfurt am Main, Germany

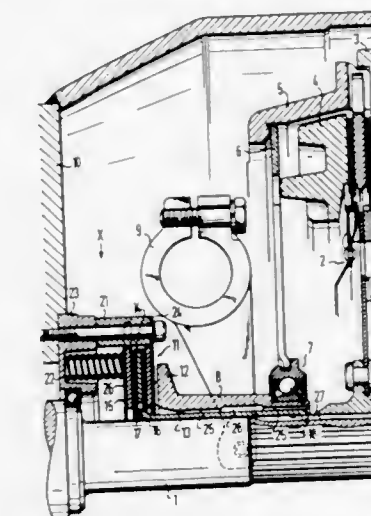
Filed Sept. 30, 1971, Ser. No. 185,069

Claims priority, application Germany, Oct. 9, 1970, P 20 49 557.2

Int. Cl. F16d 67/02

U.S. Cl. 192—13 R

11 Claims



3,722,641

## NO-BACK ACTUATOR SYSTEM

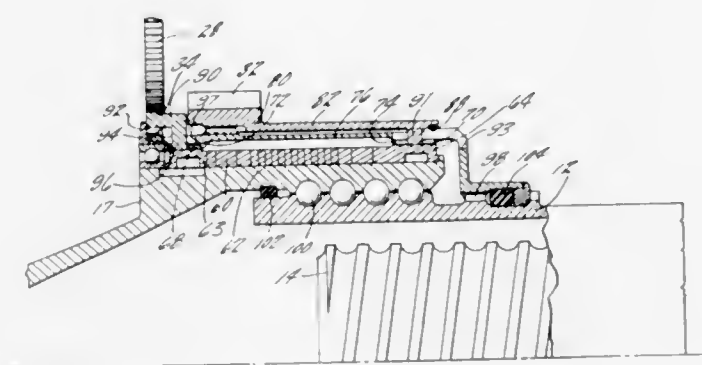
Edward H. Kuslak, Longmeadow, Mass., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Sept. 16, 1971, Ser. No. 181,128

Int. Cl. F16d 67/04

U.S. Cl. 192—8 C

6 Claims



A bidirectional no-back such as a sprag clutch or no-back spring for locking the rotary member of a screw type actuator for restraining its movement in either direction is loaded out of engagement to permit movement of the actuator by a pair of hydraulic motors cooperating therewith such that when one drives the other is driven.

The clutch release mechanism of a friction clutch for a truck or like heavy-duty automotive vehicle is linked with a brake which quickly slows the clutch shaft when the clutch is released to permit prompt shifting of the associated gear transmission. Continued rapid rotation of the shaft after axial disengagement of the driven disc from the pressure plate may otherwise result from the inertia of the relatively heavy driven disc or from the viscosity of the cooling oil often employed in such heavy-duty clutches, particularly while the oil is still cold.

3,722,642

## SELF-ACTUATED MECHANISM FOR BRAKING A DRIVEN MEMBER UPON DISCONTINUATION OF DRIVE THERETO

James W. Zurek, Lombard, and David A. Fulghum, La Grange, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed April 13, 1971, Ser. No. 133,641

Int. Cl. F16d 67/00

U.S. Cl. 192—8 R

13 Claims

A mechanism adaptable for connection between a drive and rotatable shaft to provide a driving connecting therebetween

3,722,644

## TORQUE LIMITING COUPLING

Horst G. Steinhagen, Racine, Wis., assignor to Twin Disc, Incorporated, Racine, Wis.

Filed Jan. 31, 1972, Ser. No. 221,935

Int. Cl. F16d 43/20

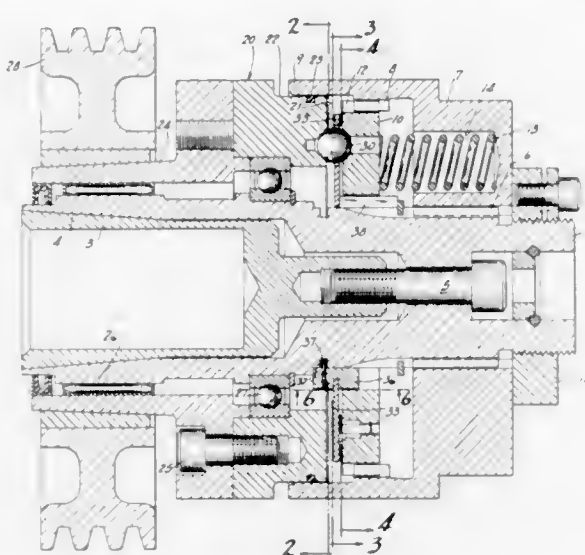
U.S. Cl. 192—56 R

8 Claims

A torque limiting coupling having a driving member and a driven member and which limits the amount of torque transmitted between the members. When excessive torque is at-



tempted to be transmitted, the coupling is released and overruns freely until the coupling is reset by causing reversal of its relative direction of rotation. The coupling utilizes a plurality



of balls which act between pockets in the two opposing members, thereby causing axial separation and release of the coupling when one of the members rotationally moves relative to the other.

### 3,722,645 CLUTCH UNIT

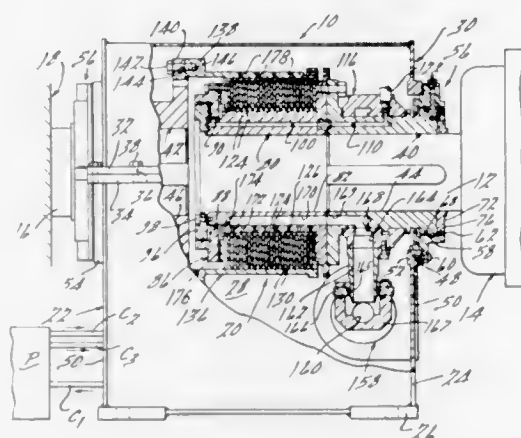
Gordon M. Sommer, Grosse Pointe Woods, Mich., assignor to G. M. Sommer Co., Inc., Detroit, Mich.

Filed April 5, 1971, Ser. No. 130,947

Int. Cl. F16d 13/52, 13/72, 13/74

U.S. Cl. 192—70.13

32 Claims



A clutch unit for selectively drivingly connecting a pair of generally coaxially aligned, axially spaced shafts, the unit comprising an enclosure having spaced side portions through which the shafts project, a pair of generally cylindrically shaped hub elements fixedly secured one to each of the shafts, a clutch assembly adapted to be operatively mounted between the hub elements for selectively drivingly connecting the same; the clutch assembly comprising a generally cylindrically shaped clutch hub, first attachment means securing the clutch hub to a driven ring spaced radially outwardly from clutch hub and arranged generally concentrically thereof, a plurality of torque transmitting discs extending radially between the outer periphery of the clutch hub and the inner periphery of the driven ring, with some of the discs being non-rotatably secured to the clutch hub and other of the discs being non-rotatably secured to the driven ring, an actuating member carried on the clutch hub for biasing the discs into driving relation, and means for axially shifting the driven ring whereby to permit removal of the clutch assembly without requiring movement of the hub elements or the shafts.

### 3,722,646 APPARATUS FOR CONTROLLING THE PRESSURE OF A FLUID FED TO A CLUTCH OF A TRANSMISSION

Tomio Oguma, Saitama-ken, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

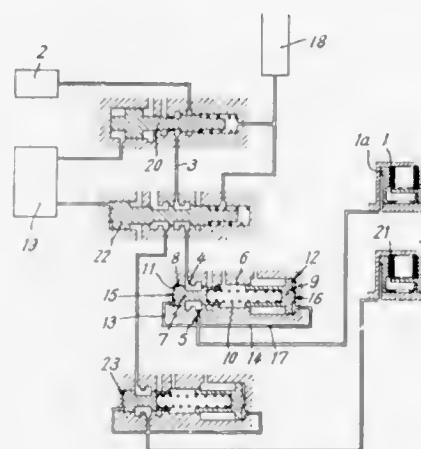
Continuation of Ser. No. 807,779, March 13, 1969,

abandoned. This application March 12, 1971, Ser. No. 123,914

Int. Cl. F16d 25/10

U.S. Cl. 192—109 F

2 Claims



A valve is interposed between a source of pressure fluid and a clutch of a transmission such that the valve initially passes the pressure fluid at a high rate to take up slack in the clutch whereafter the supply of pressure fluid to the clutch is sharply reduced during clutch engagement and subsequently gradually increased. The valve includes first and second chambers which are respectively fed with the pressure fluid being supplied to the clutch, one of the chambers being fed with delay.

### 3,722,647 WET-TYPE FRICTION CLUTCH

Helmut Kraus, Schweinfurt, and Hans-Walter Riese, Dittelbrunn, both of Germany, assignors to Fichtel Sachs AG, Schweinfurt, Germany

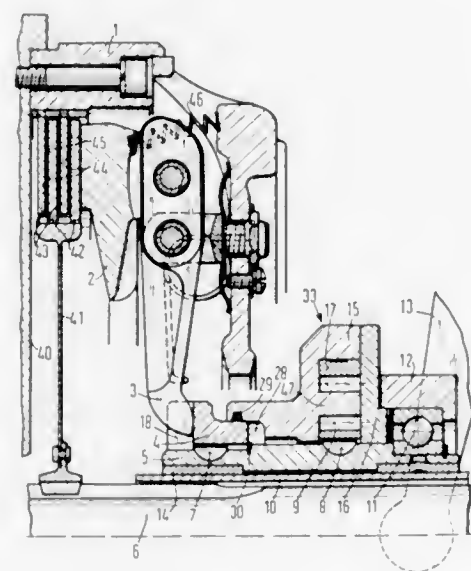
Filed Dec. 22, 1970, Ser. No. 100,711

Claims priority, application Germany, Jan. 7, 1970, P 20 00 379.6

Int. Cl. F16d 13/74

U.S. Cl. 192—113 B

8 Claims



The friction facings in an automotive friction clutch of the wet type are supplied with liquid lubricant by a gear pump mounted on the clutch release bearing in such a manner that the stator of the pump is secured against rotation by the clutch release fork while the pump rotor is connected with the release levers on the clutch casing for joint rotation whenever the associated engine is operated.

### 3,722,648 AUXILIARY CHIPPER CHUTE

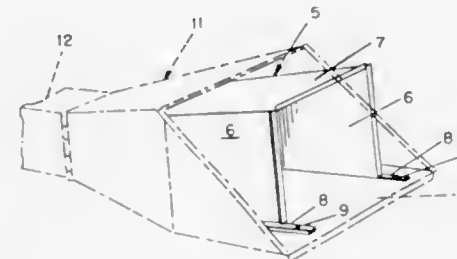
Norman E. Parker, 1343 Scott Street, and Ernest D. Stravo, 215 Clinton St., both of Maumee, Ohio

Filed Jan. 25, 1972, Ser. No. 220,573

Int. Cl. B65g 11/00, 11/18

U.S. Cl. 193—1

3 Claims



This invention consists of a chute that is fabricated from sheet steel or the like and which has a top and a side configuration of a trapezium, and an end configuration of an inverted letter U having square corners. The invention, which has open ends and no bottom, is placed inside of the chute of a chipper. The aforesaid invention is provided with drift pins for its securement in the already-mentioned chute of a chipper.

### 3,722,649 COIN ACCUMULATOR CIRCUIT AND APPARATUS

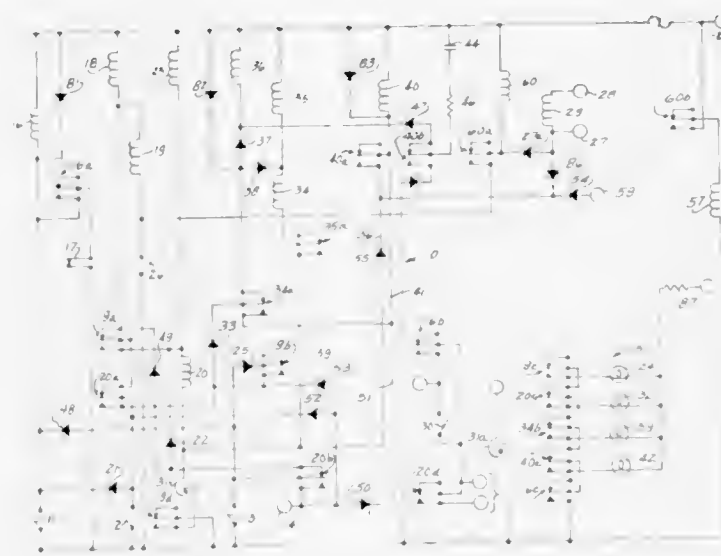
Robert L. Pfitzer, and Russell J. Drakes, both of Tonawanda, N.Y., assignors to The Wurlitzer Company, Chicago, Ill.

Filed Sept. 23, 1971, Ser. No. 183,033

Int. Cl. G07f 5/10

U.S. Cl. 194—9

10 Claims



A coin accumulator circuit and apparatus is provided with electromagnetic relays arranged to be energized sequentially in such order as to accumulate credits up to and including a maximum amount corresponding to value of a bill credit. Insertion of a coin will produce a first number of credits while subsequent insertion of coins will produce a different number of unit credits until accumulation to a maximum amount of one dollar is reached and no further accumulation can take place. Credits per coin can be two credits for 25 cents, five credits for 50 cents, eight credits for 75 cents and 12 credits for 1 dollar, the 1 dollar value being accumulated in any order of coins, i.e. either 25-cent coins or 50-cent coins or a single bill.

### 3,722,650 DUAL PRICE SELECTIVE BOTTLED BEVERAGE VENDING APPARATUS

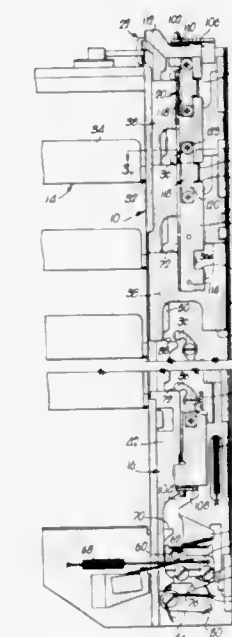
Wilhelm Buescher, Gelsenkirchen, Germany, assignor to The Vendo Company, Kansas City, Mo.

Filed Nov. 9, 1971, Ser. No. 197,027

Int. Cl. G07f 11/30

U.S. Cl. 194—10

10 Claims



A dual-price, selective, vending machine, having a reciprocal captive mechanism for preventing access to articles at any of the vending stations of the machine until insertion of coins of predetermined value, is provided with additional structure for preventing vending operation at selected ones of the vending stations which carry higher priced articles until appropriate additional coinage has been deposited.

### 3,722,651 KEYBOARD

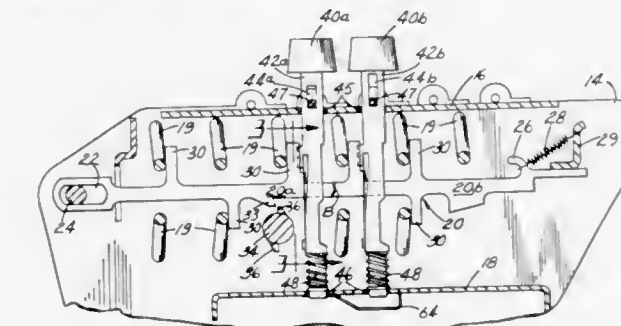
Michel Bass, North Plainfield, N.J., and Richard W. Pitman, Lafayette Hill, Pa., assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed April 23, 1971, Ser. No. 136,931

Int. Cl. B41j 23/02

U.S. Cl. 197—16

5 Claims



A keyboard having a plurality of interposers each pivotally movable on a first path of travel between a neutral and an actuated position. In the actuated position a drive dog will drive each interposer rectilinearly to cause switch action and a return spring urges the return after the switching. Each of the interposers is operable by a key which will move the interposer from its neutral to actuated position upon depression. Each key is provided with a leaf spring which is so mounted that it will drive the interposer when it is depressed, but will yield against the return movement of the interposer on its return movement to allow the interposer to return to its neutral position even though the key is held depressed.

Also a second set of keys may be provided which are movable to a second depressed position in which the leaf spring keeps the interposer depressed for repeat operation.



3,722,652

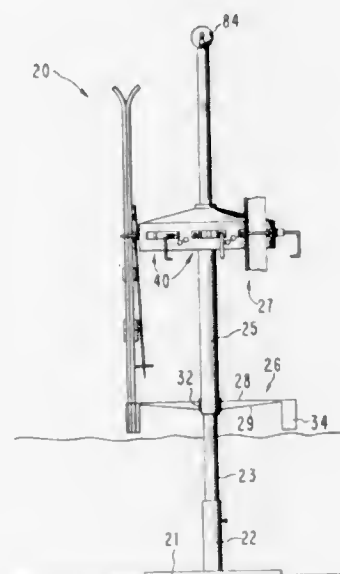
## STORAGE AND LOCKING ASSEMBLY FOR SKIS AND POLES

Paul F. Busch, Portola Valley, and John F. Krumme, Woodside, both of Calif., assignors to Ski Valet, Inc., Portola Valley, Calif.

Filed Oct. 7, 1970, Ser. No. 78,792  
Int. Cl. A47f 7/00

U.S. Cl. 194—64

15 Claims



A circular ski rack is disclosed which can be adjustably positioned vertically for different snow depths. A simple foolproof locking assembly is provided for clamping and locking skis to the rack.

3,722,653

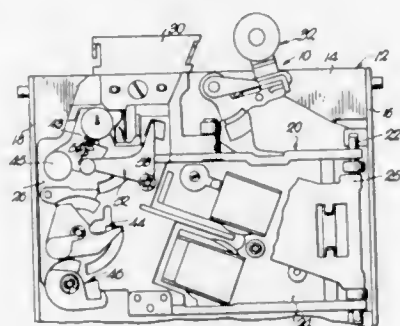
## COIN HANDLING APPARATUS

John A. Hennessy, Raytown, Mo., assignor to The Vendo Company, Kansas City, Mo.

Filed Oct. 19, 1971, Ser. No. 190,624  
Int. Cl. G07f 3/02

U.S. Cl. 194—102

8 Claims



An auxiliary latch for a testing cradle of a coin-testing and accepting device is provided and arranged to be released by coins of the denomination to be tested by that cradle but to be non-responsive to coins of smaller diameter, even when the latter contact the cradle at considerable velocity or at an unusual angle, for assuring that coins of such smaller diameter will pass through the cradle without entering the accept path associated with the latter.

3,722,654

## REPEAT SPACING MECHANISM FOR TYPEWRITERS

Tomoyoshi Watanabe, Minato-ku, Nagoya, and Masao Jozuka, Hekikaigun, Aichi, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Mizuho-ku, Nagoya-shi, Japan

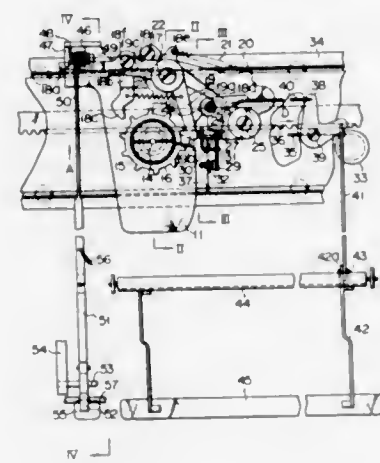
Filed Oct. 23, 1970, Ser. No. 83,589

Claims priority, application Japan, Oct. 24, 1969, 44/101043

U.S. Cl. 197—82

Int. Cl. B41j 19/00

7 Claims



A repeat spacing mechanism for typewriters wherein there are rotatably mounted a feed pawl and a hold pawl on a pawl shaft coaxially therewith; normally the hold pawl engages a toothed wheel rotatably urged by a spring drum for moving a carriage in the letter feed direction. Further provided is an elastic member made of piano wire which is operated by a repeat space key, said member being provided with a weight at its free end. During depression of the repeat space key, the elastic member acts on the feed pawl, thereby causing the feed and hold pawls to be alternately engaged with and disengaged from the toothed wheel and the carriage to perform a continuous repeat spacing movement in the letter feed direction at a speed controlled by said weight.

3,722,655

## SEMI-AUTOMATIC FORM LOADING FOR PRINTERS

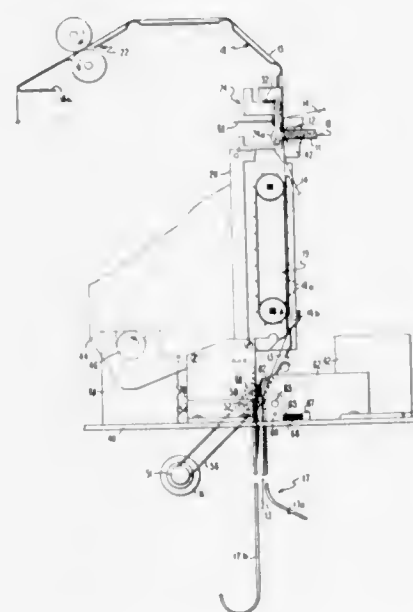
Frederick W. Singer, Binghamton, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 9, 1970, Ser. No. 88,006

Int. Cl. B41j 15/00

U.S. Cl. 197—133

1 Claim



Loading of a continuous form in a printer is facilitated by means of an auxiliary feed which is activated when the printer mechanism is moved to a non-printing position for loading.

## ERRATUM

For Class 197—16 see:  
Patent No. 3,722,651

3,722,656

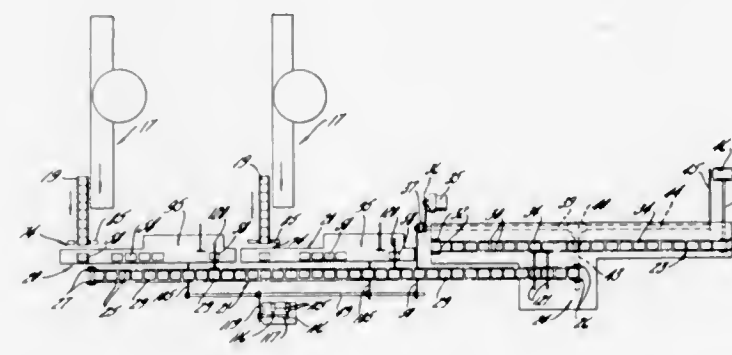
## SYSTEM FOR HANDLING AND ACCUMULATING ARTICLES

Clifford R. Loomis, Jr., both of Beloit, Wis.; Jerald R. Wiles, and Russel A. Newton, Rockford, Ill., assignors to Rexham Corporation, New York, N.Y.

Filed June 23, 1971, Ser. No. 156,004  
Int. Cl. B65g 17/32

U.S. Cl. 198—19

7 Claims



The system includes demand conveyors each having buckets for receiving packages from an automatic packager, the buckets being moved by the demand conveyor as required by the output of the packager. After the buckets have been loaded with packages, control of the buckets is switched to a timing conveyor that advances the buckets at a speed and pitch which match the speed and pitch of buckets on a continuously moving accumulating conveyor operable to receive the packages and to move the packages alongside a continuously moving conveyor carrying cartons into which the packages are inserted by an automatic cartoner.

3,722,657

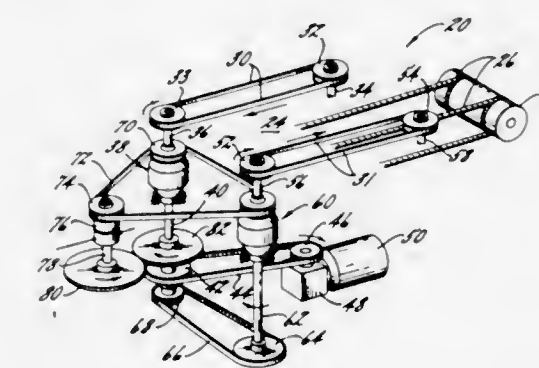
## ROTATIONAL AND TRANSLATIONAL MOTION CONTROLLING METHODS AND APPARATUS FOR CYLINDRICAL ARTICLES AND THE LIKE

Raymond P. Kienle, Oak Forest; Gerald R. Bass, Park Forest; James J. Deegan, Clarendon Hills, and Johannes Kiwiwet, Riverside, all of Ill., assignors to Inland Steel Company, Chicago, Ill.

Filed June 1, 1971, Ser. No. 148,776  
Int. Cl. B65g 47/24

U.S. Cl. 198—33 AB

8 Claims



Methods and apparatus for selectively controlling rotational and translational handling and positioning of generally cylindrical objects such as containers for mass production line applications. In the case of handling a container for performing a coating operation or the like thereon, it is subjected to sequential transport and rotational modes. In the case of orientation

handling, provision is made for torsionally rolling a container to arrive at a desired angular position, detecting the arrival of the container at the oriented position and longitudinally shifting the container in its fixed oriented position. Any two or more modes may be simultaneously performed with the present methods and apparatus.

3,722,658

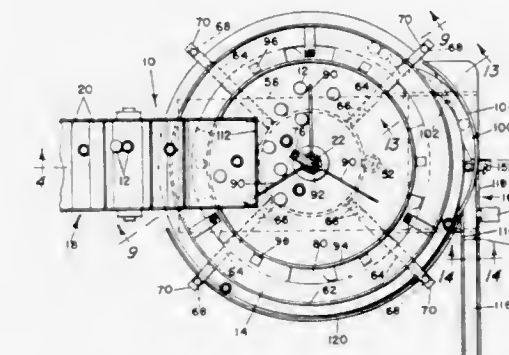
## CLOSURE HANDLING AND ORIENTING APPARATUS

Walter S. Sterling, Quincy, Mass., assignor to Pneumatic Scale Corporation, Quincy, Mass.

Filed June 23, 1971, Ser. No. 155,751  
Int. Cl. B65g 47/24

U.S. Cl. 198—33 AA

19 Claims



Apparatus particularly adapted for handling spherical closures having a flat portion at its open end wherein the randomly arranged closures are first manipulated to cause them to assume an oriented open end down position on a rotary disk whereupon the closures are aligned and discharged from the disk into a delivery chute. Provision is also made for preventing entrance into the chute of those closures in the line which inadvertently assume an open end up position and for rejecting such closures to be returned to the disk.

3,722,659

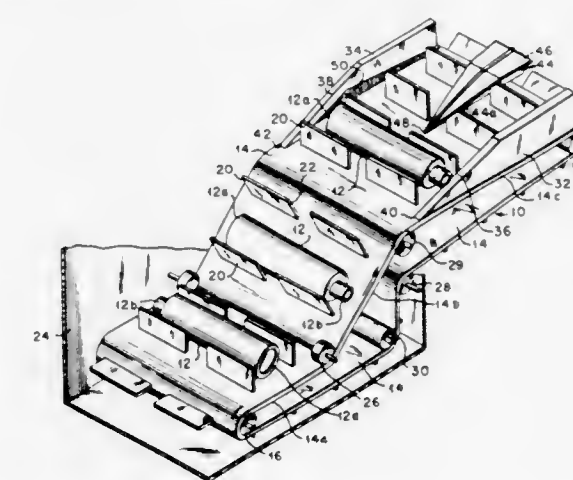
## APPARATUS FOR ORIENTING AND FEEDING BOTTLES, OR LIKE ARTICLES

Samuel S. Aidlin; Stephen H. Aidlin, both of Brooklyn, and David Rich, Merrick, all of N.Y., assignors to Aidlin Automation, Inc., Brooklyn, N.Y.

Filed Oct. 7, 1971, Ser. No. 187,330  
Int. Cl. B65g 47/24

U.S. Cl. 198—33 AC

12 Claims



Apparatus for orienting and feeding bottles, or like articles having necks at one end, in which the bottles are haphazardly picked up from the bin by spaced pairs of spaced aligned cleats on an endless conveyor belt whose upper portion is horizontally disposed with means provided along such upper portion to engage the center of the bottle length to gradually elevate



each bottle and tilt it into upright position to rest on its base to either side of the elevating means. Means are provided for translating the uprighted bottles on either side of the elevating means to a conveyor that is level with the outlet end of the bottle elevating and uprighting means.

3,722,660

## WEIGHING APPARATUS

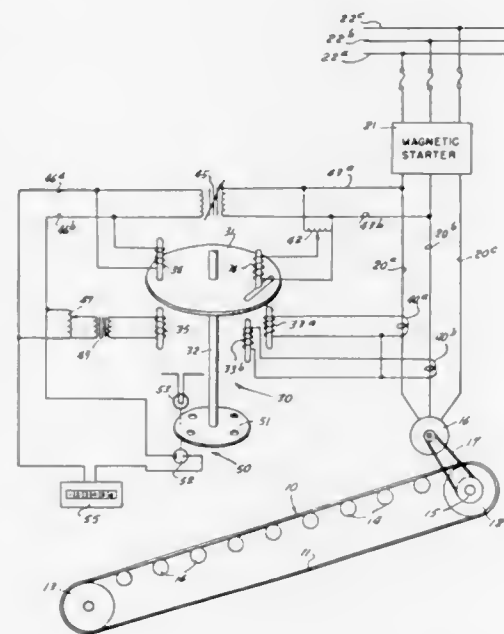
Edwin Des Sneed, P.O. Box 798, Georgetown, Tex.

Filed Nov. 26, 1971, Ser. No. 202,354

Int. Cl. B65g 69/00

U.S. Cl. 198—39

10 Claims



An inclined conveyor belt for lifting bulk material is driven by a three phase electric motor. A watt-hour meter connected in the motor circuit measures the gross power required and compensates for the power required to drive the empty conveyor, with the meter having an output proportional to the net power used for the actual load. The meter drives a counter summing the weight of the load actually lifted.

3,722,661

## ARTICLE CONVEYOR SYSTEM

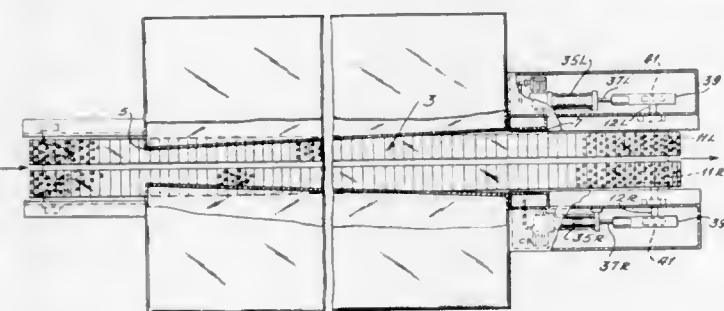
Ralph L. Williams, 3609 Manhattan, Maplewood, Mo.

Filed May 19, 1971, Ser. No. 144,758

Int. Cl. B65g 37/00

U.S. Cl. 198—76

16 Claims



A conveyor system for moving large quantities of articles through relatively small tunnels prevents blocking of restricted passages or tunnels by the articles by including a pair of belts in side-by-side relation with each other, and intermittently halting the belts individually during their movement, with one belt continuing to move while the other is halted. Preferably the tunnel sides taper slightly outwardly from the inlet portal to the outlet portal which is correspondingly wider than the inlet portal, and the upper article-supporting surface of the belts are roughened to enhance frictional engagement

with the supported articles. The belts may consist of short molded sections each having an integral sprocket chain link formed on its underside and pinned to the link part of the adjacent sections. For use in electrical treating apparatus, the belt sections are of dielectric material and may be perforated extensively. The belts are driven by a pneumatic cylinder and piston assembly through a one-way clutch so that if either belt becomes jammed, it can fully stop during the power stroke of its piston, and will be free to move rearwardly to relieve the jam during the reverse stroke of its piston.

3,722,662

## SUCCESSIVE TRANSFER APPARATUS FOR SURFACE TREATMENT OF ELONGATE ARTICLES

Ikuzo Wakabayashi, and Tsutomu Sasaki, both of Yokohama, Japan, assignors to Nippon Kakon Kabushiki Kaisha

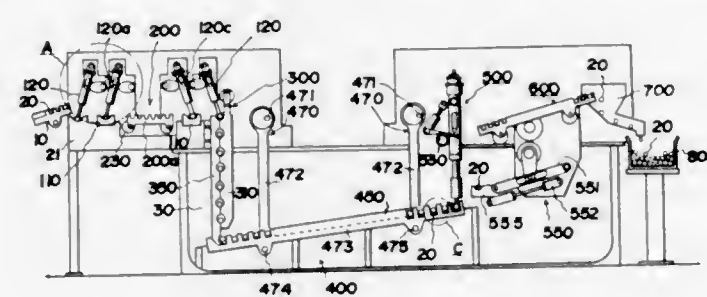
Filed March 26, 1971, Ser. No. 128,452

Claims priority, application Japan, Oct. 20, 1970, 45/91613

Int. Cl. B65g 37/00, 25/04

U.S. Cl. 198—82

12 Claims



A transfer apparatus for the successive transfer through a plating bath or a coating tank of a plurality of small elongate articles, comprising a plurality of component units adapted for the automatic branching and transfer of the articles into, through and from the plating bath or coating tank, and so mechanically coordinated that the plating or coating operation can be performed automatically and without interruption of operation.

3,722,663

## STABILIZING APPARATUS FOR LIGHTWEIGHT CONTAINERS

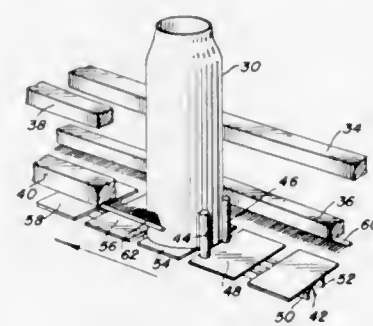
John C. Nalbach, La Grange Park, Ill., assignor to John R. Nalbach Engineering Company, Inc., Chicago, Ill.

Filed June 14, 1971, Ser. No. 152,672

Int. Cl. B65g 15/58, 17/06

U.S. Cl. 198—160

4 Claims



An aerosol container filling line for use with light-weight aluminum aerosol containers. The line includes an intermittently and linearly movable conveyor having pairs of upstanding pins located thereon for engaging a lower portion of the container and moving it along the line to and past various operating stations. A pair of longitudinally extending brushes are mounted to the production line on both sides of the conveyor and are adapted and arranged to engage the sides of the container at a position between the conveyor surface and the top of the pins so as to prevent the container from toppling rearwardly as the line begins to move from its stopped position.

3,722,664

## ARTICULATED PUSHER CONVEYOR CHAIN

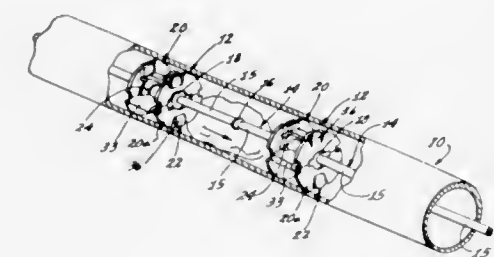
Harold W. Hart, and Edward A. Southworth, both of Glendale, Calif., assignors to H. W. Hart Mfg. Co., Glendale, Calif.

Filed April 30, 1971, Ser. No. 138,893

Int. Cl. B65g 19/00

U.S. Cl. 198—168

19 Claims



The chain consists of pushers interconnected by links, each pusher comprising a pair of spaced coaxial disks interconnected both by spaced webs and spaced U-shaped clips, the two disks confining socket washers that engage enlarged heads of the corresponding links. The U-shaped clips both straddle and space apart the two disks and the U-shaped clips as well as the two webs space apart the two socket washers and at the same time cooperate with the two disks to captivate the two washers.

3,722,665

## VACUUM ELEVATING CONVEYOR

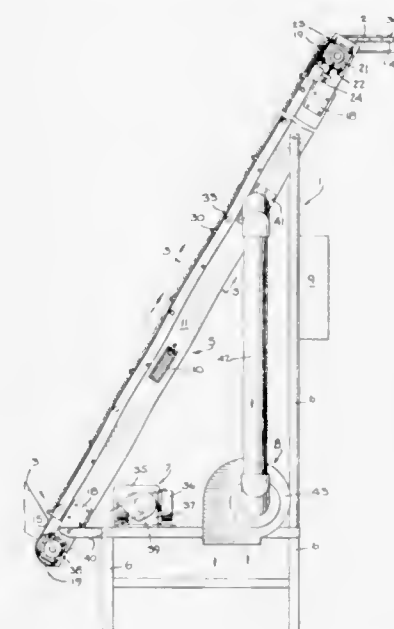
Charles W. Probasco, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio

Filed March 31, 1971, Ser. No. 129,784

Int. Cl. B65g 15/00

U.S. Cl. 198—184

1 Claim



A conveyor is disclosed for moving articles such as closure caps and other articles in a continuous stream to a higher elevation along a relatively steep path. The conveyor has an endless belt with an air permeable surface. An inclined article transporting run of the belt passes over and communicates with a vacuum box whereby articles fed onto the bottom of the moving belt are held on the belt by a vacuum force as they are carried upwardly to the elevated discharge point. A control is included in the vacuum forming box to automatically regulate the vacuum force on the articles in accordance with the number of articles held on the moving belt.

3,722,666

## TUBULAR CONVEYOR

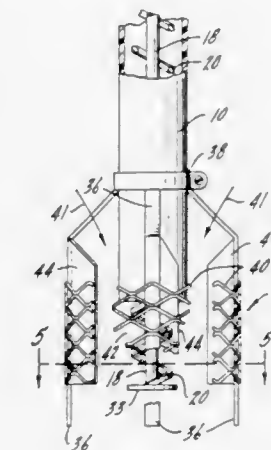
Erwin H. Ulm, Westchester, Ill., and Robert June, II, Birmingham, Mich., assignors to Triskellon Corp., Franklin Park, Ill.

Filed Dec. 22, 1969, Ser. No. 887,006

Int. Cl. B65g 33/00; G01f 11/20

U.S. Cl. 198—213

7 Claims



An improved conveyor for particulate solids which comprises a tubular housing, a flexible, longitudinal central core member, and a flexible helical member. The helical member is positioned around the core member, and is in spaced relationship with the core member and the housing. Drive means are provided for rotating both the core member and the helical member in the same direction and at the same rotational speed. In one embodiment the invention also provides a conveyor housing a vertical intake guide assembly on one end, the guide assembly being particularly adapted to conveying granular materials from a drum or other container.

3,722,667

## DUAL WIPING DEVICE FOR A CONVEYOR BELT IN WHICH BOTH WIPERS HAVE A COMMON PIVOTAL SUPPORT BUT OPERATE INDEPENDENTLY OF EACH OTHER

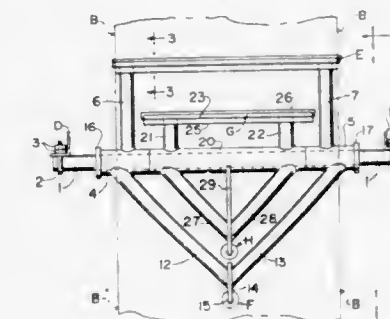
Laddie B. Olson, 24960 Townsend Avenue, Hayward, Calif.

Filed June 14, 1971, Ser. No. 152,673

Int. Cl. B65g 45/00

U.S. Cl. 198—230

5 Claims



Dual wipers for a conveyor belt in which both wipers have the same pivotal support and carry transversely extending wiping members with respect to the belt being wiped. Both wiping members are disposed on the same side of the common pivotal support and each has an independent adjustable weight or spring disposed on the other side of the pivotal support that yieldingly holds its wiping member in contact with the belt and independently of the other wiping member.

## ERRATUM

For Class 198—313 see: Patent No. 3,722,865



3,722,668

## CUSHIONED SHIPPING FOLDER

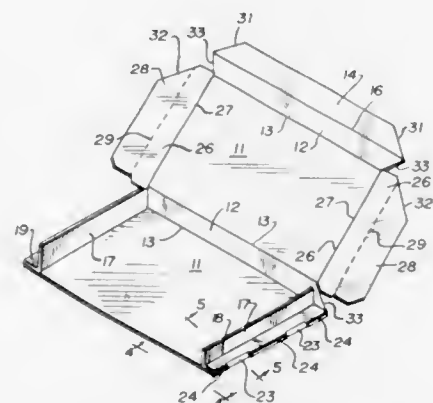
John L. Carpenter, Anderson, Ind., assignor to Container Corporation of America, Chicago, Ill.

Filed Feb. 22, 1972, Ser. No. 228,060

Int. Cl. B65d 85/30

U.S. Cl. 206—46 FR

3 Claims



A cushioned shipping folder is characterized by a pair of end cells of triangular cross section resistant to deformation and protecting a flat article such as a book or the like held within the folder.

3,722,669

## FASTENER STACK

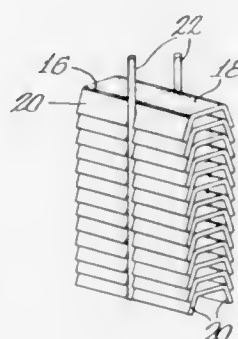
William A. Meier, Hoffman Estates, and Edward P. Wojcik, Niles, both of Ill., assignors to Signode Corporation

Filed March 19, 1971, Ser. No. 125,999

Int. Cl. B65d 71/00, 83/00

U.S. Cl. 206—56 K

5 Claims



A plurality of juxtaposed fasteners, such as seals for joining overlapping portions of a strapping ligature, are retained in a semi-rigid stack by at least one continuous, flexible, plastic filament that is press fit in aligned notches in the legs of the fasteners.

3,722,670

## CLIP STACK

Larry D. Plunkett, Crystal Lake, Ill., assignor to Signode Corporation, Glenview, Ill.

Filed March 19, 1971, Ser. No. 126,018

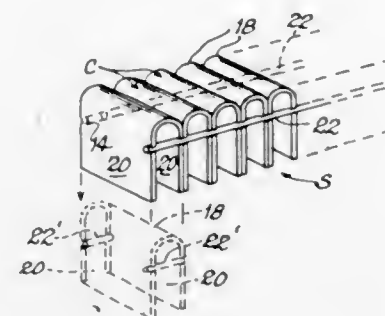
Int. Cl. B65d 71/00; F16l 21/00

U.S. Cl. 206—56 AC

7 Claims

A clip stack, a method of forming a rigidified joint, and the resulting joint. Filler material is positioned adjacent wires to be clinched by a clip, and is clinched with the wires to deform and to be compressed by the clip and wires to form a stronger and more rigid joint. The filler material may be carried by the

clip, and may be severed from a clip stack joined by a strand of filler material from which filler material is severed as a clip is



separated from the stack. The filler material may be at both sides of the stack and in an interference fit in notches in opposite sides of the clips of the stack.

3,722,671

## SANDWICH PANEL INSERT AND INSTALLATION HOLDER ASSEMBLY AND METHOD OF HANDLING

George H. Wright, Orange, and Charles S. Phelan, Tustin, both of Calif., assignors to Shur-Lok Corporation, Santa Ana, Calif.

Filed Sept. 21, 1970, Ser. No. 73,813

Int. Cl. B65d 75/06, 85/62

U.S. Cl. 206—65 K

4 Claims



A column of sandwich panel inserts each attached to a respective holding tab by a coating of adhesive subsequently operative to attach the tab and insert to a sandwich panel. The insert and tab units are held in coaxial assembly by a wire stringer of hairpin form having respective legs received in peripheral notches in the radial flange heads of the insert, which notches are utilized for injection of potting compound into a hole in a sandwich panel in which the insert is positioned by the tab. The column of inserts and tabs is enclosed in a dust-proof casing having an opener thread for slitting its side for removal of the insert-tab units.

3,722,672

## SLIDE FASTENER DEVICE

Hiroyuki Ebata, Uozu, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Choyoda-ku, Tokyo, Japan

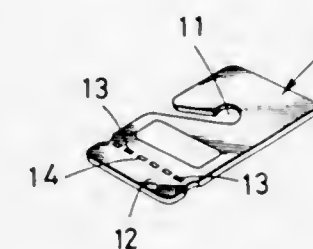
Filed May 17, 1972, Ser. No. 254,170

Claims priority, application Japan, May 20, 1971, 46/40752

Int. Cl. B63d 73/00; A44b 19/36

U.S. Cl. 206—79

3 Claims



A slide fastener device comprising a tag removably attached on an end of the fastener, part of said tag being utilized to function as an end stop for limiting the reciprocal movement of a sliding member.

3,722,673

## STRUCTURE FOR VARYING RELATIVE POSITIONS OF CONVEYORS

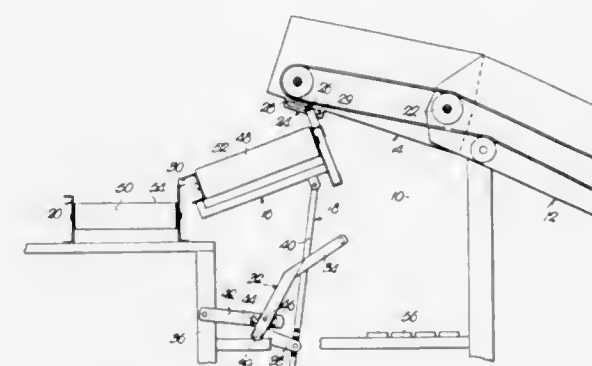
Thomas Albert Bedwell, Logan, Utah, and Bobby Dwayne McWhirt, Hesston, Kans., assignors to Hesston Corporation, Hesston, Kans.

Filed Jan. 11, 1972, Ser. No. 217,026

Int. Cl. B07c 9/00

U.S. Cl. 209—73

13 Claims



Structure is provided for varying the relative positions of certain of a series of conveyors in a potato harvesting machine. A vertically shiftable discharge end of a potato-receiving side conveyor in the nature of an elevator is operably connected with a transversely inclined, tiltable trash conveyor such that as the trash conveyor is tilted to maintain it at a predetermined angle of transverse inclination during ascent and descent of the harvester over uneven terrain the discharge end of the elevator is automatically raised and lowered. The connection itself is of such nature that the extent of gravitation of the potatoes from the elevator to the trash conveyor is kept at a minimum at all angles of inclination of the trash conveyor to avoid bruising of the potatoes. Thus, the proper angle of inclination of the trash conveyor may be maintained so that the potatoes will separate from dirt, clods, rocks and vines picked up by the elevator without danger of damage as the potatoes drop onto the trash conveyor. A front, bulk loading conveyor, disposed to receive the potatoes as they roll laterally from the trash conveyor, serves as an articulated support for the trash conveyor.

3,722,674

## APPARATUS FOR SORTING PARTICULATE ARTICLES

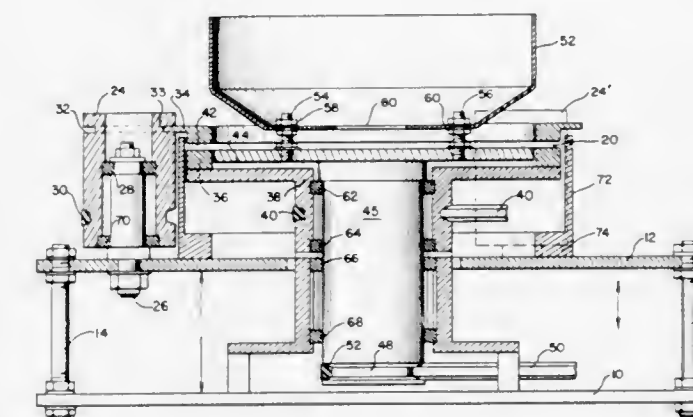
Kurt H. Hoppmann, and Horst A. Schober, both of Falls Church, Va., assignors to Hoppmann Corporation, Springfield, Va.

Continuation-in-part of Ser. No. 135,225, April 19, 1971, Pat. No. 3,669,260. This application June 12, 1972, Ser. No. 262,162

Int. Cl. B07c 5/00

U.S. Cl. 209—73

13 Claims



Apparatus for sorting, including feeding, orienting and counting, particulate articles such as coins, shells, candy, pills and the like, wherein the articles are placed upon a rotating inner plane and centrifugally discharged through a peripheral gauging aperture defined at the edges of a rotating inner plane. The peripheral aperture is defined by a pair of top and bottom outer gauging rings rotated at speeds similar to or at variance with the rotating inner plane according to the character of the articles being counted. Also, the size of the gauging aperture may be varied by vertical adjustment of the top outer ring to accommodate centrifugal discharge articles of varying dimension. The discharged articles may be guided tangentially and single file past a conventional photo electric or similar counting device. The rotating inner plane may have a horizontal surface, alternately a concave, convex or contour profile.

3,722,675

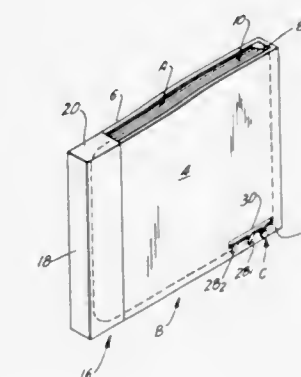
## SORTING OF DIFFERENTLY CLASSIFIED SHEETS

Arnold M. Baskin, 26 Old Orchard Road, North Haven, Conn. Filed June 23, 1971, Ser. No. 155,936

Int. Cl. B07c

U.S. Cl. 209—80.5

17 Claims



A group of sheets to be sorted into different classifications are provided on their lower edges with upwardly extending slots, the slots on each sheet being differently positioned relative to the front edge of that sheet depending upon the particular classification into which that sheet falls. The sheets are used in conjunction with a sorter housing into which all of the sheets are adapted to be received as a group, that housing



being provided with a series of apertures spaced upwardly from its lower edge and located at positions corresponding to the sheet slots for each sheet classification respectively. A sorting element is adapted to extend across the interior of the housing at the locations defined by those apertures. Those sheets not of the desired classification will be raised by that sorting element, whereas those sheets of the desired classification will assume a lower position in the housing, the sorting element being received in the slots formed in the lower portions of those sheets. Thereafter the unselected sheets can be removed from the housing either from above or, preferably, by being slid out from an open end of the housing, the selected sheets of the desired classification being retained in the housing by means of the element-slot interengagement. Thereafter the selected sheets can readily be disengaged from the element and removed from the housing.

3,722,676

## ORE SEPARATION

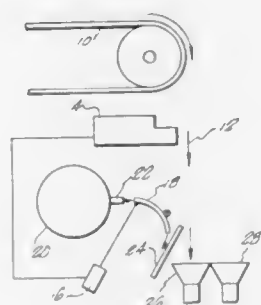
Ted C. Mathews, San Mateo, Calif., assignor to Mathews Mining Company, San Mateo, Calif.

Filed Aug. 23, 1971, Ser. No. 173,776

Int. Cl. B07c 5/34

U.S. Cl. 209—74

10 Claims



There is disclosed herein an apparatus for detecting and separating a desired ore or mineral from a quantity of ore. The apparatus includes a plurality of selectively deflectable flowing fluid streams. The streams are controlled to displace the desired mineral particles from the quantity of ore. Pivotal mounted arcuate tubes normally divert the fluid streams when then are not acting to displace particles, but these tubes are selectively movable to allow the streams to hit desired particles. A screen is used for conveying the ore past the fluid streams in such a manner that the streams may act through the screen to displace the selected particles.

3,722,677

## DEVICE FOR CAUSING PARTICLES TO MOVE ALONG CURVED PATHS

Bo Peter Lehnert, Sommarvagen 1, S-182 74 Stocksund, Sweden

Filed June 3, 1971, Ser. No. 149,732

Claims priority, application Sweden, June 4, 1970, 7788/70

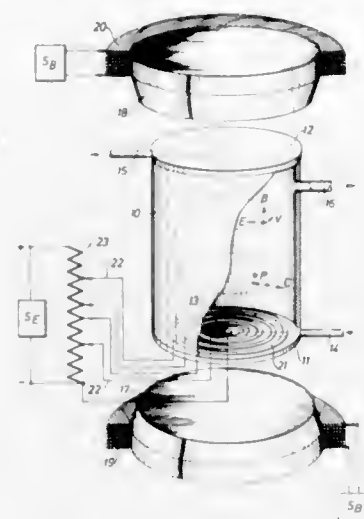
Int. Cl. B04c 3/06

U.S. Cl. 209—144

6 Claims

A cylindrical vessel confines a volume therein, the cylindrical vessel being subjected to an axial magnetic field, and a radial electrical field. In order to provide for laminar flow of particles introduced into the vessel and removed therefrom, electrodes establishing the electrical field are formed as rings

located at the end surfaces of the cylindrical vessel, and connected to tap points on a voltage divider, to establish an electrical gradient which is substantially parallel to planes passing through the curved paths of movement of the particles.



3,722,678

## MINERAL CONCENTRATOR AND METHOD OF CONCENTRATING

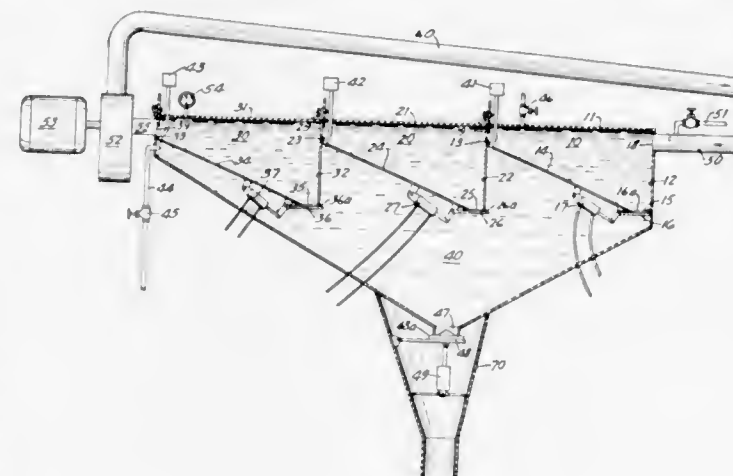
Edwin C. Potter, Brooklyn Park, Minn., assignor to Marine Science Industries, Inc., Minneapolis, Minn.

Filed June 8, 1971, Ser. No. 150,995

Int. Cl. B03b 3/30

U.S. Cl. 209—156

10 Claims



Relatively heavy mineral or metal is rapidly and efficiently separated from lighter particulate material with which it is mixed. An aqueous slurry of the mixture is drawn through a series of hatches, the bottoms of consecutive hatches being disposed in ascending sawtooth arrangement. The heavier mineral settles to the bottom of the hatch, where an openable and closable discharge port is located, while the lighter material is carried to the next hatch. By connecting a surge tank to the bottom of the hatches and filling the entire unit with water, the hatches can be discharged without disrupting the separation process.

3,722,679

## METHOD AND MEANS FOR FROTH FLOTATION CONCENTRATION UTILIZING AN AERATOR HAVING A VENTURI PASSAGE

Leland H. Logue, 150 South Marion Parkway, Denver, Colo.

Filed Sept. 24, 1970, Ser. No. 74,998

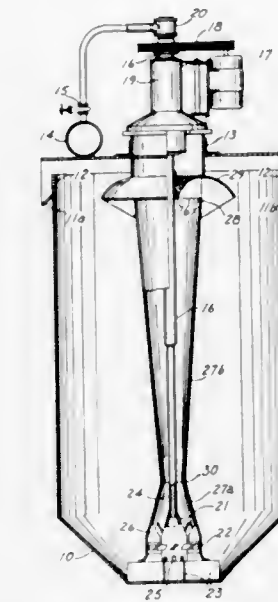
Int. Cl. B01f 3/04

U.S. Cl. 209—164

14 Claims

Method and means concepts are disclosed for concentration of minerals and the like by froth flotation treatment in a

cell utilizing a venturi tube aerator in a submerged upright position having a shorter flaring portion of a wider angle at its intake end and a longer portion of lesser angle at its upper discharge end with induced flow from intake to discharge causing dissolution of gas in the pulp flow through the intake



portion and precipitation of dissolved gas on reagent coated mineral of the pulp flow through the discharge portion. Aerated pulp discharge from aerator onto pulp surface shielded to prevent bubble breakage during direct surface travel to overflow.

3,722,680

## HEMODIALYSIS APPARATUS

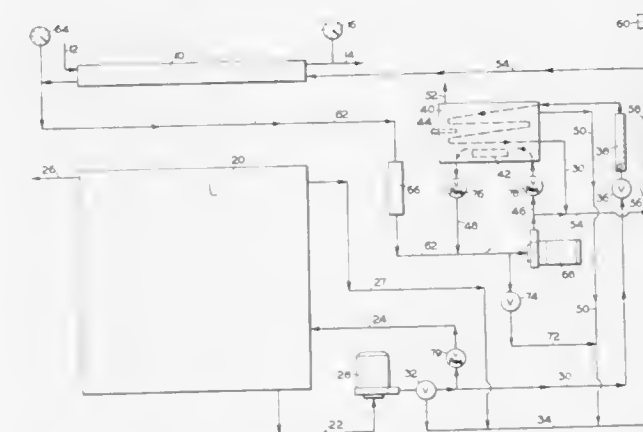
Frank R. Smith, 3848 S. Pine Street, Tacoma, Wash.

Filed March 17, 1971, Ser. No. 125,110

Int. Cl. B01d 31/00

U.S. Cl. 210—96

11 Claims



Dialysate delivery apparatus for use with a hemodialyzer provided with a dialysate inlet and a dialysate outlet comprises conduit means coupled to the inlet and outlet of the hemodialyzer as well as to a waste discharge. A fresh dialysate storage reservoir and a used dialysate recirculating reservoir communicate with the conduit means. A fresh dialysate pump is arranged in the conduit means for withdrawing fresh dialysate from the storage reservoir and circulating it to the inlet of the hemodialyzer. A used dialysate pump is arranged in the conduit means for drawing used dialysate from the hemodialyzer and circulating it to the recirculating reservoir. The conduit means also includes valve means which functions to combine a predetermined proportion of the used dialysate with the fresh dialysate being circulated to the inlet of the hemodialyzer, and to circulate a predetermined proportion of the used dialysate to and from the dialyzer as well as to the waste discharge. In this manner maximum economy of dialysate and maximum efficiency of operation of the hemodialyzer are achieved.

3,722,681

## TERTIARY FILTERING ARRANGEMENT

Salem Boorujy, 22 Carmine St., Chatham, N.J.

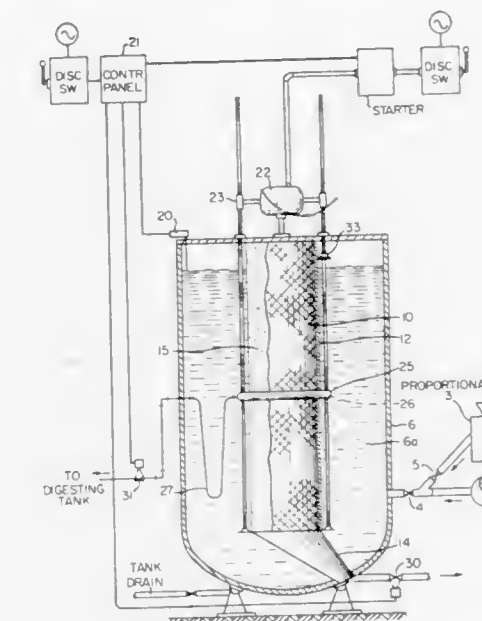
Division of Ser. No. 855,626, Sept. 5, 1969, Pat. No.

3,574,098. This application Dec. 28, 1970, Ser. No. 102,104

Int. Cl. B01d 29/38

U.S. Cl. 210—108

1 Claim



An apparatus for filtering liquids containing suspended solids is disclosed which includes a filter element and a scraper for cleaning the filter as the suspended solids collect on the surface thereof. The scraper is apertured to permit the collected debris to enter within the scraper and the inside of the scraper is connected to a ventable line. The pressure developed by the cleaned liquid on the inside of the filter suffices when the ventable connection is made to force the cleaned water back through the filter thereby flushing off the debris from the outside of the filter and causing it to enter the inside of the scraper and pass through the ventable line thereby cleaning the outside of the filter.

3,722,682

## LIQUID FILTERING APPARATUS

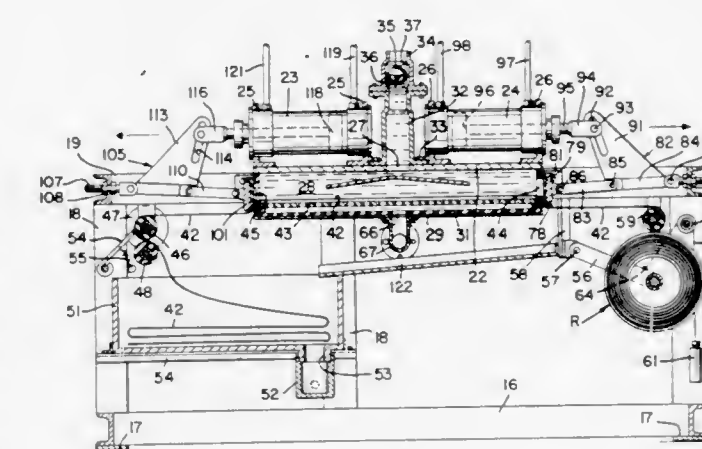
Irving Pistiner, 1401 Jessup Ave., Bronx, N.Y.

Filed Aug. 11, 1971, Ser. No. 170,849

Int. Cl. B01d 29/02

U.S. Cl. 210—123

9 Claims



A self contained liquid filtering apparatus has been provided. A filtering chamber is provided at the top of an elongated frame structure and this frame structure supports also toggle actuated devices for opening and closing end gates at the open ends of the filtering chamber in order to permit the advancing of a filtering sheet that is taken from a roll sup-



ported upon the frame and is drawn by a motorized roller through the end openings of the filtering chamber upon the end gates being lifted by toggle devices. The dirtied paper is drawn from the filtering chamber and disposed of in a tray lying within the frame structure of the apparatus arranged to receive drippings from one end opening of the filtering chamber and the drippings from the other end of the filtering chamber are delivered to the tray by an inclined drain plate. An evacuating apparatus is provided within the frame structure for removing the liquid from the filtering chamber prior to the opening of the end gates and the advancing of the filtering paper from its roll and adapted to return the liquid to the filtering chamber when the new filter area has been provided. The filtered liquid removed from the filtering chamber may be collected in a tank and returned to the filtering chamber so as to be refiltered. Fluid cylinder devices are used for the actuation of the toggle gate operating mechanisms and for the evacuating cylinder device appropriate valves are used in the liquid pipelines to control the flow of the liquid into and out of the filtering chamber. A pushbutton control box is mounted on one end of the frame structure and can control the various fluid cylinder control valves of magnetic type and the liquid control valves may similarly be controlled electrically.

3,722,683

## FLUID FILTER DEVICE

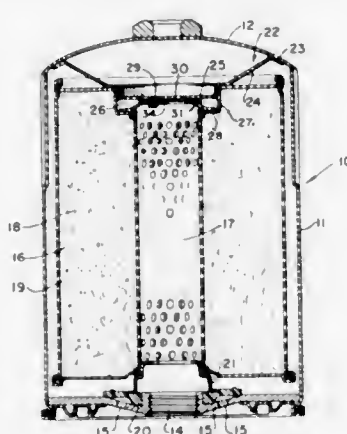
Robert J. Shaltis, and David Woltjer, both of Hastings, Mich., assignors to Hasting Manufacturing Company, Hastings, Mich.

Filed Dec. 10, 1971, Ser. No. 206,713

Int. Cl. B01d 27/10

U.S. Cl. 210-132

20 Claims

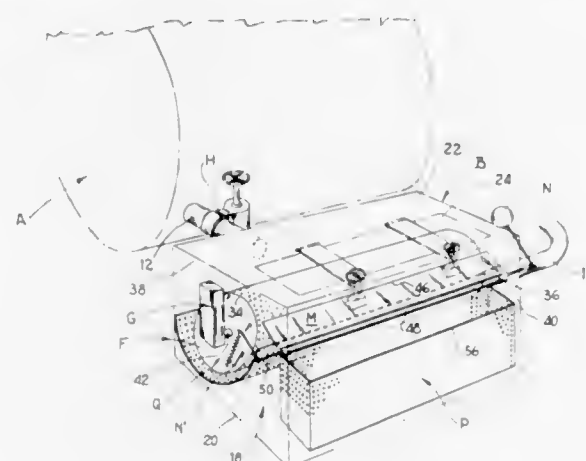


A housing has a closed end and a closure plate at its other end, the plate being provided with a fluid inlet and a fluid outlet. A filter cartridge is positioned in the housing against a support on the closure plate, the cartridge including a central tubular discharge member which communicates with the fluid outlet. A leaf spring adapter is interposed between the other end of the cartridge and the closed end of the housing to bias the cartridge against the support on the plate. The adapter has a central opening which is normally covered by a leaf spring valve element, but the valve element is deflectable from the adapter to uncover the opening by excessive fluid pressure differential between the outside of the cartridge and the inside of the discharge member. In one embodiment the valve element is imperforate and normally closes the opening in the adapter, becoming open when flow through the cartridge is blocked. In a second embodiment the valve element has an opening in register with that in the adapter and the opening in the valve element is covered by a screen which constitutes a secondary filtering medium additional to the primary filtering medium afforded by the cartridge. In the second embodiment the valve element becomes open when the screen is blocked.

3,722,684  
EQUIPMENT FOR PRE-FILTERING THE SOLVENT,  
PARTICULARLY IN DRY-CLEANING MACHINES  
Gino Maestrelli, 55 Via Bernardo Quaranta, Milan, Italy  
Filed Oct. 20, 1970, Ser. No. 82,392  
Int. Cl. B01d 33/06

U.S. Cl. 210-167

6 Claims



An equipment for pre-filtering the solvent in dry-cleaning machines or plants, said equipment comprising a chamber wherein drained dirty solvent is forced to pass across a filtering surface which is continuously cleaned by scraping means, relatively movable with respect to said filtering surface. Said filtering surface is in the form of an outer surface of a revolving fitted perforated drum; whereon a scraping blade is acting in order to remove any dirt therefrom and collect the same within a collecting box or the like.

3,722,685

## AQUATIC FILTRATION SYSTEM

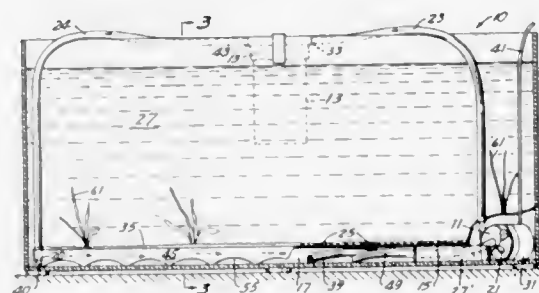
Henry E. Orensten, and Vivian C. Orensten, both of 2648 Inglewood Avenue, St. Louis Park, Minn.

Filed May 28, 1971, Ser. No. 147,856

Int. Cl. E04h 3/20

U.S. Cl. 210-169

5 Claims



The disclosed aquatic life support system provides an apertured flow control plate which defines a lower chamber of an aquarium tank. A filtered water return and a water intake means are both located within this lower chamber. A pump draws contaminated water through the intake and drives the contaminated water through a filter. The output side of the filter is connected to the water return underneath the apertured plate.

3,722,686

## POND FILTER

Wayne E. Arnett, Hettick, and Cyril P. Solomon, Palmyra, both of Ill., assignors to Solarn Mfg. Co., Inc., Hettick, Ill.

Filed March 17, 1971, Ser. No. 125,101

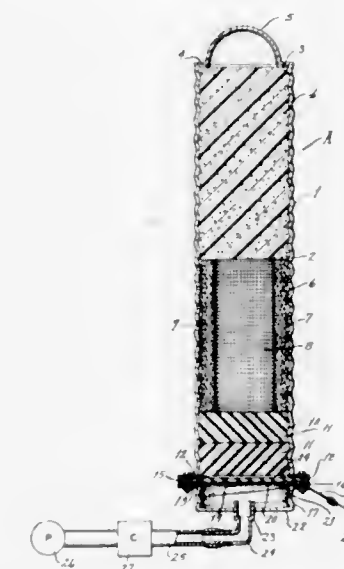
Int. Cl. B01d 35/02

U.S. Cl. 210-170

8 Claims

A pond filter comprising a cylindrical casing having a coarse filter in communication with the surrounding fluid through

openings in the side wall of said casing, a secondary or fine filter disposed adjacent said coarse filter and a relatively increased fine filter presented down-stream of said fine filter; there being pump means connected to said filter through an intervening collecting receptacle. One form of the present in-



vention contemplates the incorporation of a volume of buoyant material within the casing upwardly of the coarse filter, while another embodiment obviates the provision of buoyant material through fixing the filter within the fluid body by rigid supports.

3,722,687

## FLOATING OIL SKIMMING APPARATUS WITH OIL AND WATER SEPARATOR

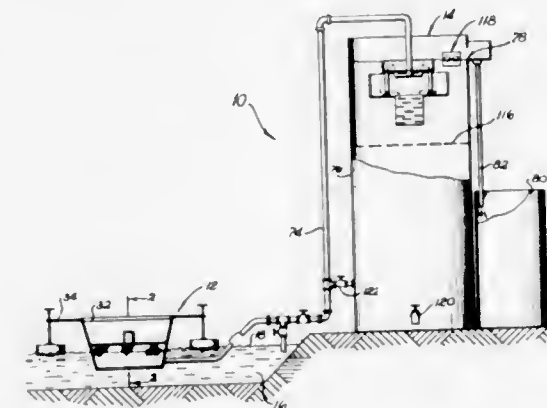
George B. Stebbins, Santa Ana; James F. Stebbins, San Marino, and John G. Becker, Long Beach, all of Calif., assignors to Edessa H. Rose, San Marino, Calif., by said John G. Becker

Filed Dec. 28, 1970, Ser. No. 101,644

Int. Cl. B01d 19/00

U.S. Cl. 210-219

12 Claims



A floating platform, vertically adjustable relative to the surface of the water and an oil slick floating thereon, having a weir member at the outer periphery and a sump and centrifugal pump adjacent the center thereof, and an oil-water separator for receiving an aerated oil and water mixture from the pump and cascading it over vertically spaced pan-like separators for causing the air and oil in the mixture to float to the surface of the separator, and water to flow to the bottom.

3,722,688

## SEA-SURFACE OIL EXTRACTOR

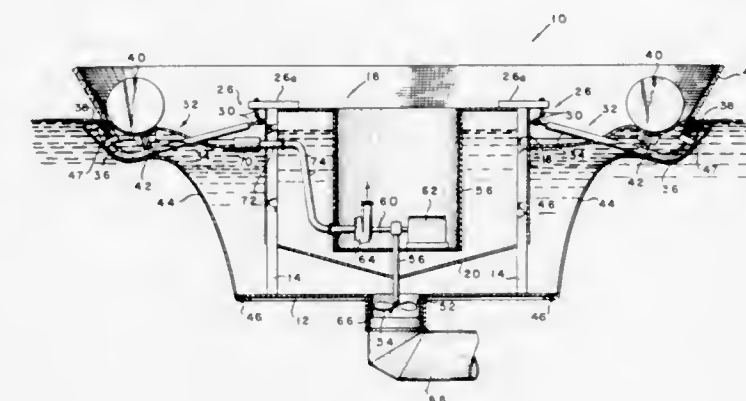
Robin F. Wirsching, Summerland Key, Fla., assignor to Reynolds Submarine Services Corporation, Miami, Fla.

Filed May 13, 1971, Ser. No. 142,940

Int. Cl. C02b 9/02

U.S. Cl. 210-242

7 Claims



An apparatus for extracting oil or the like from the surface of the sea. A centrally disposed ballast chamber is surrounded by a sump compartment into which liquids are deposited over the lips of a plurality of independently floating and an articulated weir member. The latter is provided with a substantially universal connection to the ballast chamber. A flexible skirt member forms an external wall portion of the sump compartment and is connected to the lips of the weir member. In this manner a pressure differential across the skirt member is communicated to an individual segment of the weir member in order to vary the elevation of the weir member in a self-compensating manner. Means are provided to pump liquids out of a submerged exit port in the sump compartment and for imparting direction to these pumped liquids in order to provide controlled propulsion for the skimming apparatus.

3,722,689

## APPARATUS FOR EXTRACTING OIL OR THE LIKE FROM THE SURFACE OF THE SEA

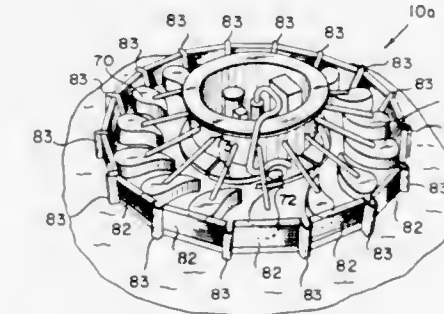
Arthur L. Markel, Miami, and Robin F. Wirsching, Summerland Key, both of Fla., assignors to Reynolds Submarine Services Corporation, Miami, Fla.

Filed May 13, 1971, Ser. No. 143,105

Int. Cl. C02b 9/02

U.S. Cl. 210-242

11 Claims



Apparatus for extracting oil or the like from the surface of the sea. A centrally disposed ballast chamber is surrounded by a sump compartment which is sufficiently large so as to obtain deceleration of flow of the liquids which pass over an articulated weir member. The latter is connected to arm members which are provided with a substantially universal connection to the ballast chamber. A flexible skirt member forms an exterior wall portion of the sump compartment and is connected to the lips which constitutes an upper edge of the outer weir.



member. In this manner a pressure differential across the skirt member is communicated to an individual weir segment member in order to vary its elevation in a self-compensating manner. In a preferred form of the invention, the float members form vanes so arranged as to impart a vortex or circular swirl to the fluids passing over the outer weir. An inner weir means is used to collect oil floating on the surface within the sump which has accumulated adjacent the wall of the centrally disposed ballast chamber.

3,722,690

## APPARATUS FOR SKIMMING OIL

Borje Stenstrom, Enebyberg, Sweden, assignor to Gulf Oil Corporation, Pittsburgh, Pa.

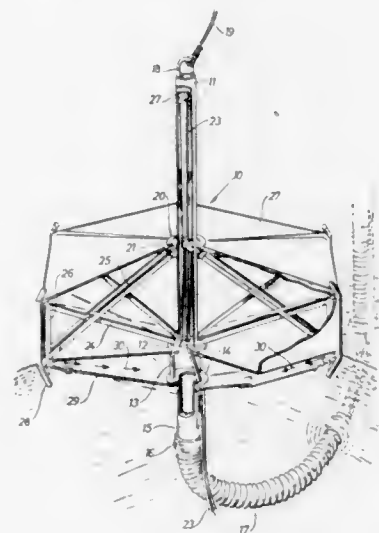
Filed July 13, 1971, Ser. No. 162,161

Claims priority, application Sweden, Nov. 9, 1970, 15126/70

Int. Cl. C02b 9/02

U.S. Cl. 210—242

7 Claims



A collapsible flotation buoy is disclosed for skimming an oil layer from water in a tanker. The buoy is provided with mechanical folding means for collapsing the buoy, permitting its insertion into a narrow opening at the top of the tank. The folding means is remotely controlled to permit expansion of the buoy for use when it is inside the tank.

3,722,691

## FILTER FOR REMOVING PARTICULATE CONTAMINANTS FROM FLUIDS

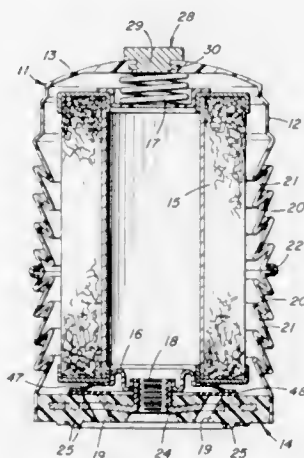
Paul L. Francois, 46 Northover Place, Red Bank, N.J.

Filed March 3, 1971, Ser. No. 120,668

Int. Cl. B01d 21/00, 27/00

U.S. Cl. 210—304

30 Claims



A filter for removing particulate contaminants from fluids such as oil comprising a filter element in a generally cylindrical

cal, thin walled plastic housing having a base threadably engaged to fluid inlet and outlet means, commonly known as a spin-on filter in which the housing is provided with fluid flow interruption means for enhancing the deposition and collection of particulate debris said means including internal, sharp angled convolutions, radial or helical, said means also including fluid inlet passages in the base oriented at an angle to the longitudinal axis of the housing.

3,722,692

## DRAIN FITTING FOR A BATH TUB

Kurt Baade, Hauptstrasse 26, D-695 Mosbach, Germany

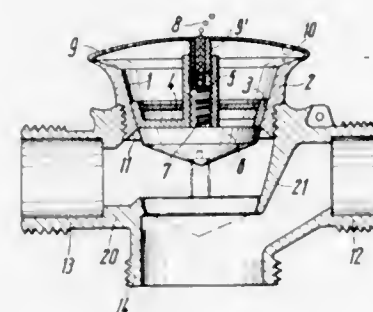
Filed July 6, 1971, Ser. No. 159,677

Claims priority, application Germany, July 9, 1970, P 20 34 054.9

Int. Cl. B01d 35/04

U.S. Cl. 210—314

7 Claims



A drain fitting for a bath tub or the like has four ports. The first port of the installed fitting leads into the bottom of the tub, a second port is connected with a pump that discharges water from the tub through a shower head, a third port is connected with the overflow of the tub, and a fourth port leads to the drain. A partition in the shell of the fitting is provided with a valve seat and separates the first and second ports from the third and fourth ports when the valve seat is sealed by a plug. A second valve seat in the first port may receive a filter carrier equipped with a coarse filter and a fine filter. The plug and the filter carrier are provided with threads which permit the plug to be attached to the filter carrier and to block passages in the same so as to close the first port and hold water in the tub. When the plug is unscrewed from the filter carrier and dropped into the valve seat of the partition, water may be drawn from the tub by the pump through the filters for the shower head, clogging of the shower head being prevented by the filters.

3,722,693

## OIL CLEANING APPARATUS

Robert E. Stull, P.O. Box 7095, Prospect, Conn.

Filed Jan. 27, 1972, Ser. No. 221,233

Int. Cl. B01d 21/02

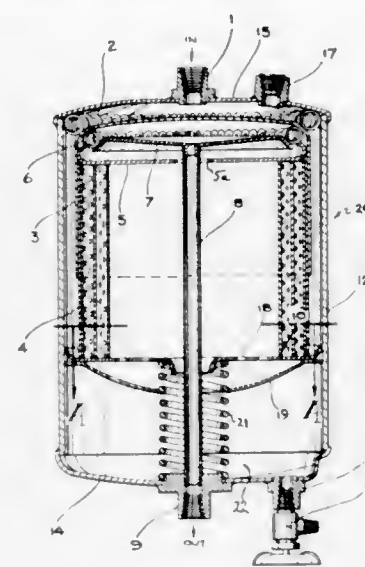
U.S. Cl. 210—320

6 Claims

The oil cleaner herein disclosed, utilizes in a unique manner, known characteristics of physical, chemical and electrical forces, to act upon contaminant particles suspended in a fluid, typically a lubricating oil, as the fluid is forced under pressure therethrough. The cleaner includes special passages, which affect velocities, pressures and electrical properties of the oil. Attendant phenomena attributable to differential friction, eddy currents, gravity forces and the result of particle im-

part on internal surfaces contribute to the cleaning action of the new device. Further cleaning efficiency of the disclosed oil

benefits and advantages in preparing separatory elements wherein end portions of hollow permeable fibers are disposed



3,722,694

## FILTRATION DEVICE

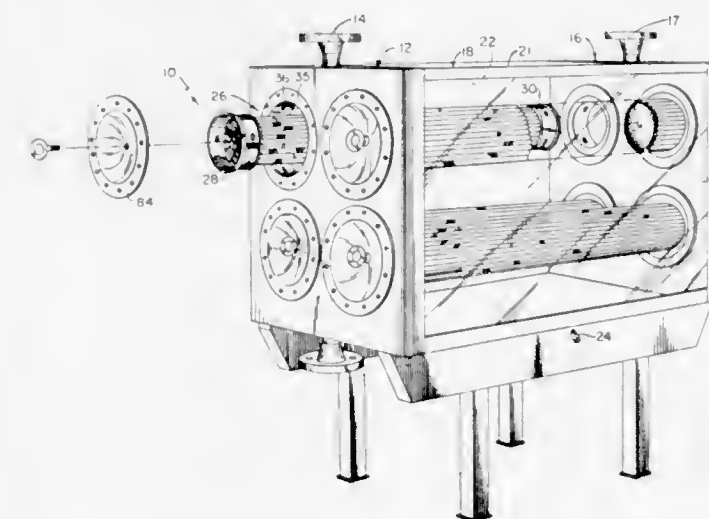
Edward A. Agranat, Weston, Mass., assignor to Romicon, Inc., Lexington, Mass.

Filed June 10, 1970, Ser. No. 45,115

Int. Cl. B01d 31/00

U.S. Cl. 210—321

12 Claims



A filtration apparatus having an inlet manifold, an outlet manifold, a filtrate region therebetween, and at least one filter cartridge which is removable and replaceable through one of the manifolds. The removably mounted filter cartridge extends between the manifolds through the filtrate region, and has a header adjacent each end, in communication with each respective manifold and sealing the filtrate region of the apparatus from each manifold thereof, respectively.

3,722,695

## ARTICLE FOR FABRICATING PERMEABLE HOLLOW FIBER SEPARATORY ELEMENT TUBE SHEETS AND SEPARATORY ELEMENTS PREPARED THEREFROM

John A. Sargent, Berkeley, and Francis W. Straub, Pittsburgh, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

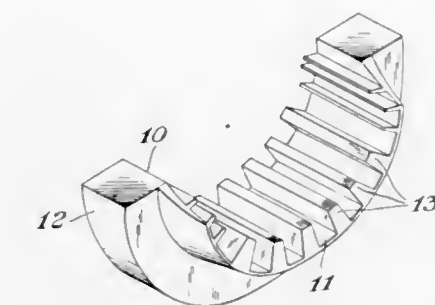
Filed July 19, 1971, Ser. No. 163,896

Int. Cl. B01d 31/00

U.S. Cl. 210—321

4 Claims

An annular segment having projections which extend radially inward from the inner surface thereof provides numerous



3,722,696

## SPIRAL-WOUND FILTER

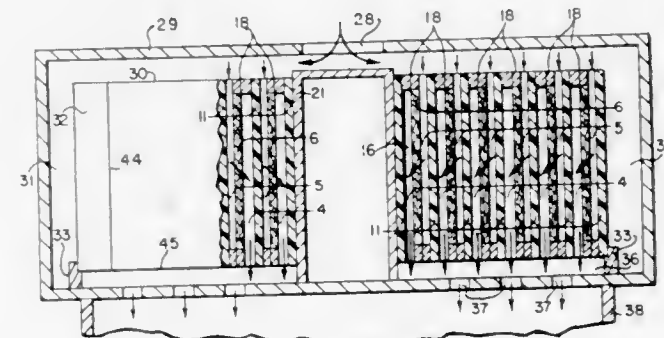
James L. Dwyer, Concord, and Peter A. Reiman, Weston, both of Mass., assignors to Millipore Corporation, Bedford, Mass.

Filed April 22, 1971, Ser. No. 136,315

Int. Cl. B01d 27/00

U.S. Cl. 210—435

13 Claims



A filter unit formed by spirally winding a multi-layer material around a core to form a generally cylindrical construction having two opposing spiral end surfaces. The multilayer material used to make the filter unit has at least one filter layer, at least two generally flat spacer layers formed from a material with a high void volume and at least one fluid-impermeable layer. The layers are adhered along the lengthwise and widthwise edges so that, in use, unfiltered fluid supplied to the unit through one spiral end surface must pass through a filter layer before it passes out of the unit through the opposing spiral end surface.

3,722,697

## INTRAVENOUS INJECTION APPARATUS DRIP CHAMBER HAVING FILTER MEANS

George K. Burke, and Kenneth Raines, both of Bethlehem, Pa., assignors to Burrton Medical Products, Inc., Bethlehem, Pa.

Filed April 29, 1970, Ser. No. 32,791

Int. Cl. B01d 35/00

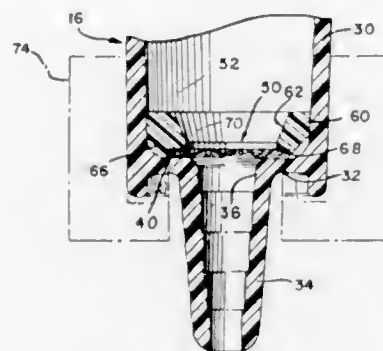
U.S. Cl. 210—451

5 Claims

An intravenous injection apparatus drip chamber comprises a tubular plastic member having a lower wall annular shoulder around said outlet hole. A filter means includes a flat metallic filter having raw outer edges which is disposed within a recess



in the bottom of a plastic filter ring. The filter ring has a lower tapered portion which is ultrasonically fused to the annular



shoulder on the lower wall of the drip chamber. The filter ring is also bonded to the outer periphery of the metallic filter.

3,722,698

## CIRCULAR CLARIFIER MECHANISM

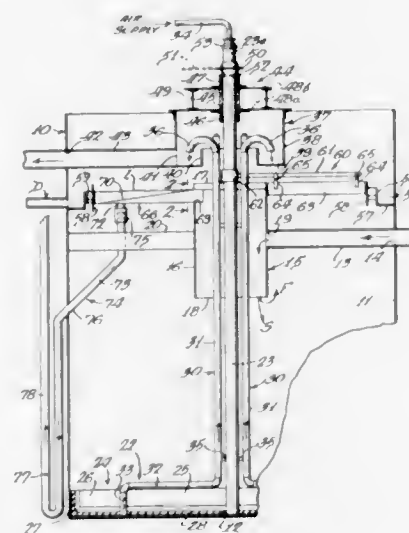
Quentin L. Hampton, Ormond Beach, Fla., assignor to FMC Corporation, San Jose, Calif.

Filed Nov. 4, 1970, Ser. No. 86,892

Int. Cl. B01d 12/00

U.S. Cl. 210—525

13 Claims



Apparatus for treating a liquid having settleable (sludge) and floating (scum) material therein to provide a clarified liquid, said apparatus including a cylindrical tank having a rotating mechanism therein for removing settled material from the bottom of the tank and for transporting floating material to a stationary radially extending trough. The mechanism is freely suspended within the tank, and is rotatably supported by structure that is disposed entirely above the liquid level. The mechanism is provided with generally radially disposed plow blades that sweep along the bottom of the tank, each blade including one or more pairs of converging sections that collect the settleable materials adjacent the junction of the converging sections. The inlet end of a pumping means is provided adjacent the junction of the converging sections of each blade, and the settled material is lifted upwardly through the center of the tank to discharge the material into an annular receptacle that is suspended from a support at the upper end of the tank above the liquid level. A scum outlet is provided in the bottom of the scum collecting trough and is connected to a scum discharge pump.

### 3,722,699 THEFT-PROOF MERCHANDISE DISPLAY HAVING A HANGING-TYPE HOLDER

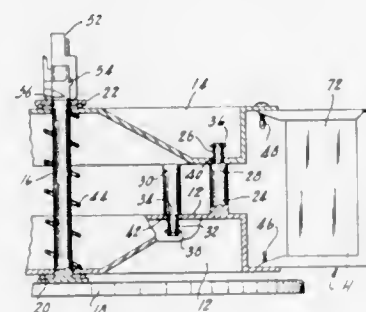
Louis John Crosslen, Grafton, Wis., assignor to Frank Mayer & Associates, Inc., Grafton, Wis.

Filed Aug. 18, 1971, Ser. No. 172,625

Int. Cl. A47f 5/02, 5/10

U.S. Cl. 211—169

2 Claims



A display device having a plurality of relatively movable support members provided with cooperable merchandise-receiving and display spindle elements. A holder is provided for being held on the spindle elements, one of the spindle elements having means for holding the holder in an open hanging position so that the holder need not be completely removed from the device when it is desired to remove the article.

3,722,700

## SHELF

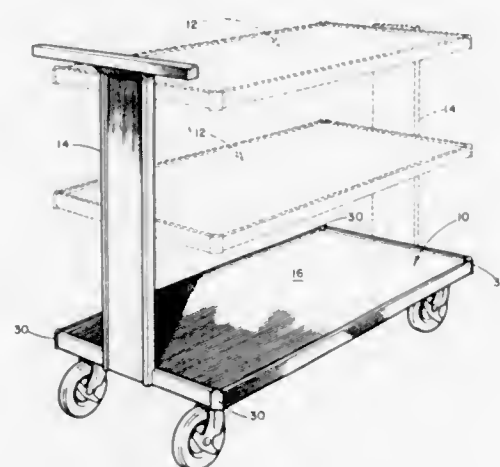
Gilbert A. Cummings, Norwell, Mass., assignor to Peters & Co., Inc., Boston, Mass.

Filed April 26, 1971, Ser. No. 137,122

Int. Cl. A47b 95/00, 96/02; B62b 5/00

U.S. Cl. 211—153

7 Claims



Shelf suitable for portable food service carts and manufacturable from sheet metal, forms a corner opening by foreshortening of side skirts while an elastomeric corner member filling the opening has a protruding bumper portion and leg surfaces along the inner surfaces of the side skirts. Features include inward lower flanges forming "C" shaped channels enclosing portions of the elastomeric corner member; welding of the flanges, bracing the side skirts; the elastomeric corner member under compression, urging the leg surfaces against the skirts; butting of the corner member against the ends of the foreshortened skirts; entire shelf formed of a single sheet of metal, providing a pair of horizontal positioning surfaces for the corner member; and the top of the corner member filling a corner cut-out in the top surface.

### 3,722,701 MODULAR FILE ELEMENT AND COMPONENTS THEREOF

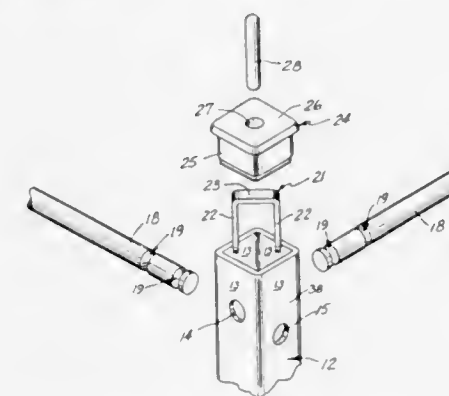
Frank John Malcik, Berwyn; Edward William Whittemore, and John Patrick Clark, both of Elmhurst, all of Ill., assignors to Swingline, Inc., Long Island City, N.Y.

Filed May 7, 1971, Ser. No. 141,317

Int. Cl. A47f 5/10

U.S. Cl. 211—177

10 Claims



A joint structure for use in a filing rack of the type which may be utilized to support loose-leaf binders or the like in hanging relationship is disclosed. The joint structure is constructed to retain two rod-like elements of a rack structure together. The joint structure includes a hollow support member having two pairs of aligned holes for receiving the rod-like elements and a specially constructed locking means which coacts with a specially configured arrangement of grooves in the rod-like elements interior of the hollow support member to retain the rod elements in place relative to each other and relative to the hollow support member.

3,722,702

## FOLDABLE GARMENT RACK

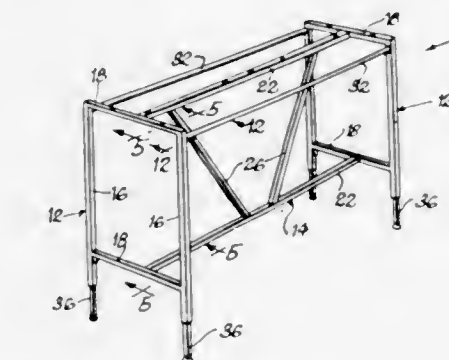
Edwin M. Marker, Jr., Chicago, Ill., assignor to Garco Corporation

Filed March 22, 1971, Ser. No. 126,451

Int. Cl. A47f 5/10

U.S. Cl. 211—178 R

18 Claims



A completely foldable garment rack construction which is easily and quickly set up, and easily folded, without removal of hang rails, and without separate mechanical fasteners. Eccentric cam hinge assemblies connect the frame members for movement between a butting, set-up and locked condition, and a spaced foldable condition. A hang rail is hinged mounted for pivotal movement on the rack with respect to a frame member, from the foldable condition into a folded condition. Legs of frame members telescopically receive leg extenders, each defining longitudinally spaced notches and notch cam tongues for camming a spring assembly outwardly when the leg extender is pulled downwardly to lengthen the leg. The spring assembly includes an integral supporting tab for supporting the spring assembly from a stretcher adjacent the leg, and provides a catch button passing through the leg and into a notch to support the leg extender against upward telescopic movement.

3,722,703

## SILENT BUTLER

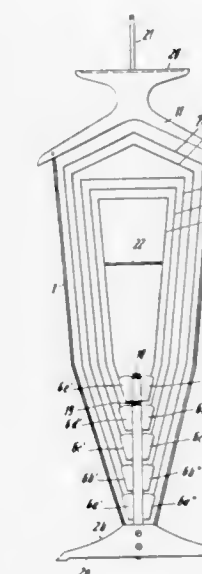
Heinz Domin, Marienburgerstr. 64, Espelkamp-Mattwald, Germany

Filed April 30, 1971, Ser. No. 138,953

Int. Cl. A47f 5/10

U.S. Cl. 211—178 R

9 Claims



A base is provided with a first pair of uprights the upper free end portions of which are connected by a garment hanger which forms with the uprights a first frame. A pair of arms is pivoted to the base and at least one connecting element pivotally links the arms to form therewith a parallelogram linkage. At least one second pair of uprights is mounted on the connecting element and has free end portions which are again connected by a second garment hanger forming with them a second frame which is so dimensioned that it can be tilted into and out of the confines of the first frame.

3,722,704

## STRUCTURAL COMPONENTS FOR THE COMPOSITION OF DISASSEMBLABLE PIECES OF FURNITURE

Giancarlo Piretti, Bologna-via Corticella, Italy, assignor to Anonima Castelli S.A.S., Bologna, Italy

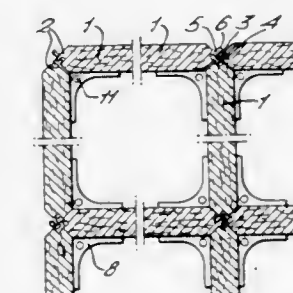
Filed July 21, 1971, Ser. No. 164,592

Claims priority, application Italy, July 23, 1970, 52341 A/70

Int. Cl. A47f 5/00

U.S. Cl. 211—183

4 Claims



Structural components pieces of furniture comprising a plurality of panels, angle members and closing plates, wherein: the panels have longitudinal edges including first coupling formation and a complementary coupling formation extending along said longitudinal edge, said first coupling formation of each panel being able to be interfitted with the second coupling formation of another panel designed to be slidably interlocked with the former panel whereby two panels can be interlocked at a right angle;



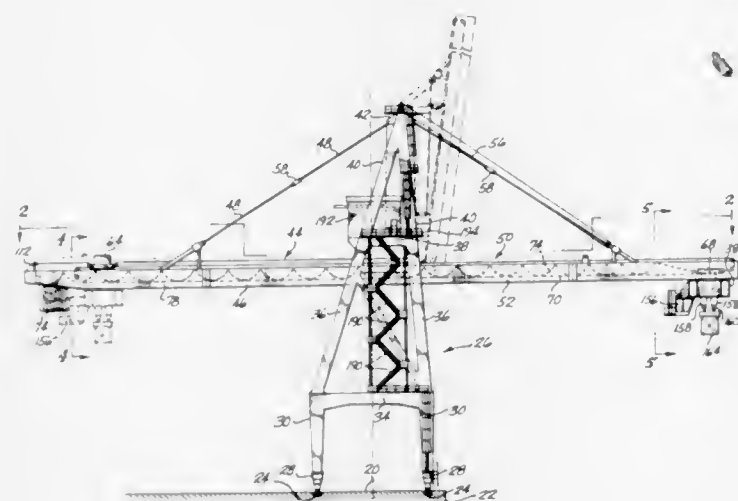
the angle members, designed to stiffen the connection between two panels and to prevent sliding movements parallelly to their longitudinal edges and provided with means for its fixing to said panels; and the closing places are each constituted of a board or sheet provided with means adapted to be engaged into the holes provided in the angle members.

3,722,705

**MARINE CRANE, PARTICULARLY DESIGNED FOR HANDLING CARGO CONTAINERS**  
Charles D. Gould, 8225 Forest Dr., N.E., Seattle, Wash.  
Filed May 28, 1971, Ser. No. 147,753  
Int. Cl. B66c 5/02

U.S. Cl. 212-15

14 Claims



There is disclosed a mobile crane for loading and unloading marine vessels. The crane is mounted for travel on widely spaced apart runway track means extending parallel to the waterside edge portion of a marine pier. The crane comprises a central tower structure supporting a fixed boom extending therefrom in a shoreside direction and a hinged boom supported thereby extending therefrom in a waterside direction.

A traveling counterweight means is mounted for travel only over the fixed boom and at a given level and a load supporting means is mounted for greater travel than said counterweight means and travels over both said fixed boom and said hinged boom and at a lower level than said counterweight means. Preferably, the travel of the counterweight means is one-half that of said load supporting means. The counterweight means and the load supporting means are interconnected and preferably by wire rope and sheave means and in a way to provide a two-part reeving system between the load supporting means and the counterweight means. Also, the load supporting means is self-powered and clamping means, preferably hydraulically operated, are carried by said load supporting means to engage or disengage the wire rope means and cause selective traveling movement thereof and of counterweight means secured thereto.

The central tower structure carries the boom hoist machinery and the center of mass of such machinery and of the tower structure is waterside of the center line between the runway track means on which the crane travels.

The boom hoist machinery is electrically powered and positioning limit switch means are included in the electric circuitry of such hoist machine so that predetermined positions of said traveling counterweight means and said load supporting means must obtain before the boom hoist machinery is operable.

The traveling load supporting means carries a rectangular frame which is designed for use in loading and unloading large bulky loads, as cargo containers, from marine vessels which may have a list and/or trim. A power actuated means is provided for determining the angular relation of said rectangular

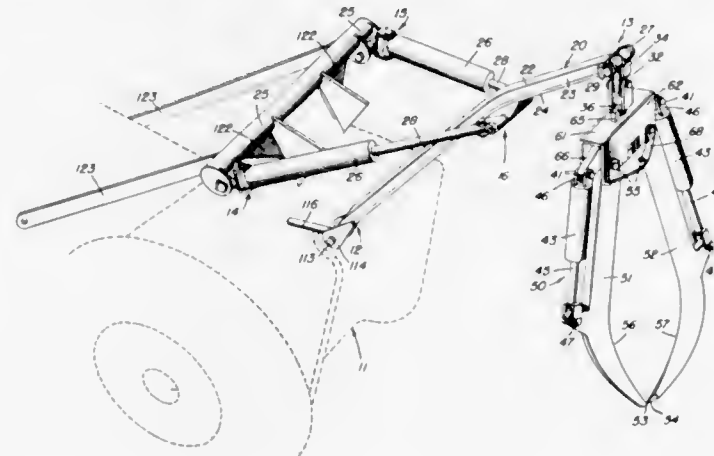
frame to a horizontal plane and thus permitting adjustment thereof to match the particular trim of the marine vessel being loaded or unloaded. Such power actuated means is shown as being hydraulic. A plurality of rope means depend from said rectangular frame and the relative lengths thereof are selectively power actuated to compensate for the list of the marine vessel.

3,722,706

**WEIGHT-ALIGNED GRAPPLE**  
Joseph E. Blonsky, Atlanta, Ga., assignor to Westvaco Corporation, New York, N.Y.  
Continuation of Ser. No. 703,155, Feb. 5, 1968, abandoned.  
This application Dec. 9, 1969, Ser. No. 883,653  
Int. Cl. B66c 1/12

U.S. Cl. 212-44

8 Claims



A grapping device which includes a powered, rotatable grapple for grasping elongated objects. The grapple is normally attached by a support to a logging vehicle such as a skidder. The support is a movably-mounted boom which is controlled by a pair of hydraulic cylinders for effecting vertical and sidewise movement of the boom. The grapple comprises a weight-actuated cam as a rotative positioning means for self-alignment of a pair of co-acting powered grapple jaws, an elongated bridge connecting said grapple jaws whereby generally uniform pressures are exerted upon grasped objects.

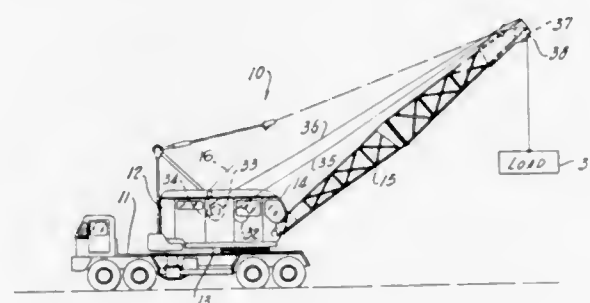
3,722,707

**HYDRAULIC CRANE CONTROL TO PREVENT UNCONTROLLED FALLING OF LOAD**  
Nils E. Hedeon, Mequon, and Carl W. Javenkoski, Sussex, both of Wis., assignors to Harmischfeger Corporation, Milwaukee, Wis.

Filed Nov. 3, 1971, Ser. No. 195,156  
Int. Cl. B66c 23/06

U.S. Cl. 212-59 R

9 Claims



A boom crane comprises a platform on which a vertically movable boom, a front hoist drum, a rear hoist drum, a swing drive and an engine are mounted. The platform is rotatable in either direction about a vertical axis. The boom can be raised or lowered about a horizontal axis by

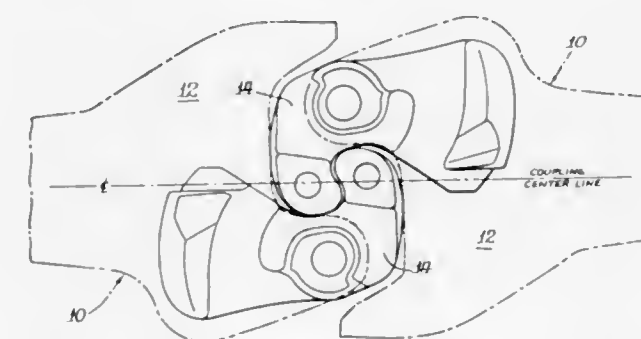
means of a boom hoist line on the boom hoist drum. The front and rear drums are operable alternately to hoist and lower loads on their respective hoist lines. The aforesaid functions are controlled by a hydraulic control system which includes various levers and pedals that control hydraulic valves to regulate pressurization of various hydraulic clutch and brake cylinders. The control system comprises a selectively operable "dead man" actuation control for the front hoist drum and another "dead man" actuation control for the rear hoist drum. When actuated, each "dead man" actuation control effects automatic braking of its associated drum to prevent its load from falling in the event the control lever for that drum is returned to its neutral position while a load is being hoisted or lowered by that drum, as in the case when the crane operator is incapacitated. The control system further comprises a dump valve which automatically depressurizes the hydraulic system, in the event the boom and hoist line hooks are raised beyond a predetermined point.

3,722,708

**REDUCED SLACK COUPLER**  
Forrest Fothergill Ion, Itasca; Walter Richard Polanin, Hazelcrest, both of Ill., and Russell George Altherr, Munster, Ind., assignors to Amsted Industries Incorporated, Chicago, Ill.  
Filed Dec. 8, 1971, Ser. No. 205,917  
Int. Cl. B61g 1/06, 3/04

U.S. Cl. 213-151

6 Claims



A modified type "E" coupler having a knuckle with a horizontal contour extending forwardly and angularly for reducing slack when coupled with either an "E" or "F" coupler, and a vertical contour tapering and curving for allowing vertical angling in area contact condition.

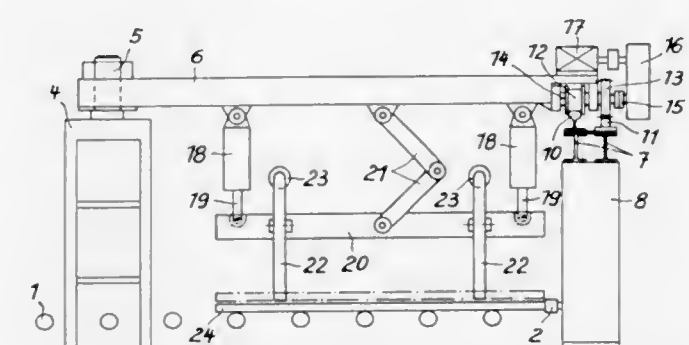
3,722,709

**CONVEYING AND COOLING LENGTHS OF SEMI-FINISHED PRODUCTS**  
Horst Buschmann, Solingen-Ohligs, Germany, assignor to Schloemann Aktiengesellschaft, Dusseldorf, Germany  
Filed March 23, 1971, Ser. No. 127,123  
Claims priority, application Germany, March 28, 1970, P 20 14 994.4

Int. Cl. B65g 63/04

U.S. Cl. 214-1 BC

7 Claims



In conventional continuous casting plants and heavy rolling mills, there is a run-out table at the end of the plant or mill,

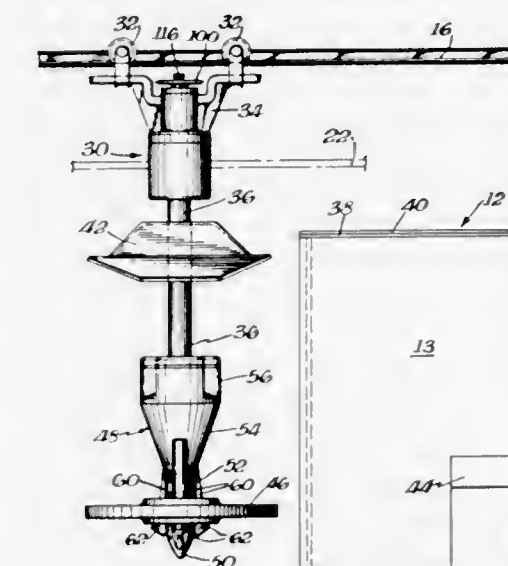
and a cooling bed running at right angles to the run-out table. The invention improves the utilization of factory space by having the cooling bed parallel to the run-out table and by turning the lengths of semi-finished products through about 90° while transferring them from the run-out table to the cooling bed.

3,722,710

**WORK CARRIER FOR ABRASIVE CLEANING ARRANGEMENTS**  
Bernard W. Ixer, and Davis Lee Baughman, both of Hagerstown, Md., assignors to The Carborundum Company, Niagara Falls, N.Y.  
Filed Oct. 23, 1970, Ser. No. 83,362  
Int. Cl. B66c 1/66

U.S. Cl. 214-1 BA

6 Claims



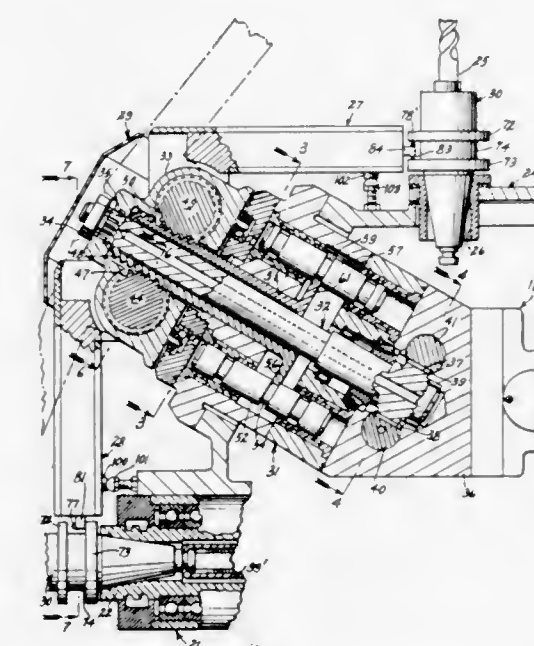
A work carrier for use in abrasive cleaning arrangements comprises a support movable in a forward direction with generally vertical work engaging arms having hook-like projections for moving into and out of a work engaging position.

3,722,711

**MACHINE TOOL**  
William B. Seidel, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio  
Filed April 15, 1970, Ser. No. 28,742  
Int. Cl. B23q 5/32

U.S. Cl. 214-1 BD

14 Claims



A pair of arms is employed to transfer tools between a tool storage mechanism and a spindle. The arms are independently



pivoted on a rotating shaft, which rotates the arms between the spindle and the tool storage mechanism, so that the arm, which is supplying a tool to the tool storage mechanism, can be held in a parked position until a desired pocket in the tool storage mechanism is positioned to receive the tool. A unique gripping arrangement releasably connects the tool to the arm and requires only a simplified cooperating structure on a holder for the tool.

3,722,712

## WORKPIECE TRANSFER DEVICES

Henri Knierim, Boulogne-Billancourt, France, assignor to Societe Des Aciers Flins De L'est, Boulogne-Billancourt (Hauts de Seine), France

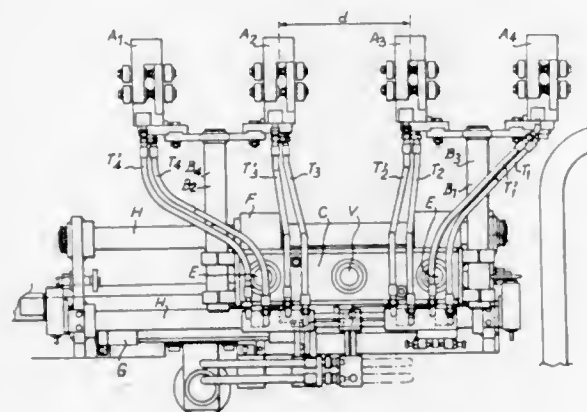
Filed Nov. 29, 1971, Ser. No. 202,856

Claims priority, application France, Dec. 8, 1970, 7044122

Int. Cl. B23q 7/04

U.S. Cl. 214-1 BB

5 Claims



This device for transferring workpieces or blanks, notably in a forging press, from one working station to another, in a sequence of working stations comprising for example forging dies, is collapsible and comprises a plurality of clamps adapted to grip the blanks, release them completely from the dies and move same laterally through a distance corresponding to the gap between adjacent dies, and lay the blank into the next die, and eventually resume their initial position. Said clamps are designed to move forwards as their jaws are closed through a toggle mechanism.

3,722,713

## UNSTACKING MACHINE FOR TRAYS AND THE LIKE

Joseph Garabedian, 737 West Yale Avenue, and Mike Garabedian, 341 South Maple, both of Fresno, Calif.

Filed June 23, 1971, Ser. No. 155,944

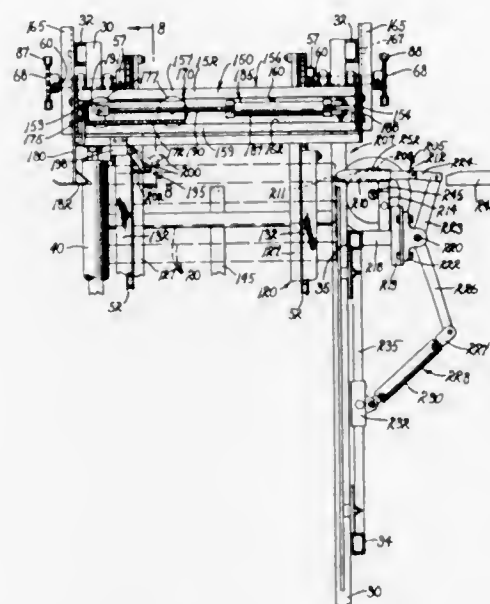
Int. Cl. B65g 59/02

U.S. Cl. 214-8.5 A

16 Claims

An unstacking machine for trays and the like disposed in elevationally stacked relation providing a frame adapted to receive such a stack of trays including powered tray pick-off means mounted on the frame for reciprocal movement successively to engage the uppermost tray in the stack and to remove it laterally substantially horizontally from the stack and powered stack elevating means on the frame operative up-

wardly to advance the stack through successive increments of travel to position each succeeding uppermost tray in the path



3,722,714

## CONTAINER INTERCONNECTION ARRANGEMENT

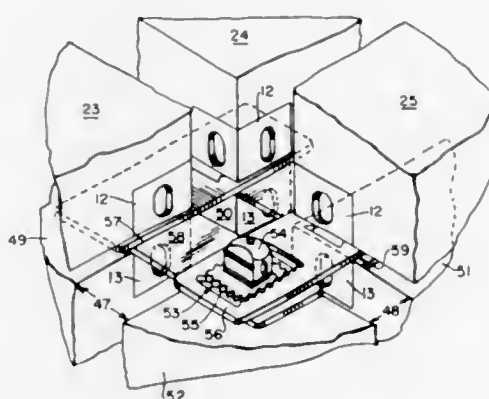
Joseph R. Morris, East Islip, and Walter A. Last, Jr., Islip, L.I., both of N.Y., assignors to Peck & Hale, Inc., West Sayville, L.I., N.Y.

Filed Sept. 14, 1971, Ser. No. 180,432

Int. Cl. B65g 1/14

U.S. Cl. 214-10.5 R

8 Claims



Interconnecting rectangular freight containers in a container stowage system having one or several tiers of containers in order to prevent relative movement horizontally and provide for variation in container spacing. This is accomplished by the use of interlock stacker units, and spacer plates or bridge fittings and, for the top tier, locking pins to secure or capture the spacer plates.

3,722,715

## VARIABLE LOAD AUGER APPARATUS

George M. Young, Oakland, Nebr.

Filed Oct. 15, 1970, Ser. No. 80,862

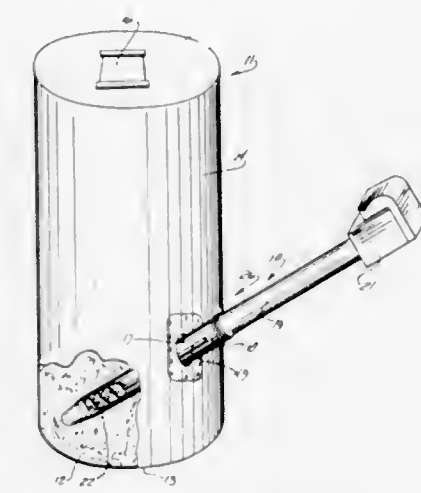
Int. Cl. B65g 65/46

U.S. Cl. 214-17 D

7 Claims

A variable load auger apparatus to be used in combination with a high moisture grain bin, the apparatus providing for a regulation of the flow rate of grain and comprising: a cylindrical sleeve passing through the bin wall in an airtight fitting, a portion of the interior end of the sleeve having the top half removed therefrom; a cylindrical tube rotatably disposed

within the sleeve having its exterior end secured to a delivery hopper and a portion of its interior end having the top half removed therefrom; an annular gasket abutting the upper end of the sleeve and held between the sleeve and the tube by a clamp, the basket providing an airtight fitting between the two; and a helical auger rotatably disposed axially within the



tube having its lower end exposed by the cutaway portion of the tube and having its upper end extend through the delivery hopper to be mechanically secured to a constant-speed drive motor, wherein the tube is rotatable within the sleeve to vary the opening therebetween in contact with the grain, thus providing a variable delivery rate without breaking the seal of the bin.

3,722,716

## METHOD AND APPARATUS FOR LOADING AND UNLOADING AIR CARGO

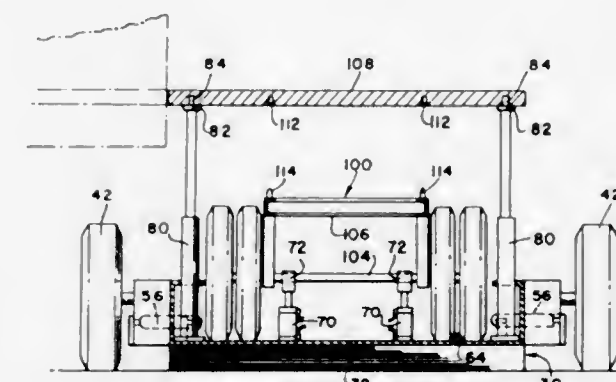
Keith W. Tantlinger, Rancho Santa Fe, Calif., assignor to Fruehauf Corporation, Detroit, Mich.

Filed June 17, 1970, Ser. No. 46,930

Int. Cl. B65g 67/02

U.S. Cl. 214-38 B

8 Claims



In a first form of the invention, a mobile unit includes means for accurately locating a road-worthy chassis thereon. Lifting and lowering means is carried by the mobile unit for lifting and lowering a moveable platform mounted on said chassis. A chassis is moved onto the mobile unit, the platform is raised so that the upper surface is substantially flush with the upper surface of a cargo deck in the aircraft, cargo is transferred between the upper surfaces, the platform is then lowered onto the chassis, and the chassis is moved off the mobile unit. In another form of the invention, a mobile dock includes a load carrying portion supported by a plurality of wheel assemblies. Means is provided for raising and lowering the load carrying portion with respect to the wheel assemblies and comprises struts including cam operated steering means whereby the wheels are steered upon relative vertical movement of the load carrying portion with respect to the wheels. In this latter

form of the invention, a road-worthy chassis is moved onto the load carrying portion of the mobile dock and the dock is then moved into operative position. The load carrying portion of the dock is raised until the upper load carrying surface of the road-worthy chassis thereon is substantially flush with the upper surface of the cargo deck, whereupon cargo is transferred between said upper surfaces. The dock is then moved away from the aircraft and the load carrying portion is lowered whereupon the road-worthy chassis is moved off of the mobile dock. Two forms of the invention may also be used in combination with one another wherein the upper surface of the platform supported above a chassis on the mobile unit may serve as a bridge for cargo passing thereover onto the upper load carrying surface of a chassis carried by a dock disposed adjacent the mobile unit.

3,722,717

## CONVEYOR SYSTEM FOR LOADING AND UNLOADING TRUCKS

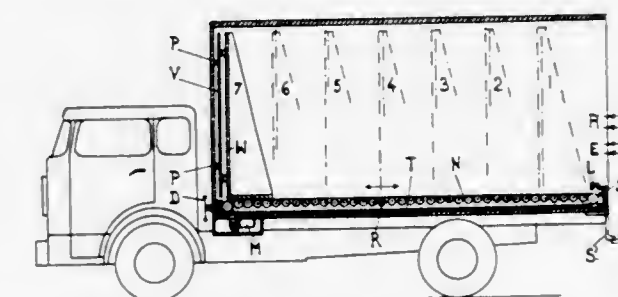
Leon K. Stryczek, P.O. Box 134, Brooklyn, N.Y.

Filed Aug. 22, 1969, Ser. No. 852,515

Int. Cl. B60p 1/36

U.S. Cl. 214-83.22

3 Claims



A conveyor movably receivable in a truck body for rapid loading and unloading of the truck comprises an endless band spanning a pair of end loaders and carries a wall member movable from one side of the truck body to the other. A brake, actuatable externally of the truck body, is provided to secure the band independently of a motor brake used to stop the conveyor, while a sill is provided at the rear of the body and is swingable downwardly out of the path of objects on the conveyor to permit loading and unloading. In its upper position, the sill lies in the path of any objects tending to be shifted rearwardly and actuates a control for cutting off the conveyor.

3,722,718

## HYDRAULIC CONTROL SYSTEM FOR A SKIP HOIST

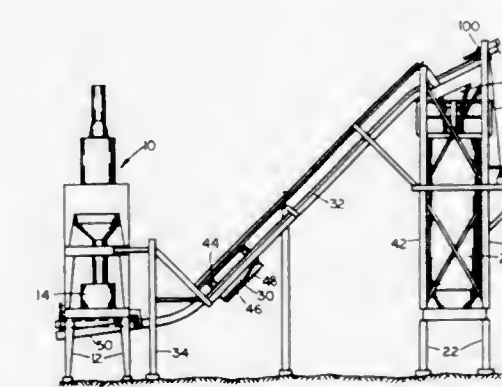
Joseph G. Gill, 6560 Wild Oaks Dr., John H. Gill, 6540 Wild Oaks Dr., both of Sylvania Twp., Ohio, and Arthur J. Holmes, 5833 Winding Way, Sylvania, Ohio

Filed May 4, 1971, Ser. No. 140,191

Int. Cl. B66b 5/24

U.S. Cl. 214-100

15 Claims



A reversible hydraulic motor for driving a windlass or winch for a cable connected to a skip and to cams that operate valves



and switches for controlling said motor, including a hydraulic retarder for the motion of the skip in one direction that stores energy for later starting the skip in the opposite direction, and safety means in the hydraulic system for said motor to stop the motor and skip when the hydraulic pressure in said system goes either above or below predetermined limits.

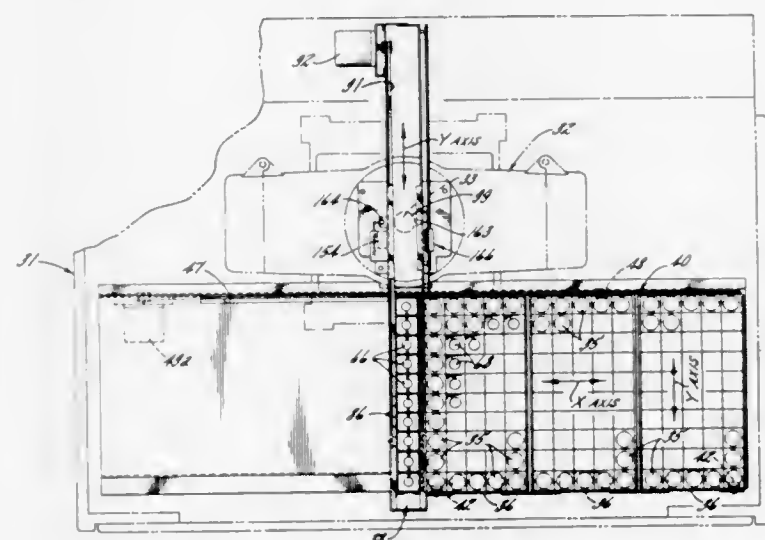
The skip reciprocates along an inclined track between a loading and an unloading station, such as for hot asphalt between its mixing plant and its hot storage bin. The skip may have a bottom door that automatically opens at its unloading station. The track may have a lower section that is movable away from the loading station when the skip and hot asphalt storage bin are not being used.

3,722,719

**METHOD OF AND APPARATUS FOR SAMPLE VIAL TRANSFERRING AND CHANGING**  
Edmund Frank, Chicago, Ill., assignor to Packard Instrument Company, Inc., Downers Grove, Ill.  
Filed April 10, 1970, Ser. No. 27,411  
Int. Cl. B65g 47/06

U.S. Cl. 214—310

13 Claims



An automated method and associated apparatus is provided for transferring sample vials and like regularized objects from a rectilinear array past a counting station in seriatim order. The array is indexed along an X-axis in at least one tray, rows of the array are indexed out of the plane of the array tray along a Z-axis by a comb member into a bottomless carriage, and individual vials in the carriage are then indexed seriatim along a Y-axis past a counting station. Photoelectric sensors are provided to override portions of the indexing mechanism if no sample vials are present in array rows or individual compartments.

3,722,720

**CONTAINER HANDLING DEVICE FOR YOKE-END TRUCKS OR THE LIKE**

John Olov Hilding Sjostrom, Hoglandssjon, and Lars Erik Sundkvist, Gullanget, both of Sweden, assignors to AB Hagglund & Soner, Ornskoldsvik, Sweden  
Filed Feb. 4, 1971, Ser. No. 112,546

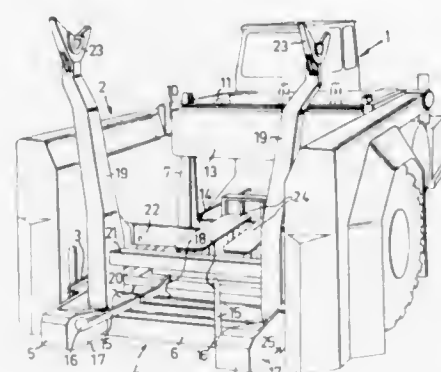
Claims priority, application Sweden, Feb. 12, 1970, 1806/70  
Int. Cl. B65g 65/00

U.S. Cl. 214—317

10 Claims

The present invention relates to an auxiliary aggregate a container handling device for yoke-end trucks or similar vehicles having vertically adjustable, essentially horizontal lifting means. The handling device is designed to lift, carry and dump, by tipping, heavy containers, preferably slag ladles or

the like. The handling device shall be of such a type that it can be supported by the lift beams of the truck and can be easily



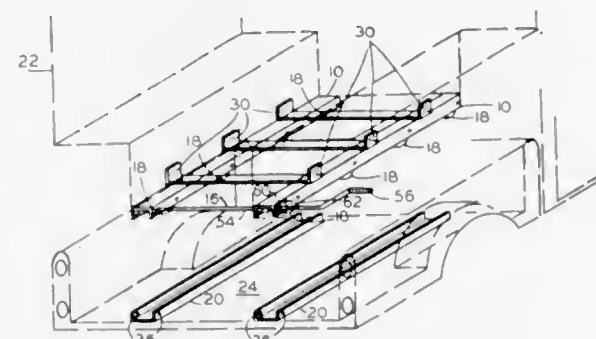
set down in a storage area when it is not required for use so that the truck can be used for other transporting purposes.

3,722,721

**MEANS FOR LOADING AND UNLOADING A CAMPER**  
Melvin L. Bennett, 2739 South Martinson, Wichita, Kans.  
Filed July 13, 1971, Ser. No. 162,183  
Int. Cl. B60p 3/38

U.S. Cl. 214—515

6 Claims



Rollers mounted on the bottom of a camper are retracted to inoperative position during camper use and are extended to antifrictionally support the camper on the pickup bed during loading and unloading of the camper. Upper channels are provided on the underside of the camper; pivotal bellcranks are pivotally mounted in the upper channels with the rollers supported on one set of arms of the bellcranks and the other set of arms engaging a common rod shifted to extend the rollers; gear and crank means move the common rods; and lower channels on the bed guide the rollers.

3,722,722

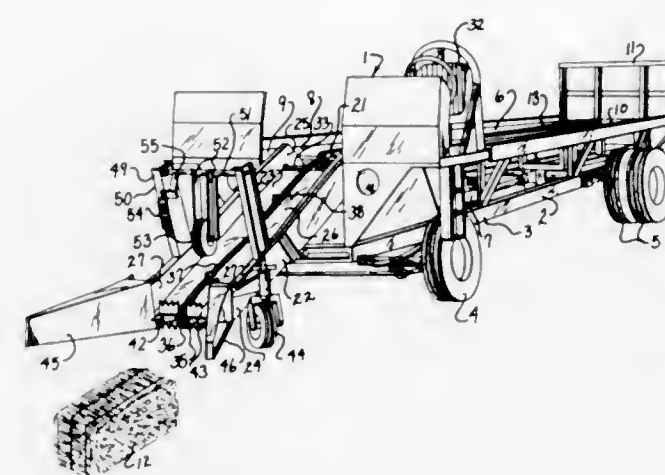
**SELF-PROPELLED BALE HANDLING APPARATUS**  
Calvin B. Blair, P.O. Box 76, Barnard, Kans.  
Filed April 5, 1971, Ser. No. 131,096  
Int. Cl. B60p 1/38

U.S. Cl. 214—522

4 Claims

A self-propelled vehicle has a flat elevated bed with a conveyor extending therealong from front to back. An elongated header extends forwardly and downwardly from the bed front, riding on the ground at the front end, and has a conveyor chain thereon coordinated with the bed conveyor. Structure is provided for funneling hay bales onto the header and holding

the bales in proper position thereon for transmission to the rear end of the bed for stacking. The conveyors may be



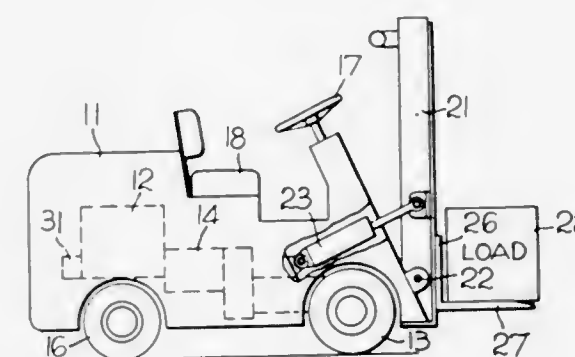
reversed and the header elevated, with an extension fitted thereon, for off-loading from the bed.

3,722,723

**TILT CYLINDER ANTICAVITATION CIRCUIT**  
Dean A. Matthews, Homewood, Ill., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.  
Filed Jan. 20, 1972, Ser. No. 219,414  
Int. Cl. B66f 9/20

U.S. Cl. 214—674

8 Claims



Cavitation in the tilt cylinder circuit for a lift truck is prevented by cross connecting one of the tilt cylinder supply lines with the return-to-reservoir line of another circuit in the lift truck hydraulic system. A cone-way check valve is incorporated in the cross connecting passage to prevent flow from the tilt cylinder circuit to the second circuit.

3,722,724

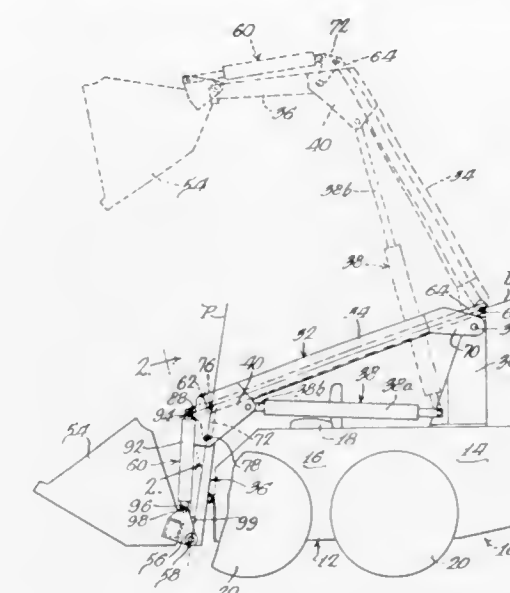
**LOAD CARRYING DEVICE WITH IMPROVED POSITION CONTROL**

Richard P. Blakely, Rockford, Ill., assignor to J. I. Case Company  
Filed April 19, 1971, Ser. No. 135,302  
Int. Cl. E02f 3/86

U.S. Cl. 214—776

6 Claims

A material handling device having a bucket pivoted on the free ends of lift arms that extend on opposite sides of a vehicle body and are pivoted on uprights extending from the body adjacent the rear end thereof. The material handling device incorporates pivot means for tilting the bucket and automatically maintaining the bucket in a level condition as the lift arms are raised. The pivot means includes a pair of links that are supported within the hollow lift arms with a fluid motor located between one of the links and the material handling im-



allow unrestricted movement of the links within the lift arms while the lift arms are pivoted between raised and lowered positions.

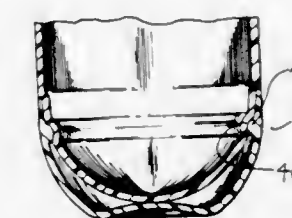
3,722,725

**PACKAGE FOR PRESSURIZED FLUENT MATERIALS - A**  
Bhupendra N. Khetani, Vernon, and Eugene F. Phillips, Rockville, both of Conn., assignors to Monsanto Company, St. Louis, Mo.

Filed Sept. 24, 1970, Ser. No. 75,095  
Int. Cl. B65d 23/00

U.S. Cl. 215—1 C

4 Claims



A package for pressurized fluent materials which includes a bottle made of a high strength moldable thermoplastic with a hemispherical base configuration to minimize stress buildup in the bottle as a result of the pressure of the contents. Means are formed in the bottle for cooperating with a support member to maintain the otherwise unstable bottle in an upright position on a horizontal surface. Preferably, the shape of the support member is the same as that of the curved bottom portion of a conventional self supporting bottle for holding carbonated beverages. The thermoplastic of the bottle preferably has a major component therein which is polymerized from a monomer having one or more nitrile groups in its molecular structure.

3,722,726

**NONEVERTING BOTTOM FOR THERMOPLASTIC BOTTLES**

Keith Stewart Carmichael, and Joseph Thomas Lester, Jr., both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.  
Filed Nov. 1, 1971, Ser. No. 194,643  
Int. Cl. B65d 1/02

U.S. Cl. 215—1 C

7 Claims

A generally cylindrical thermoplastic bottle for bottling liquids under pressure such as beer, soda and aerosols, having



a noneverting bottom under conditions of bottling and use. The bottom is a shell having a configuration consisting essentially of a series of geometric curves rotationally symmetrical about the central axis of the bottle starting at the generally right cylinder section with an ogive extending toward the bottom of the bottle connected to a toroid that forms the seat of the bottle and turns upward into the interior of the bottle con-



nected to a straight line angled towards the center of the bottle forming a re-entrant cone that is connected to a recessed toroid that turns away from the interior of the bottle ending in a straight line perpendicular to the central axis of the bottle forming a recessed disc in the bottom of the bottle. Alternatively, the bottom geometry can be modified by expanding the recessed toroid and adding a reinforcing ring of polymer on the interior of the recessed toroid.

3,722,727

## SAFETY CLOSURE FOR A MEDICINE BOTTLE

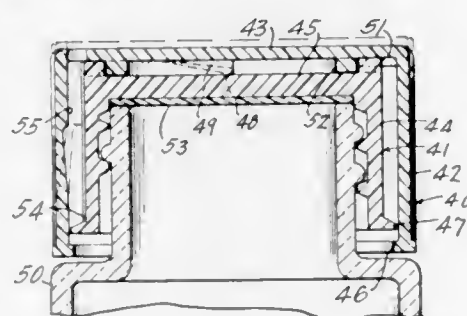
Peter P. Gach, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.

Continuation-in-part of Ser. No. 134,702, April 16, 1971, Pat. No. 3,679,085. This application June 29, 1971, Ser. No. 157,850

Int. Cl. B65d 55/02

U.S. Cl. 215-9

5 Claims



A child-proof closure for a medicine bottle or the like. The closure consists of a threaded cap and relatively flexible over-cap or driver. The cap and driver have cooperating ratchet drive means for screwing the cap onto the bottle by rotating the driver. The driver normally is rotatable in the opposite direction relative to the cap. The cap has a recess in its outer wall and a portion of the wall of the driver is radially inwardly displaceable for engagement in the recess for delivering unscrewing torque from the driver to the cap.

3,722,728

## NURSING DEVICE

Seichi Yazaki, Sakai City, Japan, assignor to The Fujimoto Company Ltd., Osaka, Japan

Filed Aug. 26, 1971, Ser. No. 175,166

Claims priority, application Japan, Sept. 8, 1970, 45/78604

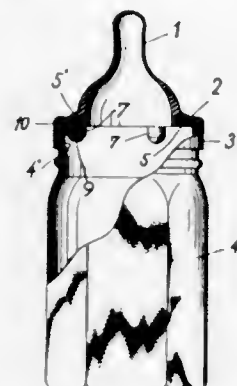
Int. Cl. A61j 9/00

U.S. Cl. 215-11 B

5 Claims

A nursing device which consists of a bottle, a main nipple body with an aperture for extrusion of milk, a grooved flange

member having tubular extensions integrally formed therewith and extending from the underface thereof, an air control ring with a central hole for receiving the main nipple body, the periphery of which fits the groove of the flange and solid



grooved protrusions extending from the underside of said air control ring for corresponding relation to the tubular members of the flange of the main nipple body, and a fastening ring to secure the main body and air control ring combination to the mouth of the bottle.

3,722,729

## BOTTLE CAP STRUCTURE AND METHOD FOR MAKING THE SAME

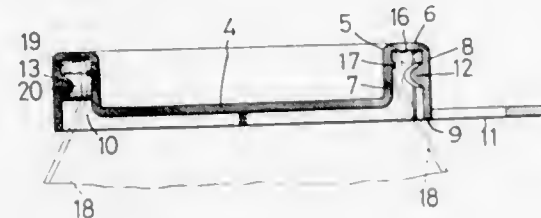
Eiji Yamada, 103 2-1 Hamacho, Nihonbashi, Chuoku, Tokyo, Japan

Filed Aug. 21, 1970, Ser. No. 65,856

Int. Cl. B65d 41/22

U.S. Cl. 215-41

1 Claim



A bottle cap of inverted concave shape in its cross section made of blank material of synthetic resin of high resiliency such as polyethylene or the like, wherein a horizontal, raised recess is formed on the center surface of the cap, and a bottle opening abutting channel is defined by the periphery of the cap and the wall of the recess on the backside of the cap, and projecting strips are provided integrally with the inner wall of the periphery at the base side of a tongue projecting from and secured to the periphery at right angle thereto and at the opposite side to the base on the backside of the periphery, cut-out portions are formed on opposite sides of the projecting strips, said cut-out portions extending to the depth adjacent to the cap periphery, and small projecting strips encompassing the backside wall of the recess are provided.

3,722,730

## MANHOLE COVER CONSTRUCTION

Erhard Joos, Wilhelmstr. 15, Korntal, near Stuttgart, Germany

Filed Sept. 25, 1970, Ser. No. 75,502

Claims priority, application Germany, Oct. 6, 1969, P 19 50 286.4

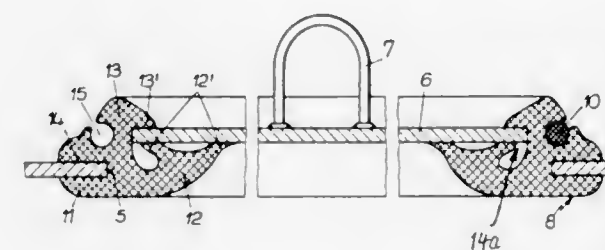
Int. Cl. B65d 53/00

U.S. Cl. 220-46 R

10 Claims

A wall portion of a vessel has an opening. An annular sealing element of elastomeric material is provided in its radially outer side with a circumferentially extending groove accommodating the marginal zone of the wall portion bounding the

opening. The radially inner side of the sealing element is provided with a similarly circumferentially extending groove extending the circumferential edge portion of a closure member for the opening. The radially inner side is further provided at opposite axial sides of its groove with radially inwardly pro-



jecting lids which sealingly and supportingly engage the closure member from opposite axial sides. The arrangement may also be reversed so that the sealing lids are located at the outer side and engage the marginal zone of the wall portion from opposite axial sides.

3,722,731

## INSET COVERALL LID FOR CONTAINERS

Robert J. McCormick, and Charles E. Fitzgerald, both of Findlay, Ohio, assignors to The Dow Chemical Company, Midland, Mich.

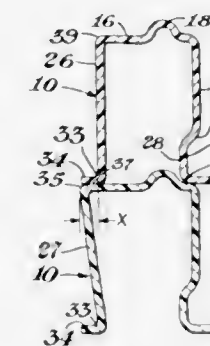
Continuation-in-part of Ser. No. 827,219, May 23, 1969, Pat. No. 3,589,552. This application May 4, 1970, Ser. No. 34,380

The portion of the term of this patent subsequent to June 29, 1988, has been disclaimed.

Int. Cl. B65d 43/10

U.S. Cl. 220-60

5 Claims



An improved thermoformed plastic inset coverall lid for use with a container for food products or the like. The lid includes inclined stacking bosses around its peripheral rim so as to prevent jamming. A locating ring about the top surface of the lid rim is employed to maintain the lids aligned in a free stack to maximize benefit of the stacking bosses.

3,722,732

## END WALL FOR DRUMS AND OTHER CONTAINERS FOR LIQUID OR SOLID STATE PRODUCTS

Karl Knut Harry Edlund, 26, Terserusvagen, Bromma, Sweden

Filed Oct. 13, 1970, Ser. No. 80,446

Claims priority, application Sweden, Oct. 17, 1969, 14269/69

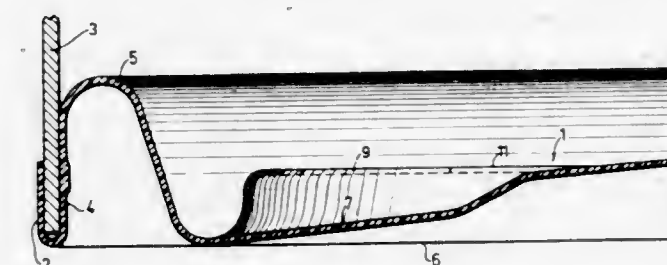
Int. Cl. B65d 7/42

U.S. Cl. 220-66

2 Claims

An end wall structure for drums and other containers adapted to hold products in liquid or solid state in which the end wall is an integrally-formed, elastic, plastic structure having a central portion which is curved inwardly with respect to a plane through the end edge surface of the drum and which is deformable from such inwardly curved configuration to an outwardly curved configuration when substantial force is ap-

plied from the interior of the drum as a result of a shock resulting from dropping the drum, etc., and which then extends toward the periphery of the end wall and toward the plane through the end edge of the drum as an outwardly curved configuration, a curved outer portion extending from the outwardly curved configuration to the inner surface of the shell of the drum and thence in a substantially straight part parallel to



the inner surface of the drum and having a sufficient curvature to resiliently take up and dampen the forces resulting from the outward deformation of the central portion and return the central portion to its original inwardly curved position and a peripheral flange portion extending from the outer portion and adapted to secure the end wall on the shell of the drum cover the edge surface of the drum.

3,722,733

## FIRE EXTINGUISHER CABINET

Richard A. Neumann, 510 - 13th Avenue, N.W., New Brighton, Minn.

Filed May 17, 1971, Ser. No. 143,971

Int. Cl. B65d 25/54

U.S. Cl. 220-82 R

1 Claim



A molded housing having an outwardly opening cavity therein with an indentation around the edge thereof and a sheet of glass positioned therein. The sheet of glass is maintained in position by overlying plates in each corner affixed to the housing by allen headed bolts or the like. The width of the indentation is increased at the corners of the glass to receive the plates and the allen screws.

3,722,734

## SAFETY RELIEF DEVICE

John H. Raidl, Jr., 6625 Millhaven Dr., Mission, Kans.

Filed Aug. 17, 1970, Ser. No. 64,182

Int. Cl. B65d 25/00

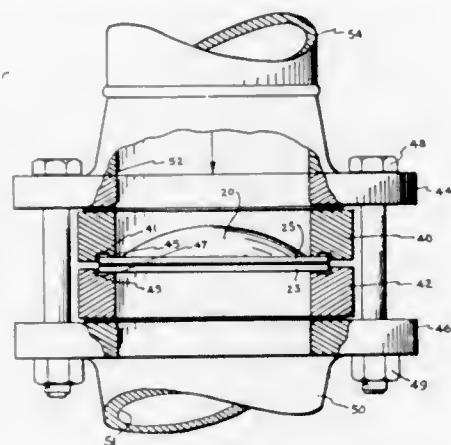
U.S. Cl. 220-89 A

8 Claims

A rupture disc and assembly is provided with a reverse acting frangible disc having a relieved burst pattern. The disc is positioned with its convex surface directed upstream and supports a diaphragm seal. When the relief pressure is reached, the disc snaps over center and assumes the configuration of a prebulged frangible disc. A burst pattern is cut or relieved in the dome of the disc to fail at a pressure less than the snap

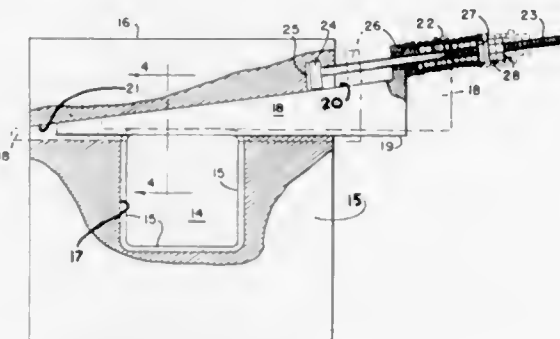


over pressure so that pressure causing snap over results in failure and bursting of the disc. To prevent premature tensile failure, a partial support member is positioned to overlay the



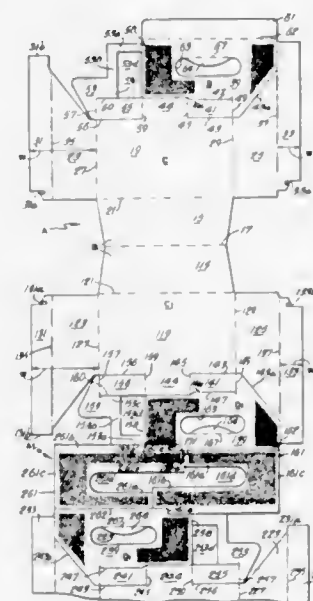
either half of a vertically adjacent container and the other half of said container extending horizontally outwardly from said vertically adjacent container beyond either end thereof or either half of either side thereof and with the adjacent upper and lower stacking elements interengaged.

**3,722,736**  
**STABILIZING DEVICE FOR LIGHTERS ON HATCH COVERS OF CARGO VESSELS**  
Jerome L. Goldman, New Orleans, La., assignor to Lash Systems, Inc., New Orleans, La.  
Filed March 17, 1971, Ser. No. 125,046  
Int. Cl. B63b 35/28, 25/02; B65d 21/02  
U.S. Cl. 220—97 B 7 Claims



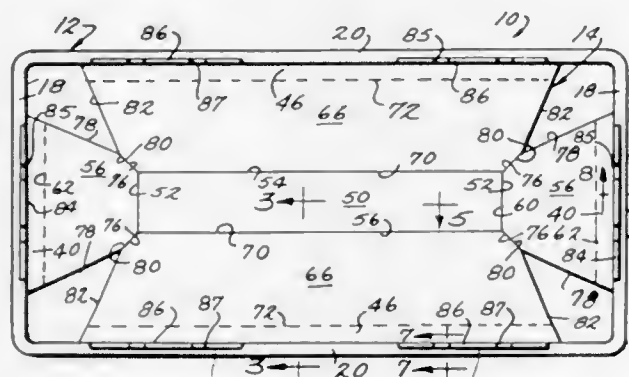
The invention involves the securing of the second or upper lighters upon lighters previously positioned on the tops of hatch covers, the first or under lighters being secured to the tops of the hatch covers by wedges in the ordinary way. Present standard lighters are constructed with four corner posts having upper cap projections of at least partial frusto-pyramidal shape and lower castings having base sockets conforming to the same shape so that the sockets of the second or upper lighters will receive the cap projections of the lower lighters. The invention involves certain spring-activated wedges carried by the socket castings or housings whereby loose fits and the shifting of lighters incident to sea conditions are avoided.

**3,722,737**  
**CARRIER FOR CONTAINERS**  
Robert G. Hughes, Rexdale, Ontario, and Lloyd B. Ruetz, Cooksville, Ontario, both of Canada, assignors to Continental Can Company of Canada Limited  
Filed Aug. 17, 1970, Ser. No. 64,268  
Int. Cl. B65d 5/48  
U.S. Cl. 220—113 23 Claims



A carrier for bottles or the like made from a single blank of paperboard by cutting, creasing, folding and gluing. The carrier

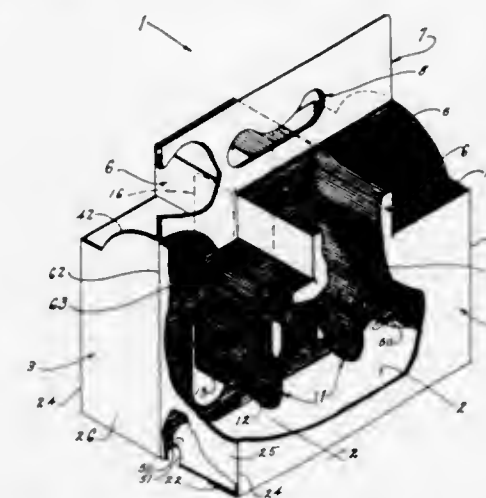
**3,722,735**  
**STACKABLE AND NESTABLE CONTAINER**  
Ralph H. Herolzer, Cincinnati, Ohio, assignor to Vanguard Industries, Inc., Cincinnati, Ohio  
Filed Jan. 22, 1971, Ser. No. 108,770  
Int. Cl. B65d 21/06  
U.S. Cl. 220—97 E 12 Claims



A stackable and nestable container of molded construction including a generally horizontally extending rigid peripheral structure having a plurality of sides defining an open top area of fixed dimensions, a plurality of side walls fixed at their upper end portions with respective sides of the peripheral structure and a bottom structure connected with the lower end portions of the side walls between a stacking position wherein the side walls extend vertically downwardly from the peripheral structure so that a plurality of like containers can be stacked one on top of the other during transportation when filled and a nesting position wherein the side walls extend downwardly and inwardly from the peripheral structure so that a plurality of like containers can be nested one within the other during storage and transportation when empty. The bottom, side and top structures of the container when in the stacking position define a containing space of generally rectangular configuration in plan bounded by two parallel ends and two parallel sides of a length approximately twice the length of the ends, the upper and lower surfaces on the container having three sets of upper and lower stacking elements permitting the container to be mounted in vertically stacked relation with a container disposed thereabove or therebelow in any of the following formations: (1) with the sides and ends thereof in vertical alignment with the sides and ends of the other container, irrespective of end-to-end orientation and adjacent upper and lower stacking elements interengaged or, (2) with either half of said container vertically aligned with

er has an open-top structure made of base, side and end walls and a central upstanding handle extending between the end walls and connected to the side walls by spaced apart straps. The handle is a sandwich structure of parts juxtaposed and adhered together and made up of main outer panels integrally connected at one end to spine-forming panels integral with the end walls. The handle is reinforced by a reinforcing flap integrally connected to one of the handle panels and intumed and sandwiched between the respective handle panels. A fold-in flap is integrally connected to the ends of each handle panel opposite the integrally connected spine-forming flap and intumed into juxtaposition therebetween. Each fold-in flap is desirably provided with a window reducing the thickness of the sandwich structure at that zone and allowing access for the end of a spine-forming flap through the windows to an adhesive connection with the underlying main handle panel. The manufacture of the carrier is completed "in the flat" and it is set-up by pulling out the sides and pushing up the base into a locking structure.

**3,722,738**  
**BEVERAGE BOTTLE CARRIER**  
William H. Wright, Cincinnati, Ohio, assignor to The C. W. Zumbiel Company, Cincinnati, Ohio  
Filed March 4, 1971, Ser. No. 121,035  
Int. Cl. B65d 75/00  
U.S. Cl. 220—113 12 Claims

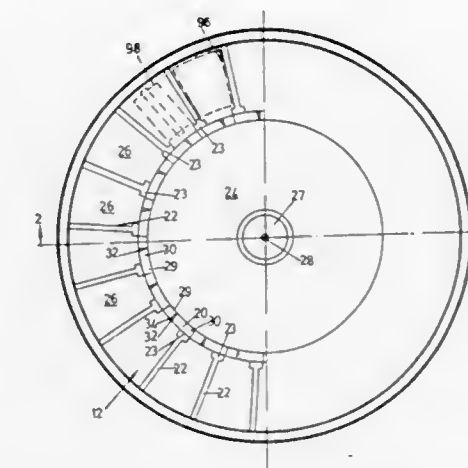


A one-piece bottle carrier formed of sheet material for confining and transporting returnable beverage bottles in group formation in which the individual bottles are isolated from one another in individual cells. The carrier comprises a container having a longitudinal, centralized partition or bottle separator including an upstanding hand grip portion. The longitudinal partition includes transverse separators which, in combination with the longitudinal partition, delineate the individual cells to prevent contact between the bottles. The carriers are furnished in flat condition and the transverse separators hingedly flip to their right angular positions relative to the longitudinal partition in an automatic manner as the assembled flat blank is erected from the flat, assembled condition to form the cells which prevent chipping or damage to the bottles.

**3,722,739**  
**PILL DISPENSER HAVING CLOCKWORK FOR PERIODIC DISPENSING**  
Martin Blumberg, Devon Valley Estates, Stellenbosch, Cape Province, Republic of South Africa  
Filed March 22, 1971, Ser. No. 126,526  
Claims priority, application Republic of South Africa, March 23, 1970, 1977  
Int. Cl. B65h 57/18 10 Claims

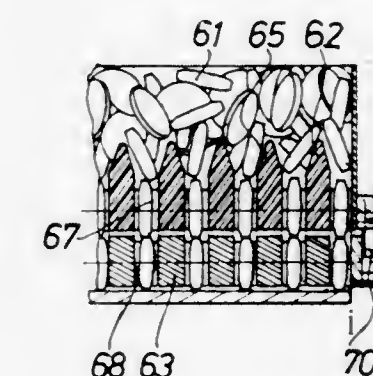
This invention relates to a pill dispenser which is convenient to carry in a pocket or handbag. The dispenser is generally cir-

cular and has internally an annular ring of pockets for the pills. Two annular members cover the ring of pockets and have windows which register to expose any one pocket. A device con-



trolled by a clockwork timing mechanism prevents movement of the inner of the members into register with a further pocket until a pre-set time interval has expired.

**3,722,740**  
**DISCRETE ARTICLE SEPARATING AND DISPENSING APPARATUS, PARTICULARLY FOR MEASURED COUNTS OF PILLS, CAPSULES AND THE LIKE**  
Hans List, Lauststrasse 51, Stuttgart-Sonnenberg, Germany  
Filed Nov. 11, 1971, Ser. No. 198,007  
Claims priority, application Germany, Nov. 12, 1970, P 20 55 598.0  
Int. Cl. B65g 65/32 38 Claims



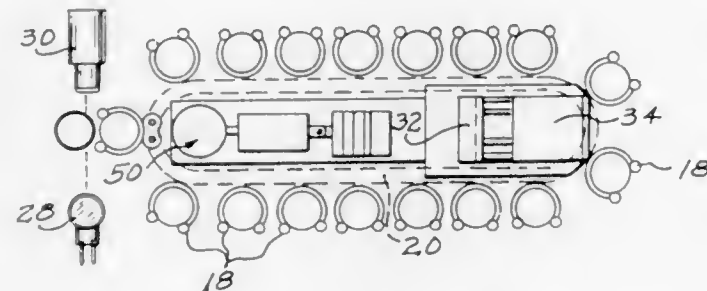
A discrete article separating and dispensing apparatus having a drum, sub-divided by row and column dividers to form receiving receptacles for articles, such as pills. Further included is a feeding grid having a plurality of feeding receptacles which are selectively in registration with the receiving receptacles which are selectively in registration with the receiving receptacles of the drum for receiving articles from interior of the drum and feeding the articles to the drum receptacles. The feeding grid extends over a lower portion of the drum and is located interior of the drum and is preferably vibrated to enhance the feeding of articles to the receiving receptacles in the drum.

**3,722,741**  
**INDEXING CAROUSEL INFEED UNIT FOR CAN ENDS**  
Wallace W. Mojden, Hinsdale, Ill., assignor to Fleetwood Systems, Inc., Countryside, Ill.  
Filed March 22, 1971, Ser. No. 126,545  
Int. Cl. B65h 7/14 11 Claims

A carousel type infeed unit for supplying can ends to a receiving station of a can processing line, or the like. The in-



feed unit employs drive means including an endless conveyor element to which is attached a plurality of carrier members capable of receiving and releasably retaining a stack of can ends. The drive means further includes an indexing arrangement capable of producing controlled, incremental movement of the conveyor element, whereby the can end carrier members may be aligned with said receiving station, at which time



an ejector arrangement is employed to engage and forcibly transfer a stack of can ends from the aligned carrier member to the receiving station. In addition, there is disclosed control means adapted for use with the infeed unit, which control means monitors the supply of can ends at said receiving station so as to attain automatic operation of the infeed unit as the need for additional can ends arises.

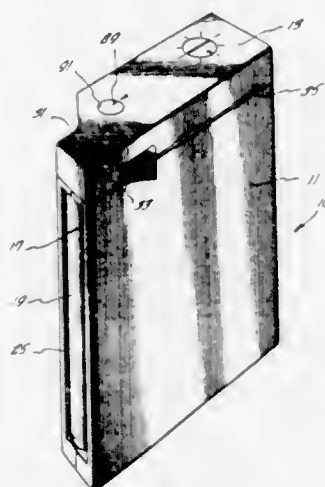
### 3,722,742 TIMED CIGARETTE DISPENSER

Keith J. Wertz, Burbank, Calif., assignor to Charles A. Larrain, Northridge, Calif.

Filed Dec. 27, 1971, Ser. No. 212,309

Int. Cl. B65b 59/00

U.S. Cl. 221-15



A timed cigarette dispenser is disclosed which is operable to eject cigarettes one at a time at predetermined time intervals. The dispenser comprises a case having a compartment for containing a quantity of cigarettes. A tubular ejector is rotatably mounted on the case for ejecting one cigarette from the compartment and blocking the passage of the others. The ejector is operatively connected, via a trip wire, to a slide which is transversely movable across the top of the casing. The manual movement of the slider is controlled by a timing mechanism which functions to periodically release the slider for ejection purposes. The slider is also operatively connected to a ratchet which is utilized as an automatic counter of the periodic time intervals. The ratchet preferably contains twenty teeth about its periphery for providing twenty time interval counts for one revolution of the ratchet. The ratchet also includes a cam lever mounted thereon which is adapted to trigger a locking mechanism for opening a cover to the case. The cam lever functions to unlock the case after each revolution of the ratchet, which is twenty time intervals, to enable the compartment to receive a new supply of cigarettes. The slider

is also integrally connected to a gear rack which is longitudinally slidable to engage an input gear of the timing mechanism for winding purposes. A time sequence cam is mounted adjacent the gear rack to adjustably limit the travel of the gear rack, thereby limiting the amount the timing mechanism can be wound.

### 3,722,743 CONVEYOR MECHANISM FOR ARTICLE DISPENSING APPARATUS

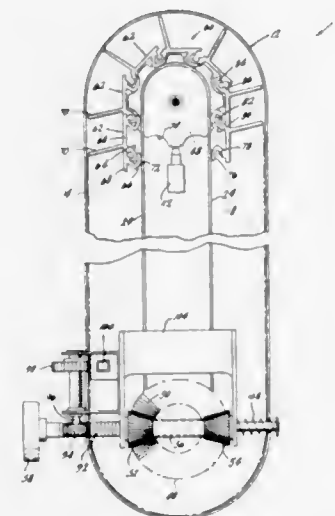
Richard C. Atchley, Charlotte, Mich., assignor to Hoover Ball and Bearing Company, Saline, Mich.

Filed March 10, 1971, Ser. No. 122,761

Int. Cl. B65g 1/12

U.S. Cl. 221-77

18 Claims



Apparatus is disclosed which is adapted for use primarily in vending machines of the coin-operated type. A conveying mechanism is provided which may be used in a variety of different styles of vending machines. The conveying mechanism includes extensible and contractable endless rails on which an endless link conveyor is mounted for travel. Each link of the conveyor is an extruded element having a tray or divider projecting from one surface. Male and female hinge portions project from the other surface at edges thereof for hingedly connecting adjacent links, and the hinge connections are arranged to travel on the rails. Sprockets are mounted adjacent to the rails, and the hinge connections are in mesh with the sprockets so that the turning of one of the sprockets will cause the conveying mechanism to travel on the rails. Various arrangements for loading and ejecting articles to and from the link conveyor are also disclosed.

### 3,722,744 SPLIT VEND GATE MECHANISM

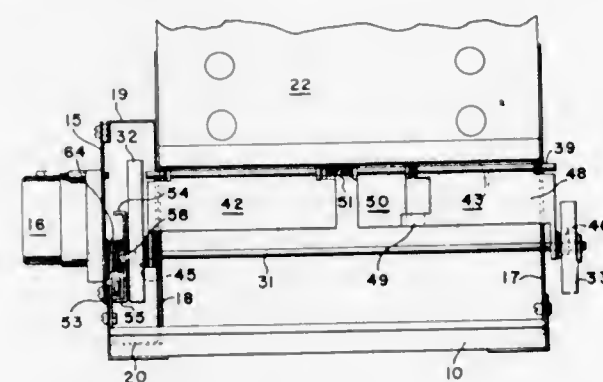
Harry R. Payne, Chattanooga, Tenn., assignor to Cavalier Corporation, Chattanooga, Ind.

Filed March 8, 1972, Ser. No. 232,779

Int. Cl. B65g 59/06

U.S. Cl. 221-129

10 Claims



A vend mechanism for back-to-back staggered stacks of cans or for a single staggered stack of bottles has opposed

vend gates for each stack. Each pair of opposed vend gates is actuated by a rotary cam and these cams are rotated by a single shaft which extends beneath the stacks of cans or bottles and acts to support the lowest can or bottle in the stack against the adjacent gate. An electric motor rotates that shaft in 90° increments for back-to-back staggered stacks of cans and rotates the shaft through 180° increments for a single staggered stack of bottles. A limit switch in the motor circuit is actuated by adjustable tabs rotated by the shaft to obtain the desired increments of rotation. One of the pairs of end gates is provided with a releasable portion when bottles are to be vended to prevent the bottle cap from sticking against the adjacent vend gate and blocking the vend mechanism.

### 3,722,745 MODULAR VENDING MACHINE HAVING TRAP-DOOR EJECTION MECHANISM

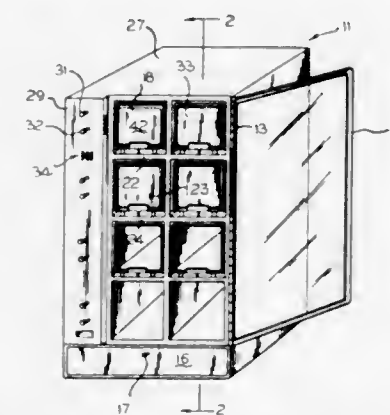
Peter James Gushi, 10400 South Larami, Oak Lawn, and Robert B. Kyts, 880 North Lake Shore Drive, Chicago, both of Ill.

Filed Nov. 2, 1970, Ser. No. 86,046

Int. Cl. G07f 11/10

U.S. Cl. 221-130

15 Claims



A modular vending machine featuring a plurality of independent compartments. Each compartment is amenable to receiving a module containing a plurality of packaged items, such as cassettes, for sale. The modules plug into the machine compartments and contain the apparatus necessary to dispense an item responsive to selection and payment by a vendee. Means are provided to assure that the packaged items are individually dispensed. A glass door front enables the purchaser to view the contents of the machine.

### 3,722,746 CIGARETTE CONTAINER AND DISPENSER

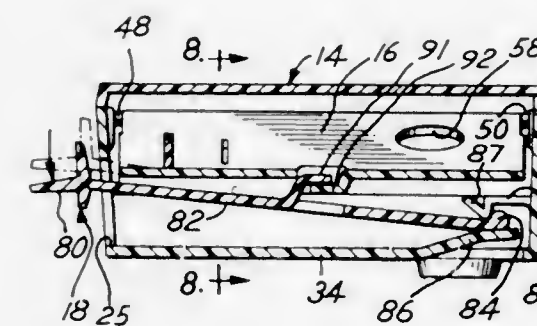
Garry Kleves, Winnipeg 13, Manitoba, Canada, assignor to K-Tel International, Inc.

Filed Dec. 17, 1971, Ser. No. 209,037

Int. Cl. A24f 15/02

U.S. Cl. 221-205

11 Claims



A cigarette container and dispenser which includes a housing having a tray for supporting cigarettes pivoted therein. An

actuator for moving the tray is pivoted in the housing transverse to the tray. Guide means are provided in the housing for cooperating with the tray for moving cigarettes one at a time from the tray to a support trough. Tilt means adjacent an end of the support trough cooperate with the support trough for tilting a cigarette so that it can readily be grasped by a user. Divider means are detachably secured to the tray to accommodate cigarette or like objects of different lengths. The housing is supported in tripod fashion so as to better adapt to non-planar surfaces.

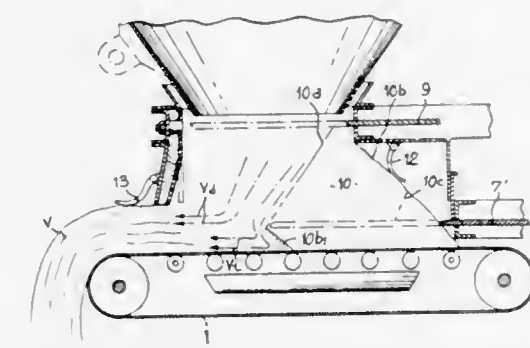
### 3,722,747 SILO DISCHARGE CONTROL

Georges Petit, 10, avenue de Salonique, Paris, France  
Continuation of Ser. No. 842,545, July 17, 1969, abandoned.  
This application Nov. 19, 1971, Ser. No. 200,634  
Claims priority, application France, July 24, 1968, 68160406

U.S. Cl. 222-56

Int. Cl. B65g 67/56

9 Claims



This specification discloses a silo suitable for granulated or powder form materials. The silo of the invention comprises a fixed shaft, at least one transfer assembly situated below said shaft and an extractor disposed beneath said transfer assembly. The silo shaft has a convergent hopper in its lower portion and there is an outlet opening in the hopper which provides for free flow of material.

At least one decompression hopper is situated in the transfer assembly and is elastically suspended so as to be displaceable in all directions relative to the silo shaft and the extractor. In this way, products leaving the silo form a constantly renewed slope at the rear end of the active part of said extractor.

### 3,722,748 CHILD-SAFE ACTUATOR-OVERCAP

Alfred W. Wakeman, Durham, and Paul M. Kotuby, Naugatuck, both of Conn., assignors to The Risdon Manufacturing Company, Naugatuck, Conn.

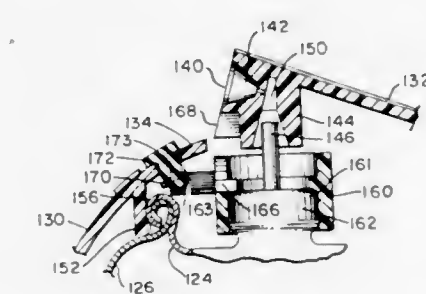
Continuation of Ser. No. 226,604, Feb. 15, 1972, abandoned.

This application March 23, 1972, Ser. No. 237,330

Int. Cl. B67d 5/22

U.S. Cl. 222-48

12 Claims



A closure assembly is disclosed for the valved end of an aerosol container, incorporating an actuator-overcap member



and a cooperating ring or collar to render the actuator inoperative in respect to the dispensing valve unless a specific relationship between the actuator-overcap and ring member is first established by rotating one relative to the other. Each member is provided with a keying element which, when in axial registry with the other, interfit to permit depression of the actuator, and each member is provided with means enabling an adult to visually recognize such registry as indicative of operative condition of the aerosol container while minimizing the change of a small child so recognizing or achieving such condition. In the preferred embodiment, registration can be effected only visually; no mechanical indication of registration is provided.

3,722,749

## AEROSOL SPRAY CONTAINER

Mitsuo Ishida, No. 9 Ageba-cho, Shinjuku-ku, Tokyo, Japan

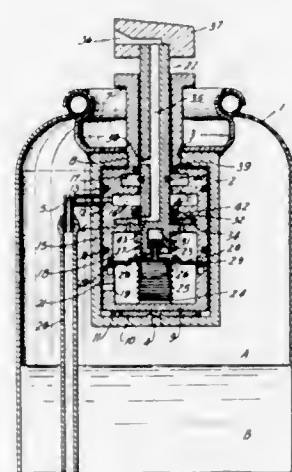
Filed Dec. 30, 1971, Ser. No. 213,991

Claims priority, application Japan, Dec. 31, 1970, 45/129662

Int. Cl. B67d 5/08

U.S. Cl. 222—61

4 Claims



An aerosol spray container has a spray valve construction which will intermittently spray measured amounts of the container contents in an automatic sequence, but which can also be operated manually, when it is desired to override the automatic operation.

3,722,750

## AEROSOL CAN CONSTRUCTION

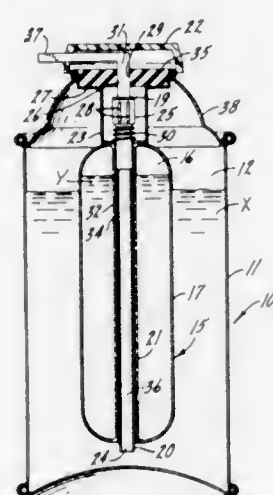
Charles F. Fox, Jr., 14738 South Clark Street, Dolton, Ill.

Filed Sept. 2, 1970, Ser. No. 68,993

Int. Cl. B65d 35/22

U.S. Cl. 222—94

7 Claims



An aerosol dispenser comprising a sealed container containing a plurality of compartments, each possessing a different

dispensable material. A dip tube positioned in the container having radial inlet openings extending through it. Rotation of the dip tube about its axis aligns the inlet openings with ports which communicate with the compartments so a selected combination of materials can be dispensed.

3,722,751

## CONTROL FOLD LIQUID EXPULSION BLADDER

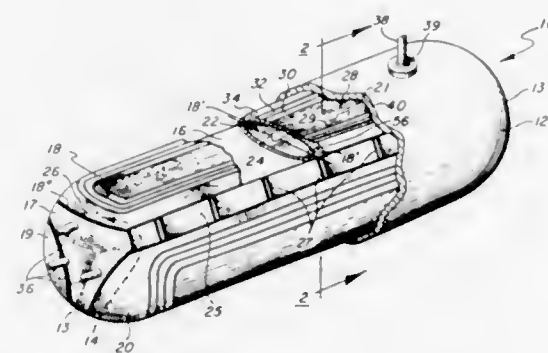
Natale R. Bisciglia, Northridge, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed Oct. 1, 1970, Ser. No. 77,156

Int. Cl. B65d 35/22

U.S. Cl. 222—94

9 Claims



A means to control the collapse of a liquid expulsion bladder is disclosed which comprises one or more bladder lobes identical in cross-section having a variable wall thickness. When external gas pressure is applied to the bladder it begins to collapse in the thin wall section, at its center, propagating towards the thicker side walls and ends. The bladder sequentially collapses towards a concave support structure with a contour matching the bladder shape, during the last stage of liquid expulsion, expulsion is complete with the bladder conforming to the concave surface of the structure free of double folds and tears.

3,722,752

## SELF-HEATING COSMETIC

Divaker B. Kenkare, North Plainfield, and Durland K. Shumway, Piscataway, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Oct. 20, 1969, Ser. No. 867,897

Int. Cl. B67d 5/60; A61k 7/14, 7/100

U.S. Cl. 222—145

9 Claims

A packaged self-heating cosmetic, such as a shaving cream, includes separate thermogenically reactive thio-di-alkanol or thio-di-lower alkoxy alkanol reductant and an oxidant, which converts the reductant to the corresponding sulfoxide or sulfone, which serves as a nonionic surface-active or solubilizing constituent of the heated cosmetic. Means are provided for dispensing the packaged reductant and oxidant from separate zones and mixing them together so that they react and heat pressurized shaving cream or other cosmetic product constituents with which the thermogenic reaction mixture is contacted. The reducing agent employed is preferably 2,2'-thiodiethanol or thiodiethoxyethanol and the oxidizing agent is aqueous hydrogen peroxide.

3,722,753

## DISPENSING ATTACHMENT FOR PRESSURIZED CONTAINERS

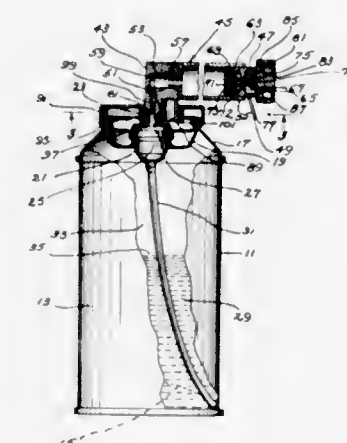
Gilbert de Wayne Miles, Ossining, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 487,968, Aug. 31, 1965, which is a continuation of Ser. No. 325,209, Nov. 15, 1963, which is a continuation-in-part of Ser. No. 139,274, Sept. 19, 1961. This application Dec. 1, 1966, Ser. No. 611,499

Int. Cl. B67d 5/62

U.S. Cl. 222—146 HA

11 Claims



A process and device for dispensing fluid material from a pressurized container at a modified temperature and including means for transferring to the fluid material heat from an exterior source such as hot water.

3,722,754

## PLASTIC CONTAINER-DISPENSER WITH OUTER CARTON CONTAINER

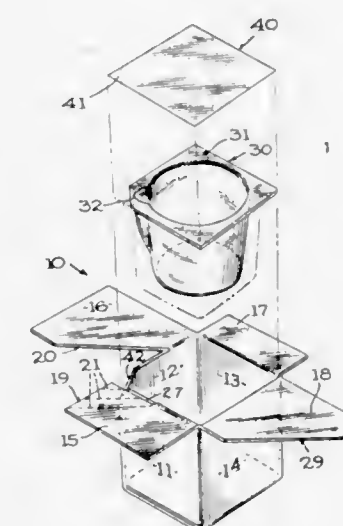
Glenn E. Struble, Fairfield, Ohio, assignor to Diamond International Corporation, New York, N.Y.

Filed April 14, 1971, Ser. No. 133,979

Int. Cl. B67d 5/06

U.S. Cl. 222—183

7 Claims



A liquor portion dispensing-package for air line service use provided with light-weight and easily disposable characteristics comprising a composite container having an inner liquid containing member, a sealing cover thereover and an outer folding carton member. The inner container member being a semi-rigid plastic cup and the sealing cover being of flexible sheet material.

3,722,755

## APPARATUS FOR AUTOMATICALLY FILLING A PRE-DETERMINED AMOUNT OF POWDERED GRAIN SUBSTANCE

Shigeo Nakashima, 7-7, Koaza Tenjinmori, Oaza Morimoto, Mukomachi, Otokuni-gun, Kyoto-fu, Japan

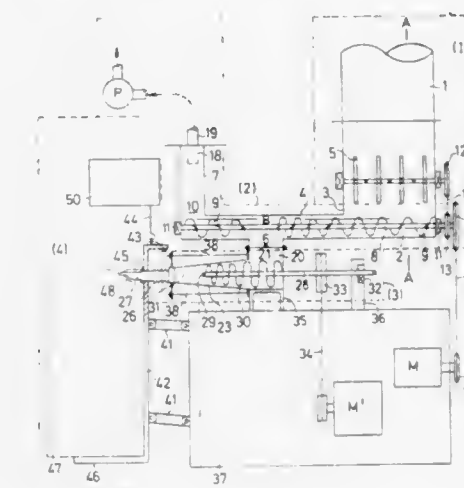
Filed Sept. 11, 1970, Ser. No. 71,506

Claims priority, application Japan, Jan. 31, 1970, 45/8632; Nov. 15, 1969, 44/91507

Int. Cl. B65d 83/06

U.S. Cl. 222—193

5 Claims



Apparatus for automatically filling a pre-determined amount of powdered granular material into a bag. The apparatus comprises a screw feeder provided within a tubular conveyor case, the walls of which are flexible. A smooth transfer of powder is effected by vibrating the walls of the conveyor case. In addition, to transfer the substance from the conveyor a pulsed compressed air stream is jetted at the substance being transferred near the other end of the conveyor case. Within the conveyor case are provided a mixing chamber, and a supply tube connected to measuring apparatus via a flexible tube, so that when a pre-determined amount of powdered material is filled in the bag, the filling operation automatically comes to a stop.

3,722,756

## METHOD AND APPARATUS FOR STORING AND DISPENSING EFFERVESCENT BEVERAGES

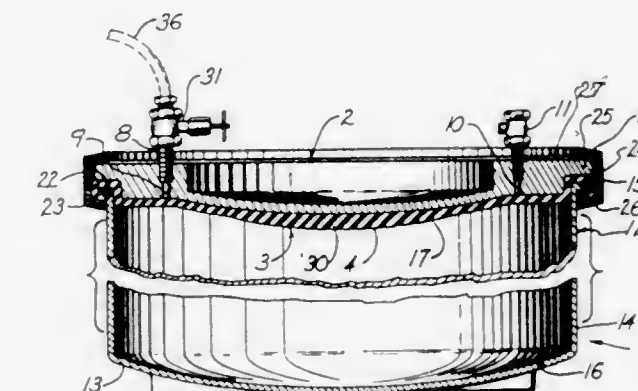
Roy A. Cramer, Jr., c/o Roycraft Industries, 8100 Paseo, Kansas City, Mo.

Filed July 19, 1971, Ser. No. 163,885

Int. Cl. B65d 37/00

U.S. Cl. 222—212

9 Claims



Apparatus for storing and dispensing effervescent beverages such as sparkling or effervescent wines and beverages for human consumption and the method of handling same. The apparatus includes a container having a head member engaged by peripheral edge portions of a resilient and distensible



bladder having a web portion in engagement with one surface of the head member until a gas under a selected super-atmospheric pressure is forced between the head member and the resilient member to expand same to receive a selected liquid under a pressure to fill the space in the bladder and expel the gas through a valve. The liquid is maintained under super atmospheric pressure during storage by the bladder and also during dispensing of the contents, a glass at a time, by opening a dispensing valve or spigot.

3,722,757

# PUMPING DEVICE WITH SELF CENTERING SPHERICAL SEATING SURFACES

Jens Karl Adolf Dahlgren, Stockholm, Sweden, assignor to Stenberg-Flygt AB, Solna, Sweden

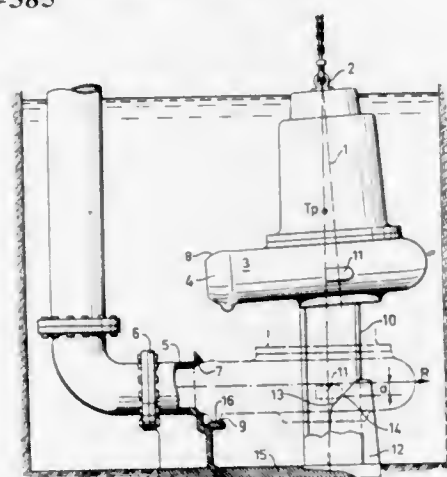
Filed Aug. 28, 1970, Ser. No. 67,719

Claims priority, application Sweden, Aug. 29, 1969, 12018/69

Int. Cl. B67d 5/40

U.S. Cl. 222—385

3 Claims



A pump unit immersible in the liquid of a well, comprising a liquidtight motor, a pump housing with an outlet connection and guiding means which, on lowering of the pump unit, guide the outlet connection into the vicinity of a fixed coupling unit of the outlet pipe. The pump unit having a seating while the outlet connection has a tapered aperture fitting thereto, so that the connection, after the unit has been essentially lowered, can be brought up against the coupling unit, into sealing engagement with the seating, essentially in the axial direction of the coupling unit. The seating surfaces being spherical to allow for slight misalignment.

3,722,758

# APPARATUS FOR DEPOSITING VISCOUS LIQUIDS

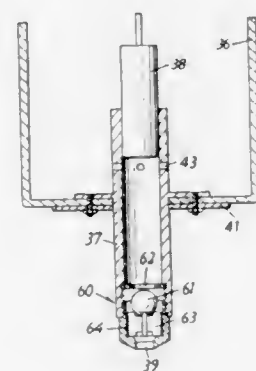
Christopher John Lewis Warren, 50, The Ridgeway, and John William Milross, 6, Tolpits Lane, both of Watford, England

Continuation-in-part of Ser. No. 798,050, Feb. 10, 1969, abandoned. This application Feb. 8, 1971, Ser. No. 113,381

Int. Cl. B67d 5/50

U.S. Cl. 222—385

8 Claims



Toffee dispensing apparatus comprises a pump plunger reciprocable within a cylinder, the clearance between the

plunger and cylinder being such that the liquid provides the sole sealing medium between the plunger and cylinder, and a discharge valve from the cylinder in which a valve member is movable vertically to seal a discharge aperture from the cylinder and is drawn against the aperture by suction, there being no external means biasing the valve member against the aperture.

3,722,759

# EXPLOSION PROOF AEROSOL CAN

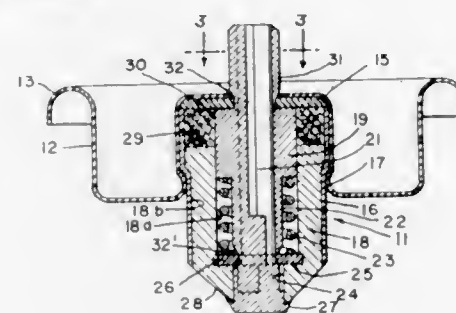
Joseph P. Rodden, 60 Jarrett Lane, Hatboro, Pa.

Filed Nov. 17, 1971, Ser. No. 199,501

Int. Cl. B65d 83/14

U.S. Cl. 222—396

15 Claims



Explosionproof aerosol can. Depressing spray head against coil spring surrounding delivery tube in normal operation moves discharge port in said tube below surrounding valve body, permitting discharge of container product. Excess pressure acts on large area annular face of surrounding valve body and on coil spring to compress yielding resilient composition in valve housing, thus moving valve body so as to expose discharge port.

3,722,760

# DISPENSING VALVE HAVING POSITIVE TILT STEM

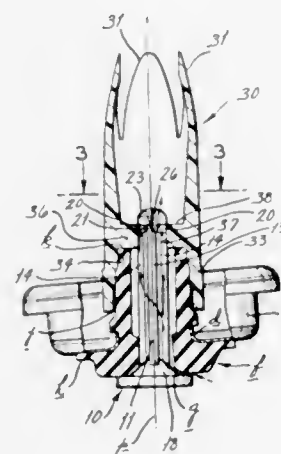
Richard C. Hug, St. Louis, Mo., assignor to Clayton Corporation, St. Louis, Mo.

Filed Dec. 23, 1971, Ser. No. 211,593

Int. Cl. B65d 83/14

U.S. Cl. 222—402.22

4 Claims



A dispensing valve of the type having a tubular elastic seal, utilizes a molded solid dispensing stem seated within it, and an external nozzle. Four ribs on the stem, fitted in a bore of the nozzle, assure tilt movement of the stem equal to that of the actuator. Two opposite ribs terminate within the bore, in end surfaces which permit cross-flow, into the base of an outflow groove which extends inward between the intermediate ribs. On the projecting ends of these are retention portions, shaped like half acorns, which flex into the groove to permit snap assembly.

3,722,761

# DEVICE FOR TRANSPORTING PRE-MEASURED AMOUNTS OF FEED

Paul Ickling, Borkenwirth 82, Borken, and Hubert Ridder, Am Schwanenhof 27, Raesfeld, both of Germany

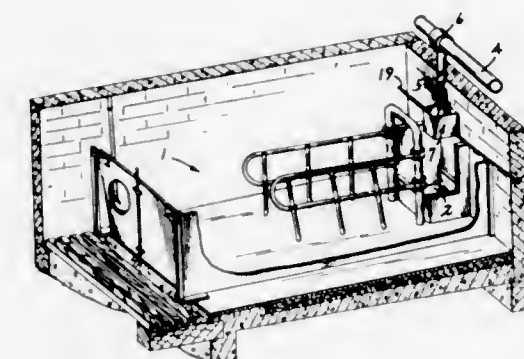
Filed May 3, 1971, Ser. No. 139,623

Claims priority, application Germany, June 24, 1970, P 20 31 056.9; Feb. 10, 1971, P 21 06 333.2

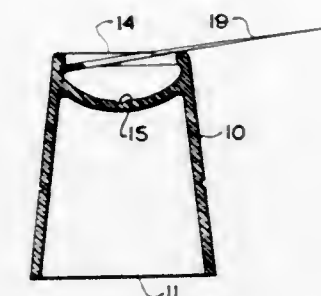
Int. Cl. A01k 5/00

U.S. Cl. 222—409

11 Claims



The invention refers to a device for transporting premeasured amounts of granular feed to feeding stations by means of a horizontal feed transport tube above the feeding station and a drop-chute connected to the feed transport tube, whereby premeasured amounts are conveyed to the feeding station via the drop-chute.



on the closed end and a small annular intumed rim or flange. The rim prevents a needle from slipping out when applying

pressure and the dome permits a person having a relatively long finger-nail to use the thimble without breaking their nail.

3,722,764

# HEAD LOAD BALANCER

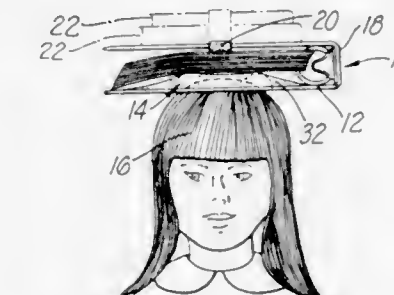
John E. Kallander, 1316 Milvia St., Berkeley, Calif.

Continuation-in-part of Ser. No. 1,704, Jan. 9, 1970, abandoned. This application June 22, 1971, Ser. No. 155,425

Int. Cl. A45f 3/00

U.S. Cl. 224—5 R

5 Claims



A head load balancer to be worn on the top of the head and including a load support having head engaging means automatically conforming fairly rigidly to the shape of the top of the wearer's head without any mechanical internal mechanism adjustment. The head engaging means comprises a plurality of circumferentially spaced elements engageable with the top of the wearer's head at circumferentially spaced points pivotally moveable independently of each other and yet flexibly interconnected and having substantial relative movement to each other so as to automatically conform to the wearer's head.

3,722,765

# CAR TOP RACK

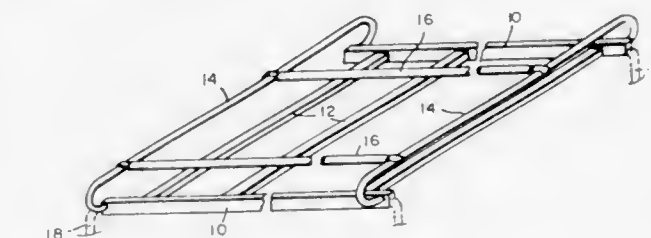
Kenneth W. Binding, Woburn, Mass., assignor to Beatrice Foods Co., Chicago, Ill.

Filed Nov. 19, 1971, Ser. No. 200,429

Int. Cl. B60r 9/04

U.S. Cl. 224—42.1 E

20 Claims



An oiler spout for use in electrical installations comprising a metal inner tube surrounded by a plastic outer shell. The exposed outer end of the tube is formed into a curved tip. The inner end extends into the spout base but not in contact therewith. The shell has a threaded inner portion mounted on the base so that the metal tip of the spout is insulated from the oiler body.

3,722,763

# SEWING THIMBLE

William Heinz, 2425 Bowness Rd., N.W., Calgary 42, Alberta, Canada

Filed April 22, 1971, Ser. No. 136,330

Int. Cl. A41h 31/00

U.S. Cl. 223—101

1 Claim

A sewing thimble is provided with an inwardly formed dome

A rack for the top of the vehicle comprising longitudinally spaced parallel bars containing transversely spaced holes, spaced parallel bars situated between the longitudinally spaced bars non-rotatably received in said holes, spaced parallel rails having reversely bent ends mounted at opposite sides of the longitudinally spaced bars with the bent ends sprung into the holes in said longitudinally spaced bars, said rails



being supported by said bent ends above the plane of the longitudinally extending bars and being rotatable into the plane of the longitudinally extending bars, and tie rods connecting the rails operable to hold them erect or to hollow them to be rotated into the plane of the longitudinally extending bars.

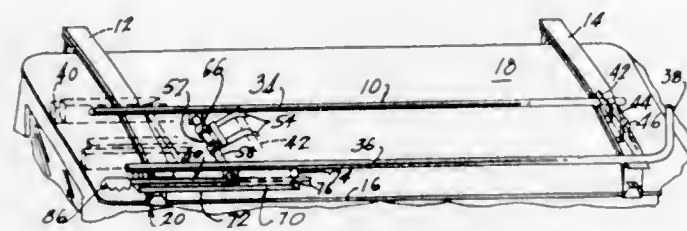
### 3,722,766 LADDER RACK

Wade H. Barrineau, and Anthony Osborne, both of Atlanta, Ga., assignors to Southern Cross Industries, Inc., Atlanta, Ga.

Filed Feb. 12, 1971, Ser. No. 114,771  
Int. Cl. B60m 9/00

U.S. Cl. 224-42.1 F

13 Claims



Capable of handling 24 ft. or 28 ft. extension ladders on top of a telephone truck the present ladder rack is easily assembled and installed without special modification of the vehicle by attachment of a pair of bow supports secured to the vehicle rain gutter on each side. Longitudinal ladder support members are attached to the bow supports and a movable ladder rung finger catch arrangement is operated by a spring steel handle which latches in place to move and clamp the ladder tightly in place on the rack. Ladder abutment feet have curved faces which are reversed from one another to assist in removing the ladder from the truck and from placing it thereon while standing alongside. To assist in positioning the ladder the spring steel handle is operated to push the ladder rearward against the fixed feet by means of the rung engagement fingers and then the handle is relatively shiftable to be spring biased into a notch, or without the ladder the fingers are retracted against the vehicle top spring tensioned by the handle.

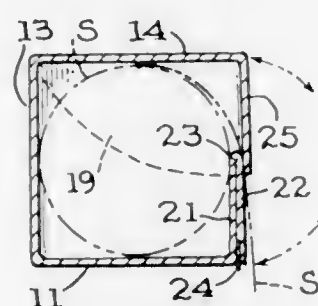
### 3,722,767 SAFETY CUTTER-EDGE BOX

Glenn E. Struble, Fairfield, Ohio, assignor to Diamond International Corporation, New York, N.Y.

Filed April 14, 1971, Ser. No. 133,980  
Int. Cl. B26f 3/02

U.S. Cl. 225-49

4 Claims



Cutter edge box for containing and dispensing web sheet material such as waxed paper, plastic film, metal foil and the like while in roll form. The box being provided with a cutter edge to facilitate severing off a web portion of said sheet material after a desired length thereof has been withdrawn from the box. The cutter edge being so arranged on said box that in the original package said cutter edge is in a shielded or unexposed position whereby safety is afforded to anyone or

anything coming into contact with the box and after the box is opened by the consumer the cutter edge is freely pivotable to a cutting position and back to the shielded position. The box being further provided with lid structure for clamping the sheet material against the support panel for the cutter edge during use thereof.

### 3,722,768

#### APPARATUS FOR OPENING FILM CASSETTES

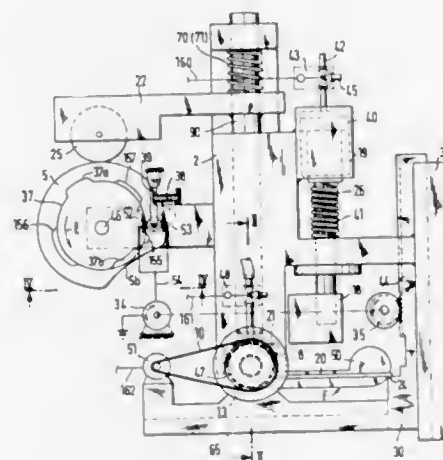
Oskar Schnellmann, Zurich, Switzerland, assignor to Gretag Aktiengesellschaft, Regensburg, Switzerland

Filed Sept. 24, 1971, Ser. No. 183,340  
Claims priority, application Switzerland, Sept. 25, 1970, 14267/70

Int. Cl. B26f 3/00

U.S. Cl. 225-105

6 Claims



A device for opening film cassettes which have a housing formed with two spool chambers and a web therebetween, comprising, two stub spindles, a clamping means and ejector combined therewith, and impacting means, all movable relative to one another by drive means. The drive means are controlled first to move the two stub spindles into axial alignment in clamping position on a take-up spool of a film cassette. Thereafter the cassette is moved to engage the take-up spool housing in the clamping means and the impacting means is then activated to break the cassette into two parts one of which is retained in the clamping means. The spindles and take-up spool are now separated from the clamped take-up spool housing which is then ejected by the ejector. Thereafter the spindles can be opened to remove the spool and the process can be repeated.

### 3,722,769

#### TENSION CONTROL SYSTEM

Everett Lloyd Aplet, Everett, and Thomas J. Reynolds, Seattle, both of Wash., assignors to Western Gear Corporation, Seattle, Wash.

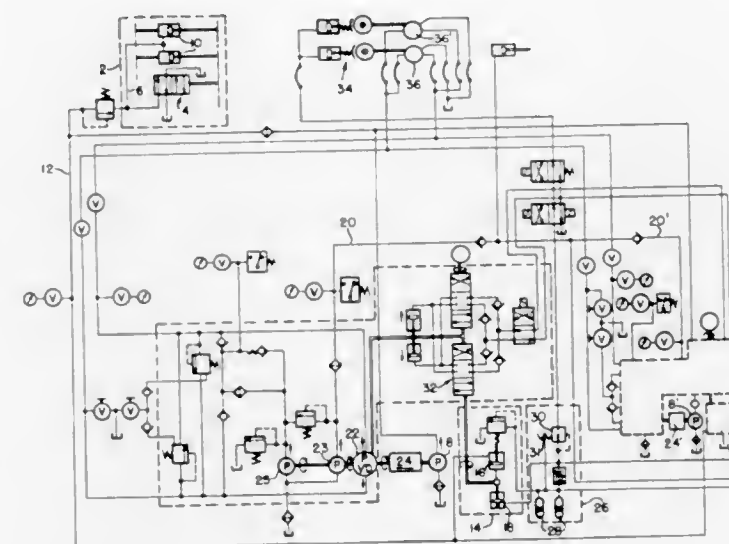
Filed Feb. 11, 1971, Ser. No. 114,461  
Int. Cl. B65h 23/22

U.S. Cl. 226-25

10 Claims

A tension control system for use in conjunction with an apparatus for feeding an elongated object such as a pipe or wire including a variable speed motor means for controlling the speed at which the object is being fed, and a means for preselecting the range of tension to which the object may be

safely subjected. The system further includes a means for accurately measuring the tension to which the object is sub-



jected and varying the speed of the feed in accord therewith to maintain the tension within the predetermined limits.

### 3,722,770

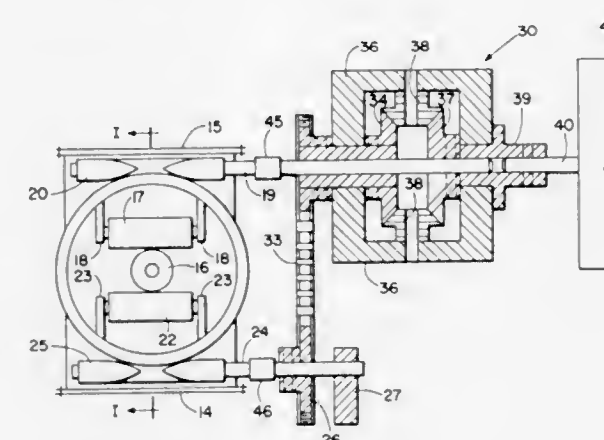
#### METHOD AND APPARATUS FOR CONTROLLING THE PATH OF AN ELONGATE ARTICLE

Jean Bouffard, Lachine, Quebec, and Yvon Onil Dionne, Chateauguay Center, Quebec, both of Canada, assignors to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Dec. 6, 1971, Ser. No. 204,938  
Int. Cl. B65h 25/02

U.S. Cl. 226-45

2 Claims



Apparatus and method for controlling the passage of a cable, or similar elongated article, through a treatment zone. Sensing devices bear on opposite sides of the article and move with the article when the article departs from the desired path. The detectors are connected in opposition so that if the detectors move in opposite directions, as when the diameter or thickness, of the article changes no output occurs. An output only occurs when the detectors move in unison in the same direction, as when the article departs from the desired path. Thus the apparatus is insensitive to cable diameter and does not require recalibrating for changes in size of cable treated.

### 3,722,771

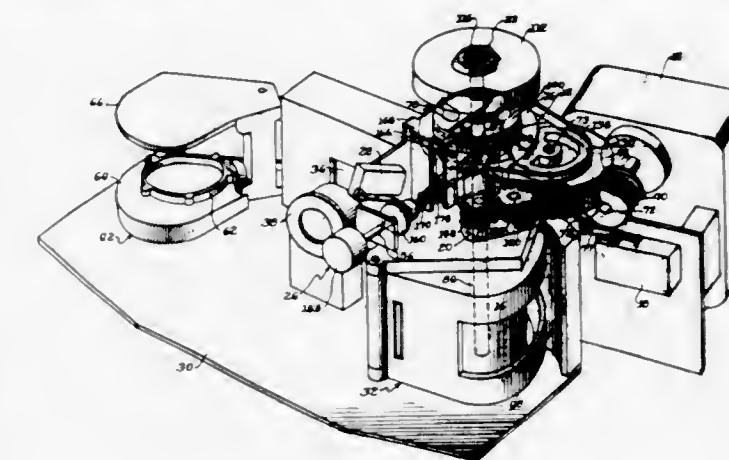
#### FILM STRIP PROJECTOR

Robert E. Petterec, Lindenhurst, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Nov. 16, 1971, Ser. No. 199,223  
Int. Cl. B65h 17/04

U.S. Cl. 226-51

5 Claims



A film strip projector having a powered drive means selectively operable to feed the film by an intermittent drive in the forward projection direction and operable to rewind the film by a continuous drive at a rate faster than the intermittent drive.

### 3,722,772

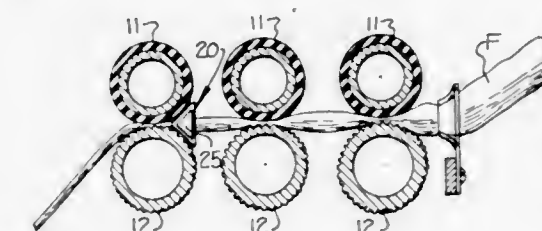
#### MAGNETICALLY POSITIONED GUIDE MEANS

Thad T. Flowers, Fort Mill, and William I. Stuart, Chester, both of S.C., assignors to Springs Mills, Inc., Fort Mill, S.C.

Filed March 29, 1971, Ser. No. 128,960  
Int. Cl. B65h 23/04

U.S. Cl. 226-196

3 Claims



Guide means of a predetermined shape for being positioned in advance of and substantially in the nip of a pair of juxtaposed rotating feed rolls, e.g., drafting rolls of a textile drafting apparatus, for receiving a strand of material and guiding the strand of material through the rolls. At least one of the rolls has at least an outside surface of magnetically conductive material. The guide means has magnetic means associated therewith of a predetermined magnetic strength for attraction to the magnetically conductive surface of the roll for holding the guide means in position in the nip of the pair of rolls to prevent falling out and allowing free rotation of the rolls and free movement of the guide means longitudinally of the pair of rolls under the influence of the strand of material.

### 3,722,773

#### JAM DETECTOR

Geerardus G. Plate, 1321 Humphreys Crescent, and Nicolaas Van Hattem, 1168 Homewood Drive, both of Burlington, Ontario, Canada

Division of Ser. No. 888,498, Dec. 29, 1969, Pat. No. 3,673,879. This application June 19, 1972, Ser. No. 263,923  
Int. Cl. B65h 25/00

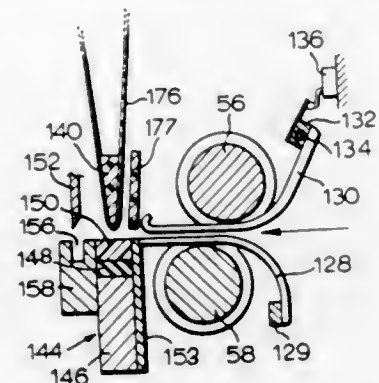
U.S. Cl. 226-25

4 Claims

A jam detector for use in bag-making machines having a pair of opposed draw rollers with circumferential recesses



formed therein comprising a plurality of stationary fingers mounted for alignment with the recesses formed in one roller for guiding stock material, a plurality of fingers mounted for



pivotal movement into and out of the recesses formed in the other roller, and limit switch means operatively connected to said pivotally-mounted fingers for stopping said draw rollers within a cycle upon jamming of said stock.

3,722,774

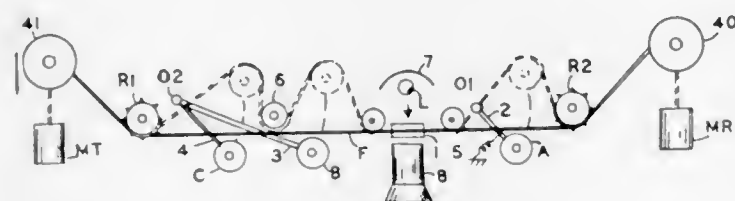
## MOTION PICTURE PROJECTOR MEANS

Abraham Scheinderman, 2164 Regent Court No., Westbury; Karl Rudzitis, 16 Blanchard Street, West Babylon; Arthur Brandsdorfer, 8 Bartel Place, Huntington, and George Wechsler, 1122 Harrison Street, North Bellmore, all of N.Y. Filed Dec. 30, 1971, Ser. No. 214,087

Int. Cl. G03b 1/22

U.S. Cl. 226—62

4 Claims



A motion picture projector in which the film is loaded in a straight line. A first roller forms an input loop and is then retracted. Second and third rollers wrap the film about the sound pick-up. Input and output sprockets are automatically de-clutched so that the sprockets are freely rotatable during the loop forming. In projection mode, the sprockets are driven and a claw device is engaged with automatic framing. Instantaneous stopping to view a single frame in fully framed position is provided by means for disengaging the claw from the film without stopping its linear oscillating motion, and at the same time de-clutching the sprockets. Control means are provided for simultaneously re-engaging the sprockets and re-engaging the film claw in the film without losing the framing.

3,722,775

## EQUIPMENT FOR LAYING OR RECOVERING SUBMARINE CABLES

Marcello Sarracino, Milan; Antonio Ferrantino, Monza, and Andrea Borroni, Carimate, all of Italy, assignors to Industrie Pirelli Società per Azioni, Milan, Italy

Filed Feb. 4, 1972, Ser. No. 223,687

Claims priority, application Italy, Feb. 12, 1971, 20455 A/71

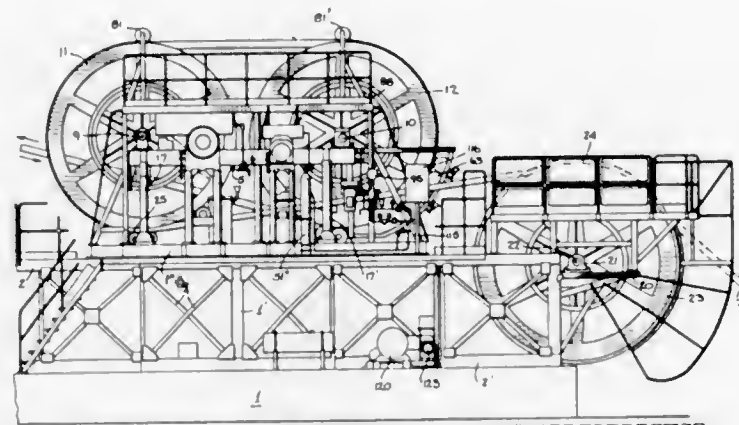
Int. Cl. B65h 17/22

U.S. Cl. 226—100

24 Claims

Apparatus for laying or recovering a submarine cable in which the cable is fed to or from a storage device by a pair of drive pulleys intermediate the storage device and a pulley for guiding the cable into the water, such pulleys rotating in

planes at an angle to each other, having braking and hydraulic motor units for braking or driving them and being mounted on a frame permitted slight oscillating movement in the direction of the cable laying. Pressure wheels maintain the cable in the driving pulley races, and the cable extends from the storage device to and part way around the drive pulley farther from



the storage device, then to and part way around the other drive pulley and then to the guide pulley. The braking units are water cooled and air operated and a hydraulic system controls the hydraulic motors. A dynamometer measures the pulley supporting frame movement, and instrumentation for indicating cable tension, speed and movement and braking pressure is included.

3,722,776

## ROLL SYSTEM FOR TENSIONING ELONGATED WORKPIECES

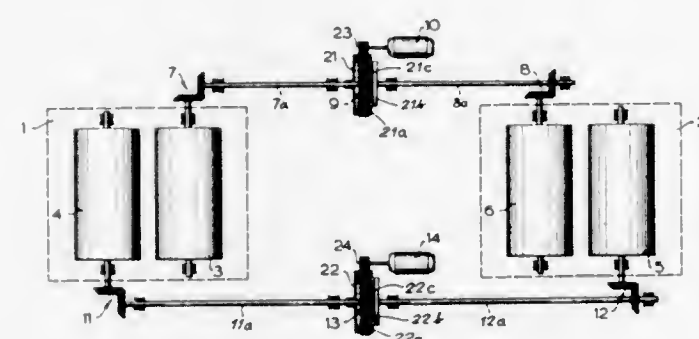
Oskar Noe, Mulheim/Ruhr, Germany, assignor to Fa. BWG Bergwerk-und Walzwerk-Maschinenbau G.m.b.H., Duisburg, Germany

Filed May 3, 1971, Ser. No. 139,575

Int. Cl. B65h 23/08

U.S. Cl. 226—195

8 Claims



A roll system for tensioning elongated workpieces such as metal bands or webs of other material, wire and the like, comprises a pair of roll supports or stands, each provided with a plurality of rolls in mirror-symmetrical relationship with the rolls of the other stand. The mirror-symmetrical rolls are interconnected by a differential transmission, e.g. a planetary gear arrangement which is coupled with a respective hydraulic motor receiving fluid from a variable-capacity hydraulic pump common to all of the motors for establishing the necessary torque at the rolls.

3,722,777

## APPARATUS FOR MAKING ELECTRICAL HEATING MATS

Gerhard Ziemek, 3 Hannover; Friedrich Schatz, 3012 Langenhagen, and Karoly Aust, 3 Hannover, all of Germany, assignors to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany

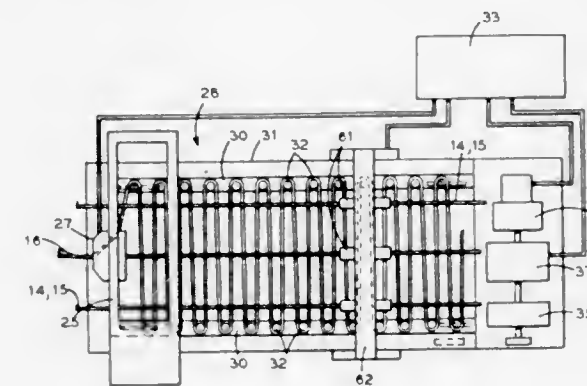
Filed March 15, 1971, Ser. No. 124,051

Claims priority, application Germany, March 18, 1970, P 20 12 766.6

Int. Cl. B23c 37/04

U.S. Cl. 228—4

7 Claims



Apparatus for the continuous production of electrical heating mats constituted of a continuous linear electrical heating element looped to form parallel portions together with tapes extending longitudinally of the looped portions of the heating element and arranged to lock the transverse portions of the heating element in spaced relation to each other. Such apparatus includes a looping mechanism for continuously looping the linear heating element as it is fed to the looping mechanism, together with means for controlling the looping mechanism to render the successive loops taut, and means for feeding a pair of tapes longitudinally of the looped element with the tapes on opposite sides thereof and including means for crimping one of the tapes at spaced intervals to receive a portion of the heating element therein and means for securing the tape portions between successive loops of heating element, together.

3,722,778

## TUBE JOINING MEANS

Roderick G. Rohrberg, Torrance, and Don E. Harvey, Inglewood, both of Calif., assignors to North American Rockwell Corporation

Continuation of Ser. No. 707,819, Feb. 23, 1968, abandoned.

This application Dec. 14, 1970, Ser. No. 98,089

Int. Cl. B23k 1/20

U.S. Cl. 228—13

20 Claims



A portable carriage adapted to be mounted on a tubular workpiece is used to perform cutting operations followed by in place welding operations on such workpiece using two subassemblies interchangeably mounted on the carriage, one for cutting and one for welding. The carriage is rotatable around the stationary workpiece or may be held stationary while the workpiece rotates. After preliminary trimming, fusion welding is progressively accomplished in a circular path to join the abutting ends of the workpiece components.

3,722,779

## COMBINATION FOOD CONTAINER AND IMPLEMENT FOR EXTRACTING THE CONTENTS

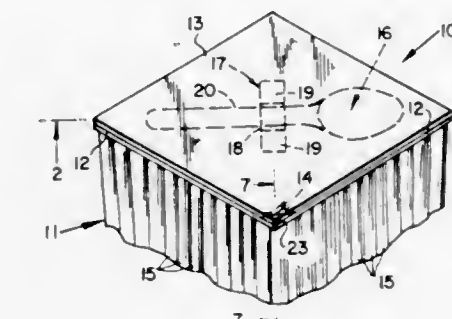
Henry M. Chang, Bronx, N.Y., assignor to First Dynamics, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 815,935, April 14, 1969, Pat. No. 3,623,632. This application Oct. 14, 1970, Ser. No. 80,713

Int. Cl. B65d 77/30

U.S. Cl. 229—1.5 C

9 Claims



The food container includes a container body having its upper circumferential edge provided with a continuous flange. An implement, for example, a spoon, is removably secured against the underside of the container cover and is preferably positioned along a maximum dimension of the cover. The cover is sealed to the body flange except for a graspable tip or tab which is so positioned that, when it is torn back it tears toward the center of the cover in a direction at right angles to the said maximum dimension and thus maintains the implement parallel with the container bottom and prevents it from being tilted into the container contents.

3,722,780

## GABLE TOPPED CONTAINER AND PAPERBOARD BLANK

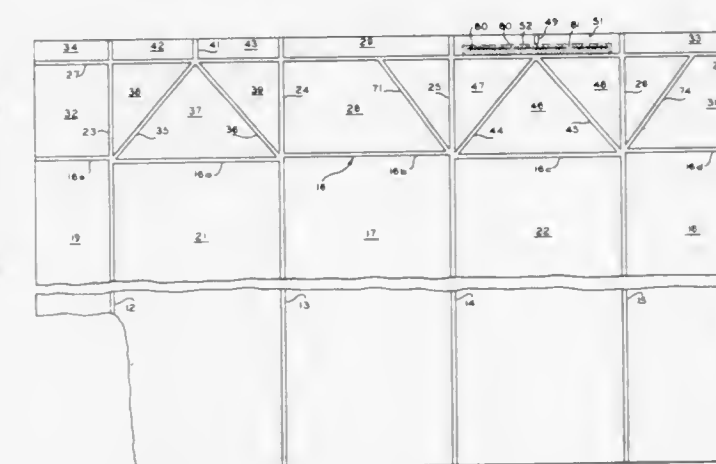
George E. MacEwen, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 51,495, July 1, 1970. This application Jan. 25, 1971, Ser. No. 109,177

Int. Cl. B65d 5/72

U.S. Cl. 229—17 G

13 Claims



A gable topped container and a paperboard blank for forming the containers constructed with ridge panels that are a substantially common width and with an end closure member having an interrupted, weakened line of severance at an elevation higher than the lowermost edges of the ridge panels with the uppermost edges of the roof panels and end closure member being at a substantially common elevation. The weakened line of severance is coated with a material being of a type for preventing sealing of the ridge panels to the portion of the end closure member covered by said material coating.



3,722,781

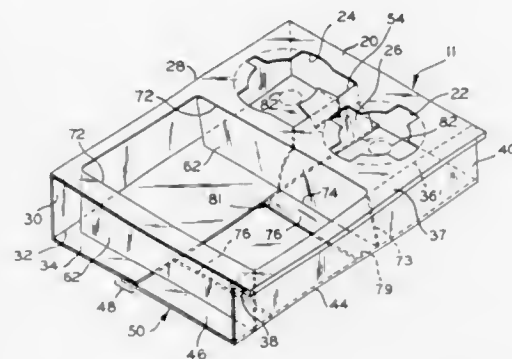
## FOLDABLE CARRY-OUT SERVING TRAY

William H. Page, Toledo, Ohio, and George A. Spillson, Monroe, Mich., assignors to Consolidated Packaging Corporation, Chicago, Ill.

Filed June 28, 1971, Ser. No. 157,098  
Int. Cl. B65d 5/48

U.S. Cl. 229—28

9 Claims



A collapsible tray foldable from one sheet of material such as paperboard having two partly overlapping bottom panel sections, opposite side panels and a top panel which is cut out to form cup retaining apertures and a large rectangular sandwich retaining aperture; which cut-outs provide first hinged struts parallel to the side panels and having end hinged flaps connected between the overlapping bottom panel sections, and second hinged struts transverse to the side panels having end hinged flaps which may engage notches which lock in the edge of the upper overlapping bottom panel section, and one of whose ends abuts one side panel, for locking the tray in its erected position. One side edge of this one side panel also may have a reinforcing flange therealong to prevent bending of the tray.

3,722,782

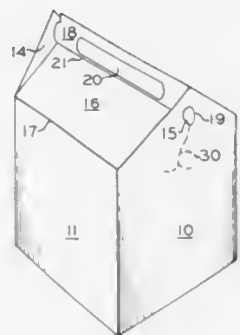
## FOLDING CARTON

Stafford D. Collier, Glen Elly, Ill., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 5, 1970, Ser. No. 78,120  
Int. Cl. B65d 5/10

U.S. Cl. 229—39 R

9 Claims



A gable top carton by the shape of its top closure provides a hand grip slot of adequate size and an improved engagement of top closure locking structure. The carton can be readily collapsed and erected.

3,722,783

## CARTON

Arthur Rous, Englewood, N.J., assignor to Grand City Container Corporation, North Bergen, N.J.

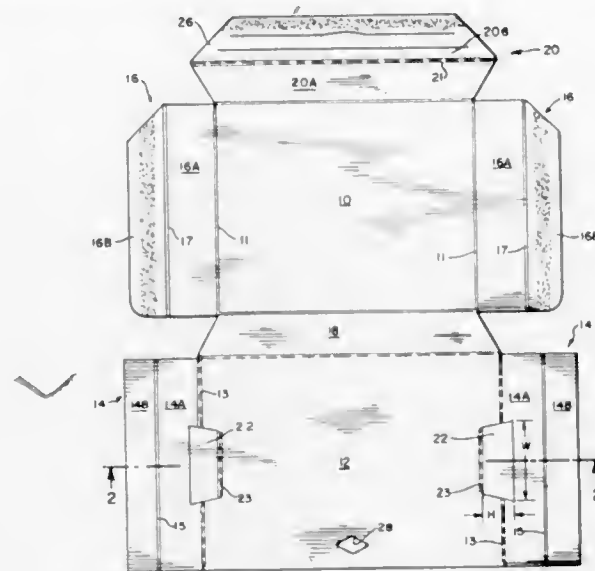
Filed March 27, 1972, Ser. No. 238,634  
Int. Cl. B65d 5/02

U.S. Cl. 229—40

8 Claims

A carton for packaging an article is formed from a single piece blank and includes a bottom wall and two inner end

flaps which are hingedly connected to the bottom wall and which are oblique with respect to the bottom wall. A pair of tabs are formed in the bottom wall of the carton. The tabs are hingedly connected to the bottom wall such that the axis of



rotation of each tab is spaced inwardly from the axis of rotation of each inner end flap. In the preferred embodiment, the tab is normally positioned perpendicular to the bottom wall of the carton. In an alternate embodiment, the tab forms an angle with the bottom wall of the carton.

3,722,784

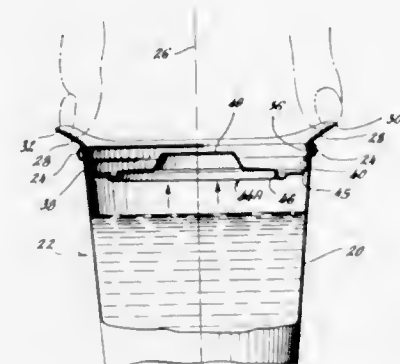
## CONTAINER CLOSURE

Paul W. Harper, 125 Lenore Ln., Centereach, N.Y.

Filed Jan. 8, 1971, Ser. No. 104,902  
Int. Cl. B65d 43/00, 5/64

U.S. Cl. 229—43

25 Claims



A closure adapted to seal a container while being easily removable therefrom. Sealing means is provided for substantially hermetically sealing the container from its external environment. The sealing means is arranged to mate with the inside walls of the container and maintain wedging and sealing contact therewith. Closure releasing or lever means is connected to the sealing means for providing sufficient mechanical advantage to break the seal between the sealing means and the container upon the application of sufficient downward force to the lever means, whereby the closure is readily removable from the container.

3,722,785

## RE-USABLE HANDLE BAG

Samuel Joseph Rivman, White Plains, N.Y., assignor to W. R. Grace & Co., Duncan, S.C.

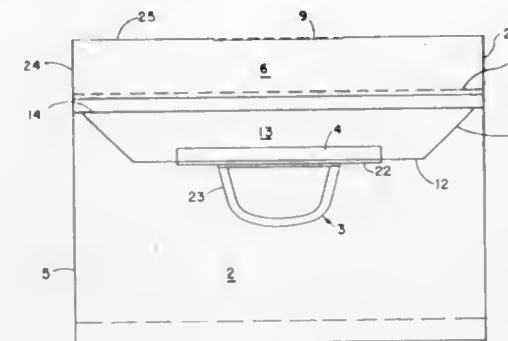
Filed Oct. 21, 1971, Ser. No. 191,308  
Int. Cl. B65d 33/06, 33/16

U.S. Cl. 229—54 R

7 Claims

The re-usable handle bag has both a closure flap and a tapered handle flap extending from opposed sides of the

mouth of the bag. A handle is attached to the handle flap and can be inserted through a receiving aperture in the closure



flap to close the bag and leave the grip portion of a handle exposed for convenient carrying.

3,722,786

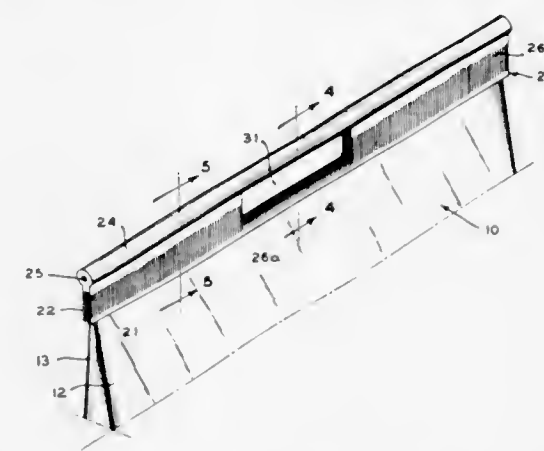
## COMBINED CLOSURE AND HANDLE FOR A THERMOPLASTIC BAG AND METHOD OF PRODUCING SAME

James B. Honn, Arcola, and Paul E. Jacobs, Tuscola, both of Ill., assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed April 6, 1971, Ser. No. 131,615  
Int. Cl. B65d 33/06, 33/10

U.S. Cl. 229—54 R

7 Claims



A combined closure and handle for heavy-duty thermoplastic bags constituted by a continuous beaded strip having integral depending spaced skirts. The closure member is extruded from thermoplastic material and includes longitudinally extending and spaced depending skirts; the abutting front and rear wall mouth portions of the bag are received between said depending skirt and sealing is effected therethrough transversely of the bag and across the full width thereof. By punching or similar operation a hand-hold aperture is produced centrally of the bag within the confines of the sealed skirt portions of the closure member and through the enclosed front and rear wall portions of the bag. The present invention relates to heavy-duty thermoplastic bags and to a novel method for closing and sealing the open mouth thereof after the bag will have been filled.

3,722,787

## MAILING FORM WITH INTEGRAL REPLAY ENVELOPE ATTACHED

Joseph J. Buchheit, Bayside, N.Y., assignor to Reply-O-Letter Company, Inc., New York, N.Y.

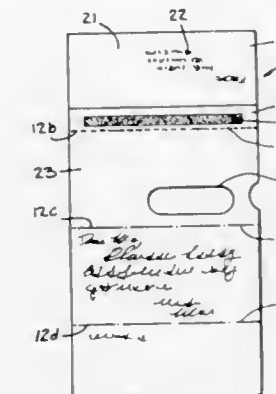
Filed Feb. 8, 1971, Ser. No. 113,141  
Int. Cl. B65d 27/04

U.S. Cl. 229—92.3

7 Claims

A mailing form having a plurality of fold lines therein to provide a plurality of rectangular panels, a first of said panels

containing a cut-out portion which registers upon folding with a space on an adjacent panel provided for addressee information, the entire form in at least partially folded condition adapted for insertion into a window envelope with the addressee space and registered cut-out portion aligned with the win-



dow of the envelope. The mailing form also includes a third panel disposed between the first and second panels and adapted for return addressee information and constituting the front face of a severable replay envelope, the reverse side of the reply envelope being constituted by the second named panel.

3,722,788

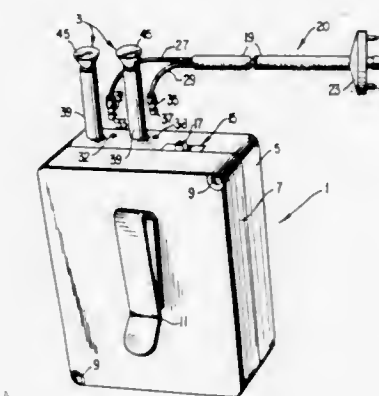
## ELECTRIC SHOCK PROTECTION DEVICE

Michael F. Petrecz, King of Prussia, Pa., assignor to Little Warrior Co., Upper Merion Township, Pa.

Filed Jan. 29, 1971, Ser. No. 110,975  
Int. Cl. B68b 11/00

U.S. Cl. 231—2 E

6 Claims



An electric shock protective device having a circuit with a vibrating coil and high voltage prods telescopically positioned on a compact housing having the battery power supply and the vibrating coil circuit therein.

3,722,789

## CENTRIFUGE AND SELF-POSITIONING TUBE HOLDER THEREFOR

Eugene R. Kennedy, Miami, Fla., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Jan. 31, 1972, Ser. No. 222,043  
Int. Cl. B04b 9/12

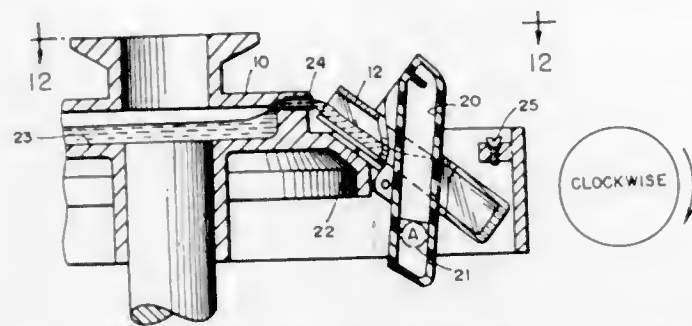
U.S. Cl. 233—26

27 Claims

A centrifuge having a rotor equipped with a plurality of tube holders, each holder being provided with a movable weight which shifts into different stations, depending on the direction of rotation of the rotor, to alter the center of mass of the



holder and thereby pivot the same into different selected positions. Such a construction is particularly useful in a mixing and



decanting centrifuge in which the centrifuge tubes are to assume one operating position for filling and/or centrifuging and another operating position for decanting.

3,722,790

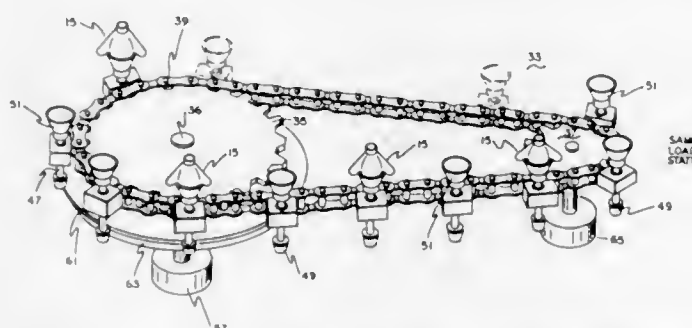
### SEQUENTIAL CENTRIFUGAL TREATMENT OF LIQUID SAMPLES

Samuel Natelson, Chicago, Ill., assignor to Robe Scientific Corporation, Santa Ana, Calif.

Filed July 30, 1969, Ser. No. 845,992  
Int. Cl. B04b 9/12

U.S. Cl. 233-26

18 Claims



System for the sequential treatment of liquid chemical samples comprising the steps of depositing the samples in a series of top-like containers having a peripheral side chamber. The containers are placed on a belt and moved past a centrifugal field wherein the containers are rotated. The containers are then removed at a terminal zone and the heavier sample component remains in the side chamber as the lighter components flow to the bottom of the container.

3,722,791

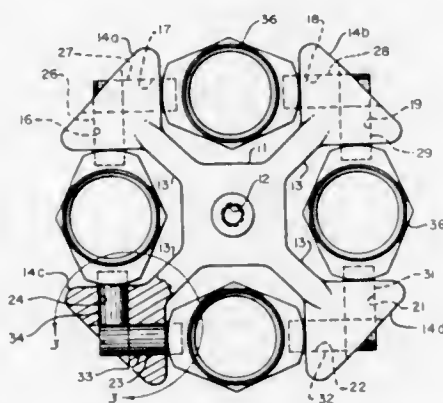
### CENTRIFUGE ROTOR WITH REMOVABLE TRUNNION PINS

Herschel E. Wright, Santa Clara, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed April 3, 1972, Ser. No. 240,440  
Int. Cl. B04b 9/12

U.S. Cl. 233-26

3 Claims



A centrifuge rotor having a core with outwardly extending support arms having removable trunnion pins for supporting a carrier.

3,722,792

### TAPE PUNCH

by Frederick J. Lawrence, executor, San Francisco, Calif., and Joseph L. Lawrence, deceased, late of San Francisco, Calif., assignors to Cycle Equipment Company

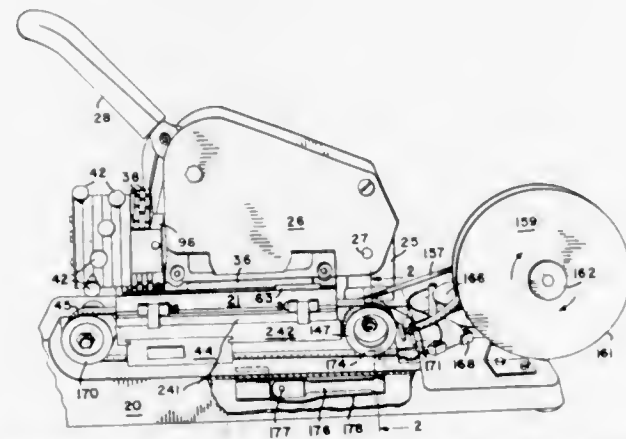
Continuation of Ser. No. 727,759, May 6, 1968, abandoned.

This application Nov. 30, 1970, Ser. No. 93,756

Int. Cl. G06k 1/10

U.S. Cl. 234-38

7 Claims



A manually operable tape punch for producing code perforations in tape in which a manually operable punch member operates a perforating mechanism including a rectangular array of die holes and a corresponding rectangular array of perforating pins. The pins are yieldably held in a raised position by spring plate means cooperating with all the pins and yieldably mounted by means of a selected plurality of compression springs. The selection of the perforations to be punched may be carried out by a code card by a plurality of adjustable members which are carried by the punch member and associated with the remaining rows of pins of said rectangular array.

3,722,793

### VOTING SYSTEM

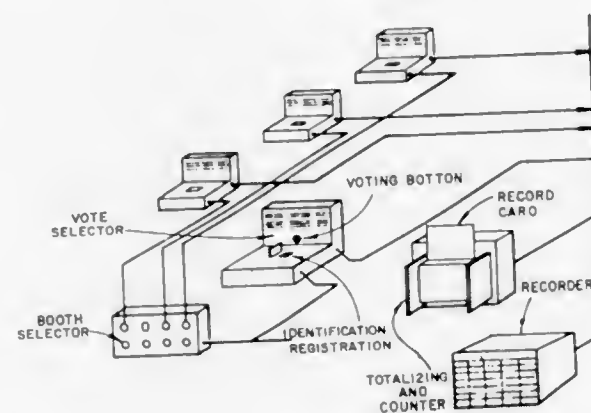
Samuel Aronoff, 1729 S. Wooster Street, Los Angeles, Calif.

Filed June 18, 1969, Ser. No. 834,283

Int. Cl. G07c 13/00

U.S. Cl. 235-50 A

3 Claims



A voting system embodying a registration machine operable by the voter through a voter's identification card and controllable by the precinct officer for voters use; upon registration said registration machine electrically releases a voter's selection panel for voting; a multiplicity of voting panels are electrically coupled to a single totalizer which sequentially totalizes the vote from each panel for every voting choice on respective specialized counters from which a single card record is instantly obtainable that is suitable for quick totalization of vote from a given area; an electrically interconnected recorder automatically records the exact vote of each anonymous voter.

3,722,794

### VALUE INPUT MECHANISM FOR TEN KEY CALCULATING MACHINES

Gerhard Weskamp, Thalfingen, Germany, assignor to Walter Buromaschinen GmbH, Gustetten, Germany

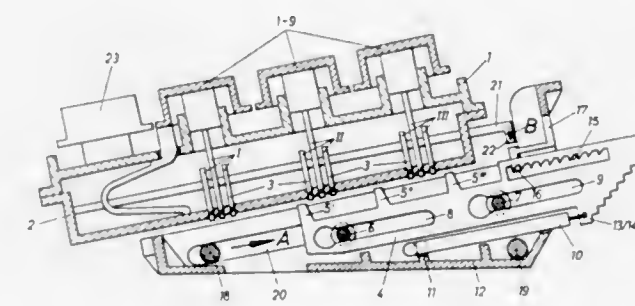
Filed Feb. 16, 1972, Ser. No. 226,666

Claims priority, application Germany, March 23, 1971, P 21 13 918.4

Int. Cl. G06c 29/00, 7/02, 25/00

U.S. Cl. 235-60 TK

9 Claims



The value entering device for a calculating machine has a carriage transversely slideable beneath a key board having nine digit keys arranged in three rows of three keys each. There is a key rod for each key with the rods being positioned in groups of three corresponding to the key rows. There are ten longitudinally moveable slide members mounted in the carriage with each slide member having three stops corresponding to the three groups of key rods so that pressing a key in the key board positions a key rod in the path of its corresponding stop to position the slide member responsive to the value of the depressed key.

3,722,795

### DIVISION CONTROL MECHANISM

Gian Piero Barozzi, and Giancarlo Horeschi, both of Crema, Italy, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

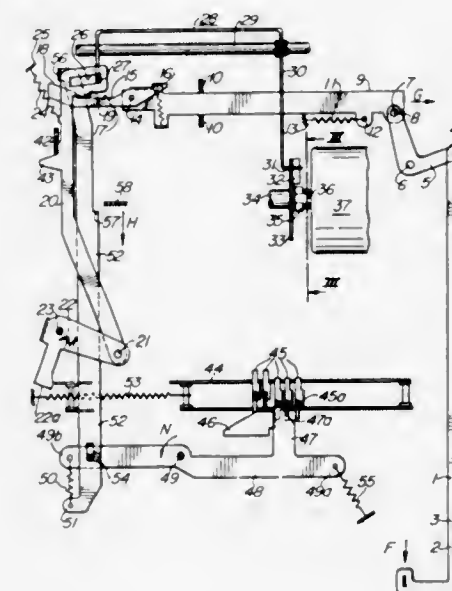
Filed Feb. 8, 1971, Ser. No. 113,586

Claims priority, application Italy, Feb. 11, 1970, 20470 A/70

Int. Cl. G06c 23/00

U.S. Cl. 235-62 F

4 Claims



A device for momentarily stopping a calculating machine comprising clutch for releasably connecting a motor shaft with the main shaft of the machine. A link mechanism to be actuated by the last step of the tabulating stroke of a carriage in division operation is provided to cause the clutch to operative-ly connect the motor shaft with the main machine shaft only

3,722,796

### SLIDE RULE CURSOR

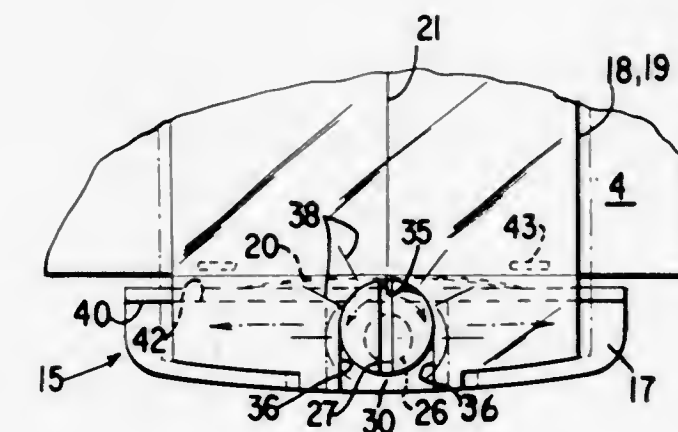
Jack Fairchild Fleming, Morris Plains, N.J., assignor to Sterling Plastics Co., Mountainside, N.J.

Filed May 11, 1971, Ser. No. 142,267

Int. Cl. G06g 1/02

U.S. Cl. 235-70 B

6 Claims



A slide rule is provided with a cursor comprising two transparent face plates, each carrying a hairline indicator, which are joined together and hold an end slide member between them at each end of the cursor by connecting means which include an eccentric adjusting member that can be displaced incrementally by a user of the slide rule so as to displace one of the face plates relative to the other for precise realignment of the positions of the hairlines relative to scales on both sides of the rule.

3,722,797

### CONVERGENT-DIVERGENT EJECTOR EXHAUST NOZZLE

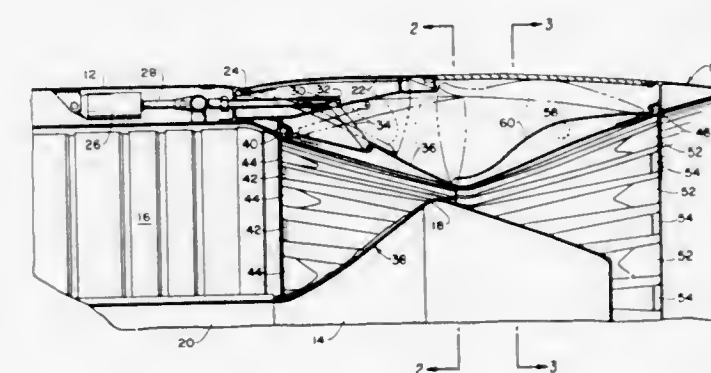
William R. Hammill, Van Nuys, Calif., assignor to CCI Aerospace Corporation, Van Nuys, Calif.

Filed Nov. 4, 1970, Ser. No. 86,728

Int. Cl. B63h 25/46; B64c 15/10

U.S. Cl. 239-265.17

7 Claims



A variable exhaust nozzle for an air breathing propulsion system having an independently actuatable convergent-divergent iris leaf section surrounding a fixed cut-off plug, a self-actuating blow in door assembly located within the exterior nozzle shell adjacent the convergent section.



3,722,798

## COMBINED AERATOR-SPRAY ASSEMBLY

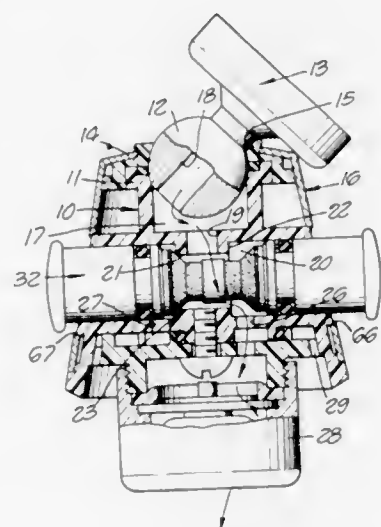
James H. Bletcher, Pacific Palisades, and Jack K. Rauh, Hacienda Heights, both of Calif., assignors to trust of Ralph E. Bletcher, deceased; Frederick Robertson; Gary Robertson; Lenora Bucknell; Richard J. Bletcher; Marcia Liston, trustee; Daniel E. Liston; Carl A. Liston; James H. Liston; Hazel Brondum; Pearl Bletcher and Ernest H. Bucknell, part interest to each

Filed Oct. 29, 1970, Ser. No. 85,102

Int. Cl. B05b 1/16

U.S. Cl. 239—428.5

7 Claims



There is disclosed herein a swinging spray assembly including both aerator and spray devices. A push button valve is provided to divert water through either an aerator or through openings around the aerator to provide a spray. The valve assembly includes collar members formed of a resilient material and which are formed in a manner such that in either position of the valve fluid pressure tends to maintain the valve in a selected position.

3,722,799

## ADJUSTABLE SHOWER HEAD ASSEMBLY WITH DIVERTER VALVE

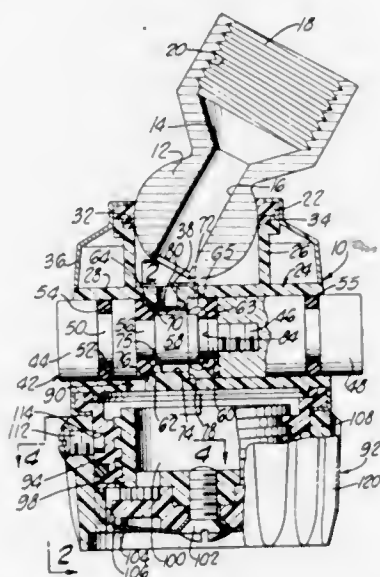
Jack Rauh, Hacienda Heights, Calif., assignor to Modern Faucet Manufacturing Company, Los Angeles, Calif.

Filed June 16, 1971, Ser. No. 153,578

Int. Cl. A62c 31/00

U.S. Cl. 239—443

5 Claims



A shower head assembly having an upper and lower portion, wherein the upper portion has a diverter valve mechanism slidably mounted therein, and the lower portion of the assembly is in threaded contact with the upper portion and moveable with respect thereto, thereby altering the exit apertures of the shower head assembly and adjusting water flow therefrom.

3,722,800

## SHUTTLE-TYPE DIVERTER VALVE FOR USE WITH HANDLE-CONTROLLED SPRAY

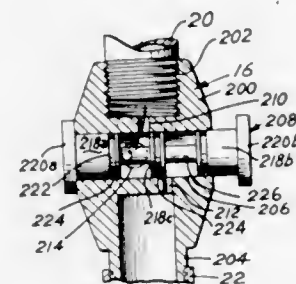
Harold Shames, Ardsley; Sidney J. Shames, Briarcliff Manor, both of N.Y., and John F. Logan, Pequannock, N.J., assignors to Melard Manufacturing Corp. by said Logan, Bronx, N.Y.

Division of Ser. No. 830,216, May 28, 1969, Pat. No. 3,637,143. This application May 27, 1971, Ser. No. 147,323

Int. Cl. B05b 11/00

U.S. Cl. 239—447

2 Claims



A handle-controlled spray that is normally in closed condition is provided in combination with a shuttle-type diverter valve that selectively provides flow along two paths one leading to the spray and the other to a shower head. The diverter valve controller is of a construction to cooperate with portions of the valve body to define two transfer flow chambers that insure discharge flow along desired paths depending upon the position of the controller.

3,722,801

## FUEL INJECTOR

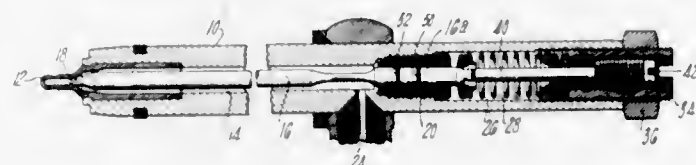
Marcel Chapuis, Versailles, France, assignor to Stanadyne, Inc., Hartford, Conn.

Filed Sept. 11, 1970, Ser. No. 71,597

Int. Cl. F16k 21/10

U.S. Cl. 239—533

4 Claims



An inwardly opening pressure actuated liquid fuel injector is provided with a valve mounted in an apertured valve guide for reciprocation. The bearing portion of the valve is provided with a pair of longitudinally spaced V-shaped peripheral grooves which are closed by the mating bearing surface of the aperture of the guide and serve to hydraulically center the valve in the aperture and minimize mechanical friction during reciprocation.

3,722,802

## AGRICULTURAL SPREADERS

Hubert Kreienbaum, Stadthohn, Germany, assignor to Wilhelm Kemper KG, Stadthohn, Germany

Filed Feb. 19, 1971, Ser. No. 116,941

Claims priority, application Germany, Feb. 20, 1970, P 20 07 871.1; April 22, 1970, P 20 19 273.8

Int. Cl. A01c 3/06

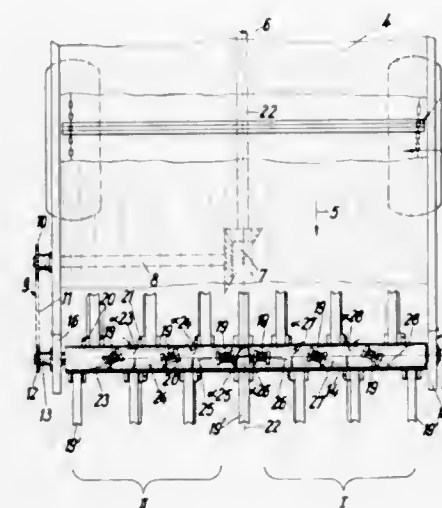
U.S. Cl. 239—658

10 Claims

An implement for spreading manure, hay, straw, and the like; it comprises a cylindrical carrier body or drum to which

there are pivoted tines which swing freely on axes at an angle to the direction of the cylindrical axis of the carrier drum and about which the carrier drum is rotatably driven. Material

the impeller axis, thereby attaining improved balanced and non-vibrating pumping operation, this pump being operable



picked up by the tines, from a load to be spread, on rotation of the carrier drum, is propelled both outwardly and axially of the carrier drum.

3,722,803

## COMBINED PUMP AND CUTTING APPARATUS

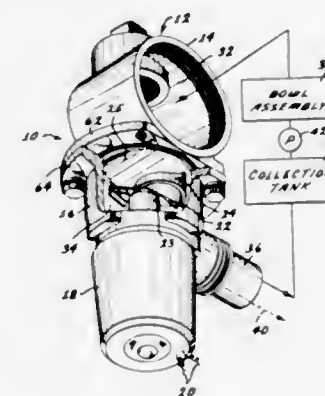
James M. Kemper, Los Angeles, Calif., assignor to Monogram Industries, Inc., Los Angeles, Calif.

Filed May 28, 1971, Ser. No. 147,810

Int. Cl. B02b 1/00

U.S. Cl. 241—46.02

7 Claims



A combined pumping and cutting apparatus for a toilet system where sanitary napkins and other nondissolving materials are sheared as they pass through the apparatus. The apparatus includes two chambers separated by a tube which directs the material to and cooperates with a rotor to cause shredding by a scissor action; the scissor action being accomplished by the stationary tube and the rotating rotor.

3,722,804

## ROTARY PUMP HAVING SWASH TYPE IMPELLER

Paul I. Petersen, Stamford, Conn., assignor to Dorr-Oliver Incorporated, Stamford, Conn.

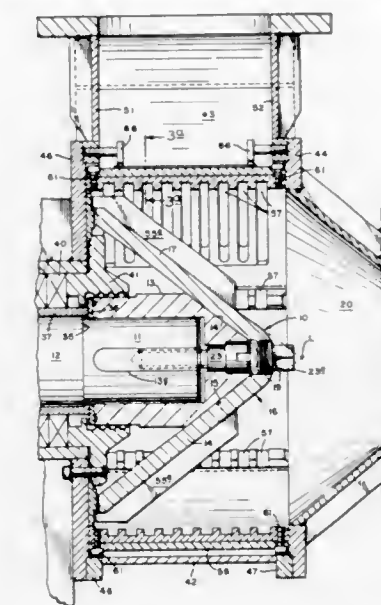
Filed Feb. 22, 1971, Ser. No. 117,529

Int. Cl. B02c 23/00

U.S. Cl. 241—46.11

16 Claims

A rotary pump constructed for non-clogging operation with a swash plate type impeller of angle-shaped cross-section, the angle shape presenting a ridge which extends perpendicular to



with or without means for simultaneously shredding or comminuting any material carried by the liquid being moved through the pump.

3,722,805

## GRATE FOR REDUCTION MILL

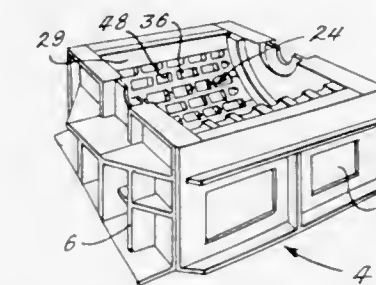
Sven B. Strom, St. Louis, Mo., assignor to American Pulverizer Company, St. Louis, Mo.

Filed Aug. 6, 1971, Ser. No. 169,647

Int. Cl. B02c 13/04, 13/13

U.S. Cl. 241—73

7 Claims



The grate of a reduction mill comprises a housing, a rotor, and a plurality of individual grate bar panels positioned side-by-side and arranged in an arc below the rotor in the housing. Each grate bar has two parallel ribs which extend axially through the housing and interconnecting the ribs are axially spaced connectors which in combination with the ribs form openings contained wholly within the individual grate bar panels. Spacers project outwardly and circumferentially from the ribs, and the spacers are axially offset from the connectors. The spacers of adjacent grate bar panels abut and create more openings in the grate. These other openings are axially offset from the openings contained wholly within the individual grate bar panels. Since the spacers and the connectors, and likewise the two types of openings, are staggered, the grate wears evenly and does not tend to wear a groove-like indentation, as do conventional grates.

3,722,806

## CRUSHER JAW

George Alderic Jette, Calgary, Alberta, Canada, assignor to Irving Industries (Foothills Steel Foundry Division) Ltd., Calgary, Alberta, Canada

Filed Jan. 26, 1971, Ser. No. 109,893

Claims priority, application Canada, Feb. 5, 1970, 074121

Int. Cl. B02c 1/10

U.S. Cl. 241—291

6 Claims

A crusher face plate for use in the devices for crushing equipment for rock ore, gravel stock and other like bulk

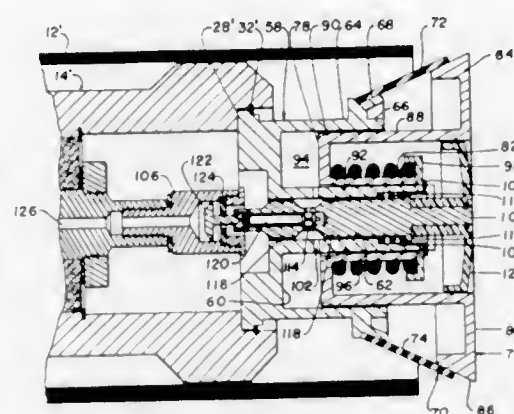


materials. Heretofore devices of this kind utilized a round nose tooth profile and were somewhat inefficient in the use of power. In the present device the tooth profile is provided with



several sharp crushing edges which will increase the crushing efficiency per unit power input when used in standard crushing devices.

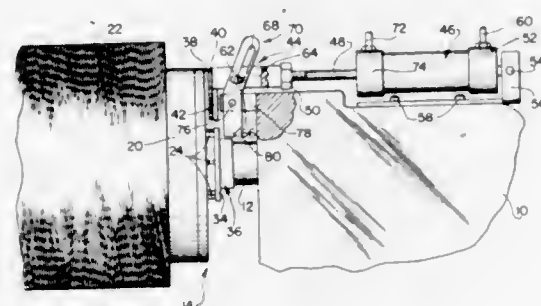
wardly against an end of a rotatable member to hold the rotatable member in centered and seated position for rotation about its axis, and is movable axially outwardly and radially in-



wardly to enable the rotatable member to be withdrawn from the mandrel over the sleeve without removing any part of the chuck.

### 3,722,807 WINDING APPARATUS

Robert L. Swinehart, Warwick, R.I., assignor to Leeson Corporation, Warwick, R.I.  
Filed March 1, 1971, Ser. No. 122,578  
Int. Cl. B65h 54/02, 67/04  
U.S. Cl. 242—18 R



A winder, such as a Model 959 take-up, manufactured by Leeson Corporation, Warwick, Rhode Island, has a rotary chuck mounted on a winder base and has chuck members resiliently urged into gripping engagement with a package core removably telescoped on the chuck. A lever is pivoted to the winder base and is operated in one direction by a fluid motor to release the chuck members from gripping engagement with the core. A brake member is pivotally connected with the lever in such a manner that operation of the motor in an opposite direction brakes the chuck and maintains the lever out of operating engagement with the chuck. The motor is controlled by a valve system which vents one side of the motor into the other side for positioning both the brake member and the lever out of engagement with the chuck.

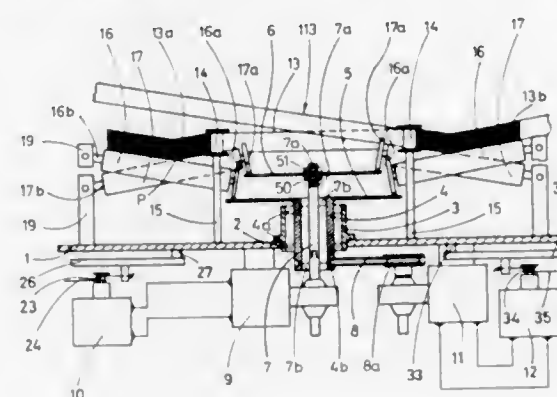
### 3,722,808 CHUCK FOR ROTATABLE MEMBERS

Edward A. Brown, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.  
Filed Aug. 27, 1970, Ser. No. 67,323  
Int. Cl. B65h 75/30, 79/00  
U.S. Cl. 242—46.4

Quick release chuck for chucking rotatable members or tubular cores wherein a flexible sleeve mounted on one end of a mandrel is caused to move axially inwardly and radially out-

### 3,722,809 ENDLESS BAND WINDING APPARATUS

Herbert Leising, Fellbach, Germany, assignor to Robert Bosch Photokino GmbH, Stuttgart-Unterturkheim, Germany  
Filed Sept. 20, 1971, Ser. No. 181,888  
Claims priority, application Germany, Sept. 24, 1970, P 20 47 043.3  
Int. Cl. B65h 17/48  
U.S. Cl. 242—55.19 R

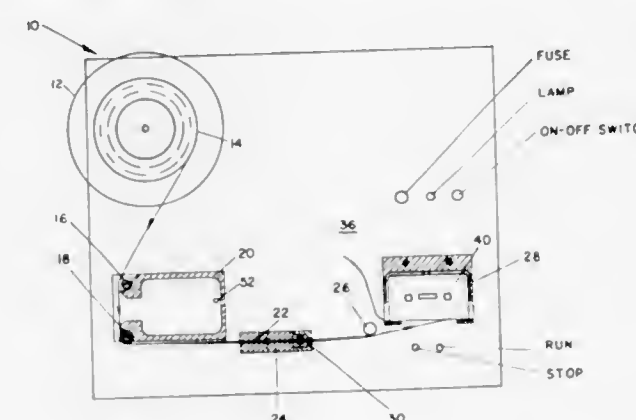


Apparatus for simultaneous convoluting and unwinding of endless motion picture film the major part of which is convoluted to form a roll and an unconvoluted part of which is transported step-by-step through a motion picture projector has two sets of alternating driving rollers which extend radially of and support the roll of convoluted film from below so that the axis of the roll is vertical. The rollers of one set support the outer annular section of the roll and are inclined downwardly toward the axis of the roll. The rollers of the other set support the inner annular section of the roll and are inclined outwardly and downwardly away from the axis of the roll. Each set of rollers is driven by a separate variable-speed electric motor through the intermediary of a horizontal turntable in such direction that the outer section of the roll collects and the inner section of the roll pays out the film. The speed of the motor which drives the one set of rollers is adjustable by a first detector which detects the changes in tension of that portion of the film which is being convoluted on the outer section, and the speed of the motor which drives the other set of rollers is adjustable by a second detector which detects the changes in tension of that portion of the film which is being withdrawn from the inner section of the roll. At least one of the turntables is movable between several levels to thereby change the inclination of the respective set of rollers and to thus enable the apparatus to support and rotate rolls of different outer diameters.

### 3,722,810 PRE-RECORDED MAGNETIC TAPE EDITING DEVICE

Trevor William Kendall, Long Island, N.Y., assignor to Dictaphone Corporation, Bridgeport, Conn.  
Filed Jan. 22, 1970, Ser. No. 4,858  
Int. Cl. B65h 19/26, 19/28, 21/00  
U.S. Cl. 242—56 R

10 Claims

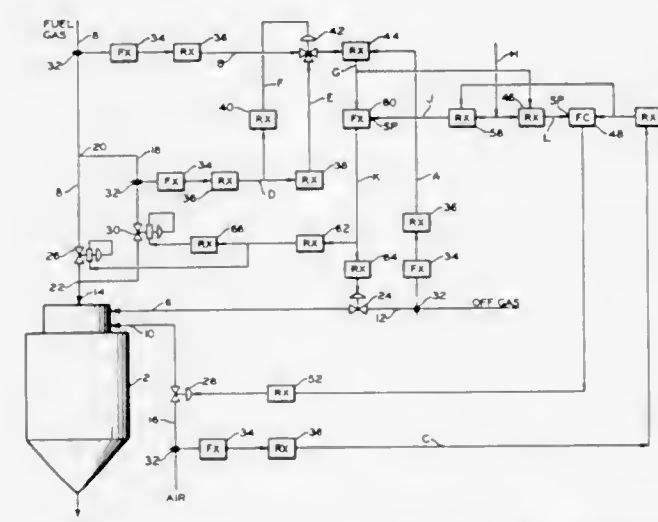


A tape editing device for use in splicing the lead end of a supply of magnetic tape on a supply reel to the free end of a leader tape on a take-up reel, which take-up reel is adapted to be rotated to draw tape from the supply reel after the splice is made. The editing device includes an enclosed buffer chamber having an open end positioned adjacent the path of travel of the magnetic tape as it is drawn from the supply reel and a splicing block, having a plurality of apertures therein, positioned in the path of travel of the magnetic tape between the buffer chamber and the take-up reel. A source of vacuum is operably connected to the buffer chamber and a magnetic pickup head control means is provided for selectively connecting the source of vacuum to the holes in the base of the splicing block in response to a prerecorded tone signal on the tape, whereby the portion of the tape passing over the splicing block, upon receipt of a tone signal by the magnetic head, is held immobile against the splicing block and excess tape, discharged from the supply reel as it is stopped, between the supply reel and the splicing block, is drawn into the buffer chamber through the open end thereof under the influence of said vacuum source.

### 3,722,811 METHOD AND APPARATUS FOR CONTROLLING THE FLOW OF MULTIPLE STREAMS

Carl L. Osburn, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.  
Filed July 13, 1971, Ser. No. 162,058  
Int. Cl. F23n 1/02  
U.S. Cl. 236—14

12 Claims



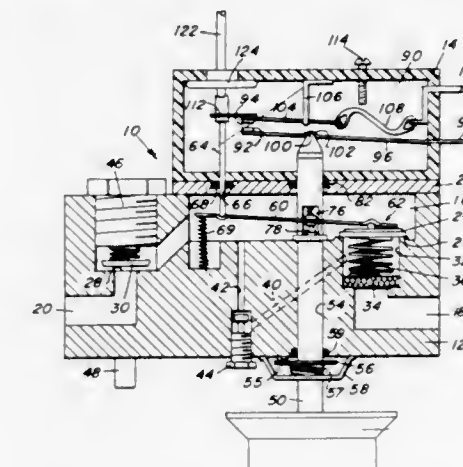
A method and apparatus for controlling the flow of first and second fuel streams and an air stream by selectively measuring

the second fuel stream in response to the flow rate of said second fuel stream and controllably combining the three streams at rates responsive to a set point signal and a signal responsive to the computed, total, combustible heating value per unit time of the summation of the fuel streams flowing through their respective conduits.

### 3,722,812 TEMPERATURE CONTROL DEVICE

H. Kenneth Ward, Arcadia, Calif., assignor to Ward & Son, Inc., City of Industry, Calif.  
Filed Oct. 12, 1970, Ser. No. 79,768  
Int. Cl. F23n 5/06  
U.S. Cl. 236—15 A

15 Claims

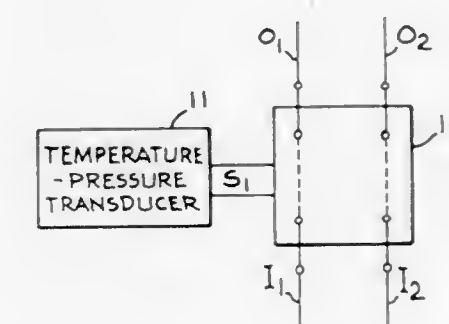


A temperature control device for regulating two primary energy sources simultaneously is disclosed. A single rotatable shaft provides the primary adjustment of a valve for regulating gas flow and the primary adjustment of the main contacts for an electric supply regulator, whereby the two regulators may be adjusted to a desired temperature setting. Secondary adjustment and operation of the device is by means of a temperature sensitive capillary tube which operates in response to a parameter to be controlled to expand or contract a bellows. The movable diaphragm of the bellows is connected by way of a second shaft to position both the gas valve and the electric contacts in accordance with the measured value.

### 3,722,813 TEMPERATURE-SENSITIVE REVERSING VALVE APPARATUS

Gene W. Osheroff, Las Vegas, Nev., and Laurence McGann, Los Angeles, Calif., assignors to Fluidtech Corporation, Inglewood, Calif.  
Filed Dec. 7, 1971, Ser. No. 205,514  
Int. Cl. F24f 11/06  
U.S. Cl. 236—1 C

22 Claims



In the present invention, a combination of four valves arranged to form a bridge is coupled to a temperature-pressure transducer that interconnects the input and output channels of the bridge according to whether the ambient environment of



the transducer is relatively warm or cool. More specifically, the transducer is coupled to both a low pressure source and a high pressure source and will apply one combination of such pressures to the bridge if the transducer environment is relatively cool and another combination of such pressures if the transducer environment is relatively warm. In response to these signals, one pair of another of the valves in the bridge are closed, with the result that the connections between the bridge's input and output channels are thereby reversed.

3,722,814

# METHOD OF BLOWING SUCH FLUID AS REDUCING GAS INTO A FURNACE

Tsuneo Miyashita, Kawasaki, Japan, assignor to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

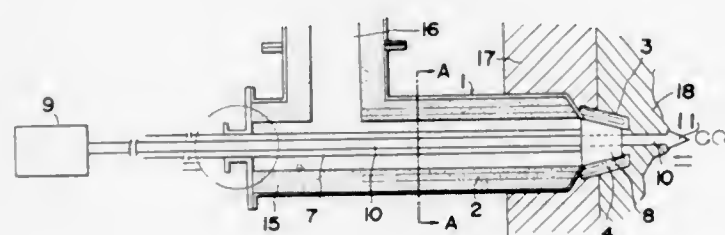
Filed Feb. 9, 1971, Ser. No. 113,862

Claims priority, application Japan, Feb. 13, 1970, 45/12147

Int. Cl. B05b 15/02

U.S. Cl. 239—1

3 Claims



A method and apparatus for (a) injecting fluids, particularly reducing gases, through a tuyere into an operating furnace, and (b) safely cleaning out plugged tuyeres, in which a seal is provided in the tuyere so that a back pressure in excess of the furnace pressure can be developed. A rotatable borer is provided forwardly of the seal to remove solids plugging the tuyere. The seal and the borer are coaxially mounted on a retractable shaft so that they can be simultaneously withdrawn and fluid injection resumed immediately the tuyere is cleaned.

3,722,815

# FOG ABATEMENT WITH POLYHYDRIC ORGANIC COMPOUNDS

Zack J. Moore, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 24, 1971, Ser. No. 146,557

Int. Cl. A01g 15/00; E01h 13/00; B01d 17/00

U.S. Cl. 239—2 R

5 Claims

Method for fog and cloud abatement wherein a normally liquid polyhydric aliphatic organic compound containing 2 to about 26 carbon atoms such as glycerine is dispersed into the fog in a particle size range from about 10 to about 100 microns.

3,722,816

# RETRACTABLE FOUNTAIN ASSEMBLY

Andrew W. Stewart, Pasadena; Gilbert J. Britzman, West Covina; Dale M. Bauer, Glendora, and Bruce E. Britzman, Baldwin Park, all of Calif., assignors to Meridian Enterprises, Inc., Los Angeles, Calif.

Filed April 21, 1971, Ser. No. 135,990

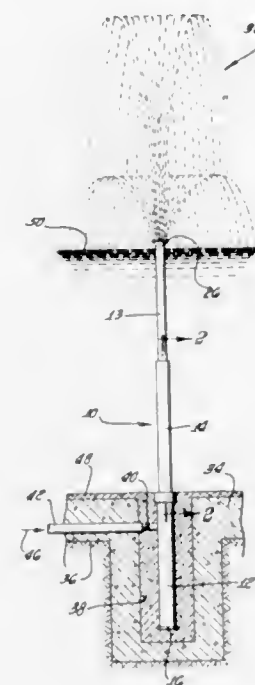
Int. Cl. B05b 15/10, 17/08

U.S. Cl. 239—17

2 Claims

A fountain assembly suitable for installation in a swimming pool made up of a plurality of extendable and retractable telescoping conduit sections. A portion of said assembly is anchored in the swimming pool bottom so that conduit sections may be extended upward therefrom to form a fountain or retracted therein flush with the pool bottom so as to present no swimming or diving hazards. The fountain is extended by

activation of pressurized liquid engaging liquid seals in said conduit sections to maintain said assembly in its extended position. Said telescoping conduit sections being adapted for



bleeding when said pressurized liquid ceases thereby allowing said conduit sections automatically to settle back to their retracted positions.

3,722,817  
SPRAYER

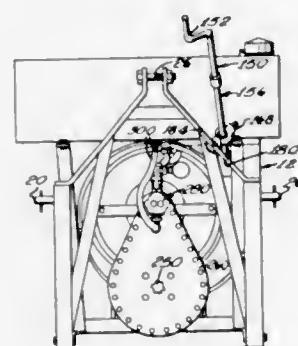
Albert B. Fletcher, Spalding, Nebr.

Continuation-in-part of Ser. No. 768,574, Aug. 19, 1968, abandoned, which is a continuation of Ser. No. 510,138, Nov. 8, 1965, abandoned. This application Jan. 25, 1971, Ser. No. 109,575

Int. Cl. B05b 7/24

U.S. Cl. 239—77

11 Claims



A livestock sprayer adapted to be mounted on the rearward end of a tractor for spraying cattle and other livestock with liquid insecticide, the sprayer having at its rearward end an air blower and a liquid insecticide nozzle means quickly directable together from one side of the sprayer to the other, a rapid rotation manual control means at a forward end of the sprayer for control by the tractor driver himself and controlling the direction of spraying by directing said blower and said nozzle means.

The sprayer having adjustably positionable gear and shaft means drivably connecting the crank handle means and blower housing.

3,722,818

# GAS CUTTING AND MARKING DEVICE

Hidehiko Hayasaki, Tokyo, and Takehiko Hayashi, Saltama, both of Japan, assignors to Kabushiki Kaisha Tanaka Seisakusho, Tokyo, Japan

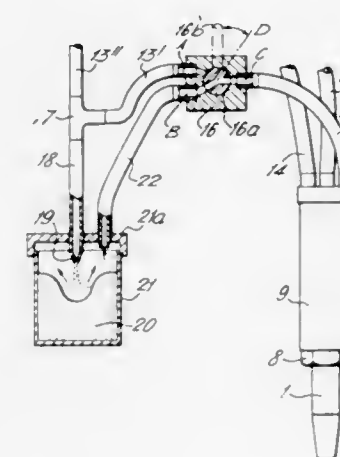
Filed March 5, 1971, Ser. No. 121,325

Claims priority, application Japan, March 19, 1970, 45/22696

Int. Cl. B05b 13/00

U.S. Cl. 239—85

5 Claims



A device for gas cutting, which is also applicable for marking by operating a valve so as to eject a mixed stream of carrier gas such as air and marking powder such as metal powder from an ejecting nozzle usually used for ejection of cutting oxygen. The device can be used either for gas cutting or for making a cutting line by a very simple switching operation.

3,722,819

# PULSED JET RIOT CONTROL APPARATUS

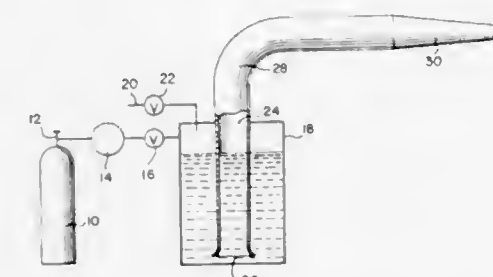
James M. Hall, Gaithersburg, Md., and Louis L. Clipp, McLean, Va., assignors to Exotech Incorporated, Gaithersburg, Md.

Filed April 19, 1971, Ser. No. 135,235

Int. Cl. B05b 1/08

U.S. Cl. 239—102

9 Claims



Apparatus for forming pulsed jets of liquid at relatively low pressures and capable of expelling the pulsed jets over moderate distances for use as a riot control device. A compressed gas is passed to a chamber having liquid therein so that upon actuation of a quick opening valve the liquid is forced from the chamber, through an acceleration tube and out a nozzle. The quick opening valve might be positioned between the pressurized gas source and the liquid chamber, or it might be in the acceleration tube. The gas can act directly on the liquid or it can act through a piston.

3,722,820

# FERTILIZING ATTACHMENT FOR LAWN MOWER

Joseph E. Kilint, Jr., 355 North Broadway, Joliet, Ill.

Filed March 22, 1971, Ser. No. 126,420

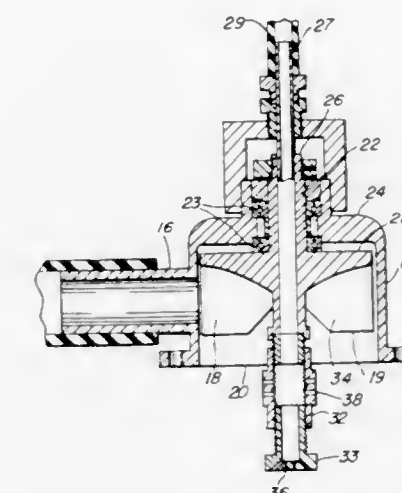
Int. Cl. B05b 3/00

U.S. Cl. 239—129

3 Claims

A turbo-powered attachment to a gas-engine powered lawn mower suitable for dispensing liquid fertilizers, insecticides,

and fungicides, connected to the exhaust stack of said engine for passage of high velocity gases therethrough, said attachment having a hollow turbo-shaft driven at high rotational speed by the high velocity exhaust gases, a supply tank with a



conduit connected to one end of the hollow turbo-shaft, a valve for regulating liquid flow therethrough connected to a centrifugal spray nozzle at the other end of the hollow turbo-shaft, said attachment being adapted for mounting on the handlebar of the mower.

3,722,821

# DEVICES FOR PROCESSING MOLTEN METALS

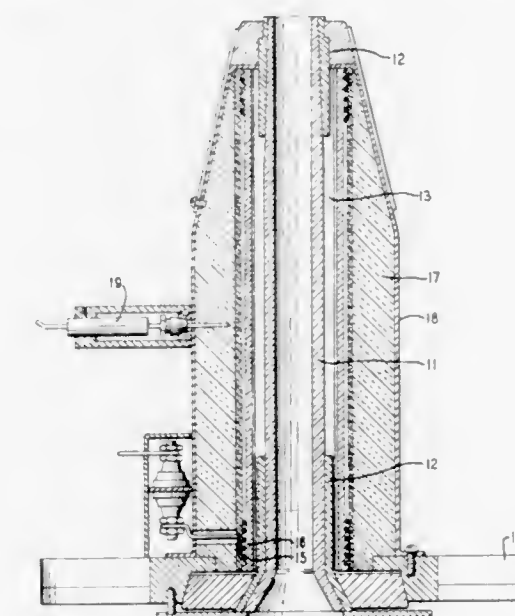
Raymond E. Jaeger, Basking Ridge, and Robert Ernest Nickell, Madison, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 78,822, Oct. 7, 1970, abandoned. This application June 3, 1971, Ser. No. 149,657

Int. Cl. B67d 3/02

U.S. Cl. 239—133

8 Claims



A nozzle is described for use with molten metals at elevated temperatures. The nozzle consists of a ceramic cylinder surrounded by a resistance heater used to preheat the ceramic part before exposure to the molten metal. Thermal stresses in the ceramic are reduced in two ways. The composition of the ceramic is adjusted so as to minimize thermal expansion and variations in thermal expansion with temperature. Also, high thermal conductivity sleeves are fitted on the ceramic cylinder to reduce temperature variations in the ceramic. These nozzles have considerably longer life than conventional nozzles made from graphite. Other apparatus in common with the nozzle depend for their utility on the ceramic composition; namely, the concentration of magnesia in the stabilized zirconium oxide ceramic.



3,722,822

## TAPE TAKE-UP DRIVE ASSEMBLY

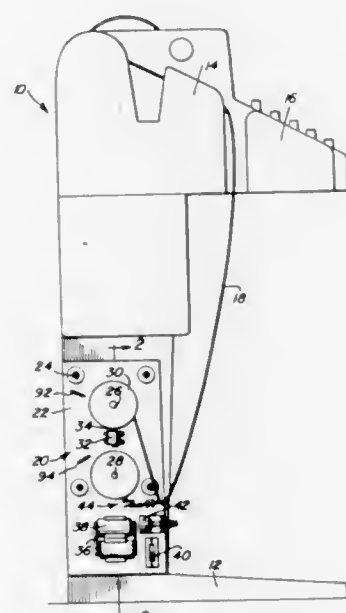
Samuel P. Wallace, 929 Georgia, S.E., Albuquerque, N. Mex.

Filed Dec. 8, 1969, Ser. No. 882,849

Int. Cl. B65h 25/32, 25/22, 25/04

U.S. Cl. 242—67.4

7 Claims



A tape handling device for a tape processing machine having a punch tape unit from which the tape is expelled. An upper take-up reel driven by a motor drive is rendered operative under the control of a tape tension switch. Magnetic means releasably hold reels on the upper and lower reel shafts. The motor drive is reversible and variable in speed for tape take-up and rewind purposes.

3,722,823

## FIRE-FIGHTING AUXILIARY APPARATUS

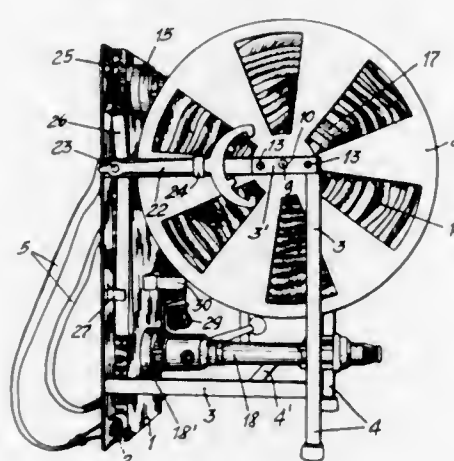
Arturo Reich, Elcksr Onlagen, Silvplana, and Guido Huder, Surlej, both of Switzerland

Filed April 3, 1970, Ser. No. 25,453

Int. Cl. B65h 75/40; A45f 3/08

U.S. Cl. 242—86

4 Claims



A fire-fighting auxiliary apparatus which enables one person alone to easily and quickly connect the hose to the hydrant as well as to unwind and lay out the hose. The use of a hose which is spooled on a brakable reel and the handling of same in combination with a portable unit can most remarkably prolong the service life of a hose. For a synthetic fire hose especially spooled storage is very economical.

3,722,824

## AUTOMATIC LOCKING DEVICE FOR A SAFETY BELT IN A MOTOR CAR

Yoshihiro Hayashi, Toyota, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Setaikusho, Nishikasugai-gun, Aichi Prefecture, Japan

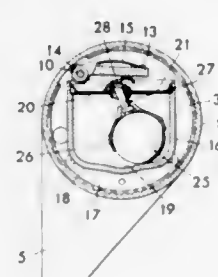
Filed Nov. 23, 1971, Ser. No. 201,291

Claims priority, application Japan, Nov. 24, 1970, 45/116605

Int. Cl. A62b 35/00; B65h 63/04

U.S. Cl. 242—107.4

2 Claims



An automatic locking device for a safety belt in a motor car comprising a globe member adapted to move detecting an acceleration of the car and a locking assembly adapted to work according to the motion of the globe member thereby to prevent rotation of a reel shaft of the safety belt instantly when a positive or negative acceleration such as an abrupt brake or collision is applied to the car. In the present device, the motion of the globe member can be remarkably magnified by a magnifying element thereby to effect a rapid and reliable locking operation of the locking assembly.

3,722,825

## WIRE DISPENSER

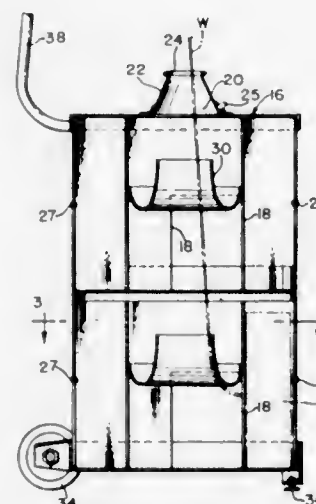
Arthur B. Phillips, 2429 E. 30th, and Roy E. Thompson, Rt. 4, P.O. Box 1846, both of Bremerton, Wash.

Filed Oct. 13, 1971, Ser. No. 188,985

Int. Cl. B65h 49/00; B62b 1/00

U.S. Cl. 242—129

11 Claims



A mobile wire dispenser having a housing supported by wheels. The housing has a central hollow core with a plurality of side openings communicating with the hollow interior. The housing also has a plurality of recesses around the core adapted to hold boxes of wire with the wire passing out of the boxes through the openings and up through the hollow core. An inverted funnel is provided on the top of the core to guide the wire out of the core.

3,722,826

## UNWINDING DEVICE FOR YARN SPOOLS

Peter Herrmanns, Stommeln near Cologne, Germany, assignor to FMN Schuster &amp; Co., Efferen near Cologne, Germany

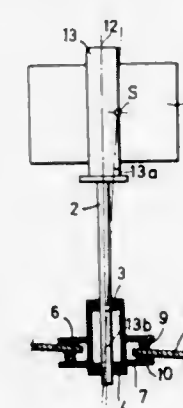
Filed April 9, 1971, Ser. No. 132,766

Claims priority, application Germany, Jan. 21, 1971, P 21 02 696.0

Int. Cl. B65h 49/00; D01h 7/16

U.S. Cl. 242—129.5

13 Claims



An unspooling or unwinding device of particular utility for use in unwinding and respooling thread prior to further processing. The device includes a spindle assembly resiliently mounted to enable the assembly and a spool of thread thereon to rotate about the center of gravity of the assembly. To reduce the effect of an unbalanced spool, the spindle within the spool takes the form of a heavy cylindrical weight with the result that the center of gravity of the assembly shifts only slightly relative to the geometric center, during rapid rotation of the spool and spindle during unwinding. The spindle shaft is supported for rotation by spaced apart bearings at a location spaced from the spindle, and the supports for the bearings are resiliently mounted so the shaft can tilt or move radially to allow the spool and spindle to rotate about their common center of gravity.

3,722,827

## FAIRLEAD CARRIAGE

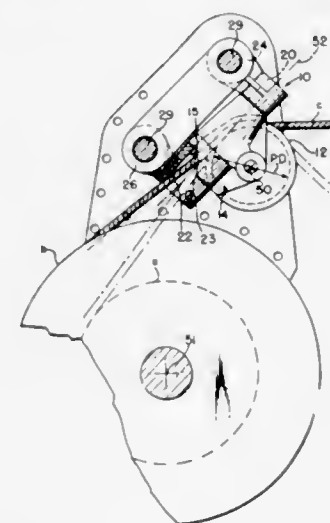
Stan Hrescak, Burnaby, British Columbia, Canada, assignor to B. C. Gearworks Ltd., North Surrey, British Columbia, Canada

Filed Feb. 12, 1971, Ser. No. 114,803

Int. Cl. B65h 54/28

U.S. Cl. 242—158.4 R

5 Claims



A level-wind fairlead carriage is reciprocally mounted for traversing along the length of a winch drum. The carriage is provided with a fairlead sheave rotatably mounted on a

bracket for movement about an axis parallel to the axis of the winch drum. The bracket is mounted for pivotal movement about a second axis which lies on a line generally tangent to the winch drum. The pitch diameter of the fairlead sheave also ends on the second axis.

3,722,828

## CINEMATOGRAPHIC APPARATUS FOR USE WITH CASSETTES FOR MOTION PICTURE FILM

Rudolf Kremp, Ludwig-Thoma-Pl. 3, Grunwald, and Fridolin Hennig, Munich, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

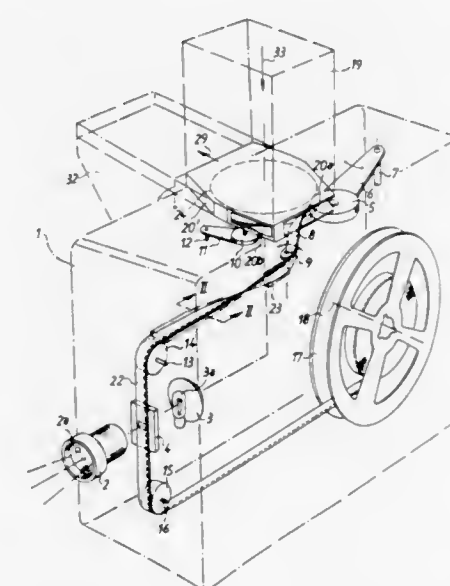
Filed May 10, 1971, Ser. No. 141,825

Claims priority, application Germany, May 21, 1970, P 20 24 646.2

Int. Cl. G03b 1/04; G11b 15/32, 23/04

U.S. Cl. 242—181

10 Claims



A motion picture projector wherein the top wall of the housing supports a detachable upright duct for a stack of horizontal film-containing cassettes. The lowermost cassette of the stack dwells in a projection position in which the film can be automatically withdrawn from such cassette to be threaded through the projector and attached to the core of the takeup reel. An automatic rewinding unit rewinds the film onto the supply reel in the cassette occupying the projection position, and such cassette is thereupon expelled from projection position by a pusher to enter a detachable collecting receptacle. The lowermost cassette of the stack in the duct descends by gravity and occupies the projection position when the pusher returns to its retracted position. The guide means wherein the film passes from the supply reel in the cassette occupying the projection position to the takeup reel in the housing of the projector has a channel which twists the film through 90°.

3,722,829

## CASSETTE

Theodorus Franciscus Arnoldussen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Phillips Corporation, New York, N.Y.

Filed Dec. 28, 1970, Ser. No. 101,549

Claims priority, application Netherlands, Jan. 16, 1970, 7000677

Int. Cl. G11b 23/10

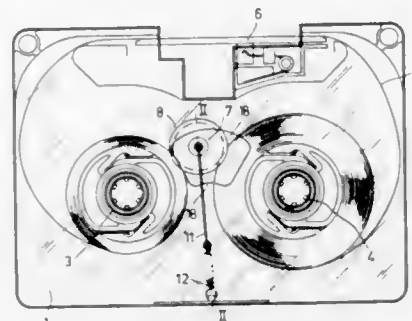
U.S. Cl. 242—199

3 Claims

A cassette for use in an apparatus for the recording and/or playback of recording on or from a strip-shaped record carrier, which cassette contains a take-up core and a supply core for the record carrier and a single, flanged, freely rotatable,



and displaceable, guide roller which is mounted so as to be floating and engages the outer circumferences of the record

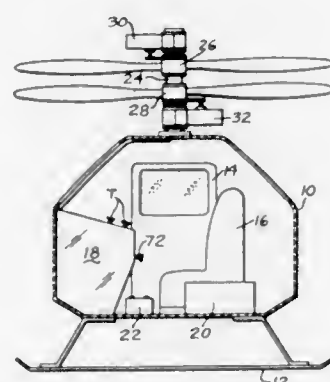


carrier rolls wound on the supply and take-up cores. The flanges of the roller simultaneously guides the outer turns of both record carrier rolls.

**3,722,830**  
**HELICOPTER TYPE VEHICLE**  
Gerald L. Barber, 364 Mona Lane, Findlay, Ohio  
Filed Feb. 12, 1971, Ser. No. 114,987  
Int. Cl. B64c 27/10

U.S. Cl. 244—17.23

6 Claims



The invention discloses a helicopter type vehicle having coaxial counter rotating propellers above the cabin of the vehicle, each propeller being fixed in pitch as opposed to conventional helicopter propellers which vary in pitch during rotation of the propeller. The counter rotating propellers provide lift for lifting the vehicle from the surface, and forward thrust on the vehicle is developed by shifting the center of gravity of the vehicle to tilt the axis of rotation of the propellers with the shifting of the center of gravity of the vehicle being accomplished in at least one instance, by mounting the propeller drive motors adjacent the respective propellers and rotating the motors bodily about the axis of rotation of the propellers.

**ERRATA**

For Classes 244—188 thru 254—124 see:  
Patents Nos. 3,722,840 thru 3,722,864

**3,722,831**  
**MIXING MACHINES**

Horst Bialas, Georgsmarienhütte, and Friedrich Lindenthal, Osnabrück, both of Germany, assignors to Dierks & Sohne, Osnabrück, Germany

Filed July 18, 1969, Ser. No. 842,949

Claims priority, application Germany, July 20, 1968, P 17 82 115.7; Dec. 19, 1968, P 18 15 582.3

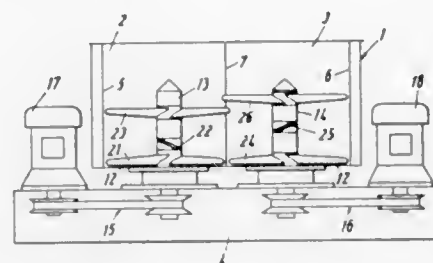
Int. Cl. B01f 7/00, 15/00

U.S. Cl. 259—6

14 Claims

A high speed mixing machine in which power driven tools are arranged to rotate in a mixing vessel to produce a forced

vortex-like movement of the material being mixed has a plurality of separate tools rotatable in coating compartments of the vessel which merge with one another so that the material,

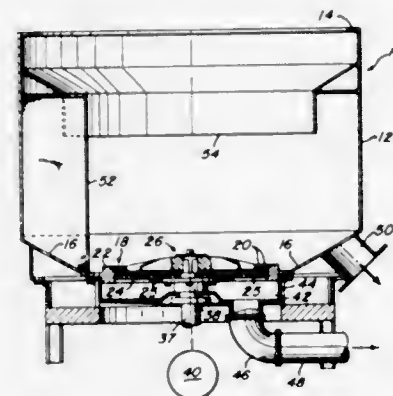


particularly synthetic material to be processed and/or mixed e.g. with other material in the form of additives or liquids, is continuously transferred from one compartment to another of the vessel.

**3,722,832**  
**PULPING APPARATUS**  
Peter Seifert, Middletown, Ohio, assignor to The Black Clawson Company, Hamilton, Ohio  
Filed March 10, 1971, Ser. No. 122,809  
Int. Cl. B01f 15/02, 7/16

U.S. Cl. 259—44

2 Claims



A waste treatment tub having a cylindrical side wall, a perforated bottom wall and a rotor mounted on the bottom wall is provided with a baffle which extends across the tub in chord relationship to the circle defined by the cylindrical side wall. The chord-like baffle shifts the center of the vortex formed by the rotor to a position non-coincident with the axis of rotation of the rotor to improve cutting efficiency and also causes undissolved material to be flung inwardly, from whence it can be carried through the treating zone. When the rotor is of the type which is provided with pivotally mounted hammers or flails, the flow pattern which results from the use of the chord-like baffle reduces vibrations which may be caused by material collecting on the vanes of the rotor and the hammers or flails.

**3,722,833**  
**METHOD OF SPATULATING PACKAGED DENTAL FILLING**

Kiyoshi Inoue, Tokyo, and Akihiko Shimizu, Sagami-hara, both of Japan, assignors to Inoue Japax Research Incorporated, Yokohama-shi, Kanagawa, Japan

Filed Nov. 12, 1970, Ser. No. 88,738

Claims priority, application Japan, Nov. 15, 1969, 44/92248; Nov. 15, 1969, 44/92249

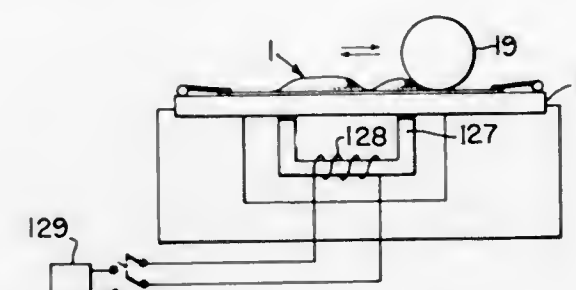
Int. Cl. B01f 13/08

U.S. Cl. 259—72

2 Claims

Pre-packaged dental filling ingredients for use by dentists. The ingredients which are in part liquid and in part powder are encapsulated and sealed tightly in a flexible-membrane

formed bag and therein separated one from the other which separation is released by the compression of the bag to cause the ingredients to be successively brought into contact and mixed together. The mixture, confined within the bag, is

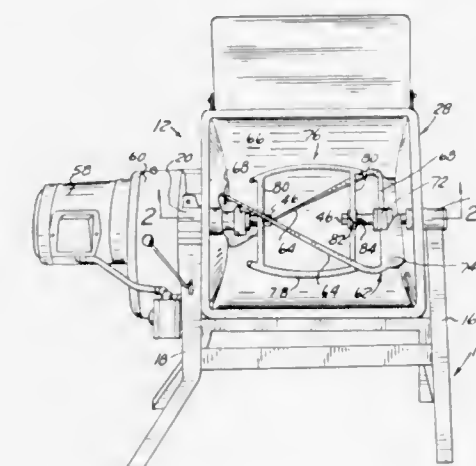


spatulated to form a paste or semi-solid, ready for application to a patient's tooth. The spatulation may be carried out advantageously with apparatus adapted to compressively roll over the flexible bag supported on a surface or squeeze the bag against the surface.

**3,722,834**  
**DOUGH MIXING MACHINE**  
Sidney Bakewell, 5945 Martin Ave., Dearborn, Mich.  
Filed Jan. 20, 1972, Ser. No. 219,345  
Int. Cl. B01f 7/08

U.S. Cl. 259—105

7 Claims



In a dough mixer having a frame, a tank, a power transmission driving a sleeve and a coaxial shaft, both projecting through one end wall of the tank, the improvement which includes a longitudinally adjustable idler shaft spaced from and aligned with the power driven shaft and extending through the other tank wall. An outer paddle assembly nests within the tank and at one end is secured to said drive shaft sleeve and at its other end is journaled upon the idler shaft. An inner paddle assembly rotates within the outer paddle assembly, at one end is secured to the drive shaft and at its opposite end is journaled upon the idler shaft and wherein, the inner paddle assembly is easily removable from the tank for cleaning by removing the two retainer nuts and upon axial retraction of the idler shaft sufficient to disengage from the inner paddle assembly to permit disengagement of the inner paddle assembly from the drive shaft.

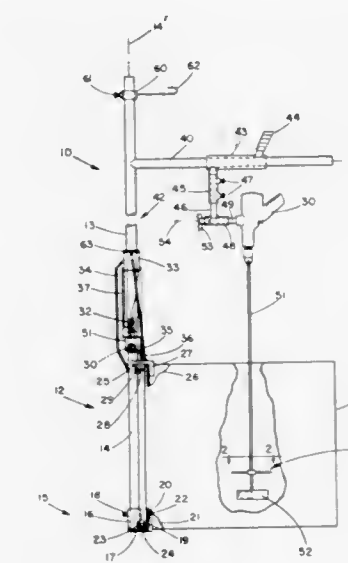
**3,722,835**  
**MOVABLY MOUNTED MORTAR MIXER**  
William J. Knott, P.O. Box 279, R.R. No. 3, Richmond, Ind.  
Filed Nov. 8, 1971, Ser. No. 196,545  
Int. Cl. B28c 5/16; B01f 7/00

U.S. Cl. 259—178 R

7 Claims

An apparatus for mixing materials in a tub having a mortar mixer movably mounted to a frame mountable to the tub. A

frame is connected to the tub by a pair of clamps which engage the top and bottom edges of the tub. A vertical rod is threadedly received by the frame and is supported thereto by a hollow bearing cylinder fixedly supported above the frame. A sleeve encloses the bottom threaded end of the vertical rod. A horizontal rod is cantileveredly mounted to the vertical rod and slidably receives a carrier. An electric hand drill is suspendedly mounted to the carrier and has a rotatable shaft with a

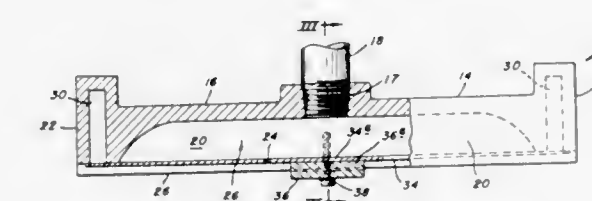


mixing blade mounted thereto. A blade protector is mounted to the shaft preventing damage to the blade. The carrier is slidable to and from the vertical rod and is rotatably mounted to the horizontal rod. The drill is rotatably mounted about an axis parallel to the horizontal rod and may be swung upwardly to disengage the mixing blade from the tub. A hook is mounted to the vertical rod for locking the drill in the upward position. The vertical rod is rotatable about a vertical axis.

**3,722,836**  
**GAS DIFFUSER**  
Elton S. Savage, Wexford, and Donald F. Heaney, Pittsburgh, both of Pa., assignors to Dravo Corporation, Pittsburgh, Pa.  
Filed June 24, 1970, Ser. No. 49,369  
Int. Cl. B01f 3/04

U.S. Cl. 261—1

17 Claims



A gas diffuser for admitting gas into a body of liquid is disclosed. The diffuser includes an elongated body with a chamber extending inwardly from an open face thereof and a resilient strip covering the chamber and secured to the body so as to flex at its ends under the urging of the pressure of gas in the chamber. The body includes a pair of cavities adjacent its end walls. The cavities act as resonance chambers causing the gas therein to resonate with the strip as the gas stream flows across the cavities. In addition, the strip is tapered from an intermediate portion thereof to its ends.



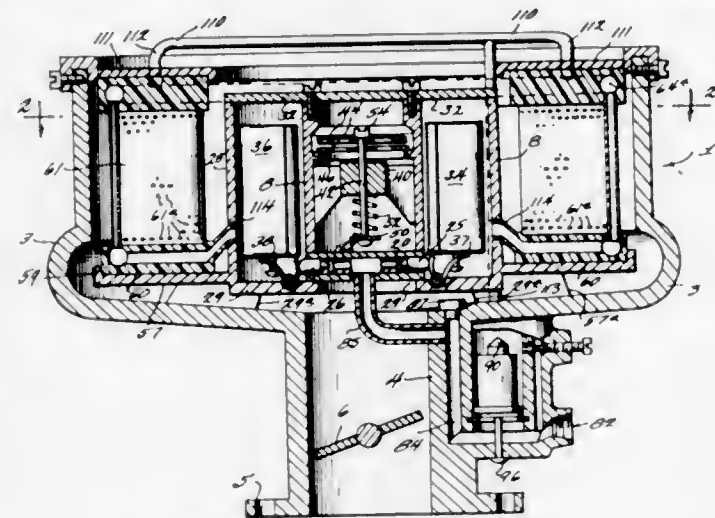
3,722,837

**CARBURETOR UTILIZING SURFACE TENSION AND CAPILLARY ACTION**

William R. Dapprich, P.O. Box 384, Pittsburgh, Pa.  
Continuation-in-part of Ser. No. 7,201, Jan. 30, 1970,  
abandoned. This application April 12, 1972, Ser. No. 243,403  
Int. Cl. F02m 17/28

U.S. Cl. 261—34 A

10 Claims



Wet plates or grids with minute perforations are so positioned as to utilize the fuel property of surface tension and capillary action to allow the fuel to form a film over the apertures so that the air pressure differential between the manifold side of the grid and the atmospheric pressure side will stretch the fuel film and encapsulate sufficient air to burn the fuel in the film.

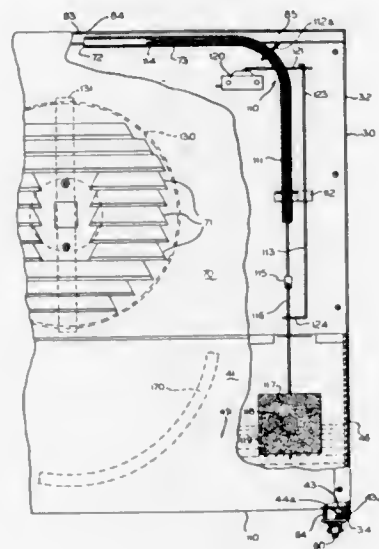
3,722,838

**HUMIDIFIER**

James A. Swimmer, and Martin Harris, Chicago, Ill.  
Division of Ser. No. 887,236, Dec. 22, 1969, Pat. No.  
3,637,194. This application Dec. 17, 1971, Ser. No. 209,393  
Int. Cl. B01f 3/04

U.S. Cl. 261—72 R

3 Claims



A humidifier comprises a housing formed from prefinished metal sheets in such a manner as to provide a water reservoir, an inclined filter pad carried by a water trough, an impeller disposed below the high point of the filter pad and consisting of a hub carrying a pair of axially spaced plate-like bodies, each of the bodies having two semicircular water-throwing edges of different radii, a ring carried by the impeller and disposed partly in the water reservoir, a two-speed motor for rotating the impeller, and a combined shutoff and indicator apparatus which functions to show the amount of water left in the reservoir and to turn off the motor when the water level drops below a predetermined value.

3,722,839

**VAPOR-LIQUID CONTACTING**

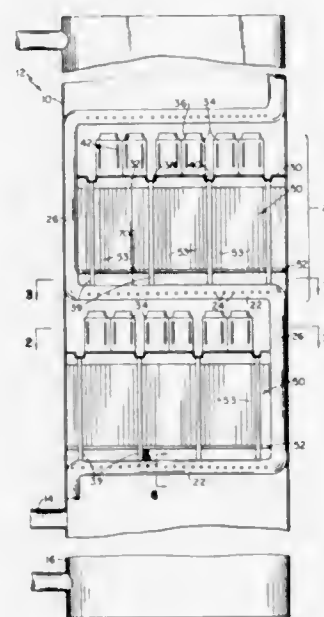
Alve J. Erickson, Chisholm, Minn., and Thomas W. Mix, Wellesley, Mass., assignors to Merix Corporation, Wellesley, Mass.

Filed July 20, 1970, Ser. No. 56,266

Int. Cl. B01d 47/06, 47/10

U.S. Cl. 261—111

15 Claims



Vapor-liquid contacting device having a contact zone, a separator downstream of the contact zone, and a fluid conduit extending transversely through the interior of the contact zone and having a wall providing openings spaced transversely in the zone for distributing fluid thereinto.

3,722,840

**SPIN STABILIZED VEHICLE AND SOLAR CELL ARRANGEMENT THEREFOR**

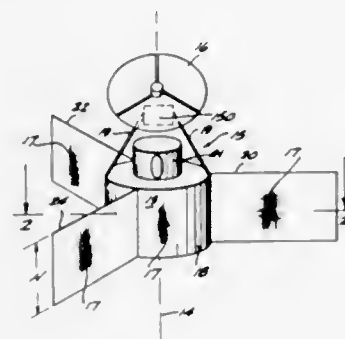
George J. Andrews, Los Angeles, and Harold A. Rosen, Santa Monica, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 18, 1969, Ser. No. 886,332

Int. Cl. B64g 1/10

U.S. Cl. 244—1 SS

1 Claim



A spin-stabilized vehicle comprising (1) a body and (2) three deployable panels, arranged to present body and panel surfaces covered with photovoltaic or solar cells for increasing the stability and the sun derived power of the craft. The panels are stowed within or wrapped about the craft during ascent towards its utilizable position. When deployed, the panels extend radially from the craft. When extended, the panels are at least as long as the radius of the body. The use of three panels results in a relatively small ripple of the power supplied by the cells as the craft rotates and therefore a relatively high efficiency of cell utilization is provided.

3,722,841

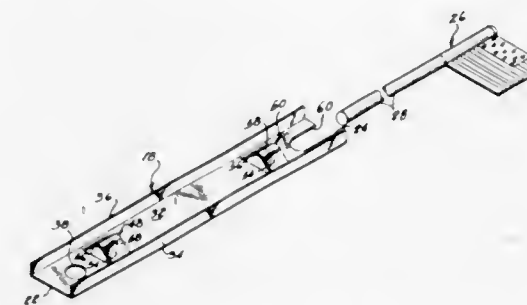
**FLAG HOLDER**

Quentin P. Cioffi, 5890 N.W. 114th St., Hialeah, Fla.  
Filed April 24, 1972, Ser. No. 247,001

Int. Cl. F16m 13/02

U.S. Cl. 248—43

4 Claims



A one piece holder for displaying a flag on a bicycle, for example. The holder includes: an elongate body having at least two spaced aligned socket defining portions each sized to snugly receive and frictionally retain a flag staff in upstanding relation; shield means to protectively partially house the staff of a flag held by the holder; mounting means for attachment of the holder to the threaded distal end of the axle shaft of the rear wheel of a bicycle, or for attachment to a similarly equipped vehicle, the mounting means comprising a through hole in one end of the body sized for passage of the axle shaft to be retained thereon by threaded advancement of a keeper nut; additionally for optional use, quick detach mounting means are provided in the form of a slot in the other end of the elongate body, the slot being sized to receive the axle shaft; and rigidifying means for the body to resist deformation of it in use.

3,722,842

**IMPLEMENT FOR MEASURING OR MARKING WORKPIECES**

Herman Schweizer, Esslingen, Germany, assignor to C. Stiefelmayer KG, Esslingen, Germany

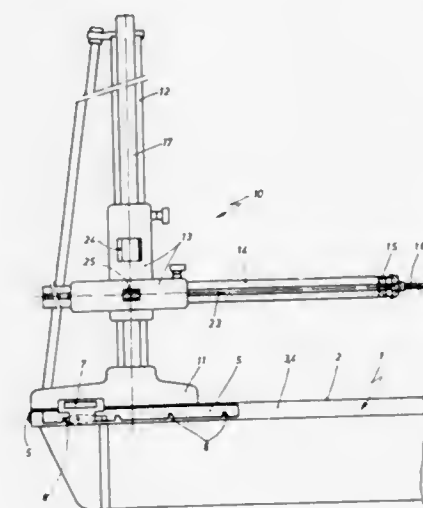
Filed Feb. 19, 1971, Ser. No. 116,796

Claims priority, application Germany, Feb. 26, 1970, P 20 08 948.9

Int. Cl. G01b 5/00

U.S. Cl. 248—124

12 Claims



This implement comprises an upright standard and a cross bar which extends at right angles to the standard and is adjustable to different heights along the standard and also in its axial direction so that its tool-carrying end may be extended to different distances from the standard. The invention provides that the cross bar is made of a tubular shape with closed ends which are connected to each other by bracing means, for ex-

ample, tie rods, which extend longitudinally through the hollow inside of the cross bar and at least one of which is connected to at least one end of the cross bar at a point above the longitudinal axis of the cross bar so that, when this bracing means is tightened on the outside of one end of the cross bar, the tool-carrying part will be given a biasing tension which tends to curve this part upwardly and thereby counteracts the tendency of this part to bend downwardly under its own weight and the weight of the respective tool thereon. This biasing tension of the cross bar may be adjusted in accordance with the weight of the particular tool. By providing several tie rods or similar bracing means within the cross bar and connecting them at different points to the ends of the cross bar, and adjusting them axially to different tensions, the cross bar may also be bent in lateral directions.

3,722,843

**DISPLAY FIXTURE FOR PORTABLE ELECTRICAL ARTICLES**

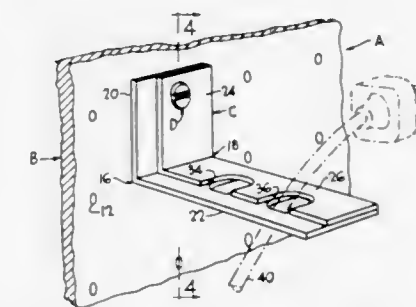
Albert J. Enckler, North Olmsted, Ohio, assignor to Keeler & Dunkel, Inc., Cleveland, Ohio

Filed July 19, 1971, Ser. No. 163,914

Int. Cl. A47g 23/02

U.S. Cl. 248—300

3 Claims



A display fixture or device for the public display of one or more portable electrical articles having a permanently attached electric power cord or wire with a connector member of larger diameter than the cord or wire at its free end. The display fixture or device includes a rack or stand-type support having a plurality of circular apertures in a part thereof and an article attaching or security assembly comprising two overlapping plate-like members each having a portion at an angle to another with two portions having notches in their opposite sides for the reception of the cord or wire of an electrical article on display and the other portions detachably connected to one another and to the rack or stand member by a blind fastener or anchor member, the shank of which extends through alignable apertures in the other portions of the plate-like members and an aperture in the rack or stand member.

3,722,844

**FISH BASKET SUPPORT**

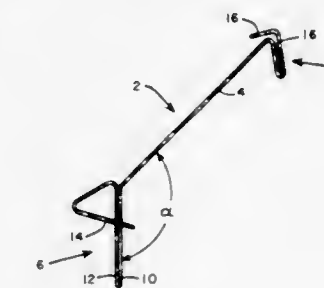
Arthur W. Baker, Rt. No. 1, P.O. Box 844, Excelsior, Minn.

Filed April 13, 1971, Ser. No. 133,544

Int. Cl. A47f 7/00

U.S. Cl. 248—302

5 Claims



A support member for supporting a fish basket from the side of a row boat. The support member is of unitary construction



and comprises an elongated rod having one end bent to define a hook portion onto which can be fastened a cord, line or bail secured to the fish basket. The other end of the rod is bent at an obtuse angle and has a pair of closely spaced parallel leg segments with one of the leg segments defining a FIG. 4. The parallel leg segments are adapted to be inserted into an aperture in the gunwale such as the oarlock of the boat. The horizontal portion of the FIG. 4 abuts the gunwale of the boat to prevent rotation of the support member in the oarlock.

3,722,845

## GROUND MOUNTING BASE FOR CENTRAL AIR CONDITIONER HEAT EXCHANGER UNITS

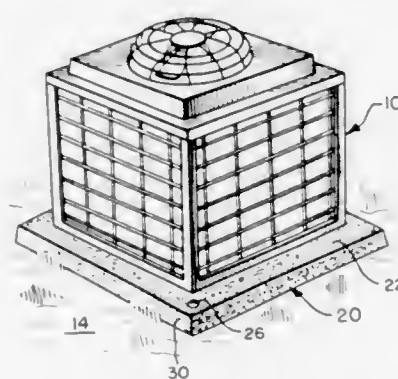
Robert M. Unger, 564 Northampton Cir., Elk Grove Village, Ill.

Filed Jan. 22, 1971, Ser. No. 108,909

Int. Cl. F16m 13/00

U.S. Cl. 248—346

4 Claims



A ground mounting base is disclosed for use with externally mounted heat exchanger units such as the outdoor condenser unit commonly used in residential central air conditioning systems. The base is light weight but strong and comprises a pad of concrete employing vermiculite as its primary aggregate, a wire screening reinforcement, and a top layer of sand aggregate concrete. A bubble level is affixed at the top surface to aid in leveling the base and upward projecting pre-set mounting bolts affixed therein for receiving and affixing the heat exchanger to the base. The base also preferably has inclined side walls inclining outward from the top to the bottom to aid in preventing horizontal movement after placement.

3,722,846

## CONNECTING MEANS

Werner Albrecht, Herne, Germany, assignor to Klockner-Werke AG, Duisburg, Germany

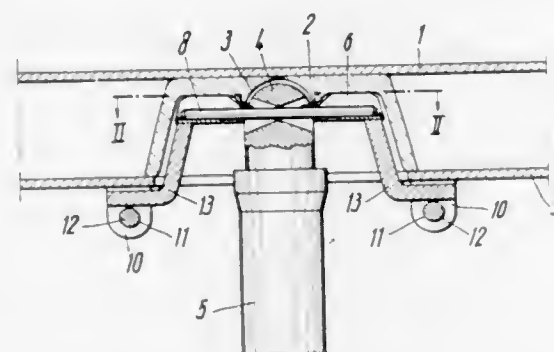
Filed Feb. 3, 1971, Ser. No. 112,308

Claims priority, application Germany, Feb. 11, 1970, P 20 06 088.2

Int. Cl. E21d 15/55

U.S. Cl. 248—357

3 Claims



Means for establishing a connection between a support cap and a prop head for pit props of the type used in the mining industry, the support cap comprising a bar or the like supporting an upper bed such as a hanging wall or roof of the mine, and

the pit prop constituting a hydraulic cylinder with its ram, or prop head, bracing against the support cap, the connecting means comprising a securing element fixed to the outer free end of the ram and releasably fixed to the support cap.

3,722,847

## INSTRUMENT SUPPORT STRUCTURE

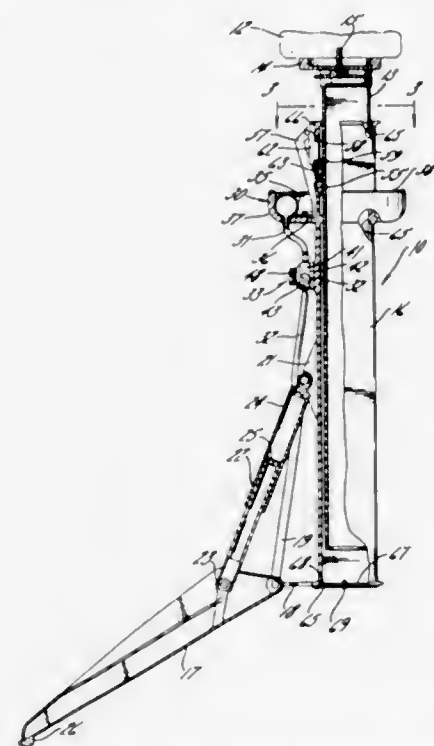
Chadwell O'Connor, 3490 E. Foothill Blvd., Pasadena, Calif.

Filed March 1, 1972, Ser. No. 230,699

Int. Cl. F16m 11/38

U.S. Cl. 248—407

9 Claims



An instrument support structure including a post telescoped in a column, with a lock for adjusting their combined length, and three legs pivoted at the bottom of the column for swinging movement from adjacent the column to extended, base-defining positions. The legs are locked by extendible struts including fluid actuators with one strut interconnecting each leg with the column. Fluid from a reservoir on the column is directed to all actuators when the legs are extended, and then valving is closed to shut off fluid intercommunication and lock the legs. The column and post are triangular in cross section for rigidity. The parts are formed to collapse compactly.

3,722,848

## HOT TOP SECURING SYSTEM

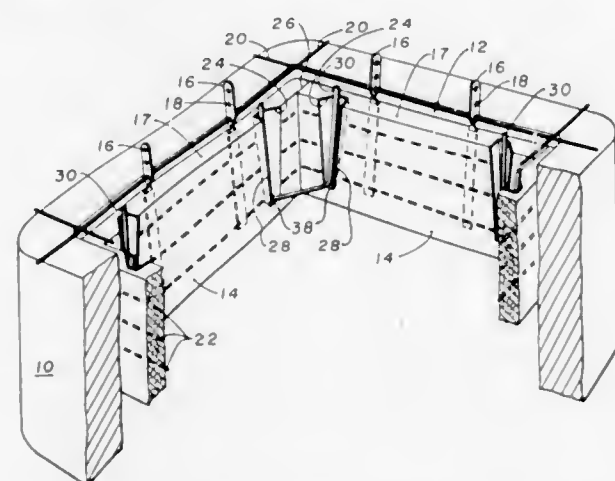
James E. Young, Chadds Ford, Pa., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed June 4, 1971, Ser. No. 149,982

Int. Cl. B22d 7/10

U.S. Cl. 249—197

5 Claims



A hot top securing system for securing preformed sideboards within an ingot mold. The securing system employs

end adjacent side boards having grooves therein which form downwardly convergent wedge receiving grooves at each corner of the mold. Each groove comprises a protective liner secured to the sideboard and so formed and oriented that the required downward convergency results. Wedge means, preferably U-shaped spring rods, are inserted base side down between pairs of grooves at each corner to provide the required securing force.

3,722,849

## CONCRETE FORM CLIP

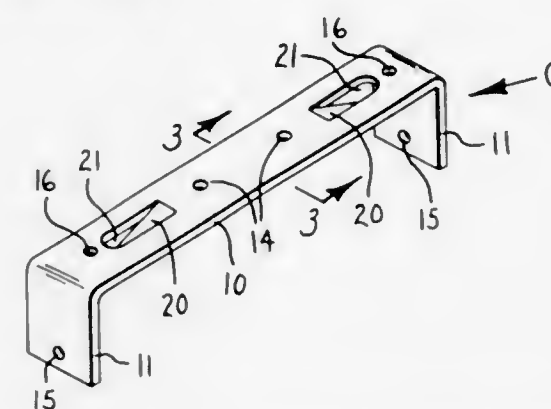
William John Luyben, 14005 N.E. Marine Dr., Portland, Ore.

Filed Nov. 5, 1971, Ser. No. 196,130

Int. Cl. E04g 17/14

U.S. Cl. 249—219 R

9 Claims



A metal bar has upturned end flanges on opposite ends of a base portion arranged to provide stops against the outward movement of a pair of vertical form panels resting on the clip. Spaced inwardly from said end flanges is a pair of outwardly directed tongues struck out from said base portion in inclined positions with elevated ends spaced from said flanges. The form panels are received in the spaces between the end flanges and the tongues. Panels improperly placed in the mid portion of the clip may be readily pushed out against the end flanges or the pouring of the concrete will push the panels out to their proper positions. The tongues provide sloping ramp surfaces to facilitate the outward movement of the panels.

The clip is also utilized in making forms for the monolithic pouring of a wall and footing. In one embodiment the clip is mounted on stakes in the footing pour area to support the wall form panels. In another embodiment in similar arrangement the clips are made long enough for mounting on the top edges of the footing form panels.

3,722,850

## SNAP ACTION VALVE

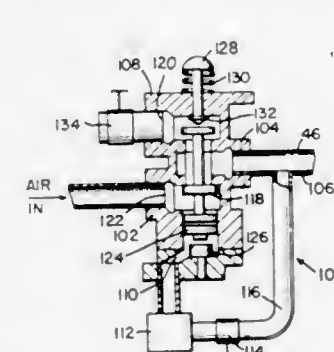
James M. Kemper, Hollywood, Calif., assignor to Monogram Industries, Inc., Los Angeles, Calif.

Division of Ser. No. 829,486, June 2, 1969, which is a continuation-in-part of Ser. No. 737,232, June 14, 1968, abandoned. This application Nov. 13, 1970, Ser. No. 89,376

Int. Cl. F16k 21/16; E03d 5/016

U.S. Cl. 251—52

4 Claims



A snap action valve mechanism includes a spool to which is coupled a magnetizable piston. A permanent magnet in a con-

trol chamber holds the spool in a first configuration. A pneumatic fluid is applied to the control chamber to act upon the piston, forcing the spool to snap into the second configuration.

3,722,851

## TIMING VALVES

Addison N. Love, Houston, Tex., assignor to Harold Brown Company, Houston, Tex.

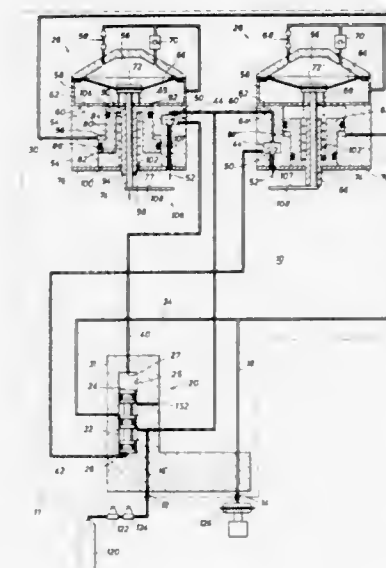
Division of Ser. No. 821,745, May 5, 1969, Pat. No. 3,653,393.

This application July 9, 1971, Ser. No. 161,150

Int. Cl. F16k 31/12

U.S. Cl. 251—54

8 Claims



This invention relates to timing valves for controlling the pressure fluid between a supply line and a utilization line servicing one or more pressure utilization devices with pressure signals of adjustable duration and frequency. The operation of a pair of complementary timing valves in connection with a controller is synchronized by the pressure signals applied to the utilization line. One timing valve begins its predetermined delay period on the application of the pressure signal, while the other timing valve begins its delay period on the termination of the pressure signal. Each timing valve includes a time-calibrated variable orifice forming part of a timing chamber which includes fluid which is placed under pressure by a flexible diaphragm. A master control valve coupling the supply line to the utilization line can be controlled by the timing valves and the successive displacements of the diaphragms.

3,722,852

## RELIEF VALVE

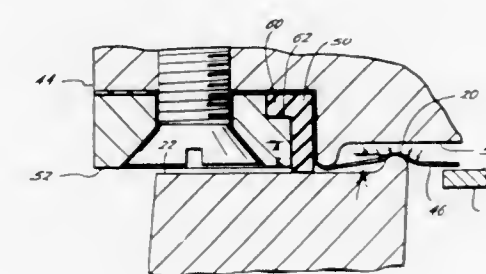
Walter W. Powell, Houston, Tex., and Dennis L. Howland, Oceano, Calif., assignors to Anderson, Greenwood & Co., Houston, Tex.

Division of Ser. No. 808,797, March 20, 1969, Pat. No. 3,583,432. This application March 12, 1971, Ser. No. 123,762

Int. Cl. F16k 25/00

U.S. Cl. 251—61.2

5 Claims



An improved pressure vacuum relief valve having a pressure energized seat, a secondary seat with a stop adapted to be used



with a pilot valve to relieve a vacuum condition and with two pilot valves to relieve pressure and vacuum conditions. This abstract is neither intended to define the invention of the application which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

3,722,853

## PILFER-PROOF VALVE

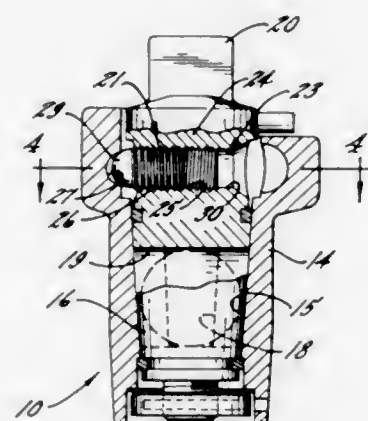
Theodore A. Dargatz, and Erwin E. Hirschberg, both of Rockford, Ill., assignors to Eclipse Fuel Engineering Co., Rockford, Ill.

Filed Dec. 8, 1971, Ser. No. 205,992

Int. Cl. F16k 35/06

U.S. Cl. 251—110

6 Claims



A locking screw is threaded into and retained permanently in the valve member of the valve and prevents rotation of the valve member upon being projected into a locked position in response to the turning of a specially designed laterally flexible tool inserted into the valve body and detachably connected in torque-transmitting engagement with one end of the screw.

3,722,854

## VALVE WITH PERFORATED RIBBON SILENCING ELEMENT

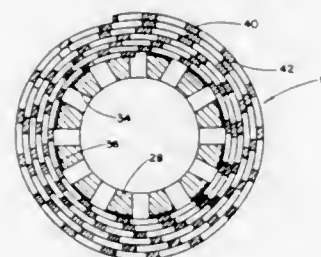
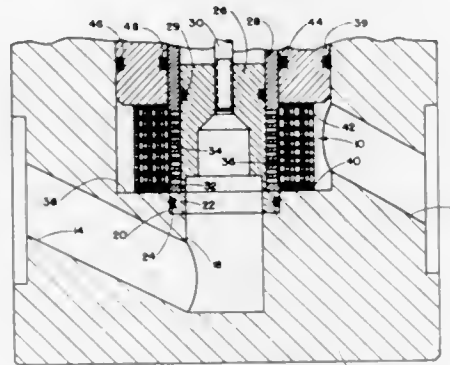
Gary D. Parola, Moraga, Calif., assignor to Grove Valve and Regulator Company, Oakland, Calif.

Filed Dec. 1, 1971, Ser. No. 203,561

Int. Cl. F16k 47/00

U.S. Cl. 251—127

9 Claims



The disclosure is of a silent valve in which outlet flow is in a radial direction. Intermediate the valve closure member and

the outlet passage is an annular flow retarding member formed by a coiled ribbon of perforated sheet material wrapped onto itself in several layers with holes therethrough overlapping to form communicating orifices. Preferably, the ribbon is sufficiently thick that the holes form expansion chambers producing further energy loss. Holes across the width of the ribbon are uncovered progressively as the closure member moves toward open position.

3,722,855

## BETWEEN FLANGE VALVE ASSEMBLY AND CLAMPING MEMBER

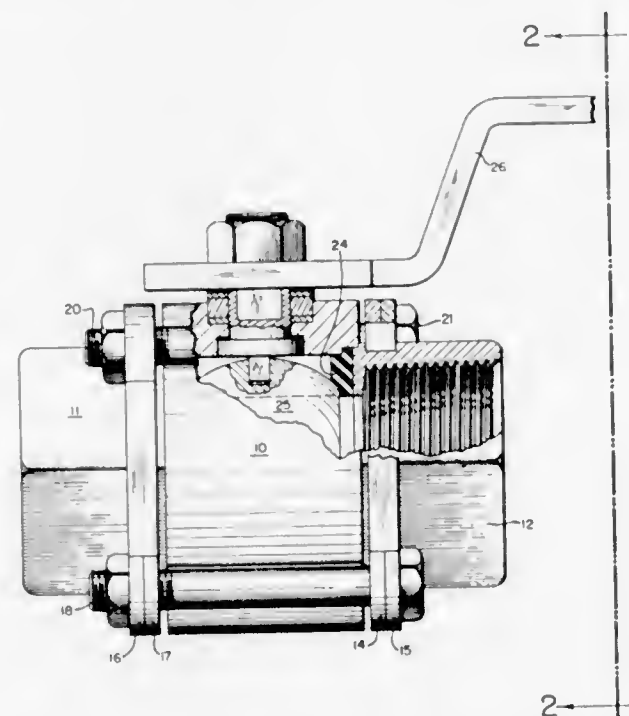
Roger G. Massey, Holden, Mass., assignor to The Parker and Harper Manufacturing Company Inc., Worcester, Mass.

Filed July 14, 1971, Ser. No. 162,369

Int. Cl. F16k 51/00; F16i 23/00

U.S. Cl. 251—151

4 Claims



A replaceable valve assembly secured into position by paired clamp members which engage flange members on either side of the valve and are bolted together by a plurality of bolts which engage only the clamp members themselves. The clamps are removable independently by removal of one of the bolts.

3,722,856

## BALL VALVE WITH SEPARABLE END FITTING

Ulrich H. Koch; Stephen Matousek, both of Moraga, and Gary Soderlund, Livermore, all of Calif., assignors to Whitey Research Tool Co., Emeryville, Calif.

Filed Oct. 26, 1971, Ser. No. 192,493

Int. Cl. F16k 5/06

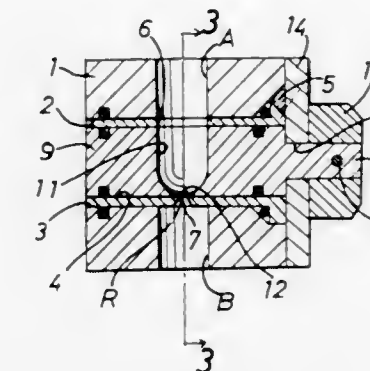
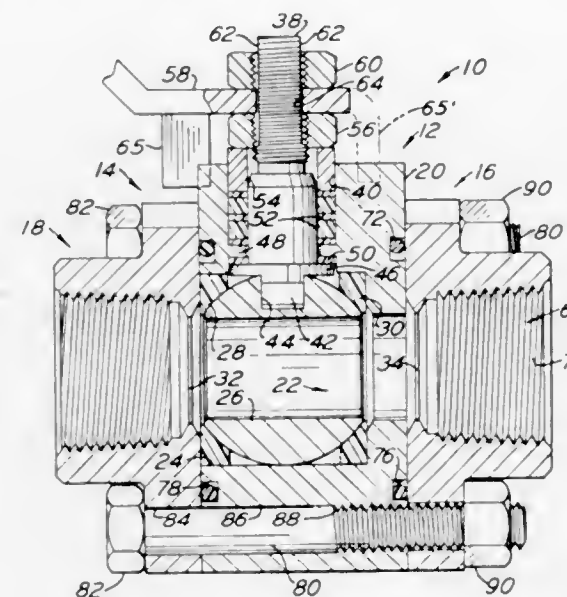
U.S. Cl. 251—152

4 Claims

The specification and drawings disclose a valve including a main body having an internal valve chamber connected with first and second flow passages. Cooperating with the first flow passage is a first end fitting which holds the valve member and seats in the main body. The first end fitting is connected to the main body by bolts which extend through it into threaded engagement with the body. Threaded end portions of the bolts extend outwardly of the body adjacent the second passage. A second end fitting cooperates with the second passage and in-

cludes openings through which freely pass the threaded end portions of the bolts. Nuts are threaded on the outer end of the

the inner surface of the sleeve and sloping outwardly to the outer surface of the sleeve, a throttle spool mounted in the sleeve and provided with a cavity of decreasing size communicating at its larger end with the first opening of the sleeve



bolts to clamp the second end fitting to the main body. This allows the valve to serve as a union since the second end fitting can be removed without disturbing the valve member.

and at its smaller end with the second opening of the sleeve, and means for relatively moving said sleeve and throttle spool to adjust the size of a sharp-edged orifice defined by overlap of the smaller end of the cavity with the second opening of the sleeve.

3,722,857

## GATE VALVE

Charles L. Townsend, 2 Corwin Road, Penfield, N.Y.

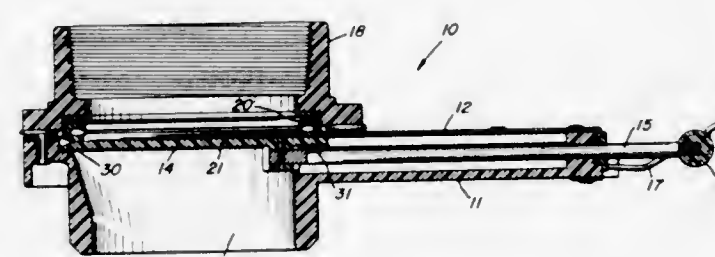
Continuation of Ser. No. 828,396, May 27, 1969, abandoned.

This application April 19, 1971, Ser. No. 135,366

Int. Cl. F16k 25/00

U.S. Cl. 251—203

3 Claims



A sliding gate valve has an improved seal and a cammed gate that cooperate to provide better sealing, along with easier operation and a gate of lighter construction. The improved seal is a flexible annular lip around the valve passageway having a ridge engaged by the gate and surfaces on opposite sides of the ridge inclined upward away from the gate for easy camming of the gate into engagement with either side of the ridge. The cammed gate includes cam followers on the gate and cams in the valve housing for forcing the gate against the seal as the gate nears its closed position.

## 3,722,859 BALL VALVE SEAL FOR HIGH TEMPERATURE OPERATION

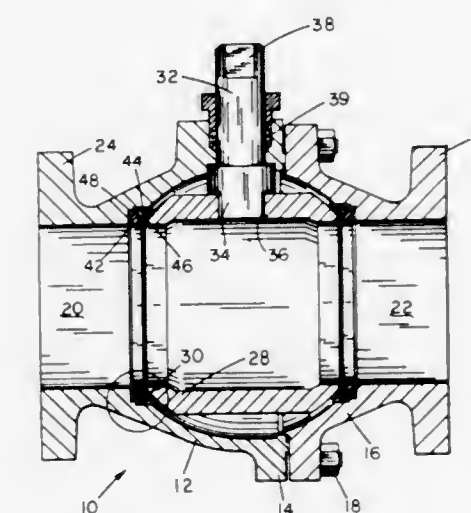
Francis E. Murphy, Greensburg, and William L. Kane, Trafford, both of Pa., assignors to Walworth Company, Bala Cynwyd, Pa.

Filed March 22, 1971, Ser. No. 126,848

Int. Cl. F16k 5/06

U.S. Cl. 251—315

10 Claims



## 3,722,858 FLOW REGULATING DEVICE

Masashi Sugimoto, Nagoya, and Yoshiki Moriyama, Okazaki, both of Japan, assignors to Norio Nomura, Anjo-shi, Japan

Filed Dec. 15, 1970, Ser. No. 98,311

Claims priority, application Japan, Dec. 29, 1969, 44/1407

Int. Cl. F16k 5/10, 5/18

U.S. Cl. 251—209

5 Claims

A flow regulating valve for hydraulic systems including a housing having inlet and outlet ports and a port crossing bore, a sleeve mounted in the bore of the housing and provided with a first opening communicating with the inlet port and a second opening on the opposite side communicating with the outlet port, the walls of the second opening forming knife edges at

A ball valve seal comprising a seal ring of yieldable material and of rectangular cross-section, though with one inner corner removed leaving a conical sealing surface. A seat ring assembly almost completely contains the seal ring, engaging both radial and both cylindrical surfaces to inhibit cold flow of the seal material, with just the conical surface exposed. A groove around the outer cylindrical surface of the seal ring provides space for thermal expansion relative to the seat ring. A back seal ring, which seals around the seat ring, has an internal conical surface that engages a complementary surface on the seat ring assembly whereby hoop tension provides a spring force under axial load.



3,722,860

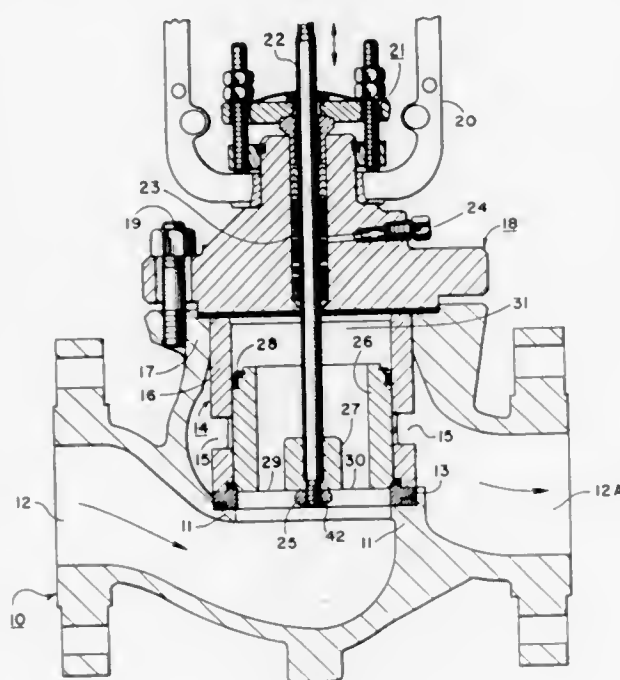
## CAGE VALVE ASSEMBLY

John R. Curran, Attleboro, Mass., assignor to The Foxboro Company, Foxboro, Mass.

Continuation of Ser. No. 42,426, June 1, 1970, Pat. No. 3,648,718. This application Dec. 9, 1971, Ser. No. 206,248  
Int. Cl. F16k 39/04

U.S. Cl. 251-332

3 Claims



A simplified industrial process control valve utilizing a cage guided plug having an easily replaceable soft seat, two gasket construction, improved plug rim seal and an unpinned stem and plug assembly to provide bubble-tight shut off.

3,722,861

## FENCING

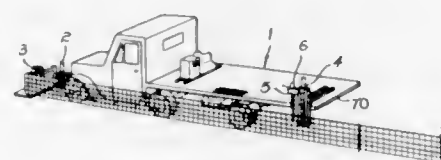
Colin C. Anderson, 111 Kengington Rd., Norwood, Australia  
Filed May 28, 1969, Ser. No. 828,598

Claims priority, application Australia, May 30, 1968, 38586/68

Int. Cl. B65h 75/30; B66f 3/00

U.S. Cl. 254-64

9 Claims



The disclosure relates to a fencing device in which a transport moves along the line of fencing and feeds the wires which are to form the line of fencing under tension once fencing is commenced. The posts are positioned by driving means along the line of strip wire and the wires are tied to the posts while the tension is maintained. The tension is maintained by braking means either on a drum which carries the wire or on separate means over which the wire passes and the tension means are so arranged that the force on this tension drum or means is measured by springs so arranged that the brakes are applied until the required tension is reached whereupon the brakes are progressively released to maintain the tension, control being such that the tension is maintained whether the vehicle moves forwardly during the playing out of the wire or is stationary during the driving of the posts.

3,722,862

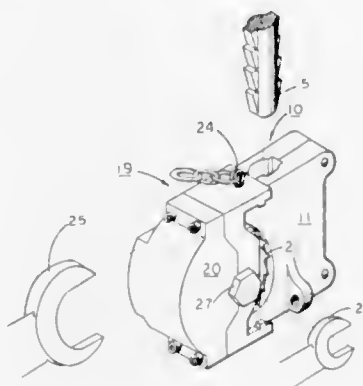
## JACK AND LOCK

Samuel L. Doke, 1421 North Kirby Drive, La Habra, Calif.  
Filed June 21, 1971, Ser. No. 154,912

Int. Cl. B66f 3/08

U.S. Cl. 254-10.5

8 Claims



A disconnectable assembled jack and lock combination. A unidirectionally adjustable lock, including a movable tongue having a longitudinal axis, further includes a longitudinally restrained, springloaded means adapted to cooperate with the tongue for checking longitudinal motion thereof in a preselected one of two opposed directions parallel to the longitudinal axis. A jack having a rotatably mounted pinion is adapted to engage the tongue for preselected unidirectional translation in a record of the two opposed directions. The jack and lock are keyed laterally of the longitudinal axis and parallel to the axis rotation of the pinion, whereby the jack and lock may be disconnectably engaged for cooperation.

3,722,863

## LIFT APPARATUS

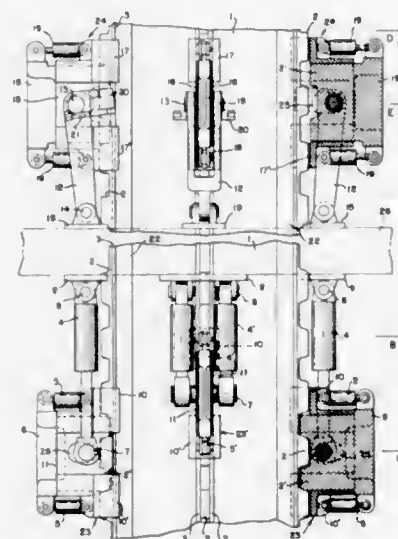
Isamu Itoh, Koenji-Minami, Tokyo, and Fumio Nakazono, Funabashi, both of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Dec. 22, 1971, Ser. No. 210,924

Int. Cl. B66f 1/00; E02d 21/00

U.S. Cl. 254-105

2 Claims



When a plurality of hydraulic cylinders are actuated for lifting or lowering a platform, the platform and the load applied to it are supported by a plurality of locking plates coupled to the cylinders and each having a plurality of trapezoidal teeth in engagement with the similar teeth of a rack attached to a post along which the platform is lifted or lowered. Lever means are provided for locking in position the platform for a long time even when the hydraulic pressure is not applied to the locking cylinders which cause said locking plates to engage with the racks.

3,722,864

## COMPOSITE STRUCTURAL MEMBER

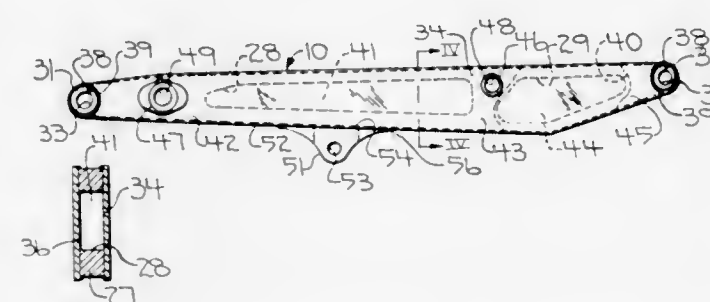
Herbert W. Borer, Naperville, and Arthur R. Shaff, Montgomery, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 13, 1971, Ser. No. 207,153

Int. Cl. B66f 3/00

U.S. Cl. 254-124

11 Claims



An elongated structural member with a central plate having apertures therein intermediate the ends thereof and having side plates secured thereto forming a laminated construction whereby the side plates and apertures form cavities within the structural member to provide a hollow, box-beam cross section for a portion of the length thereof in the areas of minimum stress and to provide solid sections in areas of maximum stress.

3,722,865

## WALKING BEAM FURNACE

Herder Storck, Duesseldorf-Heerd, and Werner Erhard, Kleinenbroich, both of Germany, assignors to Koppers-Wistra-Ofenbau Gesellschaft mit beschränkter Haftung, Duesseldorf-Heerd, Germany

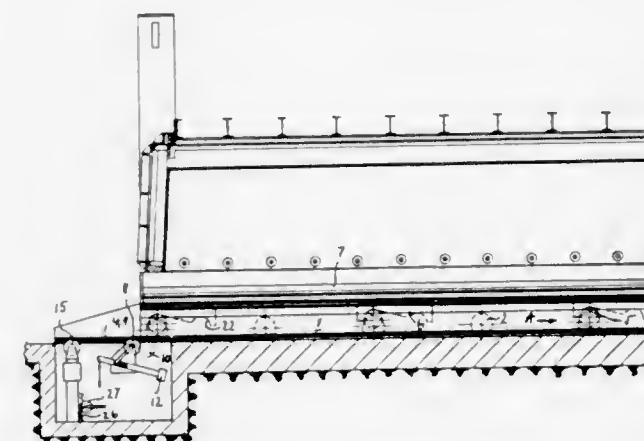
Filed March 22, 1971, Ser. No. 126,648

Claims priority, application Germany, March 21, 1970, P 20 13 580.2

Int. Cl. F27b 9/24

U.S. Cl. 263-219

10 Claims



In a walking beam furnace there is provided at least one lower and at least one superposed upper walking beam support frame. These are mounted for relative vertical as well as longitudinal movement. Components having upwardly inclined surfaces are interposed between the frames with which they cooperate so as to effect relative vertical displacement of the upper frame with reference to the lower frame when the frames are moved longitudinally relative to one another. A rack is fast with the lower frame and a stationarily mounted gear cooperates with this rack to cause longitudinal displacement of the lower frame. Another rack is fast with the upper frame and an engaging arrangement is provided, including a stationary upright hollow guide member located beneath the upper frame, an upright support which is guided in the guide member for vertical movement, a gear wheel turnably carried by the upright support and camming with the rack on

the upper frame, and a biasing arrangement such as a counterweight which permanently urges the gear wheel into engagement with the rack on the upper frame.

3,722,866

## APPARATUS FOR FEEDING A GAS FURNACE

Claude Herzberg, Bron, France, assignor to Societe Generale Des Produits Refractories, Paris, France

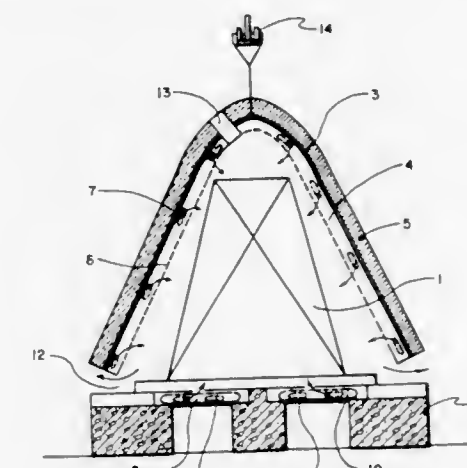
Filed April 5, 1971, Ser. No. 131,365

Claims priority, application France, April 3, 1970, 70/12124; April 3, 1970, 70/12127

Int. Cl. F27b 3/02

U.S. Cl. 432-175

8 Claims



A method and apparatus for providing substantially uniform temperature in a furnace or kiln heated by combustion of an air-fuel mixture. A distribution chamber is provided having at least one permeable wall adjacent the combustion chamber. The permeable wall comprises a refractory material, either fabric or felt, of ceramic fibers. The air-fuel mixture is introduced into the distribution chamber at a pressure in excess of that in the combustion chamber. In this way the air-fuel mixture slowly passes through the permeable wall and is ignited and burned over a large area within the combustion chamber.

3,722,867

## METHOD OF CALCINING LIMESTONE

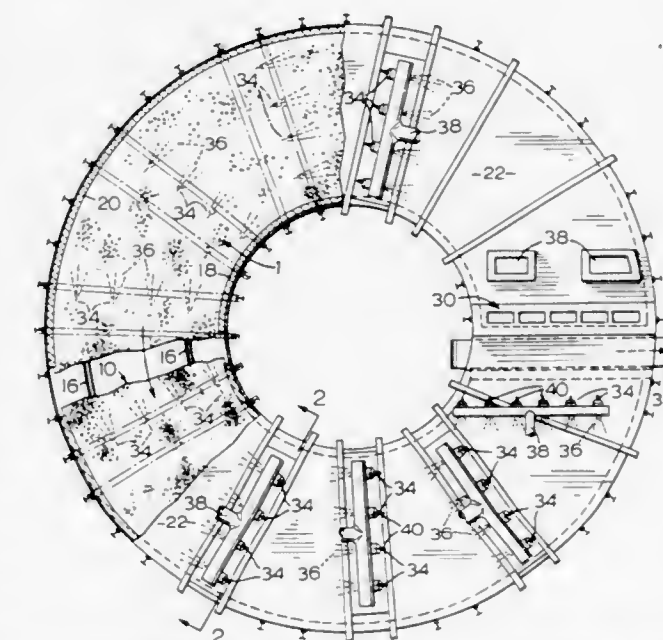
William D. Butler, 4 Quincey Crescent, Willowdale, Ontario, Canada

Filed June 1, 1971, Ser. No. 148,342

Int. Cl. C04b 1/00

U.S. Cl. 423/175

2 Claims



This invention is concerned with a continuous method of calcining limestone in a chamber having refractory walls and



a refractory hearth movable through said chamber comprising the steps of depositing the limestone in a layer on the hearth, heating the limestone above 1600° F. as the hearth moves through chamber by directing burning gases against the surface of the layer and downwardly into the limestone and against the hearth, evacuating CO<sub>2</sub> and other gases released from the limestone and gas combustion from said chamber and removing the limestone from the hearth.

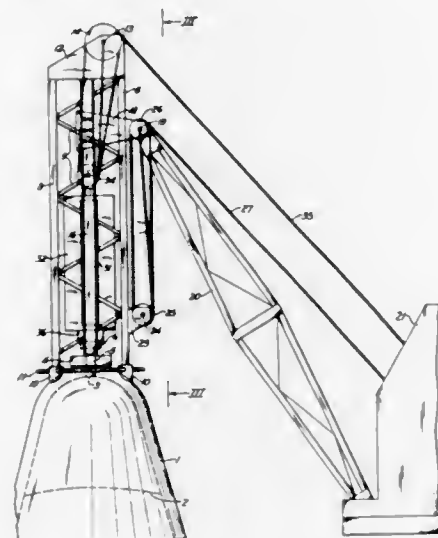
3,722,868

# **APPARATUS FOR DISLODGING SKULLS FROM SLAG OR CINDER LADLES**

Richard K. Jones, 347 Thompsonville Road, McMurray, Pa.  
Filed Aug. 24, 1971, Ser. No. 174,352  
Int. Cl. C21b 7/14

U.S. Cl. 266—1 S

8 Claims



An inverted ladle, in which a skull is stuck, is provided with a vertical hole through its upper end. Inserted in this hole is a pin that extends above the ladle. A power hammer that has been lowered close to the upper end of the pin is then operated to drive the pin down into the ladle in order to knock the skull loose from inside the ladle. The power hammer operates in a framework temporarily resting on the ladle around the pin.

3,722,869

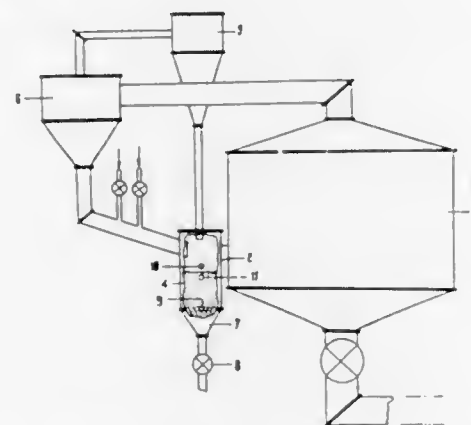
# **SEGREGATION APPARATUS**

Victor J. Moore, Nkana East, Zambia, Republic of South Africa, to Anglo American Corporation of South Africa Limited, Johannesburg, Republic of South Africa  
Division of Ser. No. 670,620, Sept. 26, 1967, abandoned. This application May 14, 1970, Ser. No. 37,336  
Claims priority, application South Africa, Sept. 28, 1966, 66/5859

Int. Cl. F27b 21/00; C21b 1/02, 13/14

U.S. Cl. 266—20

1 Claim



In the process of U.S. Pat. No. 3,300,299, material in the chamber through which continuous plug flow takes place is

caused to oscillate in level, in response to pressure probe measurements, either by intermittently discharging from the chamber or by varying the rate of discharge between a level which is higher than the rate of inflow into the chamber and a level which is lower than that rate of inflow.

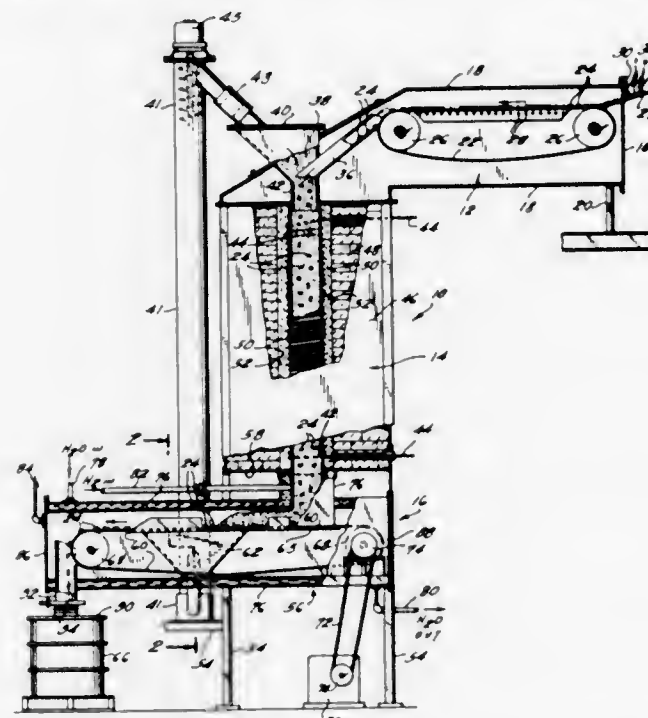
3,722,870

# **METHOD AND FURNACE FOR SINTERING**

John F. Griffin, 121 Carey Avenue, Meriden, Conn.  
Filed May 20, 1970, Ser. No. 38,937  
Int. Cl. F27b 21/00

U.S. Cl. 266—20

4 Claims



A method and furnace are disclosed for continuous sintering powdered metal products. The furnace includes a high temperature heating zone through which the powdered metal products pass for sintering. The high temperature heating zone includes a thermally stable medium preferably alumina sand, in which the sintered product is carried through the furnace. The invention provides a sintering furnace which is capable of achieving and maintaining higher temperatures in continuous operation than previously possible for commercially operated furnaces.

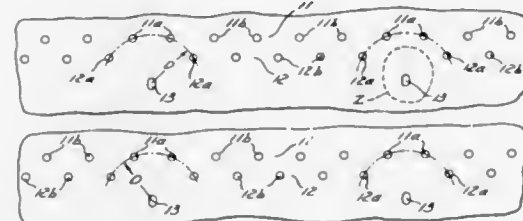
3,722,871

# **BLAST FURNACE WITH STAGGERED TUYERE SYSTEM**

Melvin J. Greaves, Cleveland, Ohio, assignor to Arthur G. McKee & Company, Cleveland, Ohio  
Filed Oct. 15, 1970, Ser. No. 80,907  
Int. Cl. C21b 7/16

U.S. Cl. 266—29

3 Claims



Tuyere systems for blast furnaces are disclosed embodying two or more rows of tuyeres, to provide increased capacity for injection of blast air and for injection of materials to control temperatures and reactions inside the blast furnace. The increased capacity provided by more than one row of tuyeres

makes possible the introduction of air and injected other materials in sufficient quantities to provide desired temperatures and reactions, and efficient operation of blast furnaces of exceptionally large diameters. The tuyeres are disclosed as arranged substantially equidistantly from the iron notch to make possible equalization of heating around the notch, and to minimize hazardous conditions. At least four iron notches are utilized, and advantageous processes are disclosed for withdrawing iron through the iron notches. Tuyeres in the multiple rows may be divided into groups through which injection materials may be injected into the furnace independently of the tuyeres in other groups to provide control of internal condition temperatures and reactions in the furnace.

3,722,872

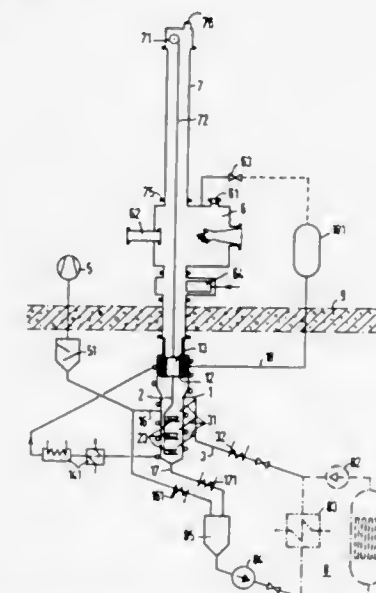
# **COMBINED SPECIMEN REMOVAL AND VACUUM DISTILLATION APPARATUS**

Heribert Jentges, and Oskar Burz, both of 8520 Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Munich, Germany  
Filed Oct. 30, 1970, Ser. No. 85,320  
Claims priority, application Germany, Nov. 7, 1969, P 19 55 988.7

Int. Cl. C21c 7/00

U.S. Cl. 266—34 R

10 Claims



A combined specimen removal and vacuum distillation apparatus for discontinuously checking liquid metal for purity, such as used as a heat carrier in nuclear reactor plants. The apparatus comprises a vessel of stainless steel forming a processing chamber and having wall-temperature control means and a removable top cover, means for positionally securing the cover on the vessel against excess pressure in the chamber, a plurality of removable specimen containers, holder devices mounted on the cover in suspended relation thereto for supporting the respective specimen containers, the holder means having respective heating means and respective temperature sensors, a lifting device having a tube vertically extending above the cover and tightly joined with the vessel chamber, a lifting mechanism disposed in the tube and connected to the cover for lifting the cover and the specimen containers, and a glove box and a specimen sluice interposed between the vessel and the tube of the lifting device.

3,722,873

# **METHOD AND APPARATUS FOR REFINING MOLTEN METAL**

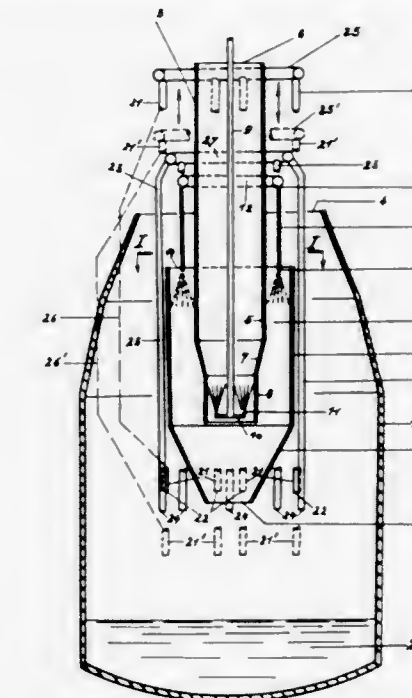
Walter Von Haumer, Mozartstrasse 6, Essen, Germany  
Division of Ser. No. 16,684, March 5, 1970. This application June 11, 1971, Ser. No. 152,383  
Int. Cl. C21c 7/00

U.S. Cl. 266—34 L

6 Claims

Molten metal, particularly pig iron, is refined by oxygen supplied to the melt substantially in the form of liquid metal

oxides. Refining gas, preferably high purity oxygen, blown above the melt surface entrains slag and pulverulent additives to form a refining jet in which a substantial part of the oxygen reacts to form liquid metal oxides which refine the melt under controlled endothermal conditions. A foamed slag is prepared during the first phase of the refining operation by blowing refining gas above the surface of the melt while injecting pow-



dered lime in a stream of refining gas into and through a combustion chamber located above the slag surface, in which the heat liberated by reaction of the exhaust gases drawn in from the converter is absorbed by the lime particles traveling through the chamber on their way to the slag. During the second phase of the process pulverulent cooling additives such as sponge iron are added in the same manner.

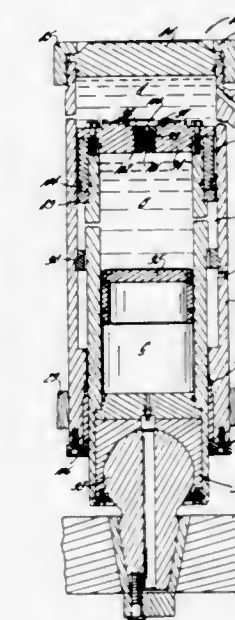
3,722,874

# **SLAG POT CARRIER**

Edward S. Kress, 4009 Brookdale Pl., Peoria, Ill.  
Filed Dec. 15, 1970, Ser. No. 98,306  
Int. Cl. F16l 5/00

U.S. Cl. 267—64 R

2 Claims



An improved slag pot load carrier is provided. Fluid powered means are included to assist the primary dump mechanism in moving a vehicle load pivoted on the main vehicle frame from a carry to a dump position, and to return the



load to its carry position. Suspension means are provided to lower and raise at least a portion of the vehicle frame and to resiliently support the frame against shocks. A hydro-pneumatic system is also provided to appropriately actuate the suspension means, and the primary dump and return assist mechanisms.

3,722,875

## ADJUSTABLE SUSPENSION UNIT

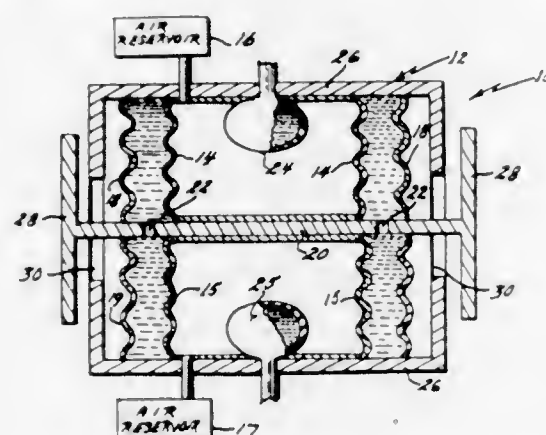
Hans O. Hasse, Alamogordo, N. Mex., assignor to the United States of America as represented by the Secretary of the Air Force

Filed April 29, 1971, Ser. No. 138,426

Int. Cl. F16k 5/00

U.S. Cl. 267—122

10 Claims



An adjustable suspension unit having an outer housing encompassing a pair of counteracting bellows which are surrounded by a pair of damping bellows, respectively. Separating one set of counteracting and damping bellows from the other set of counteracting and damping bellows, is a middle plate utilized for supporting the equipment to be suspended. By regulating the volume and pressure within the counteracting bellows, the load carrying capacity and spring stiffness of the unit can be easily adjusted. Adjustment of the damping bellows can also be performed if necessary.

3,722,876

## SHOCK ABSORBING DEVICE ESPECIALLY FOR VEHICLES

Kurt Schwenk, 318 Wolfsburg, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

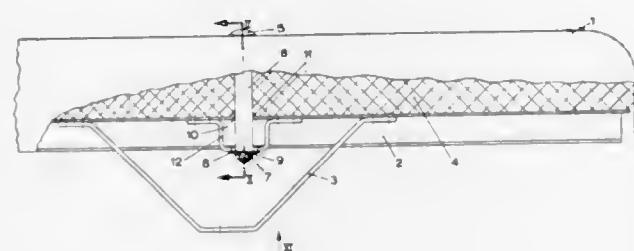
Filed April 8, 1971, Ser. No. 132,448

Claims priority, application Germany, April 9, 1970, P 20 16 855.2

Int. Cl. F16f 7/12

U.S. Cl. 267—140

20 Claims



Shock absorbing device having an outer and an inner section supported for relative movement with respect to each other in the direction of a shock force, an intermediate section placed into the space formed by the outer and inner sections and comprising a material having volume-elastic properties, the elastic material is treated with a material having adhesive properties for delaying the return of it into the original position due to its elastic properties after a shock force causing compression of the elastic material has ceased.

3,722,877  
APPARATUS FOR OPENING FOLDED, BOUND, MULTIPLE-SHEET PAPER PRODUCTS

Jakob Wetter, Wetzikon, Switzerland, assignor to Ferag, Fehr & Reist AG, Hinwil, Switzerland

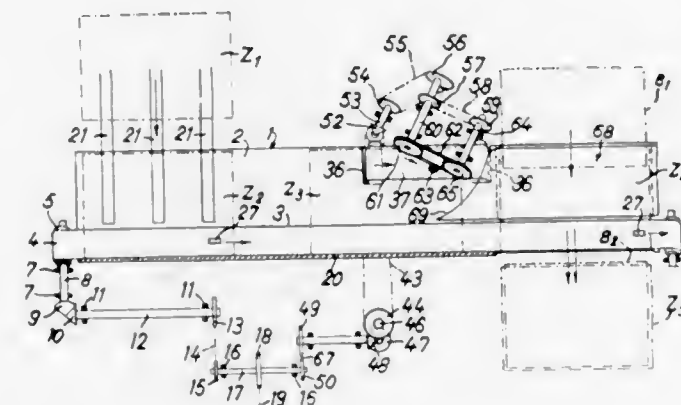
Filed Dec. 28, 1970, Ser. No. 101,456

Claims priority, application Switzerland, Jan. 9, 1970, 278/70

Int. Cl. B65h 5/30

U.S. Cl. 270—57

11 Claims



There is disclosed an apparatus for opening folded, bound, multiple-sheet paper products which are continuously advanced or conveyed at a spacing from one another at a conveying device. According to the invention, there are provided two driven entrainment members which act at opposite flat sides of the paper products, and wherein the paths of movement of these entrainment members are at least partially disposed in the conveying plane, enclose an acute angle with respect to one another, and possess a directional component which coincides with the conveying direction.

3,722,878

## SHEET FEEDER

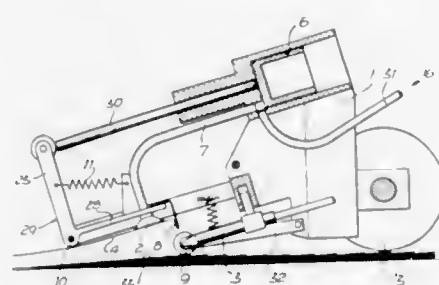
Hermann F. Kistner, 7141 Neckarweihingen, Germany, assignor to Maschinenbau Oppenweiler Binder & Co., Oppenweiler, Germany

Filed Oct. 1, 1970, Ser. No. 77,124

Int. Cl. B65h 3/08

U.S. Cl. 271—31

7 Claims



A sheet feeder having a conveyor for feeding sheets spread apart so that the corresponding transverse edges of adjacent sheets overlap each other; a singling station at the front end of the conveyor; a separating mechanism above the conveyor and preceding the singling station and comprising a suction head for lifting the rear edge portion of the leading sheet; and a separating blower for blowing an air current between the lifted rear edge of the leading sheet and the next lower sheet; and control means for the separating mechanism comprising a feeler element adapted to engage with a transverse edge portion of the leading sheet and to insure that this sheet will not be sucked up by the suction head until its front edge is located at the singling station.

3,722,879

## CONTROL APPARATUS FOR DOCUMENT STACKERS

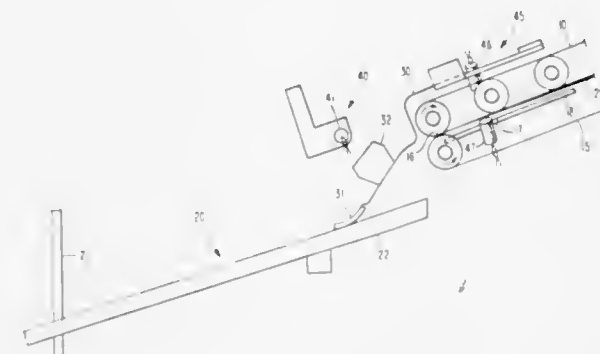
David L. Johnston, and Marvin E. Nyberg, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed March 6, 1972, Ser. No. 231,936

Int. Cl. B65h 31/00, 7/02

U.S. Cl. 271—47

7 Claims



A document level sensor for controlling movement of a platform as documents stack thereon. A document tail kicker carries a shutter plate for blocking light normally impinging upon a light sensitive detector. A document sensor is placed upstream of the stacker platform at a distance less than the minimum distance between documents. The outputs of the light sensitive detector and the document detector are connected to a logic circuit requiring simultaneous outputs from each so as to develop a signal for actuating a motor. The motor drives a lead screw for lowering the stacker platform. The logic circuit also detects a stacker full or stacker jam condition. The stacker full condition is detected by sensing the output of the light sensitive detector, the output of the document detector and a lower limit switch. The stacker jam condition is detected by sensing the occurrence of two successive signals directing the stacker platform to be lowered and an output from the light sensitive detector.

3,722,880

## DETECTOR ASSEMBLY

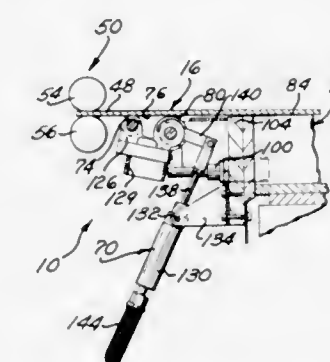
Earl D. Harris, Warminster, Pa., assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed April 14, 1971, Ser. No. 133,822

Int. Cl. B65h 5/06, 7/00

U.S. Cl. 271—51

16 Claims



An improved apparatus for operating on sheet material includes a machine having a carriage which moves a sheet during work operations and then deposits the sheet at an unloading location. A detector assembly detects when a trailing end portion of a sheet is moved from the unloading location by an unloader assembly and thereupon provides a signal to initiate operations of the machine on a next succeeding sheet. The detector assembly includes a piston and cylinder biasing assembly which moves a detector roller from an inactive position to an active position in which the detector roller is pressed against a sheet. When the trailing end of the sheet leaves the unloading location, the biasing assembly swings the

detector roller upwardly to an actuated position. As the detector roller moves to the actuated position, a switch is closed to provide a signal indicating that the sheet has been removed from the unloading location. The force with which the detector roller is urged upwardly by the biasing assembly can be adjusted so that the roller is pressed upwardly with a relatively large force against heavy sheets of material and is pressed upwardly with a relatively small force against light sheets of material.

3,722,881

## SUPPORTS FOR GYMNASIAC BEAM

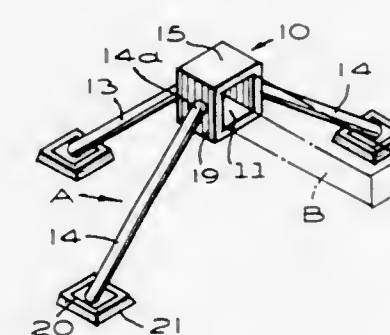
Donald R. Vilotti, 535 Corbitt Drive, Burlingame, Calif.

Filed Jan. 20, 1972, Ser. No. 219,288

Int. Cl. A63b 1/06; F16m 11/32

U.S. Cl. 272—60

5 Claims



Supports for gymnastic beam wherein a pair of stand-like supports are provided, each having a cap formed with a socket into which an end section of a gymnastic beam may be telescoped, with tripod legs fixed to each of the caps to support the beam at a desired height above the floor or ground, with the tripod legs retaining the beam against endwise and lateral movements while a person performs various acrobatic stunts on the beam.

3,722,882

## EXERCISE CYCLE WITH INTERACTING WAIST BELT

Harris W. Patrick, 2491 State Road 84, Fort Lauderdale, Fla.

Filed Sept. 27, 1971, Ser. No. 184,070

Int. Cl. A63b 23/04, 23/02

U.S. Cl. 272—73

8 Claims



Exercising apparatus in which a person seated on a seat of the apparatus grasps a handle directly in front of him and at the same time pedaling a pedalling device with his feet stretched horizontally out in front of him. A waist belt is provided to be struck by the thighs of the person when pedalling and wearing the belt about his waist in order to exercise the waist. The handle and the pedals are adjustable vertically.



### 3,722,883 CHILD'S SWING

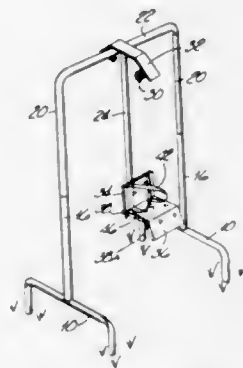
Joseph O'Dowd, Jersey City, N.J., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Oct. 13, 1971, Ser. No. 188,916

Int. Cl. A63g 9/00

U.S. Cl. 272—85

3 Claims



A swing employs a hollow U-shaped tubular frame having a top horizontal tube. An elongated vertical tube is pivotally secured at its upper end to the midpoint of the horizontal tube. A seat is secured to the vertical tube, and is free to swing back and forth below an in a vertical plane perpendicular to the horizontal tube. A clip extends horizontally over the horizontal tube at right angles thereto and has a spring at each end extending downwardly and inwardly toward the vertical tube.

### 3,722,884

#### FRONTALLY RAISEABLE VEHICLES AMUSEMENT APPARATUS

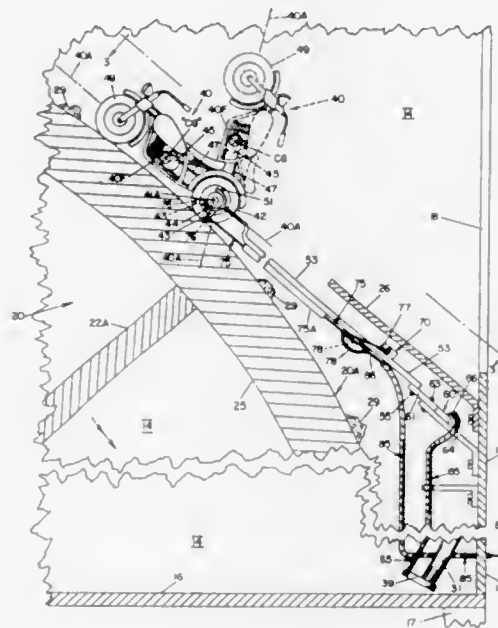
Richard L. Brown, Bellevue, Nebr., assignor to Bally Manufacturing Corp., Chicago, Ill.

Filed Sept. 29, 1971, Ser. No. 184,813

Int. Cl. A63f 9/14

U.S. Cl. 273—1 E

11 Claims



There is provided amusement apparatus comprising a miniature simulated vehicle positioned within an upright hollow housing, and remotely controllable by a rearwardly externally positioned operator, the apparatus vehicle simulating the front-end raising or "wheelie" effect of a typical land-vehicle as it might rapidly traverse inclined or uneven terrain whereby pronounced vertical accelerations are subjectable thereto (and especially evident at the land-vehicle's forward-portion). The amusement apparatus also preferably includes a simulated-terrain drum located within the housing frame, means a drive wheel on the the vehicle frictionally engaging the drum

for causing relative longitudinal velocity between the simulated-terrain and vehicle, protuberances on the drum extending between the vehicle and the simulated-terrain for vertically upwardly accelerating the vehicle such that the forward-portion thereof pivots upwardly, or "wheelies," about its rearward-portion, and operator remote control steering linkage to steer the vehicle around the protuberances or preventing, or at least minimizing, vertical accelerations to the vehicle forward-portion, and a cable for rehabilitating an immobilized upended vehicle.

### 3,722,885 EXERCISE GAME

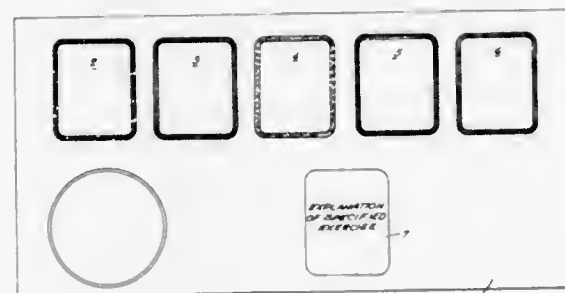
Carol Ann Leaf, 18W130 73rd Place, Westmont, Ill.

Filed July 13, 1971, Ser. No. 162,229

Int. Cl. A63f 1/00

U.S. Cl. 273—1 R

5 Claims



A game wherein provision is made for the chance designation of the character and duration of performance of an exercise selected from a group of exercises designed to condition the body of the player in five important physical fitness component areas including cardiovascular endurance, flexibility, agility, balance and strength. Instructions for the performance of these exercises are imprinted on one side of cards of various colors which are arranged colored side up in piles relating to the various physical components for which the described exercise is designed. Special dice are provided, one having color designations which indicate the pile from which the player shall select a designated exercise and the other having numerals to indicate the period of time to be devoted for the performance thereof. Scoring is based upon the judgment of the instructor as to performance, effort and endurance. A timer is provided to measure the time designated by the cast of the numbered die.

### 3,722,886

#### MOVABLE STAND FOR A BASKETBALL GOAL

George A. Sinner, Casselton, N. Dak., assignor to Teamakers, Inc., Casselton, N. Dak.

Filed May 11, 1971, Ser. No. 142,234

Int. Cl. A63b 63/04

U.S. Cl. 273—1.5 R

17 Claims

A stand for a basketball goal has as its main member an elongated tube which, at one end, has a basket and a backboard mounted thereon and which runs at an inclined angle of roughly 30° to 45° from that point to a ground supported end. The tube is supported at its mid-portion by a movable carriage so that the basket and backboard are removed far enough from the carriage to provide the players with a relatively large run-under room. The tube running at an inclined angle from the backboard to the ground provides a relatively great effective longitudinal dimension of the stand which creates a rigid and firm support for the backboard which will have relatively little give or springiness. A winch

### 3,722,888

#### AIR CUSHION GAMES

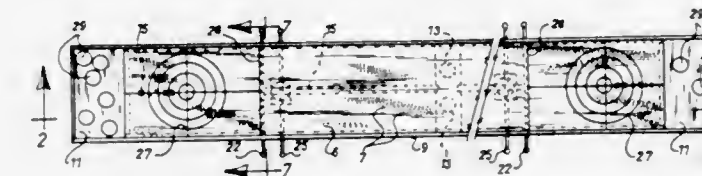
Jacques Ducharme, 5891 de Normanville St., Montreal, Quebec, Canada

Filed April 29, 1971, Ser. No. 138,630

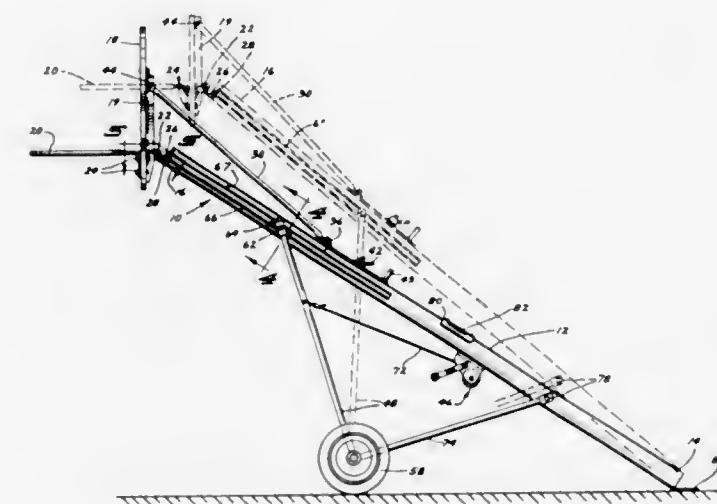
Int. Cl. A63f 7/00

U.S. Cl. 273—126 R

7 Claims



Games of the type in which playing pieces are slid over a playing surface characterized in that the panel forming the playing surface is provided with a great number of holes in communication with an air supply under pressure which lifts the playing pieces off the playing surface, resulting in very little friction opposing the movement of the playing pieces. Means are provided to control the pressure of the air supplied to the through bores in order to adjust the coefficient of friction between the playing pieces and the playing surfaces. A few types of games are described incorporating the above principle, including a game of curling.



provided so that the stand may be secured to a motor vehicle or bolted to a solid surface. The lower end of the tube may be filled with any suitable ballast material to add mass and increase stability.

### 3,722,887

#### CORRELATED SET OF CLUBS WITH INDICATOR LINE

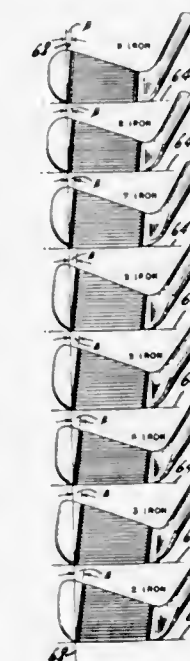
Alastair J. Cochran, Sutton, Coldfield, England; John W. Jepson, Marion, Mass.; Edward R. Woolley, Rancho Santa Fe, Calif., and Francis deS. Lynch, Mattapoisett, Mass., assignors to Acushnet Company

Division of Ser. No. 146,255, May 24, 1971. This application Nov. 16, 1971, Ser. No. 199,285

Int. Cl. A63b 53/00

U.S. Cl. 273—77 A

5 Claims



In a correlated set of golf clubs at least one visible indicator line on the striking face of each club head is provided. This indicator line lies in the loft plane of the club head and is in a predetermined angular relationship with a second line, real or imaginary, and being perpendicular to a third line, real or imaginary, formed by the intersection of the loft plane and the plane on which the club is placed in its normal position for striking a golf ball. The angular relationship is a certain degree for each successive club in the set.

### 3,722,889

#### PORTABLE PUTTING GAME DEVICE

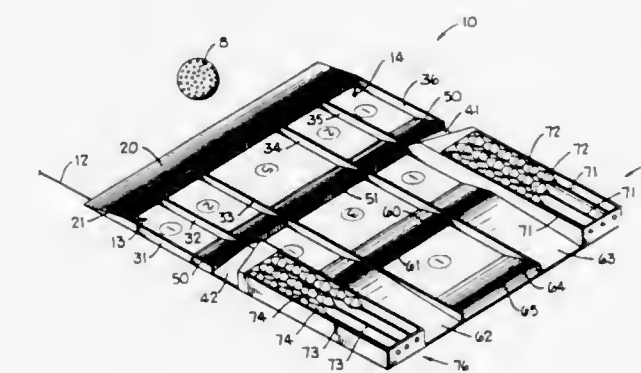
W. Curtis Miller, 1005 Jameson Ct., New Castle, Ind.

Filed April 28, 1972, Ser. No. 248,530

Int. Cl. A63b 57/00, 67/02

U.S. Cl. 273—176 F

17 Claims



Portable golf putting apparatus including two rectangular plastic putting targets spaced apart from each other a suitable putting distance and having their side edges arranged along a straight line defined by an inelastic cord having its opposite ends secured to keyhole openings in the targets. Each target includes four parallel spaced-apart ramps over which a golf ball may be puttied. Six parallel spaced-apart partitions extending perpendicular to the ramps define five channels through which the puttied ball passes. One or more scoring pockets are located along the length of each channel and a ball exit opening is provided at the end of each channel. A set of counting beads is provided at each rear corner of the target, to facilitate keeping score.

### 3,722,890

#### GOLF CLUB SWING TRAINING DEVICE

Richard A. Wieboldt, 1623 Ora Drive, Napa, Calif.

Filed Nov. 20, 1970, Ser. No. 91,443

Int. Cl. A63b 69/36

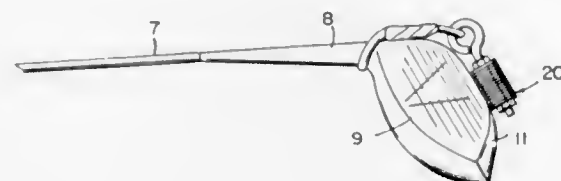
U.S. Cl. 273—186 A

1 Claim

For use with a golf club having a shank and a head there is provided a loop having a bight large enough to slip over the shank but not large enough to pass over the head. The loop is



flexible and is connected by an articulation to a body having a substantial weight and preferably of a material making an audible click when the body strikes the club sole at the end of



the backswing. The weight body may take the form of a threaded eye bolt including a pair of lock nuts between which a plurality of washers are clamped.

3,722,891

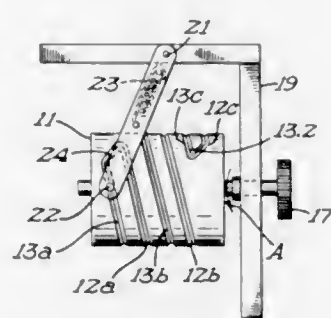
## SOUND REPRODUCING DEVICE FOR TOYS

Waldemar Hiller, Maastrichter Str. 26, Cologne, Germany  
Continuation-in-part of Ser. No. 862,361, Sept. 30, 1969, abandoned. This application Nov. 10, 1971, Ser. No. 197,263  
Claims priority, application Germany, Oct. 19, 1968, P 18 04 041.0

Int. Cl. G11b 25/02, 3/00

U.S. Cl. 274—22

4 Claims



A sound reproducing device for toys and the like comprising a drum as a carrier for the sound grooves, the drum being reciprocally journaled. The sound grooves extend helically over the drum circumference. The groove system consists of two interposed tracks connected at their terminations by means of guidings for the stylus of the pickup means, enabling the stylus to permanently engage any one of the grooves and thus eliminating the necessity to disengage the stylus for return to the respective groove start point of a groove.

3,722,892

## TAPE RECORDER WITH CASSETTE CHANGER

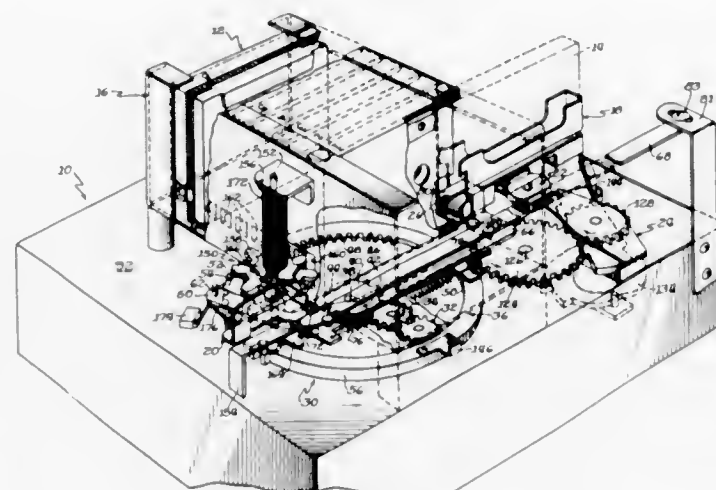
Robert Haake, Pasadena, Calif., assignor to Bell & Howell Company, Chicago, Ill.  
Filed June 29, 1970, Ser. No. 50,601 The portion of the term of this patent subsequent to Sept. 7, 1988, has been disclaimed.  
Int. Cl. G11b 15/24, 23/12

U.S. Cl. 274—4 F

17 Claims

A tape recorder-reproducer having a mechanism for loading any one of a plurality of cassettes from a magazine into a carrier means, for rotating the carrier means to invert the cas-

sette to position each of two magnetic tracks on a tape in an effective position for recording or reproduction, for unloading



the cassette from the carrier means into the magazine and for advancing the magazine to permit repeating the cycle.

3,722,893

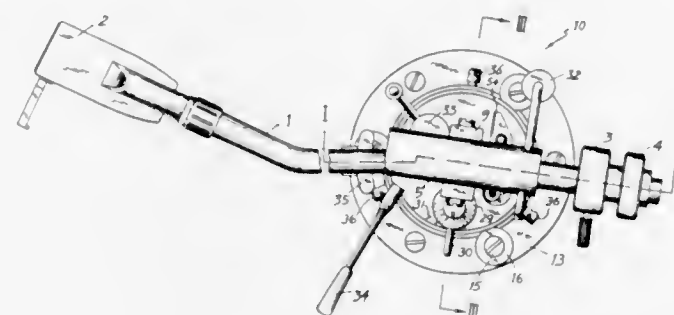
## PICKUP OF DISK REPRODUCER

Seisuke Shimoda, and Yoshiaki Shimoda, both of Tokyo, Japan, assignors to Toho Machine Co., Ltd., Tokyo, Japan  
Filed April 17, 1970, Ser. No. 29,493

Int. Cl. G11b 3/10

U.S. Cl. 274—23 R

4 Claims



A pickup for disk transducing mechanisms is disclosed including a stylus force applying means for varying the contact force between the stylus and the recording disk. Another feature of the invention resides in the provision of a mechanism to rotate the pickup arm in opposition to the force produced by the stylus tracking in the spiral groove of the recording disk. Another feature of the invention is the provision of means for simultaneously adjusting the contact force and the tendency of the pickup arm to rotate toward the axis of rotation of the disk.

3,722,894

SEALING GLAND WITH UNSTRESSED STANDBY SEAL  
Alan Cameron-Johnson, St. Albans, England, assignor to Hawker Siddeley Aviation Limited, Kingston-upon-Thames, Surrey, England

Filed March 3, 1971, Ser. No. 120,460

Claims priority, application Great Britain, March 6, 1970, 10,888/70

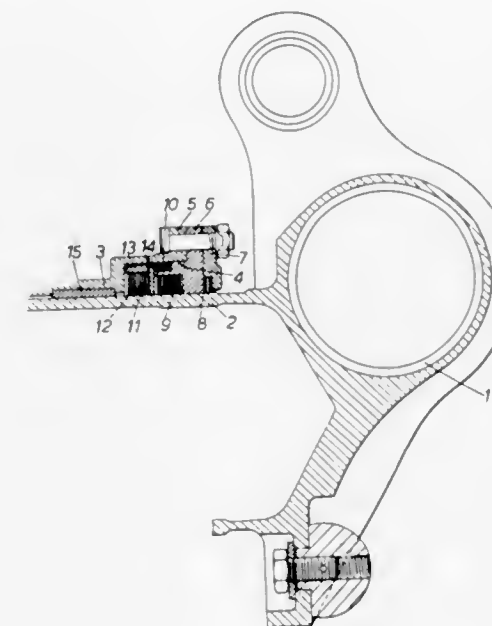
Int. Cl. F16j 9/00

U.S. Cl. 277—9

8 Claims

A sealing gland assembly for an aircraft undercarriage leg in which, in addition to the primary or working seal ring, a standby seal ring is stored in an unstressed condition on the 'wet' side of the working seal ring. Both seal rings are contained within a seal chamber formed by an enlargement at the end of

the outer tube of a sliding telescopic pair of tubes, the open end of the enlargement being substantially closed by a gland



ring that has an axial flange extending into the seal chamber and compressing the working seal, but not the standby seal, against the inner tube.

3,722,895

## SEALING DEVICE

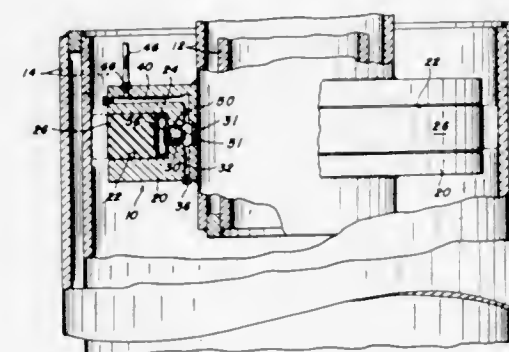
Ernst A. Mevissen, Robinson Township, Allegheny City., Pa., assignor to Dravo Corporation, Pittsburgh, Pa.

Filed Dec. 30, 1970, Ser. No. 102,831

Int. Cl. F16j 15/46

U.S. Cl. 277—34.3

13 Claims



A device for providing a sealed contact between two metal telescoping members is disclosed. One of the members has an annular packing-receiving channel secured thereon. An expandable tubular annulus forming part of the sealing device is entirely contained in the channel. Fluid pressure means is provided for selectively supplying fluid under pressure to the annulus and for relieving the fluid pressure therein. A replaceable radially yieldable elastic annular seal member is fitted in the channel around the expandable tubular annulus and has its radial outer peripheral surface projecting from the channel toward the confronting surface of the other member. The outer peripheral surface of the seal member has a sealing surface thereon for contacting the confronting surface of the other member when the tubular annulus is expanded.

3,722,896

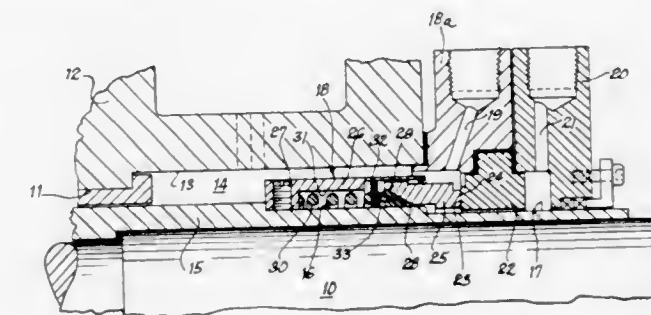
SECONDARY SEAL FOR ROTARY MECHANICAL SEAL  
Harry Tankus, Wilmette, Ill., assignor to Crane Packing Company, Morton Grove, Ill.

Filed March 19, 1971, Ser. No. 126,030

Int. Cl. F16j 15/34

U.S. Cl. 277—87

5 Claims



The invention resides in a secondary seal of polytetrafluoroethylene for a rotary mechanical shaft seal. The novel secondary seal replaces and is interchangeable with a known secondary seal also made of polytetrafluoroethylene which has a wedge shape in radial cross section and which causes fretting over the portion of the shaft contacted by the apex of the wedge. The novel secondary seal is somewhat V-shaped or folded in radial cross section and presents the rounded bottom of the fold to the shaft to produce a rolling action of the secondary seal on the shaft instead of the sliding, fretting-producing wedge action of the wedge-shaped secondary seal.

3,722,897

## CIRCUMFERENTIALLY EXPANSIBLE OIL RING

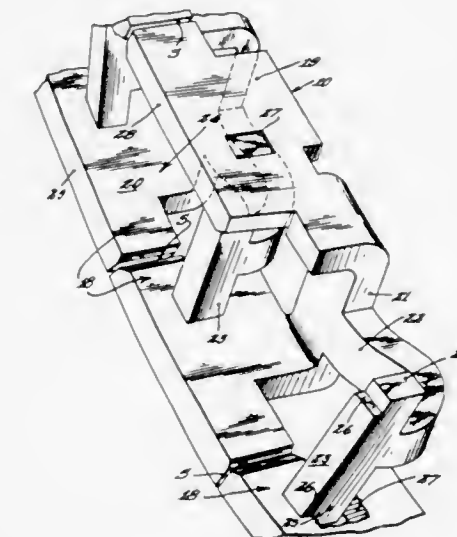
Arthur M. Brenneke, New Castle, Ind., assignor to TRW INC., Cleveland, Ohio

Filed June 25, 1970, Ser. No. 49,664

Int. Cl. F16j 9/12

U.S. Cl. 277—154

8 Claims



A circumferentially expansible oil control channel type piston ring composed of individual linked together circumferential ring portions or units. Each circumferential ring portion or unit has axially spaced top and bottom segments with outer peripheral edges providing scraping surfaces to ride on the cylinder wall. The segments of each unit are connected by an upstanding leg on the inner periphery of the ring. A spring finger extends from the leg of each portion between the segments of the next adjacent portion and terminates in an upstanding strut with ends seated in holes or recesses of the seg-



ments of the adjacent portion to link the portions together. The upstanding struts have shoulders supporting the segments against axial collapse. The ring is continuous and the holes or recesses receiving the ends of the struts are oversized to allow appreciable expansion of the ring so that it may fit over a piston head and snap into the ring groove of the piston. The ends of the struts abut the walls of the recesses or holes before the ring reaches its operating diameter so that further contraction can only be accommodated by deflection of the spring fingers, thereby providing a circumferentially expansible spring ring especially suited for the oil control ring of an internal combustion engine piston.

3,722,898

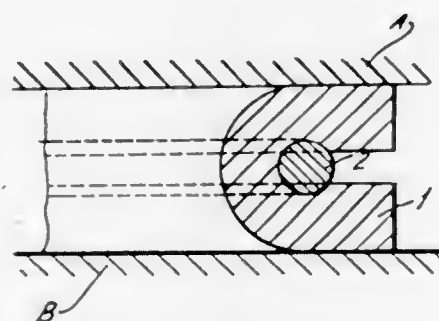
## SEALING ARRANGEMENT

Gerd von Benningsen, Gelsenbrunn, Post Gilching, Germany, assignor to Reinz Dichtungs-Gesellschaft, GmbH, Neu-Ulm/Donau, Germany  
Division of Ser. No. 830,693, June 5, 1969, abandoned. This application May 11, 1971, Ser. No. 142,257  
Claims priority, application Germany, June 6, 1968, P 17 50 805.3

Int. Cl. B65d 53/00

U.S. Cl. 277—206

10 Claims



A sealing arrangement for establishing a seal between two juxtaposed surfaces. A first annular sealing element of solid cross-section and of a hard material is accommodated in the hollow of a second annular sealing element having a channel-shaped cross-section. The two elements are in axial registry with one another and have a predetermined combined axial thickness. The material of the second element is substantially softer than that of the first element so that pressure exerted upon the device by movement of one of the surfaces towards the other results in deformation of the softer second sealing element with concomitant reduction of the axial thickness and penetration of the harder first sealing element into the material of the softer second sealing element.

3,722,899  
SEAL

Alfred James Sedwell, Bury, England, assignor to General Engineering Company (Radcliffe) Limited  
Filed Aug. 3, 1971, Ser. No. 168,609  
Claims priority, application Great Britain, Aug. 5, 1970, 37,701/70

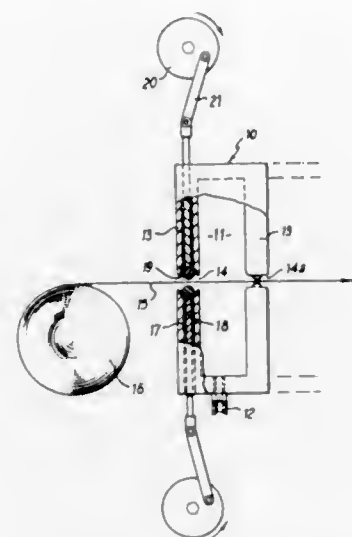
Int. Cl. B05c 11/115

U.S. Cl. 277—237

9 Claims

This invention provides a seal for closing an entry or exit aperture of an apparatus in which a moving strip of material is to be treated while in either a partial vacuum or while in a pressurized container, the seal serving completely to close the entry or exit aperture periodically and to deform as the material under treatment moves so that no appreciable drag is imparted to the material and then to open slightly to allow the seal to become undeformed before closing again upon the material so that the increments of time for which the seal is

open are small and thus passage of fluid across the seal is minimized thereby to enable the required degree of vacuum or



pressure to be maintained without imposing undue stress upon the mechanism used to create the vacuum or pressure conditions required.

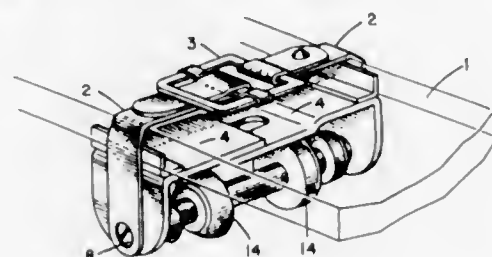
3,722,900

## SNOWLESS SKIS

George H. Dickert, 624 Garden Lane, Bristol, Va.  
Filed May 1, 1970, Ser. No. 33,749  
Int. Cl. A63c 17/18

U.S. Cl. 280—7.13

11 Claims



A ski fitted with a plurality of rollers for use in traversing a smooth solid surface devoid of snow or snow-like substance. The outer surface of rolling members is tapered to a smaller diameter than a diameter more inward. Preferably, the rolling surface is segmented. The tapered shape of the rollers provides a dynamic action similar to snow skiing with respect to turning, edging or stopping.

3,722,901

## SKI HAVING A HARD TYPE FOAMED RESIN CORE

Haruki Kolke, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

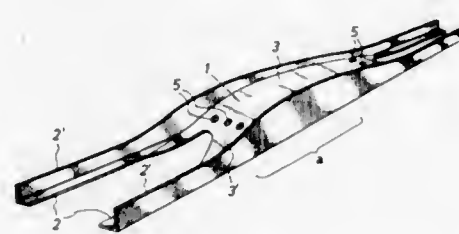
Filed Feb. 9, 1971, Ser. No. 113,863

Claims priority, application Japan, Feb. 14, 1970, 45/14459

Int. Cl. A63c 5/12

U.S. Cl. 280—11.13 L

8 Claims



In a ski including a core structure made of a hard type foamed resin, the core structure is further composed of a

screw-holding framework embedded in the hard type plastic foam core body, the framework being beforehand molded to have two longitudinally extending portions for holding screws attaching steel edges of the ski to the body of the ski and a central portion for holding screws attaching a shoe clamping device for the ski to the upper surface of the ski, whereby the holding nature of the ski for these screws is substantially improved and the lateral cracks caused in the conventional ski can be completely eliminated.

3,722,902

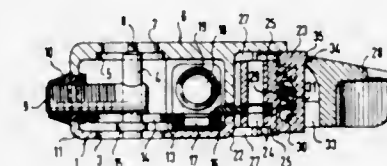
## TOE IRON FOR SAFETY SKI BINDINGS

Hannes Marker, Hauptstrabe 51-53, Partenkirchen, Germany  
Filed Oct. 19, 1970, Ser. No. 81,702  
Claims priority, application Germany, Nov. 11, 1969, P 19 56 653.1

Int. Cl. A63c 9/00

U.S. Cl. 280—11.35 T

8 Claims



A pivoted member carries a sole holder carrier and is pivotally movable from its normal position against the force of at least one spring about a pivot pin which is at right angles to the surface of the ski. The pivot pin is held on at least one toe iron part which is fixed to the ski. The pivot pin is adjustable relative to the pivoted member in the longitudinal direction of the toe iron.

3,722,903

## ADJUSTABLE SKI POLE WITH SPLIT RETAINER RING

John P. Jones, 1326 Shenandoah Drive, Colorado Springs, Colo.

Continuation-in-part of Ser. No. 842,232, July 16, 1969, abandoned. This application Oct. 26, 1970, Ser. No. 90,217

Int. Cl. A63c 11/22

U.S. Cl. 280—11.37 F

2 Claims



A ski pole which allows one to correctly adjust the overall length of the pole to skier's height. It embodies upper and lower pole sections whose adjacent coaxing ends are telescopically joined and are equipped with manually regulatable coupling means. This coupling means embodies an outer nut-like sleeve having an internal stop shoulder at its lower end and wholly encompassing a longitudinally split inner expansible and contractible sleeve which when clampingly contracted provides a friction held retainer. The lower tapered end of the outer sleeve is cooperatively oriented with a gradu-

ated pole length measuring scale provided on the peripheral surface of the lower section of the pole.

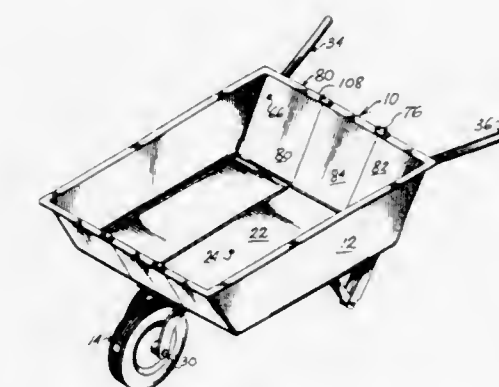
3,722,904

## FOLDABLE WHEELBARROW

Lloyd S. Puckett, 2127 East Hamlin Street, Seattle, Wash.  
Filed Dec. 13, 1971, Ser. No. 207,199  
Int. Cl. B62b 1/20

U.S. Cl. 280—36 R

8 Claims



A wheelbarrow adapted to having its wheel, legs and handles foldable underneath its container center base and its container side sections foldable and enclosing about the folded wheel, legs and handles so that a substantial elongated box shape can be formed for compact safe storage and handling purposes.

3,722,905

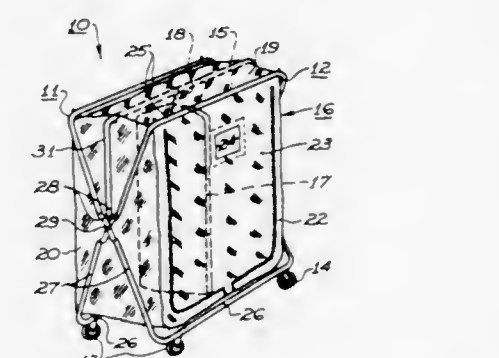
## COLLAPSIBLE TRANSPORTER FOR GARMENTS AND THE LIKE

Archie Solomon, 900 Edgewater Trail, Atlanta, Ga.  
Filed Oct. 26, 1971, Ser. No. 192,513

Int. Cl. B62b 11/00

U.S. Cl. 280—39

8 Claims



A portable garment rack and enclosure that rolls on casters with garments suspended on hangers supported on a hanger rod. The apparatus has a frame that supports a protective enclosure for covering the garments during transport and storage and the frame and enclosure are collapsible so that the apparatus takes up a minimum of storage space when not in use.

3,722,906

## STROLLER BUMPER

Raymond G. Pierson, Jr., Bedford, and Charles L. Voytko, Johnston, both of Pa., assignors to Hestrom Company, Bedford, Pa.

Filed March 15, 1971, Ser. No. 124,053

Int. Cl. B62b 7/00

U.S. Cl. 280—47.4

4 Claims

A collapsible stroller has a seat in which the child sits and a footrest spaced below the seat on which the child may rest his



feet and legs. The footrest projects beyond the front of the carriage and it is adjustable in the usual way between upper and lower horizontal positions. A plastic bumper composed of a shell and strap is clamped onto the front of the footrest and



projects beyond the carriage per se. The shell has a depending skirt and rigidifying ribs which abut the front edge of the footrest so that the bumper as a whole is able to withstand impacts when the footrest is in either of its operative positions.

3,722,907

## STEERING IDLER ARM BRACKET

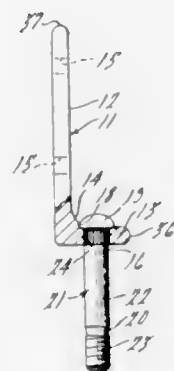
John E. Freudenberger, West Unity, Ohio, assignor to Power and Sons, Montpelier, Ohio

Filed June 11, 1971, Ser. No. 152,221

Int. Cl. B62d 7/16

U.S. Cl. 280—95 A

2 Claims



The idler arm supporting bracket is made from an L-shaped rolled section having a vertical and horizontal flange. A length of the rolled section is cut into narrow strips to form L-shaped supporting elements having a long vertical section and a shorter and thicker horizontal section with a flute of large radius therebetween to provide increased strength between the sections. An aperture in the horizontal section has the flute material cut away thereabout to provide clearance for the head of a pin which is supported in the aperture. The pin has a cylindrical body with a head on one end and a thread on the other end. The pin body has a corrugated section beneath the head which cuts into the wall of the aperture in the horizontal section when the pin is forced thereinto. The bracket and pin form a rigid unit which is attached to the righthand rail member of a vehicle frame for supporting the idler arm of the steering mechanism on the cylindrical body of the pin.

3,722,908  
TORSION BAR SUSPENSION SYSTEM FOR TANDEM TRAILER WHEELS

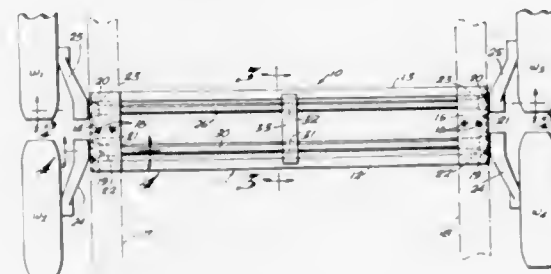
William P. Whitley, Jr., 4525 E. 10th Lane, Hialeah, Fla.

Filed Aug. 24, 1971, Ser. No. 174,365

Int. Cl. B60g 3/12

U.S. Cl. 280—124 B

6 Claims



A torsion bar suspension system for tandem wheels, suitable for use in boat trailers and the like, is described. An elongated, rectangular, supporting framework carries a pair of transversely-extending, horizontally-spaced torsion bars the outer ends of which have secured thereto, at each side of the supporting framework, downwardly and oppositely outwardly-extending moment arm members the outer ends of which journal the tandem wheel sets. Midway along their lengths, the torsion bars are securely affixed to a wrench bar bridging said torsion bars and adapted to effect reaction therebetween and at the same time provide for substantially independent torsional suspension for each of the supported wheels along its directly associated half torsion bar. End portions of the bridging wrench bar are seatingly supported upon transversely-extending portions of the support framework at a somewhat elevated eccentric position with respect to the ends of said torsion bars to constrain said torsion bars in slightly upwardly curved or bowed disposition for canting the wheels inwardly.

3,722,909

## VEHICLE SAFETY BELTS AND HARNESSES AND BUCKLES FOR THEM

Mark Edward Esner, London, England, assignor to Dynasafe Equipment Limited and Howard Wall Limited, both of London, England

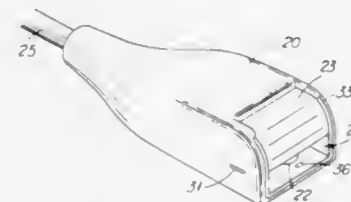
Filed Feb. 12, 1971, Ser. No. 115,030

Claims priority, application Great Britain, Feb. 12, 1970, 6,812/70

Int. Cl. B60r 21/10

U.S. Cl. 280—150 SB

5 Claims



A safety belt or harness for a vehicle includes a two part buckle of which one part comprises a plate with an aperture and the other part comprises a unit having a bump on which the aperture in the plate fits, one end of the unit consisting of the end of a slidable member which holds the two parts of the buckle together and a mouth where the plate enters the unit. The slidable member is moved by hand to release the plate, and by hand or by the end of the plate when the plate is inserted into the unit. The slidable member slides on a channel housed within the unit, the channel having a hole by which the

unit can be attached to a bracket or cable connected to the vehicle. Adjustment of the belt or harness can be by single or double snubbers carried by the plate or the harness straps or the vehicle fixtures. For adjacent seats or bench type seats two buckles can be mounted on a single fixing bracket which can be such that the buckles can be folded into the seats when not in use.

3,722,910

## HOOK UNIT FOR PICKUP TRUCKS

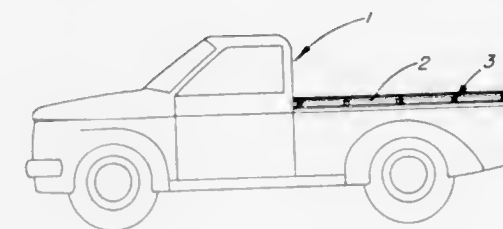
Harry R. Heckenlaible, 2086 Webb St., Stockton, Calif.

Filed April 21, 1971, Ser. No. 135,884

Int. Cl. B60p 7/00

U.S. Cl. 280—179 R

4 Claims



A rope hook unit removably mounted on a pickup truck or the like; the truck having, in combination with the hook unit, a horizontal, outwardly opening, supporting channel permanently secured thereon, and the hook unit (of which there are several in practice) being wedgingly engaged in the channel for use but manually quick-detachable from said channel for storage when not in use. Additionally, the hook unit is fitted with a manually disengageable locking dog which prevents accidental detachment from the channel of said hook unit when the latter is in use.

3,722,911

## TIE DOWN ANCHOR

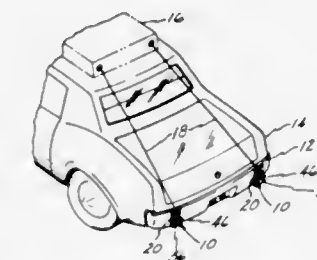
Howard A. Rbody, 9312 South Forrey, Grand Blanc, Mich.

Filed Oct. 29, 1971, Ser. No. 193,781

Int. Cl. B60p 7/00

U.S. Cl. 280—179 R

10 Claims



A tie down anchor mounted on a vehicle and adapted to facilitate the lashing down of a load carried by the vehicle. The tie down anchor has a support plate with spacer means disposed between the support plate and the vehicle to provide a clearance space therein when the support plate is fastened to the vehicle. The front face of the support plate has a plurality of retaining arms extending outwardly in a spider-like configuration and within which is carried an anchor movable between a first outwardly projecting position and a second lowered position wherein the anchor is disposed behind the retaining arms in a general parallel relationship with the support plate. A channel-shaped cover has legs with inwardly bent end flanges that are adapted to be disposed within the clearance space and slidably engaged to the back side of the support plate when the cover member is slid down over the front face of the support plate. The retaining arms are joined

at their extended ends to define a base portion that is spaced from the support plate a sufficient distance to slidably engage the inner face of the cover so as to exert a slight outward force thereagainst and urge the bent end flanges of the cover against the back side of the support plate and thereby secure the cover from accidental removal from the support plate.

3,722,912

## FOLDING BICYCLE

Akira Housayama, Komaki, Japan, assignor to Tsunoda Jitensha Kabushiki Kaisha, Nagoya-shi, Aichi-ken, Japan

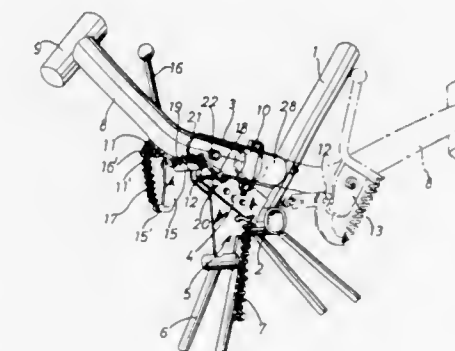
Filed Feb. 5, 1971, Ser. No. 112,908

Claims priority, application Japan, Feb. 6, 1970, 45/4510784

Int. Cl. B62k 15/00

U.S. Cl. 280—287

7 Claims



Disclosed herein is a folding device for a folding bicycle, according to which a strut is secured on a rear body frame carrying a rear road wheel, a saddle and a crank-pedal thereon and connecting means is mounted on the strut to connect swingably a front body frame carrying a front road wheel to the strut. Provided also to complete the device for simple and easy folding and unfolding works are locking means to have the front body frame fasten to the strut, holding means to maintain the releasing position of the locking means, and a resilient member to hold the fastening position of the locking means.

3,722,913

## FOLDING BICYCLE

Akira Housayama, Komaki, Japan, assignor to Tsunoda Jitensha Kabushiki Kaisha, Naka-ku, Nagoya-shi, Aichi-ken, Japan

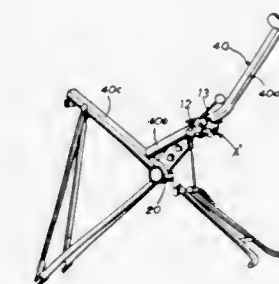
Filed Feb. 25, 1971, Ser. No. 118,765

Claims priority, application Japan, Feb. 27, 1970, 45/17541; Aug. 8, 1970, 45/69386

Int. Cl. B62k 15/00

U.S. Cl. 280—287

9 Claims



Disclosed herein is a folding device for a folding bicycle which comprises a front body frame carrying a front road wheel, a rear body frame carrying a rear road wheel, an extension member secured on the lower portion of the rear body frame to complete the front body frame, and connecting means to connect transversely and swingably the front body frame with the extension member. Provided also to complete



the device for simple and easy folding and unfolding, are locking means to fasten the connecting means, holding means to maintain the released position of the locking means, regulating means to control the holding means, and a resilient member to hold the fastening position of the locking means.

3,722,914

## SLIDER MOUNT FOR FIFTH WHEELS

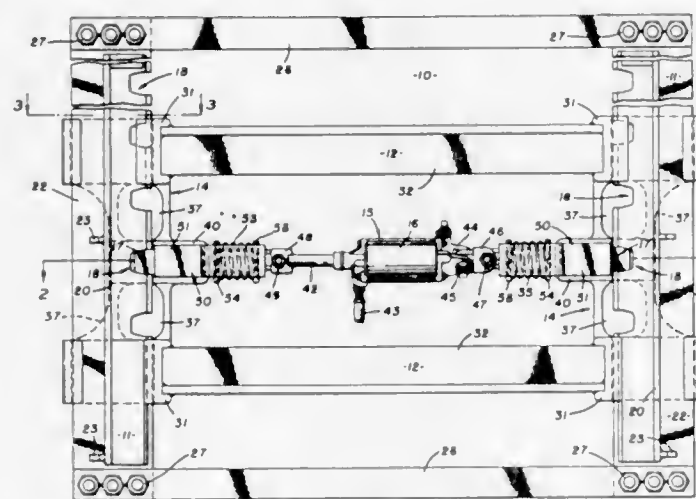
William D. Walther, Dayton, Ohio, assignor to The Dayton Steel Foundry Company, Dayton, Ohio

Filed June 10, 1971, Ser. No. 151,834

Int. Cl. B62d 53/06

U.S. Cl. 280-407

3 Claims



Slider mount to adjust position of fifth wheel coupler assembly with power operated locking mechanism. Coupler mounting trunnions are carried medially of transverse double span slides moving on parallel composite rail members. Locking mechanism carried on the support member beneath the trunnions includes reciprocating plungers having angulated locking faces selectively engaging correspondingly shaped notches formed integrally in the rail members.

3,722,915

## HITCH FOR COUPLING AGRICULTURAL IMPLEMENTS TO A TOWING VEHICLE

Josef Gail, No. 1, 8891 Unterwittelsbach, Germany

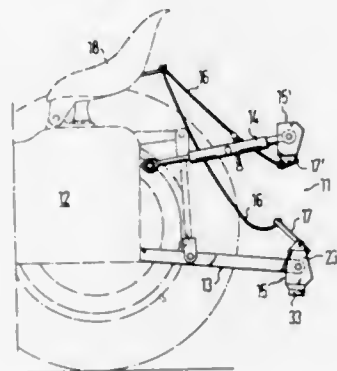
Filed Oct. 18, 1971, Ser. No. 190,119

Claims priority, application Germany, Oct. 26, 1970, P 20 52 389.1; July 6, 1971, P 21 33 516.0

Int. Cl. B60d 1/04

U.S. Cl. 280-415 A

12 Claims



An agricultural implement is coupled to a tractor by one upper and two lower releasable links, each lower link having a male coupling member at the end of a linking bar attached to the tractor and an eye on the implement adapted conformingly to receive the coupling member which has the general shape of an upwardly tapering frustum of a pyramid and is provided with a latch biased toward a position in which it holds the coupling member and eye in the conformingly en-

gaged position. The upper link is an inverted version of one of the lower links.

3,722,916

## MOUNTING ARRANGEMENT FOR FLEXIBLE MEMBERS

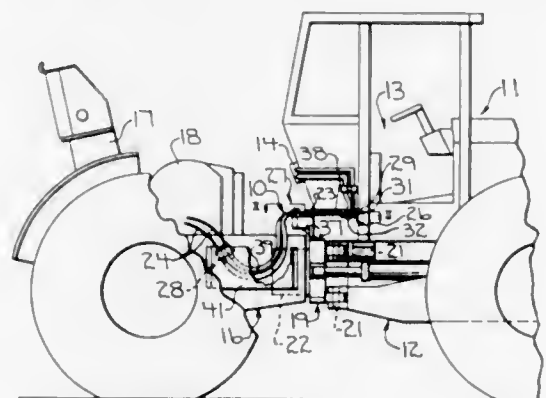
John R. Muntjanoff, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 10, 1971, Ser. No. 206,661

Int. Cl. B60d 1/08

U.S. Cl. 280-421

13 Claims



An improved mounting arrangement for flexible members such as flexible hoses which extend between the front and rear sections of an articulated vehicle which has a center hitch member to permit limited relative swinging movement of the sections in a horizontal plane about a vertical axis and to permit limited relative rotation about a horizontal axis in a vertical plane. The arrangement includes a first clamp which attaches the hoses to the front section and a second clamp which attaches the hoses to the hitch member in a manner which provides sufficient slack in the hoses to form a collapsible loop between the front section and the hitch member which loop resides in a plane substantially normal to the vertical axis. A third clamp attaches the hoses to the rear section of the vehicle so as to form a travelling loop between the hitch member and the rear section which resides in a plane substantially normal to the horizontal axis of the hitch.

3,722,917

## TRAILER HITCH APPARATUS

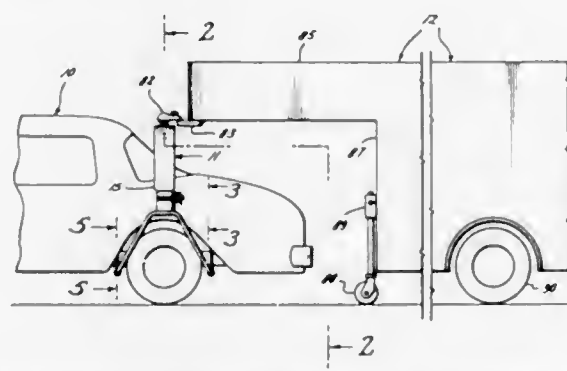
Paris A. Mims, and Larry Ronnie Nettles, both of 5931 Britmore Rd., Houston, Tex.

Filed June 28, 1971, Ser. No. 157,497

Int. Cl. B62d 53/00

U.S. Cl. 280-423 R

5 Claims



Trailer hitch apparatus wherein a support beam is mounted over the rearward portion of a vehicle, e.g. an automobile, and the trailer, extending over the rearward part of the vehicle, is connected by a trailer hitch to the support beam. Each end of the support beam is provided with a hinged yoke, the ends of each yoke each being removably connected to a fitting installed on the vehicle, and the fittings being preferably disposed forward and rearward of each rear wheel of the vehicle.

3,722,918

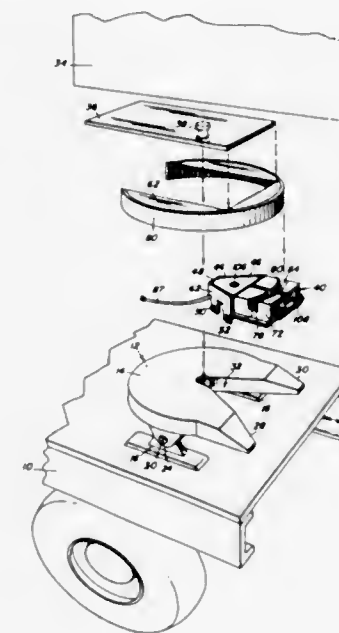
## ANTI-JACKKNIFING DEVICE FOR TRACTOR-TRAILER TRUCKS

Elmer W. Conner, 207 East Fremont, Medicine Lodge, Kans.

Filed June 23, 1971, Ser. No. 155,911

U.S. Cl. 280-432

14 Claims



An anti-jackknifing device for tractor-trailer trucks which includes braking means mounted on the fifth wheel of the tractor and a vertical arcuate skirt mounted on the under surface of the trailer, concentrically with the kingpin. The braking means define an arcuate gap having the same radius as the skirt and which partially surrounds the vertical skirt, and brake pads arranged on both sides of the gap can simultaneously engage the vertical skirt to effectively prevent a jackknifing movement of the trailer.

3,722,919

## ANTI-JACKKNIFE DEVICE

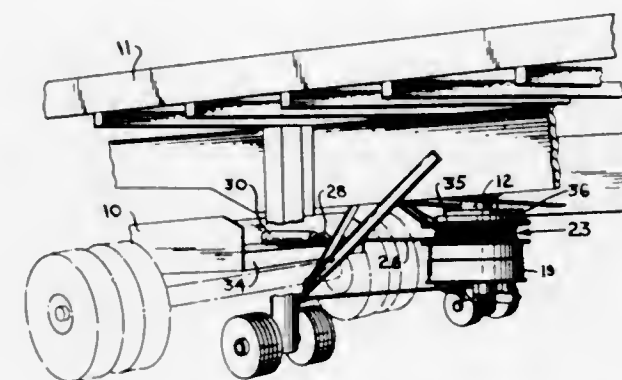
Francis A. Herbert, P.O. Box 81, Schriever, La.

Filed Dec. 7, 1971, Ser. No. 205,519

U.S. Cl. 280-432

Int. Cl. B60d 7/00

8 Claims



The present invention is directed to a braking device separate from the wheel brakes of the vehicle which may be mounted either on the tractor or the trailer and which is subjected to the actuating fluid when the vehicle wheel brakes are applied and which locks with a cable drum and cable when the free end of the cable is connected to the unit of the tractor-trailer that a brake device is not connected to which will arrest the horizontal swing of the trailer relative to the tractor before attaining the point of no return at which jackknife results.

3,722,920

## HYDRAULIC STABILIZING DEVICE

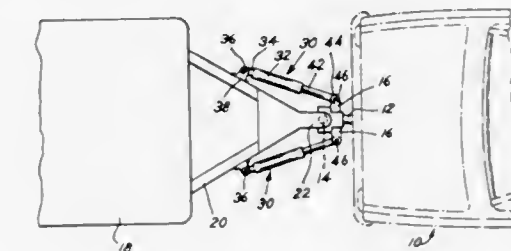
Terrell J. Reese, Elkhart, Ind., assignor to Reese Products, Inc., Elkhart, Ind.

Division of Ser. No. 861,972, Sept. 29, 1969, abandoned. This application Feb. 12, 1971, Ser. No. 115,039

Int. Cl. B62d 53/00

U.S. Cl. 280-446 B

5 Claims



A hydraulic stabilizing device usable as a sway control for trailers or towed vehicles and including a hydraulic cylinder-piston unit having a normal position wherein the piston is located intermediate the length of the cylinder and being characterized by negligible resistance to piston movement in one direction from normal position and greater resistance to piston movement in the other direction from normal position. The piston has apertures and associated spring closures regulating liquid flow therethrough and the cylinder has piston bypass means at one end portion thereof. The cylinder contains a sealed flexible hollow gas-containing chamber adapted to expand and contract to maintain the volume of the liquid-containing portion of the cylinder substantially constant during elongation and shortening of the unit.

3,722,921

## TRACTOR-TRAILER SIDE TOW CONSTRUCTION

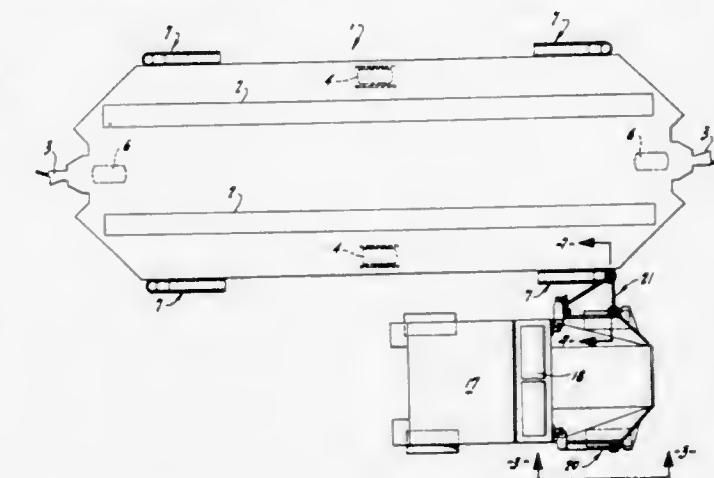
Arnold Duerksen, Salinas, Calif., assignor to Cochran Western Corp., Salinas, Calif.

Filed March 24, 1971, Ser. No. 127,574

Int. Cl. B60d 1/04

U.S. Cl. 280-473

27 Claims



A towing tractor and towed trailer combination including structure at each of the sides of the trailer which impart side tow capability thereto. The trailer towing structure includes an inclined ramp and communicating socket at each corner of the trailer with which a towing pin of the tractor towing mechanism is removably engageable. The tractor towing mechanism includes hydraulic means at each side of the tractor and associated control mechanism for selectively positioning a tractor towing pin in operative engagement with a trailer ramp and socket structure so that rapid insertion or removal of the towing pin relative to a preselected trailer socket may be effected.



3,722,922

## POSTER BOARD FOR ACCOUNTING FORMS

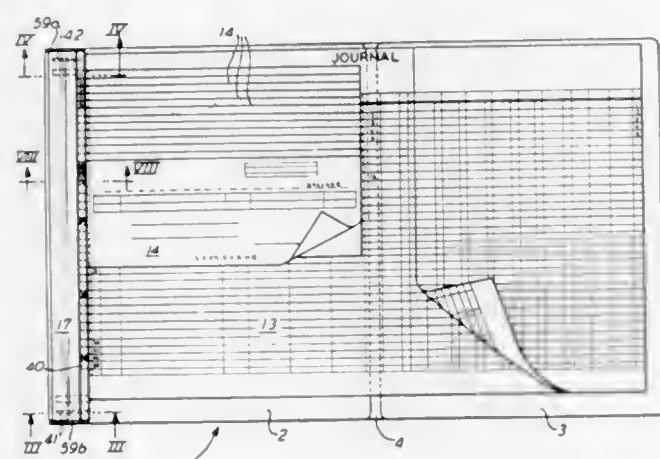
Guillermo Perez, Bloomfield, N.J., assignor to Litton Business Systems, Inc., Carlstadt, N.J.

Filed March 10, 1970, Ser. No. 18,038

Int. Cl. B411 3/04, 3/06

U.S. Cl. 282—29 B

2 Claims



A folding poster board on which accounting forms are mounted, including a clamping means for clamping the forms to the board and a stripper plate for stripping forms from the board. A separate operating plate is provided for operating the stripper plate. The clamping member is mounted for rotation about a first axis, and the stripping plate and operating plate are mounted for rotation about a second axis parallel to and spaced from the first axis. Toggle spring means holds the clamping member resiliently in its open and closed positions. The operating plate for the stripper plate is resiliently biased away from the latter towards a relative position where further movement of the operating member will operate the stripper member. The board comprises first and second board members hinged together. When the second board member is folded over to cover the first board member, the clamping member, when moved to closed position, will engage the second board member and thereby prevent the poster board from inadvertently coming open.

3,722,923

## COUPLING JOINT FOR PLASTIC COVERED METAL TUBE

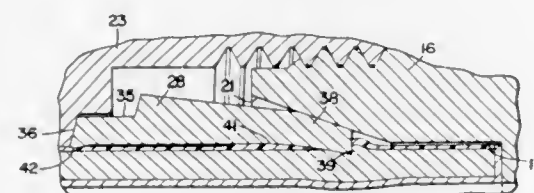
Darwin Grahl, Novelty, Ohio, assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed April 8, 1971, Ser. No. 132,405

Int. Cl. F161 19/08

U.S. Cl. 285—55

4 Claims



A tube coupling joint comprising a metallic tube with a non-metallic sheath, the tube coupling including a sleeve deformed

into gripping engagement with the metallic tube and into sealing engagement with the non-metallic sheath.

3,722,924

## COMBINED COUPLING AND SEALING ADAPTER

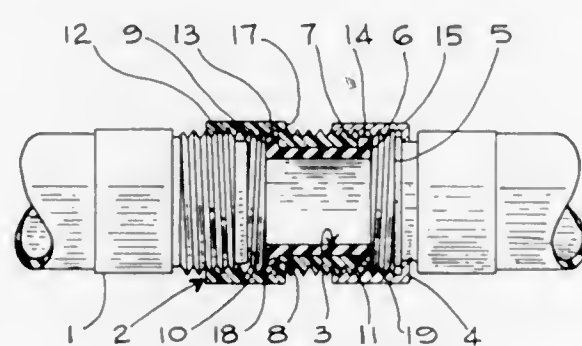
Melvin G. Bjornsen, 805 West San Marino, Alhambra, Calif.

Filed Oct. 16, 1970, Ser. No. 81,239

Int. Cl. F161 55/00

U.S. Cl. 285—55

1 Claim



A combined coupling and sealing adapter for joining threaded male and female base coupling members, particularly damaged coupling members. The adapter has a compliant tubular body with threaded male and female ends for threaded connection to the female and male base coupling members, respectively, and a terminally flanged resilient sealing sleeve captivated within the adapter body for sealing contact with the coupling members.

3,722,925

## COUPLING AND/OR JOINING LINED PIPE

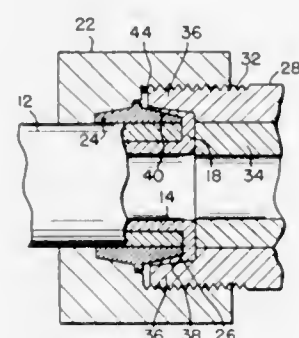
James F. Robbins, Westford, Mass., assignor to Sybron Corporation, Rochester, N.Y.

Filed March 25, 1971, Ser. No. 128,108

Int. Cl. F161 9/14, 19/04

U.S. Cl. 285—55

4 Claims



Disclosed is a coupling and a method for joining tin lined tubings wherein a portion of the tubing is removed to expose a portion of the tin lining. The exposed lining is then flared over the end of the tubing so that during connection of the tubing to a fitting by conventional ferrule and nut means, the flared tin is forced against and over the ferrule to form a joint completely lined with tin including a layer of tin between the opposed pipe and fitting faces.

3,722,926

## LIQUID COUPLING

Rinjiro Fukushima, No. 1-090, Toyoda, Hino-shi, Tokyo, Japan

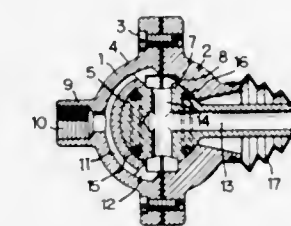
Filed July 12, 1971, Ser. No. 161,491

Claims priority, application Japan, July 13, 1970, 45/61259

Int. Cl. F161 27/06

U.S. Cl. 285—261

2 Claims



The disclosure relates to a liquid coupling for connecting a path between a casing and a rotor within the casing, the path being around the rotor and then normal to the axis of the rotor to the rotor center where it communicates with an outlet passage to decrease rotor wear due to abrasion thereof with the casing.

3,722,927

## LATCH AND RETURN SPRING

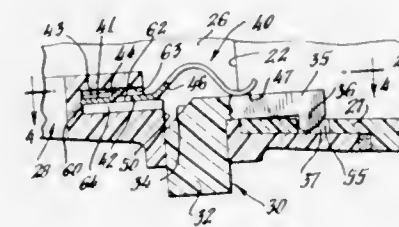
Alvars Miska, Bridgeport, Conn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed May 20, 1971, Ser. No. 145,211

Int. Cl. F161 21/08

U.S. Cl. 285—317

8 Claims



Apparatus for separably connecting a portable source of supply of hot air and a hair grooming implement holder together, wherein the source includes a housing, and the holder includes a housing adapted to carry a hair grooming implement and guide hot air from the source laterally of the implement. The connecting apparatus comprises: an L-shaped latch, one leg of which is slidably mounted in a passageway formed in one of the housings, and the other leg of which is positioned to internally overlap a portion of the other housing when the housings are brought together for connection; a leaf spring connected to the one housing to contact the latch for resiliently loading the latch in the passageway; and a keeper cavity formed in the other housing for receiving the other latch leg. The spring resiliently loads the latch for forcing the other latch leg into the cavity to connect the housings together, and the latch is manually movable against the spring load to enable the housings to be separated. Also, the spring acts as a stop to limit the travel of the latch so as to prevent the spring from being overstressed.

3,722,928

## PANEL RETAINER FOR PORTABLE TIERING RACK

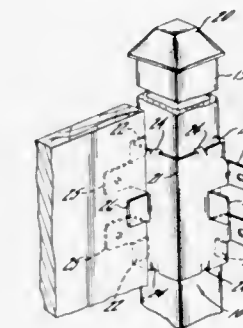
Leroy F. Skubic, La Porte, Ind., assignor to The Paltier Corporation, Michigan City, Ind.

Filed May 7, 1971, Ser. No. 141,109

Int. Cl. F16b 5/06

U.S. Cl. 287—20.924

5 Claims



A one-piece panel retainer is provided for attaching side panels to a portable tiering pallet rack having a base frame and a plurality of vertical corner posts. Each retainer is formed with a body which nests against the inner peripheral surfaces of a post, mounting clips which hold it against the post, tangs which preclude sliding along the surfaces of the post, and cleats which position and engage the side panels approximately tangent to the outer peripheral surfaces of the post. In a typical installation, at least two such retainers may be mounted on each post. One retainer per post may be used for low panels or for racks with panel securing devices built into the pallet base frame.

3,722,929

## HUB-CORE ASSEMBLY

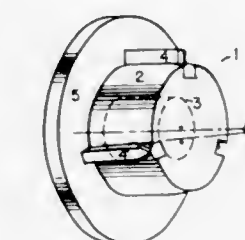
Samuel Gilman, West Los Angeles, Calif., assignor to Terminal Data Corporation, Van Nuys, Calif.

Filed Jan. 20, 1971, Ser. No. 107,914

Int. Cl. F16d 1/06

U.S. Cl. 287—53 SS

3 Claims



A hub-core assembly in which nominal deformation of a radial projection upon the hub serves to removably secure the surrounding core to the hub. The projection engages a slot in the core and is circumferentially deformed by such engagement. The projection is formed with a small angle with respect to the axis of rotation of the hub. The projection may have a central open slit to facilitate resilient deformation of the assembly during rapid starts and stops.

3,722,930

## BICYCLE HANDLEBAR STEM

Robert F. Humlong, Maysville, Ky., assignor to Wald Manufacturing Company, Incorporated, Maysville, Ky.

Filed Sept. 3, 1971, Ser. No. 177,650

Int. Cl. F16b 7/18

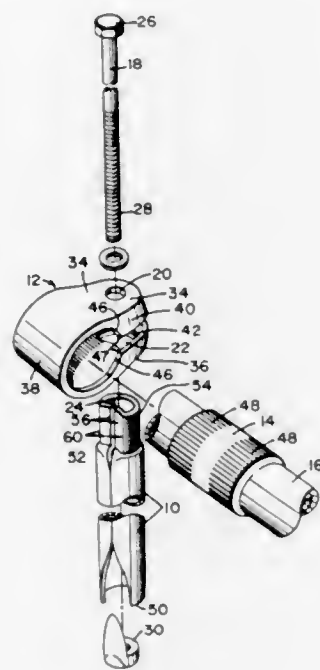
U.S. Cl. 287—54 E

10 Claims

The handlebar stem, constructed inexpensively of formed sheet metal parts, requires but a single bolt for simultaneously



clamping the handlebar ferrule, fixing the stem head upon the stem, expanding the stem within the fork bearing tube, and effecting at the same time powerful friction bites between the



head, the stem, and said ferrule, to fix said parts securely against relative displacement incident to tightening the stem bolt.

3,722,931

SWIVEL JOINT

Yasuo Uchida, Hamamatsu, Japan, assignor to Ishikawa Tekko Kabushiki Kaisha, Tokyo, Japan

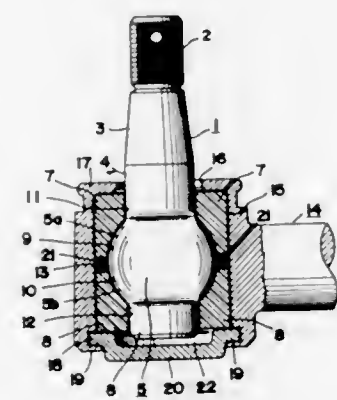
Filed Oct. 26, 1971, Ser. No. 192,068

Claims priority, application Japan, Nov. 5, 1970, 45/97415

Int. Cl. F16b 17/00

U.S. Cl. 287-93

2 Claims



A swivel joint comprising a stud having an upper cylindrical stem portion, a lower cylindrical stem portion and a substantially spherical member disposed between said upper and lower cylindrical stem portions, an annular upper bearing member and an annular lower bearing member, and a socket receiving therein and supporting said upper and lower bearing members. Said annular upper bearing member and an annular lower bearing member receive therein and support an upper half of said substantially spherical member and said upper cylindrical stem portion contiguous therewith and a lower half of said substantially cylindrical member and said lower cylindrical stem portion contiguous therewith respectively to act as a bearing.

### 3,722,932 CONNECTING APPARATUS FOR TOOTH ADAPTER ASSEMBLY

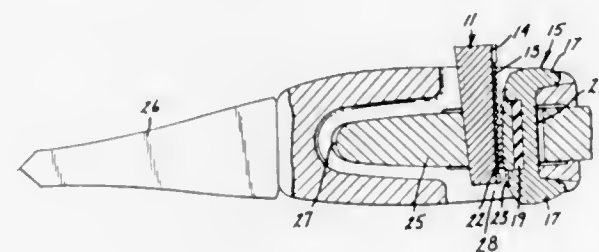
James R. Dougall, New Brighton, Minn., assignor to Minneapolis Electric Steel Castings Company, Minneapolis, Minn.

Filed Nov. 10, 1971, Ser. No. 197,243

Int. Cl. F16b 7/00

U.S. Cl. 287-103 D

7 Claims



Apparatus for removably connecting a digger tooth adapter to an excavating shovel. The adapter and lip of the shovel fit together in overriding relation, with openings in each aligning to form a passage which receives a C-shaped clamp and wedge. The back side of the C-clamp has a rectangular recess which receives a locking member. The locking member has an exposed face which is serrated, and it is urged out of the recess by a resilient mounting pad. The wedge also has a serrated face which mateably engages the locking member. To simplify removal of the adapter from the shovel, a longitudinal groove is formed in the engaging face of the wedge which extends through and below the serrations. A partial groove is formed in the C-clamp, and the grooves together guidably receive a spike therebetween which, upon insertion, separates the respective serrated faces and enables the wedge to be removed.

3,722,933

### EXPANSION JOINT FOR A FIRE-RATED CEILING SYSTEM

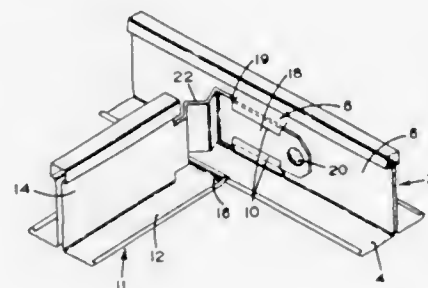
Ernest B. Nute, Jr., Mountville, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed May 7, 1971, Ser. No. 141,243

Int. Cl. F16b 7/04

U.S. Cl. 287-189.36 A

5 Claims



The cross member of a ceiling system is connected to the main runner of a ceiling system by a slide lock tab. A tab is bent at a 90° angle to the longitudinal axis of the cross runner. This tab slides into a fastener on the main runner structure. The connecting element between the cross member proper and the tab is corrugated so that, during a fire condition, the cross member can expand without buckling. Expansion occurs due to the collapse of the corrugated structure.

3,722,934

### TWINE FINGER FOR KNOTTER MECHANISM OF A BALER

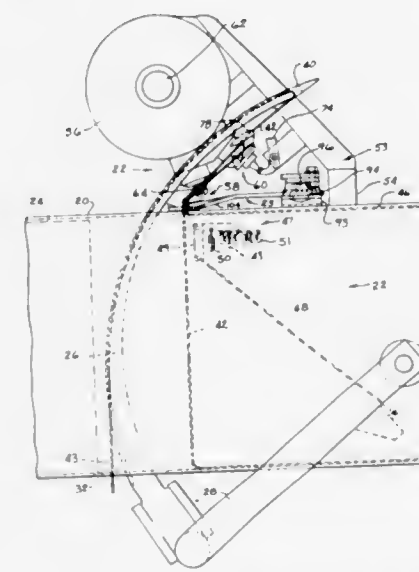
Edwin B. Nolt, New Holland, and Irwin D. McIlwain, Lancaster, both of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed July 1, 1971, Ser. No. 158,746

Int. Cl. B65h 69/04

U.S. Cl. 289-13

10 Claims



A pivotally mounted twine finger has a hook portion and lateral extension at the forward end under the knotter unit of a baler and an opening between the extension and hook portion. A latch is pivotally mounted on the lateral extension and has a projection extending across the entrance of the opening. The projection is held in a closed position by a resilient bias on the entrance side of the pivotal connection and in a non-contacting, overlapping relation with the hook portion by an anvil on the other side. The latch prevents the leading and trailing strands of twine from escaping from the opening through the entrance as the twine finger holds the strands taut against the bill hook during the twisting operation, the pulling of the twisted strands along the bill hook to form the knot and the assisting in pulling the knot from the bill hook. A forwardly facing straight edge on the latch generally spans the pivotal connection and anvil to distribute forces on the latch to the twine finger. The edge is engaged by the leading strand during baling and guides the leading and trailing strands into the opening on the pivotal movement of the twine finger on the commencement of the knotting operation.

3,722,935

### LOCKING DEVICES FOR VEHICLE VENT WINDOWS

Ismail Osman Latib, 383 Kerk Street, Transvaal, Republic of South Africa

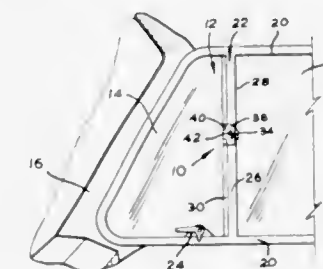
Filed March 24, 1971, Ser. No. 127,637

Claims priority, application Republic of South Africa, April 2, 1970, 2201

Int. Cl. E05c 19/18

U.S. Cl. 292-63

4 Claims



A vehicle vent window locking device adapted to be fitted to a vent window of a vehicle which has a window bar separat-

ing the vent window from an adjacent side window of the vehicle and which window bar has a side face directed towards the side window and a side window groove in the side face for the side window, the locking device including bolt means having a lip portion extending from its free end, the lip portion being adapted to be received in the side window groove and imprisoned therein by the side window. A vehicle vent window locking device adapted to be removably fitted to a vehicle vent window, and including bolt means to lock the vent window.

3,722,936

### LATCHING MECHANISM FOR ACCESS DOOR

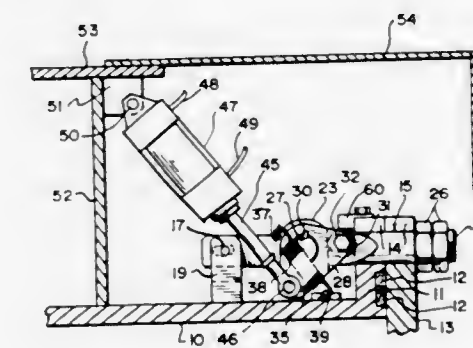
John Wesley Stubert, Memphis, Tenn., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed March 24, 1971, Ser. No. 127,231

Int. Cl. E05c

U.S. Cl. 292-64

29 Claims



An enclosed structure having an opening for access thereto with an access door, which can close the opening, mounted movably to the structure, and a latch mechanism for securing the door in closed position over the opening in the structure. The latch mechanism comprises a locking bolt pivotally mounted to a supporting bracket on the structure to be swung into and out of engagement with a pair of mating troughs in the edge of the door and opening. A pivot shaft extends laterally from the side of the bolt between the bolt ends and a cam is mounted on the pivot shaft to rotate relative to the bolt. A lever arm is joined to the cam to rotate the cam. The cam has a face which contacts the opening edge, restrains forward movement of the bolt and applies a rearward force thereon.

3,722,937

### SPRING LEVER CATCH AND STRIKE CAM

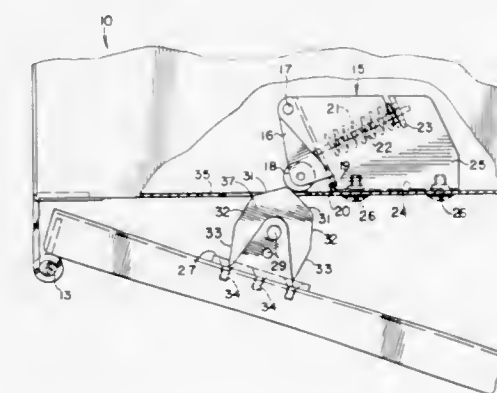
Ernest P. Stoeckl, St. Charles, Ill., assignor to Geneva Industries, Inc., Geneva, Ill.

Filed June 30, 1971, Ser. No. 158,278

Int. Cl. F05c 19/02

U.S. Cl. 292-79

6 Claims



A spring actuated lever which functions as a catch for a door and as a buffer or cushion for closing movements of the



door in cooperation with a strike which is contoured to provide the cushioning action upon initial contact with the spring actuated lever, then provides a camming action to pull the door fully closed whereupon the strike by reason of its shape acts as a catch in association with the spring actuated lever to retain the door in closed position.

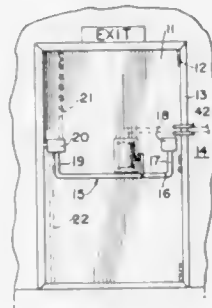
3,722,938

**EMERGENCY EXIT DOOR UNLATCHING ACTUATOR**  
Charles A. Bauer, Woodbridge, and Alfred E. Floyd, North Guilford, both of Conn., assignors to Sargent and Company, New Haven, Conn.

Filed March 22, 1971, Ser. No. 126,455  
Int. Cl. E05c 21/00

U.S. Cl. 292-92

7 Claims



Emergency exit doors are conventionally provided with a horizontally disposed bar which extends across the inside of a door. Such a bar is grasped and pushed towards the door which action unlatches the door and constitutes a means for opening the door as such emergency doors are hinged to move outwardly. The unlatching actuator is used to move the said bar downwardly towards the surface of the door by electric motive means without the necessity of using manually applied force. The bar is then held in an unlatched condition until the same electric motive means is utilized to permit the return of the bar to a normal position which is accomplished by the usually employed spring means associated with emergency or panic exit door unlatching assemblies.

3,722,939

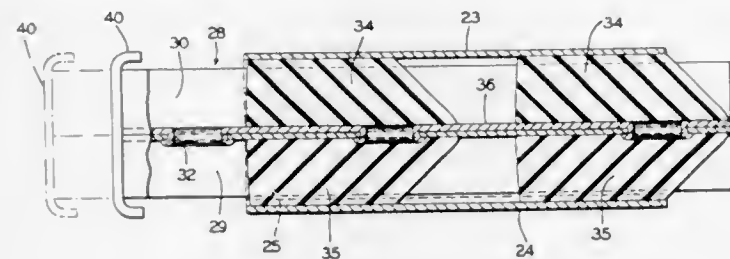
**VEHICLE BUMPER MOUNT CONSTRUCTION**

Herman S. Church, Cuyahoga Falls, and James L. Hagener, Canton, both of Ohio, assignors to Teledyne Mid-America Corporation, Hartville, Ohio

Filed Nov. 23, 1971, Ser. No. 201,335  
Int. Cl. B60r 19/06

U.S. Cl. 293-88

15 Claims



A vehicle bumper mounting construction formed of a generally elongated box-like housing member enclosing a portion of an elongated beam member generally H-shaped in cross section, one or more pairs of rubber pads having parallel surfaces are bonded, one surface to the web of the H-beam member and the other surface to the inside surface of the side walls of the housing. The housing member is provided with means for mounting the assembly to the frame of an automobile and the H-beam is provided with a mounting flange for attaching an automobile bumper to the assembly. Impact energy applied to the bumper is absorbed by the construction by deflection of the H-beam placing shear stress on the pairs of rubber pads.

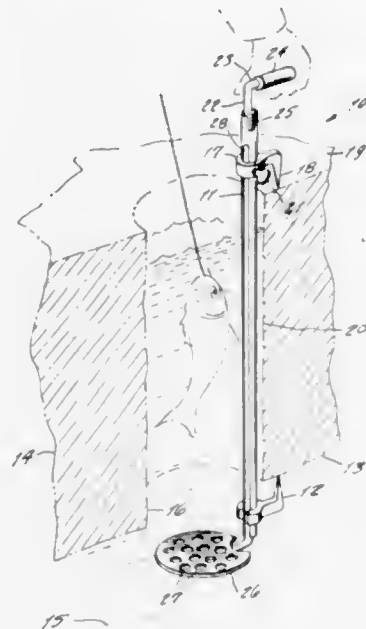
3,722,940

**ICE FISH SAVER**

Sandra M. Misjak, 1410 Calhoun Street, Peru, Ill.  
Filed Aug. 25, 1971, Ser. No. 174,850  
Int. Cl. A01k 69/00

U.S. Cl. 294-1 R

1 Claim



An accessory for ice fishing and which serves to close a lower end of a hole through the ice when a fish is being pulled up therethrough so to prevent the fish to escape in case it meantime gets off the hook; the device consists of a stationary tube attachable along a side of the hole in the ice, the tube supporting a rod having a handle at its upper end and a horizontal gate plate at its lower end, the rod being pivotable by the handle so as to swing the gate into a closed position at the bottom end of the hole, and the plate then being movable upwardly so to bring the fish into the top end of the hole in the ice.

3,722,941

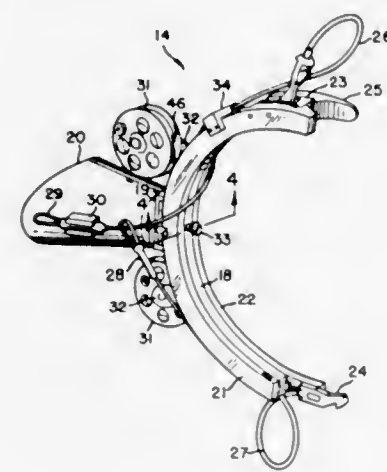
**MARINE MAMMAL UNDERWATER ATTACHMENT AND RECOVERY TOOL**

Ronald L. Seiple, Kailua; Edward A. Ashenden, P. O. Box 990, Honolulu, Hawaii, and Robert L. Webb, Kailua, all of Hawaii, assignors to The United States of America as represented by the Secretary of the Navy

Filed Feb. 3, 1972, Ser. No. 223,162  
Int. Cl. B66c 1/18

U.S. Cl. 294-66 R

10 Claims



An attachment and recovery tool for recovery of underwater objects has two telescopically extending arms which together with a central portion encircles the object to be

recovered. The telescopically extending arms are urged into object engaging position by spring motor means mounted on the central portion. Latch units mounted on each telescopic arm secure them in encircling engagement with the object to be recovered. Cable means carried by said latch means cooperate with a lifting line to raise the object to the surface.

3,722,942

**LOAD BEARING STRAP**

Hans Baur, von der Osten Strasse 6, D-8902 Goggingen, Germany

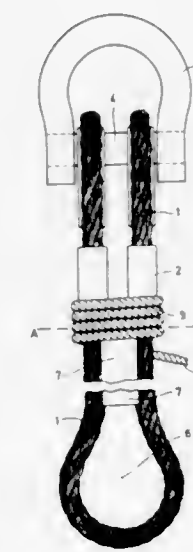
Filed March 13, 1972, Ser. No. 233,984

Claims priority, application Germany, March 24, 1971, P 21 14 207.4

Int. Cl. B66c 1/18

U.S. Cl. 294-74

10 Claims



A load bearing strap comprising a multiple strand cable having a pair of eye loops formed at its ends coupled to a shackle. An open loop is disposed at the other end of the strap and is formed by bending the cable and coupling its ends to the shackle. A resilient spacing member, having semi-cylindrical recesses in its sides, is disposed between the sections of the cable between the open loop and the pair of eye loops for supporting the sections of the cable. A multiple strand rope or cable is wound tightly around the cable and the spacing member to form a protective jacket on the cable and increase its rigidity.

3,722,943

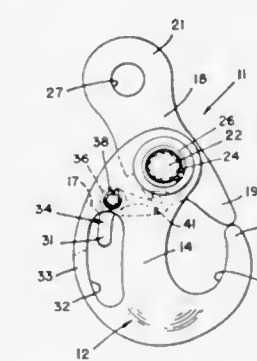
**SAFETY HOOK**

John Kalua, Jr., 865 White Cottage Road, Angwin, Calif.  
Filed May 12, 1971, Ser. No. 142,548

Int. Cl. B66c 1/36

U.S. Cl. 294-82 R

2 Claims



A hook for use with crane blocks, lifting hoists, and the like, having a safety keeper for closing and locking the hook to

3,722,944

**STORE RELEASE MECHANISMS**

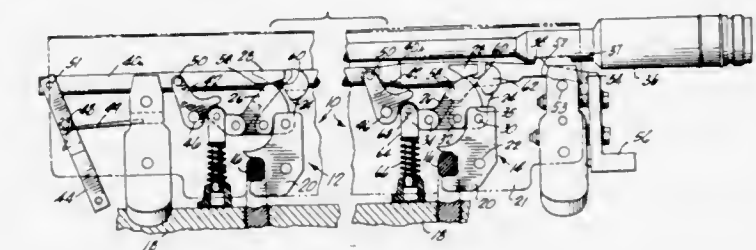
Harvey Stewart Dand, Garden Grove, Calif., assignor to McDonnell Douglas Corporation

Filed April 2, 1971, Ser. No. 130,589

Int. Cl. B66c 1/34

U.S. Cl. 294-83 R

12 Claims



Store release mechanisms which include sears and pawls in their release linkages as well as overcenter means in both store engaging and store release positions thereof. Pairs of the present mechanisms are designed to cooperate so that either mechanism can be independently moved into the store engaging position, yet positive means are provided to prevent one or more mechanisms from being in an inadvertent unlocked or unsafe store engaging position.

3,722,945

**CARRIER FOR FLANGED ARTICLES**

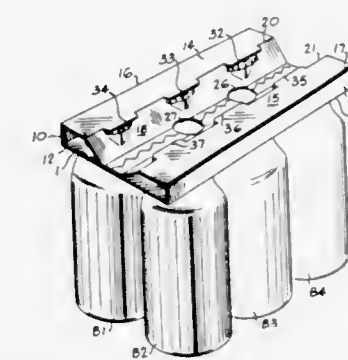
Prentice J. Wood, Jonesboro, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Nov. 15, 1971, Ser. No. 198,699

Int. Cl. B65d 71/00

U.S. Cl. 294-87.2

5 Claims



A carrier for flanged articles includes a generally rectangular base panel, a pair of side walls foldably joined respectively to the side edges of the base panel and extending upwardly therefrom, a pair of top wall panels foldably joined respectively to the top edges of the side walls and extending inwardly therefrom, a pair of support panels foldably joined respectively to the inner edges of the top wall panels and extending downwardly and inwardly therefrom, a pair of anchoring panels foldably joined respectively to the inner edges of said support panels and disposed in flat face contacting relation with the upper surface of the base panel, at least one flange receiving slit formed at the junction between each of the top wall panels and its associated support panel, at least a pair of stabilizing flaps struck from the base panel in areas thereof adjacent the side walls respectively and each flap being folded upwardly to occupy a position adjacent its associated side wall and defining an article receiving aperture in the base panel, and a flange receiving slit formed in each stabilizing flap and



arranged to cooperate with the corresponding flange receiving slit in the associated top wall panel and support panel for engaging diametrically opposite sides of an article underneath the flange thereof.

3,722,946

**CAMPER AND CABINET CONSTRUCTION THEREFOR**

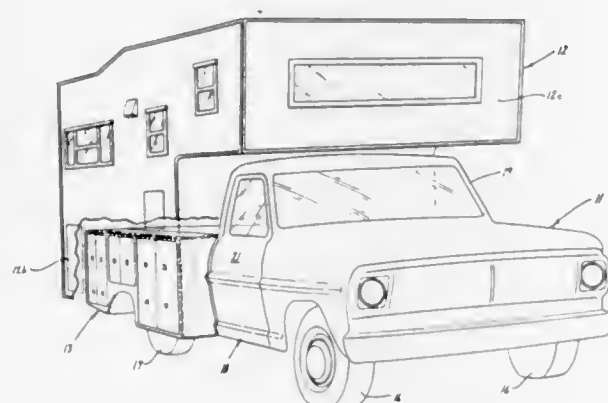
Thomas Francis Cary, 546 Emory St., San Jose, Calif.

Filed Nov. 30, 1970, Ser. No. 93,622

Int. Cl. B60p 3/32

U.S. Cl. 296—23 MC

11 Claims



A camper having a pickup with a camper body mounted on the pickup and with a cabinet construction provided on each side of the pickup and underlying overhanging portions of the camper body.

3,722,947

**RETRACTABLE SIDE FRAME FOR FLAT BED TRAILER**

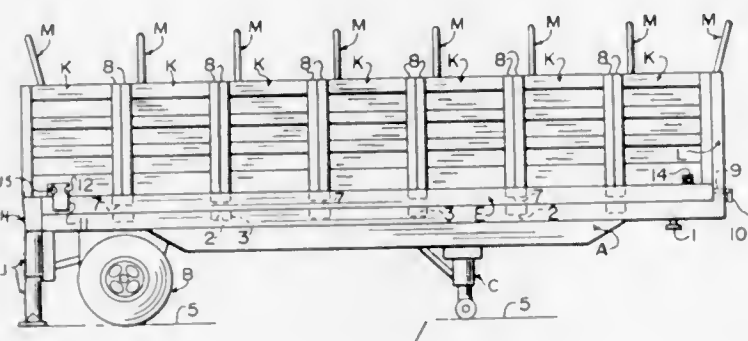
Mark L. Zucca, 1608 Lafayette St., Alameda, Calif.

Filed Nov. 29, 1971, Ser. No. 202,959

Int. Cl. B62d 33/08

U.S. Cl. 296—26

5 Claims



A retractable side frame for flat bed trailer in which a U-shaped frame has side members that are slidably received in channels which in turn are removably mounted adjacent to the sides of the flat bed. The U-shaped frame has telescopic legs which may be extended to contact the ground when it is desired to retract the side U-shaped side frame and thus expose the flat bed so that items can be loaded onto or removed from the flat bed along the sides thereof. A modified form of the device discloses mechanical means for retracting the side frame and another modified form shows that the U-shaped retractable side frame as well as the two channels that receive the side members of the retractable frame can be formed in sections so that the device can be readily disassembled and stored when it is desired to use the flat bed trailer without the retractable side frame.

3,722,948

**MULTI-TRANSPORT SYSTEM**

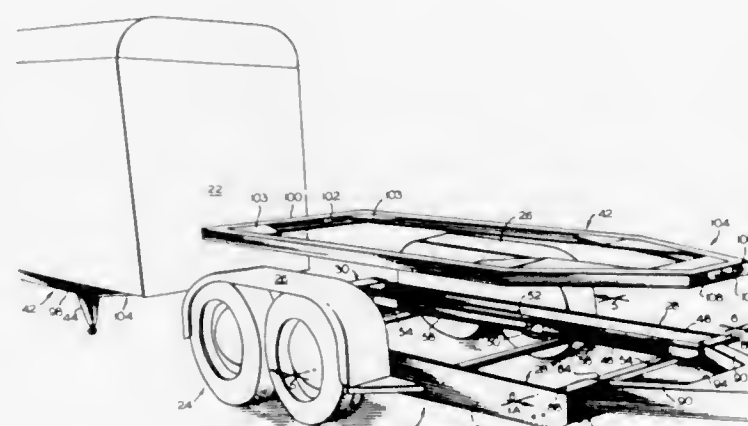
David P. Walsh, and Joanne M. Walsh, both of 1400 Ramsey Drive, Edgewater, Md.

Continuation-in-part of Ser. No. 873,001, Oct. 31, 1969. This application Nov. 18, 1970, Ser. No. 90,667

Int. Cl. B60p 3/42

U.S. Cl. 296—35 A

10 Claims



A multi-use transport system including a trailer having a main chassis frame and a plurality of interchangeable type trailer bodies each of which is mounted on a substantially identical sub-frame, the sub-frame and main chassis frame being so interrelated and designed for coaxing cooperative interengagement of each said body type sub-frame with the main chassis frame. Each trailer type body is mountable selectively on an identical trailer main chassis, permitting variable multiple function use of a single trailer.

3,722,949

**WINDSCREEN FILTERS**

Leonard Palman, 5 Windsor Close, Hendon Lane, London, England

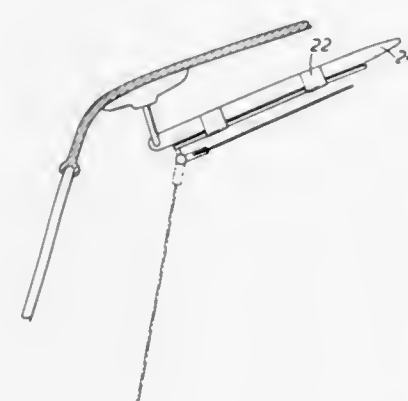
Filed April 14, 1971, Ser. No. 133,994

Claims priority, application Great Britain, April 20, 1970, 18,735/70

Int. Cl. B60j 3/02

U.S. Cl. 296—97 C

2 Claims



A filter for reducing glare and useful as a windscreen filter for vehicles is angularly displaceable relative to a support by means of a hinge to an "in use" position. The hinge is resilient to permit removal of the filter from the support.

In a preferred embodiment a wire frame is clipped on to the sun blind of, for example, a car, and has end portions which by virtue of the shape and resilience of the wire frame are retained in a hinge bracket on the filter to permit angular displacement of the filter about the so formed hinge.

3,722,950

**CHAIR WITH REPLACEABLE UPHOLSTERY COVER**

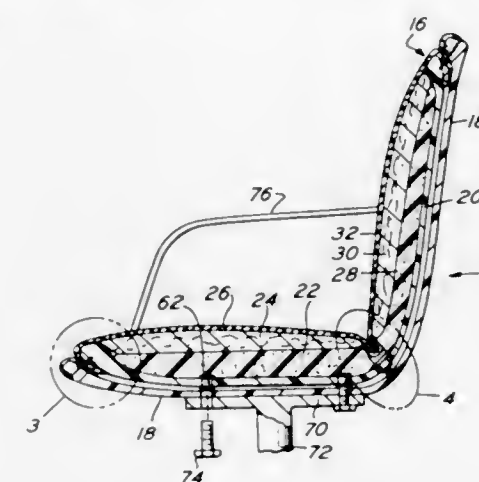
Robert Harnick, Parlin, N.J., assignor to Blair Manufacturing Co., Marietta, Ga.

Filed Dec. 3, 1971, Ser. No. 204,658

Int. Cl. A47c 7/02, 23/00

U.S. Cl. 297—218

7 Claims



The upholstery cover of a chair is readily removable so that a damaged cover may be rapidly replaced. Either the original cover or any replacement cover may be tufted.

3,722,951

**VEHICLE PASSENGER SAFETY DEVICE**

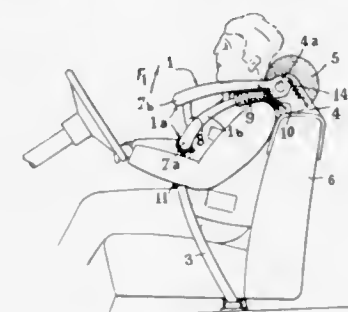
Raymond Ezquerro, 25 Place Nicolas Freimeaud, Tours, France

Continuation-in-part of Ser. No. 876,375, Nov. 13, 1969, abandoned. This application June 3, 1971, Ser. No. 149,684

Int. Cl. A47c 31/00

U.S. Cl. 297—390

10 Claims



A device for protecting a passenger of an automotive vehicle in case of crash, accident and the like, this device comprising a bow-shaped element of which the intermediate portion is adapted to be disposed in front of the trunk of the person to be protected, and the side branches of the element extend to the rear and are pivoted to the upper portion of the seat, for example to a head-rest. Thus, in case of sudden forward projection of the passenger's or driver's trunk, the shoulders of the protected person will exert a certain pressure against the lateral branches of the device, thus causing the latter to pivot upwards to a position in which the head of the person is safely retained.

3,722,952

**COLLAPSIBLE FURNITURE**

Anatol Novitzky, 788 Columbus Avenue, New York, N.Y.

Filed May 17, 1971, Ser. No. 143,903

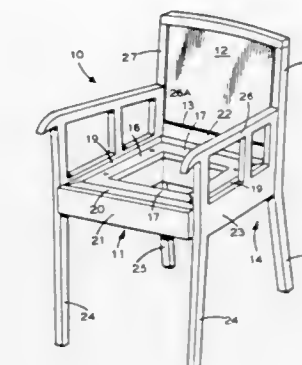
Int. Cl. A47c 4/02, 7/00

U.S. Cl. 297—440

10 Claims

Furniture such as chairs, arm chairs, tables or the like, which are collapsible; elements of the furniture being hingedly

connected together to permit movement of the hinged elements between collapsed and set up conditions, together with



means rigidly locking the hinged elements together in their set up condition, yet being releasable to allow for collapse of the furniture.

3,722,953

**FURNITURE FORMED OF ARCUATE AND CYLINDRICAL MEMBERS**

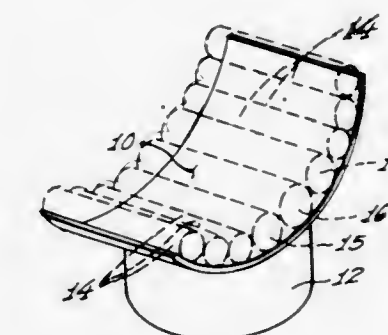
James R. Hull, 10910 Kenross Avenue, Los Angeles, Calif.

Filed July 2, 1971, Ser. No. 159,410

Int. Cl. A47c 7/00, 7/20

U.S. Cl. 297—445

8 Claims



The invention is concerned with chairs, bed, sofas, tables, bookshelves, and other articles of furniture, which are formed of arcuate and cylindrical members which may be derived, for example, by cutting cardboard tubes into appropriate shapes. However, it will become evident as the description proceeds that although cardboard is a suitable material for the furniture, the furniture may be formed of arcuate and cylindrical members composed of metal, fiberglass, plastic, wood, or any other appropriate material, and the members need not necessarily be formed by cutting tubular members into the desired shapes.

3,722,954

**UPHOLSTERED FURNITURE**

Ivor Allan Rey, Turramurra, New South Wales, and Victor Edmund Krout, Potts Point, New South Wales, both of Australia, assignors to Sebel Limited, New South Wales, Australia

Filed July 2, 1971, Ser. No. 159,341

Claims priority, application Australia, July 13, 1970, PA 1804

Int. Cl. A47c 7/14, 7/20

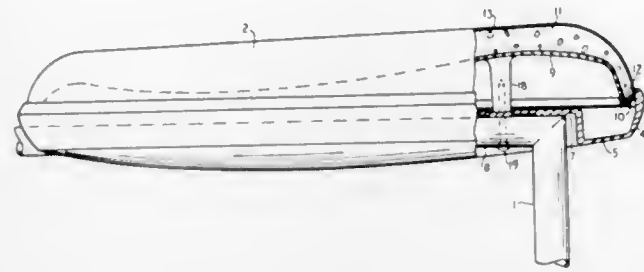
U.S. Cl. 297—452

4 Claims

A seat or backrest for a chair or other article of furniture is made from two moulded shells, one of which is inverted and seats within the other. Upholstery material is placed on the top



of the said one shell, upholstery cover material is stretched over the upholstery material and over a lip surrounding the compartment. The truck allows joint transportation of full quills of yarn to the looms for replenishment and empty quills



said one shell, and secured inside the shell, the lip of the inner shell retaining itself and the upholstery material or cover against a lip on the other shell.

3,722,955

**UNDERBODY VENTILATING STRUCTURE**

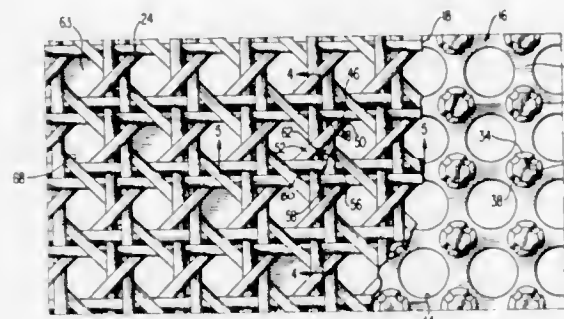
Herbert H. Trotman, c/o Comfort Conditioning, Inc. P.O. Box 1046, Virginia Beach, Va.

Filed April 28, 1970, Ser. No. 32,642

Int. Cl. A47c 23/00

U.S. Cl. 297—453

18 Claims



Underbody ventilating structure includes a ventilation grid sheet having a resilient base portion and a plurality of molded-in body-support projections. A cover sheet is coextensive with the grid sheet and has molded-in recessed portions defining a decorative pattern in the cover sheet such as a woven cane-simulating pattern. The body support projections maintain the cover sheet spaced from the base portion of the grid sheet, to form a ventilation space between the grid and cover sheets. The body-support projections are bonded to decorative recessed portions of the cover sheet, to eliminate scrubbing of the cover sheet across the grid sheet. The body-support projections can be rigid, or can be partially collapsible to yield with springlike action for increased comfort.

3,722,956

**TRUCK FOR TENDING TEXTILE LOOM BATTERIES**

Roy Leon Lee, Fort Mill, and Lanneau Frazier Waldrop, Rock Hill, both of S.C., assignors to Springs Mills Inc., Ft. Mill, S.C.

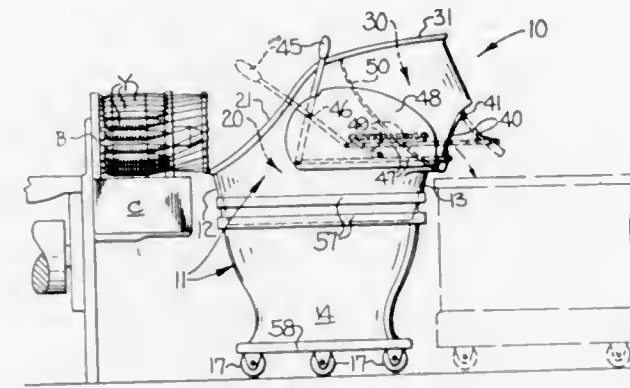
Filed May 21, 1971, Ser. No. 145,733

Int. Cl. B60p 1/56

U.S. Cl. 298—2

4 Claims

A movable truck for tending textile loom batteries including a housing having casters on the bottom thereof for easy moving of the truck by an operator from loom to loom, a first compartment for carrying full quills of yarn to replenish the batteries on looms, a second compartment for carrying empty quills removed from the looms, and a door associated with the second compartment and positioned upwardly from the base of the truck and including means for opening the door to empty the empty quills from the second compartment and for closing the door to accumulate the empty quills in the second



away from the looms eliminating separate transporting operations.

3,722,957

**GAGE SCRAPER**

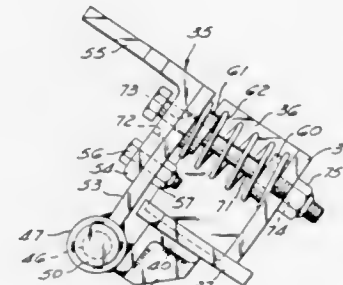
Larry L. Snyder, and James R. Matlack, both of Solon, Ohio, assignors to Jarva, Inc., Solon, Ohio

Filed April 5, 1971, Ser. No. 130,982

Int. Cl. E01q 3/04; E21c 25/10

U.S. Cl. 299—86

13 Claims



A tunneling machine includes a support frame, a rotatable cutter head, and inside roller cutters and gage roller cutters for cutting or crushing the end face of a tunnel. Each gage cutter has a gage scraper with a scraper blade engaging the tunnel surface for clearing materials from the path of the gage cutter. A spring biases the scraper blade toward the tunnel surface, and the scraper blade is pivotally mounted with respect to the cutter head for movement toward and away from the tunnel surface along an arcuate path. A bolt head in the arcuate path provides an adjustable stop for preventing excessive outward travel of the scraper blade when a void is encountered in the tunnel surface. The bolt also provides a release means to displace the scraper blade away from the tunnel surface to permit removal of the scraper blade.

3,722,958

**ROTATIVE WHEEL COVERS, AND THE LIKE**

William H. Marshall, 1910 Missouri, Baytown, Tex.

Continuation-in-part of Ser. No. 41,188, May 28, 1970, abandoned. This application Dec. 23, 1970, Ser. No. 100,904

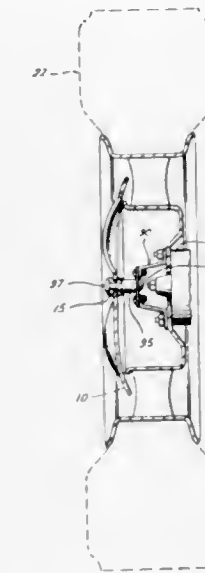
Int. Cl. B60b 7/06

U.S. Cl. 301—37 N

2 Claims

Wheel covers and the like which are mounted for rotation independently of the wheel rotation. The apparatus may be af-

fixed to the usual hub caps of automotive vehicles, or may be affixed directly to the hub of the wheel assembly, or may be af-



fixed to the lugs which secure the wheel to the hub assembly. Preferably, for utmost safety, the wheel covers are disposed entirely within the limits of the surrounding tire.

3,722,959

**HUB SHELL ASSEMBLY FOR A BICYCLE AND METHOD OF MAKING THE SAME**

Theo Carbon, and Reinhard Kessler, both of Schweinfurt am Main, Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany

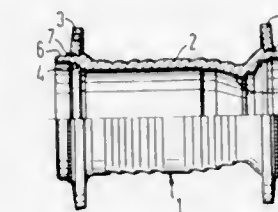
Filed Dec. 22, 1970, Ser. No. 100,703

Claims priority, application Germany, Jan. 8, 1970, P 20 00 680.8

Int. Cl. B60b 27/04

U.S. Cl. 301—105 B

2 Claims



A hub shell for a bicycle wheel is assembled from two approximately semicylindrical sheet steel stampings by butt welding the axial edges of the stampings, machining the blank so produced to desired dimensions and details of sleeve contour, mounting annular flanges for the spokes on knurled outer faces of the sleeve, and deforming the exposed knurls to secure the flanges in position.

3,722,960

**BRAKING SYSTEM FOR AUTOMOTIVE VEHICLES WITH MEANS FOR PREVENTING THE LOCKING OF WHEELS DURING BRAKING**

Alexander Von Lowis OF Menar, Mauren, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Aug. 27, 1970, Ser. No. 67,416

Claims priority, application Germany, Sept. 17, 1969, P 19 47 012.3

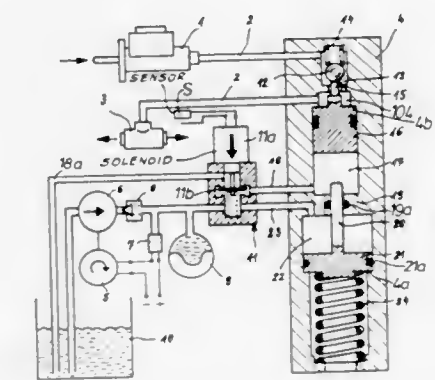
Int. Cl. B60t 8/00

U.S. Cl. 303—21 AF

12 Claims

A braking system for the wheels of an automotive vehicle wherein the master cylinder is connected with the wheel cylinders by brake lines and can supply to the wheel cylinders a braking medium under such pressure that the wheels are locked and skid along the road surface. The braking system further includes devices which prevent prolonged locking of

wheels in response to excessive pressurization of the braking medium, and each such device includes a shutoff valve which is provided in the respective brake line, a control piston which normally holds the shutoff valve in open position under the action of a pressurized fluid, and a safety plunger which is normally retracted to stress a spring and is displaced by such spring in response to a predetermined drop in the fluid pressure whereby the plunger maintains the shutoff valve in open



position by way of the control piston. The latter permits the shutoff valve to close when a sensor detects that the corresponding wheel is locked in response to excessive pressure of braking medium in the wheel cylinder; at the same time, the control piston increases the volume of a cylinder chamber which receives some braking medium to thus effect a reduction of pressure in the wheel cylinder and the termination of locking action.

3,722,961

**ENDLESS TRACK**

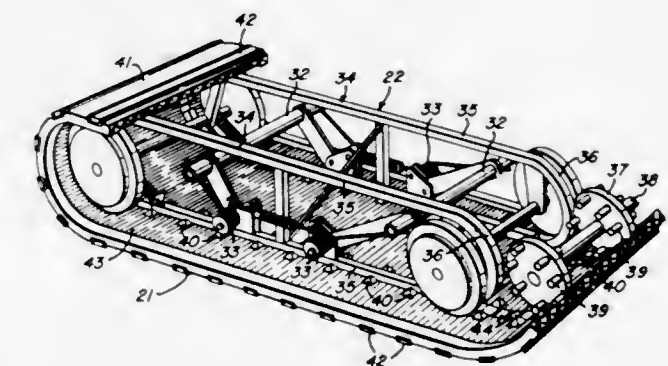
John S. Haley, Lake Junaluska, and Jerry W. Cooper, Waynesville, both of N.C., assignors to Dayco Corporation, Dayton, Ohio

Filed April 22, 1971, Ser. No. 136,422

Int. Cl. B62m 27/02; B62d 55/24

U.S. Cl. 305—25

16 Claims



An endless track is provided which is particularly adapted to be supported by a slide rail suspension system and moved in an endless path thereabout. The endless track comprises a main body portion having a ground engaging surface and an inside surface and is provided with a plurality of bearing inserts fixed to the main body portion and such inserts comprise a part of the inside surface. Each of the inserts is arranged in an associated row which extends in an endless path and each insert has an outside bearing surface which is adapted to engage associated rails of the slide rail system for movement of the track about such slide rail system with optimum flexibility and in a substantially frictionless manner. Certain ones of the inserts may have means for guiding the track as it is moved along its slide rail system.



3,722,962

## DRIVE SPROCKET

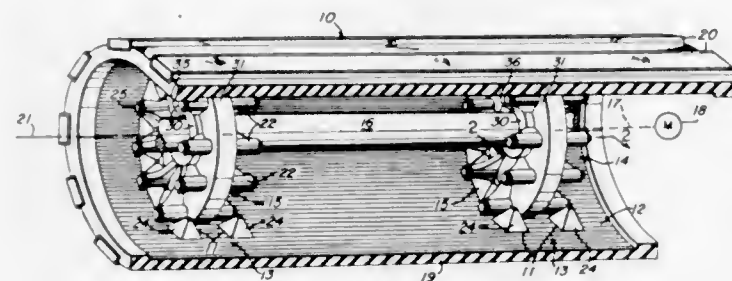
Jerry W. Cooper, Waynesville, N.C., assignor to Dayco Corporation, Dayton, Ohio

Filed Feb. 10, 1971, Ser. No. 114,311

Int. Cl. B62d 55/12

U.S. Cl. 305—35 EB

10 Claims



A drive sprocket for an endless traction belt which has a plurality of driven surfaces is provided wherein the sprocket has a plurality of driving members each supported for rotation relative to the sprocket and each being adapted to engage driven surfaces of the traction belt associated therewith in a serial manner to transmit a driving force thereto while avoiding sliding movement between each member and its associated driven surfaces to thereby reduce wear.

3,722,963

## DRIVING LUG STRUCTURE FOR ENDLESS TRACK

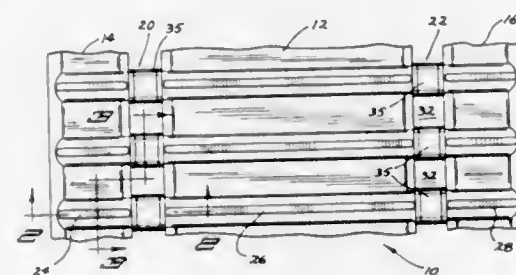
Frank A. Cetrulo, Jr., Fort Thomas, Ky., assignor to National Factors, Inc., Cincinnati, Ohio

Filed Sept. 10, 1971, Ser. No. 179,313

Int. Cl. B62d 55/24

U.S. Cl. 305—38

2 Claims



A driving lug for an endless track member for a snowmobile, said lug comprising a seamless metal ring-like member having a core of rubber fabric material bonded thereto with said core having a transverse rod of said track member disposed therethrough and bonded thereto for a unitary construction.

3,722,964

## EXTENSIBLE DRAWER SUPPORT

John Alvin Chitester, Long Beach, and Frank D. Jonas, Oyster Bay, both of N.Y., assignors to Oxford Pendaflex Corporation, Garden City, N.Y.

Filed July 7, 1971, Ser. No. 160,378

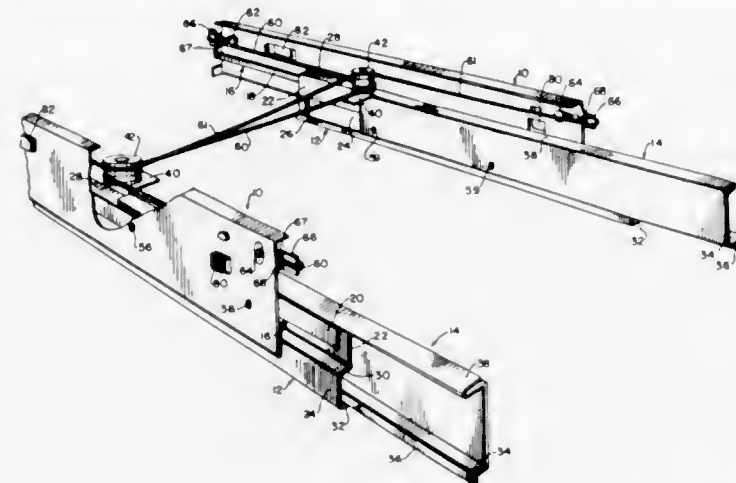
Int. Cl. F16c 21/00

U.S. Cl. 308—3.8

3 Claims

An extensible drawer support for use with a file cabinet or the like includes a case mounting rail, a suspension rail, and a drawer mounting rail. The suspension rail is generally S-shaped in cross section with the upper portion thereof being

supported on a spherical bearing retained within a flange extending inwardly from an intermediate portion of the case mounting rail. The bottom portion of the drawer mounting rail extends into the lower portion of the extension rail and is sup-



ported on a similar bearing within the suspension rail. Two additional spherical bearings serve to fix the position of the suspension rail relative to the case mounting rail and drawer rail, respectively.

3,722,965

## RADIAL SLIDE BEARINGS CONSTRUCTED AS THREE-WEDGE BEARINGS, PREFERABLY FOR TURBOMACHINES

Rudolf Gemein, Duisburg, and Gerold Holzer, Mulheim (Ruhr), both of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mulheim (Ruhr), Germany

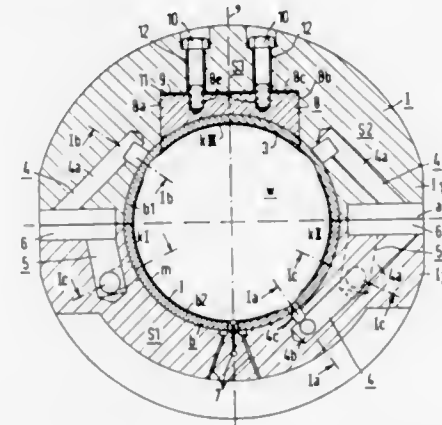
Filed Jan. 21, 1972, Ser. No. 219,628

Claims priority, application Germany, Jan. 25, 1971, P 21 03 239.3

Int. Cl. F16c 17/16

U.S. Cl. 308—122

4 Claims



Radial slide bearing in the form of a three wedge bearing includes a bearing shell formed of an upper and a lower longitudinal half shell, a bearing bushing mounted in the shell and formed with shaft-bearing surfaces on the inner periphery thereof, the bearing shell and bearing bushing being comprised of three radial wedge segments with respective sickle-shaped spaces distributed over the inner periphery for building up therein wedges of lubrication for lubricating a rotary shaft receivable in the bearing bushing, the sickle-shaped spaces each having a leading edge in direction of rotation of the shaft, oil inlet channels formed in the bearing shell and the bearing bushing and communicating with the respective spaces at the leading edges thereof, and oil outlet channels also formed in the bearing shell and the bearing bushing and communicating with the respective spaces at a location thereof downstream from the leading edges thereof, one of the three wedge segments being located at the top of the bearing shell and extending over the bearing surface at the upper half shell substantially concentrically to the vertical axial plane of

the bearing shell, the upper wedge segment including an adjusting segment wherein the respective sickle-shaped space of the upper wedge segment is formed, the adjusting segment being adjustably mounted in the bearing shell for adjusting lubrication clearance between the bearing surface thereof and the shaft receivable in the bearing bushing so as to vary oil pressure forces exertable on the upper part of the shaft.

3,722,966

## FLUID SEAL MEANS SURROUNDING BEARING MEANS

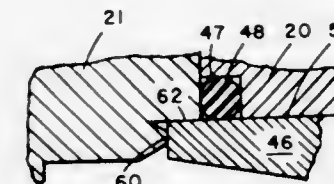
George V. Woodling, 22077 West Lake Road, Rocky River, Ohio

Filed July 19, 1971, Ser. No. 163,707

Int. Cl. F16c 33/76

U.S. Cl. 308—187.1

5 Claims



Fluid seal means surrounds bearing means and includes a step-shoulder which defines with said bearing means an annular groove to receive an O-ring seal.

3,722,967

## LOW HEAT GENERATION TURBINE ENGINE BEARING

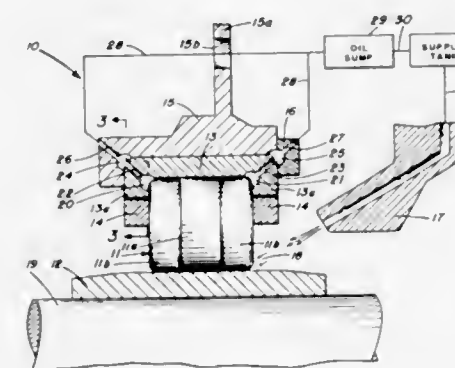
Harry R. Lewis, Arlington, Va., assignor to The United States of America as represented by the Secretary of the Navy

Filed Oct. 26, 1971, Ser. No. 191,980

Int. Cl. E16c 33/30

U.S. Cl. 308—187

14 Claims



A low heat generation roller bearing having inner and outer races. Oil is applied to the surface where the rollers and inner race contact by means of an oil jet nozzle. Centrifugal force and rotation of the rollers, forces the oil around the rollers to the outer race. Radial bores extend through the outer race and connect with one or more circumferential grooves to collect and aid in transmission of oil from the outer race. A path is provided to return the oil to an oil sump for scavenging back to an oil supply tank.

3,722,968

## WHEEL-BEARING ASSEMBLY

Arthur L. Bomberger, Lancaster, Pa., assignor to National Bearings Company, Lancaster, Pa.

Filed June 29, 1967, Ser. No. 649,986

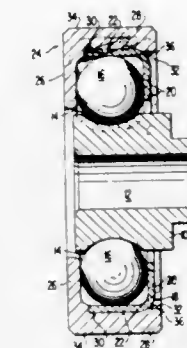
Int. Cl. F16c 33/30

U.S. Cl. 308—191

6 Claims

A ball bearing-wheel assembly has an outer nylon tire partially enclosing a stamped metal cup which serves as the outer

race for the balls. The nylon tire has the inner surface of its peripheral wall adapted to securely engage the peripheral wall



of the stamped metal cup, thereby retaining the balls between the inner and outer races and the base portion of the tire.

3,722,969

## BALL AND ROLLER BEARING RETAINER IMPROVEMENT FOR HIGH SPEED OPERATION

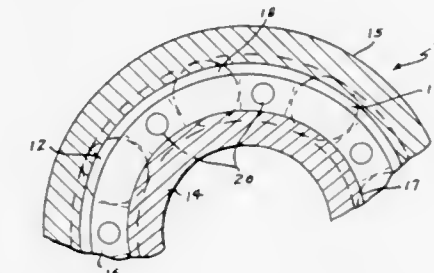
Phillip R. Eklund, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force

Filed Jan. 4, 1972, Ser. No. 215,314

Int. Cl. E16c 33/00

U.S. Cl. 308—193

7 Claims



A rolling bearing-retainer element having a substrate or base structure manufactured from a free-machining-type of relatively manganese-rich tool and/or die steel that is plated with a deposit of silver after being heat treated and cured under predetermined temperature conditions that ensures the formation of a base surface microstructure that includes a series of manganese sulphide spheroids dispersed throughout and a combined surface microstructure in which a silver sulphide complex is formed at each of the manganese sulphide spheroids to thereby provide a relatively non-yieldable retainer element having substantially less friction and significantly improved resistance to galling, wear and fatigue.

3,722,970

## DISPENSING APPARATUS

James W. Healy, Wakefield, Mass., assignor to Peters & Co. Inc., Boston, Mass.

Filed April 19, 1971, Ser. No. 135,100

Int. Cl. A47f 1/00; B65g 1/16

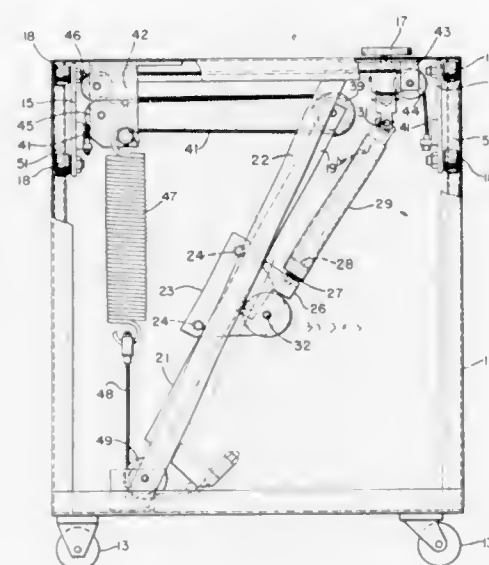
U.S. Cl. 312—71

38 Claims

A dispensing apparatus of the self-leveling type in which a vertically movable platform is balanced by a spring and in which a balance beam is interposed between the spring and the platform to permit adjustment for different types of materials carried on the platform. Among the features shown are adjustment of effective moments by moving the fulcrum



while constraining the beam longitudinally; moving the fulcrum with gear, rack, and stationary track; moving the fulcrum by pivotal link; rolling of surfaces in the fulcrum region; constraining the beam by a pivotal link connected at a point



spaced from the fulcrum; vertical arrangement of the beam and adjusting rod in a compact arrangement; and a multiple parallel support cord arrangement, together with other important related features.

3,722,971

## PLASTIC BOX FURNITURE

Walter Zeischegg, 7910 Neu-Ulm, Germany, assignor to Hans Friedrich Hefendehl, Kierspe, Germany

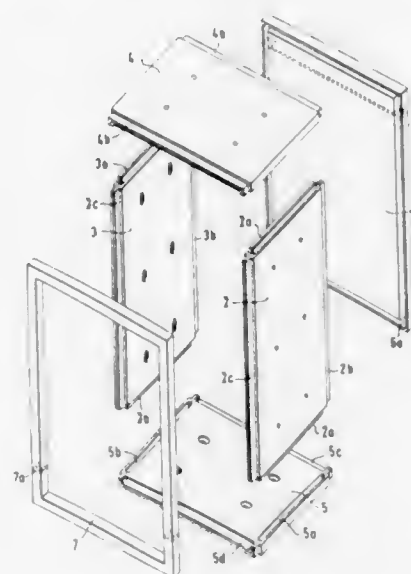
Filed Aug. 28, 1970, Ser. No. 67,779

Claims priority, application Germany, Nov. 6, 1969, P 19 55 922.9

Int. Cl. A47b 77/00, 87/00, 81/00

U.S. Cl. 312-107

7 Claims



Plastic box furniture is made up of at least one rectangular box member open on at least one side. The box member is constructed of individual side panels fitted together along adjoining edges and secured together around the periphery of the open side by a frame. Preferably, the side panels are made of a hollow construction, formed by a pair of spaced wall members joined together along their edges to provide ribs or grooves for interconnecting the panels. Each of the panels can be provided with openings to receive bolt-like members for securing separate box members together in a furniture arrangement. The box member can be arranged to receive a drawer inserted through its open side, or the open side can be closed by a door or a cover.

3,722,972  
FIBERGLASS FILING CABINET

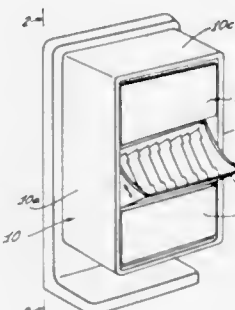
Douglas Deeds, San Diego, and Barry L. Rosengrant, Los Angeles, both of Calif., assignors to Architectural Pottery, Los Angeles, Calif.

Filed June 28, 1971, Ser. No. 157,278

Int. Cl. A47b 88/18; E05d 7/04

U.S. Cl. 312-305

3 Claims



An improved filing cabinet is provided which lends itself particularly to a double-walled fiberglass construction. The filing cabinet of the invention includes a molded fiberglass base which defines a rectangular frame normally disposed in a vertical plane. One or more file drawers are supported within the frame above one another, the support of each drawer being effectuated by elongated strips mounted on the ends thereof. The strips are supported in depressions formed in the inner wall of the frame, the depressions having the shape of an inverted triangle, so as to permit each drawer to be independently tilted out from the frame for access to its interior, and then to be tilted back to an upright position within the frame.

3,722,973

## FURNITURE ARTICLE WITH DISPLACEABLE DRAWER CASE

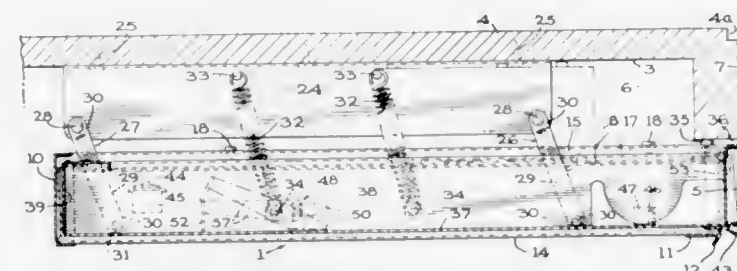
Melvin A. Textoris, Struthers, Ohio, assignor to The General Fireproofing Company, Youngstown, Ohio

Filed April 1, 1971, Ser. No. 130,249

Int. Cl. A47b 88/00, 95/00

U.S. Cl. 312-325

11 Claim



A furniture article having a top supporting surface includes a drawer case assembly mounted beneath said surface and displaceable from an elevated stored position normally hidden from the user's view, to a lowered use position horizontally offset from the stored position to allow subsequent rectilinear movement of a drawer carried by the assembly.

3,722,974

## DRAWER SIDE WALL

David A. Hartman, 3226 Vernon Ave., Elkhart, Ind.

Filed July 15, 1969, Ser. No. 841,809

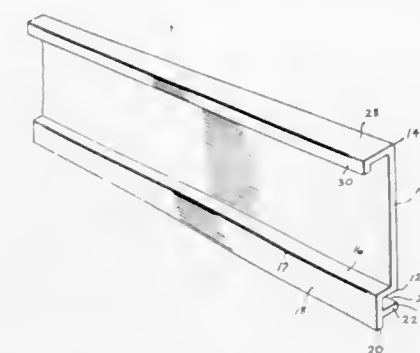
Int. Cl. A47b 88/00

U.S. Cl. 312-330

9 Claims

A side wall for a drawer defined by a substantially vertical panel member having an outwardly offset lower margin which

is interconnected to the remainder of the panel member by a substantially horizontal web. A flange extends inwardly from



an intermediate portion of the offset lower margin and cooperates with the web and offset lower margin to define a channel for the receipt of a side margin of a drawer bottom.

3,722,975

## TILT-OPEN DRAWER CONSTRUCTION

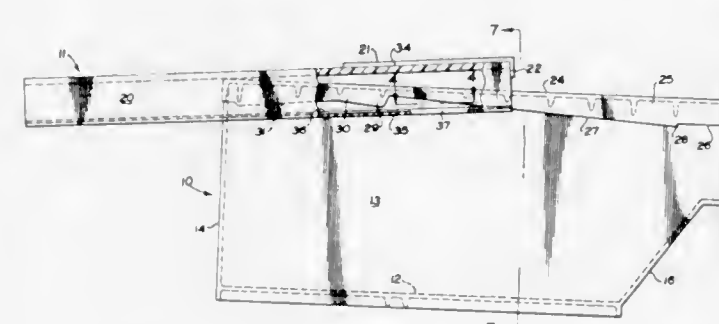
William D. Taylor, Wooster, Ohio, assignor to Rubbermaid, Inc., Wooster, Ohio

Filed Jan. 3, 1972, Ser. No. 214,709

Int. Cl. A47b 88/00

U.S. Cl. 312-348

2 Claims



A drawer preferably of molded plastic material slidably mounted in a carrier frame having channel side rails slidably supporting side rails on the drawer, the lower legs of said channels having forward slots receiving selectively projections on the side rails to hold the drawer in closed and full open positions, and the upper channel legs slidably abutting the rear upper edges of the side rails to limit downward tilting of the drawer in open positions.

3,722,976

## MERCURY GENERATION

Paolo Della Porta, and Mauro Rebaudo, both of Milan, Italy, assignors to S.A.E.S. Getters S.p.A., Milan, Italy

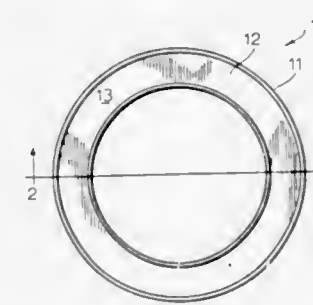
Division of Ser. No. 78,839, Oct. 7, 1970, Pat. No. 3,657,589.

This application Jan. 18, 1972, Ser. No. 218,755

Int. Cl. H01j 9/38

U.S. Cl. 316-3

7 Claims



Mercury releasing getter devices employing intermetallic compounds of mercury with zirconium and/or titanium such as  $Zr_3Hg$  and  $Ti_3Hg$  related compositions of matter and uses thereof to charge electron tubes with mercury.

3,722,977  
OPTICAL SCATTERING FILTER

Howard J. Sloane, Fullerton, Calif., assignor to Beckman Instruments, Inc.

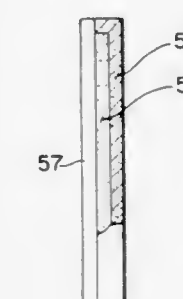
Continuation of Ser. No. 348,387, March 2, 1964, abandoned.

This application Aug. 30, 1971, Ser. No. 176,231

Int. Cl. G02b 5/22

U.S. Cl. 350-1

22 Claims



Long pass optical filters for the infrared region and methods of making the same are disclosed which utilize a transmitting matrix of high and low refractive index materials for selectively scattering all wavelengths shorter than a critical wavelength and which have a relatively sharp cut-on front. By the inclusion of materials having absorption bands at wavelengths longer than the cut-on wavelength of the scattering medium, the cut-on front may be sharpened and positioned over a wide range to provide a filter having a preselected cut-on wavelength and cut-on front.

3,722,978

## OPTICAL SCATTERING FILTER WITH HYGROSCOPIC MATERIAL

Howard J. Sloane, and Gerald T. Keahl, both of Fullerton, Calif., assignors to Beckman Instruments, Inc.

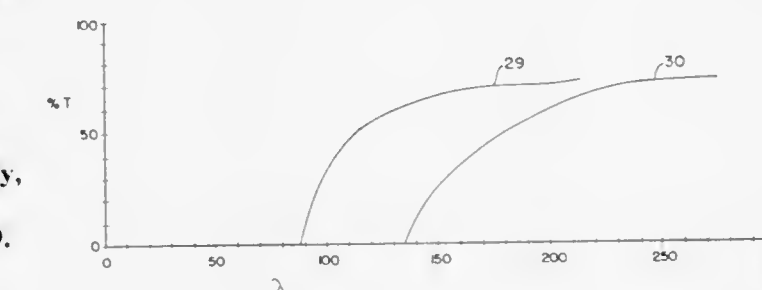
Continuation of Ser. No. 348,444, March 2, 1964, abandoned.

This application Aug. 30, 1971, Ser. No. 176,232

Int. Cl. G02b 5/22

U.S. Cl. 350-1

11 Claims



Long pass optical filters for the infrared region and methods of making the same are disclosed which utilize a transmitting matrix of high and low refractive index materials for selectively scattering all wavelengths shorter than a critical wavelength and which have a relatively sharp cut-on front. By the inclusion of materials having absorption bands at wavelengths longer than the cut-on wavelength of the scattering medium, the cut-on front may be sharpened and positioned over a wide range to provide a filter having a preselected cut-on wavelength and cut-on front. The absorbing materials may include one or more hygroscopic materials whose particles tend to coalesce when finely divided. By adding small quantities of a highly refined mineral oil and mulling before die pressing while heating, these materials may be evenly distributed throughout the area of the filter.



3,722,979

**OPTICAL SYSTEM OF THE REAL IMAGE TYPE FOR FINDERS HAVING ASPHERIC SURFACES**

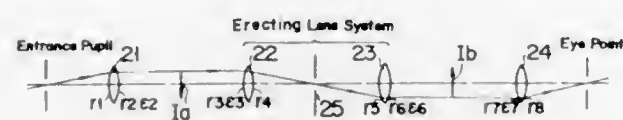
Nobunao Mikami, Yokohama, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed May 27, 1971, Ser. No. 147,532

Claims priority, application Japan, June 1, 1970, 45/47405  
Int. Cl. G02b 23/00

U.S. Cl. 350—54

2 Claims



A finder optical system of the real image type comprises four identical non-spherical lenses arranged on a single common optical axis and constituting, in the direction of incident light rays therethrough, an objective lens, a front lens of an erecting lens system, a rear lens of the erecting lens system, and an eyepiece. A small diaphragm may be arranged between the front and rear lenses of the erecting lens system, or at another selected location along the optical axis.

3,722,980

**MALLEABLE EXPOSURE SLIT FOR A CONTINUOUS STRIP PHOTOGRAPHIC PRINTER**

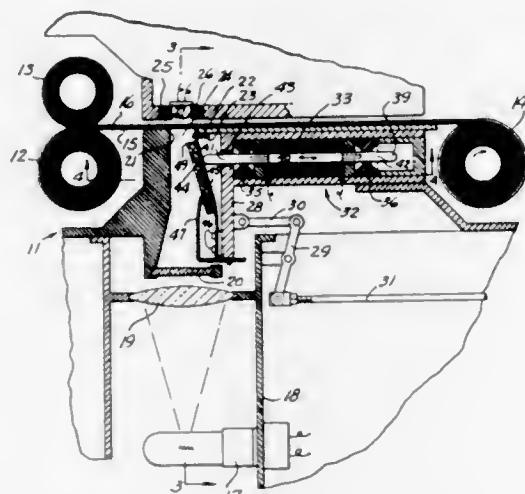
Dwin Richardson Craig, Gaithersburg, Md., assignor to Joseph F. Balac; Felix P. Tolssa, both of Vienna, Va.

Filed Feb. 16, 1972, Ser. No. 226,896

Int. Cl. G03b 27/76

U.S. Cl. 355—83

5 Claims



A malleable exposure slit for continuous strip photographic printing to achieve automatic dodging as the print is being exposed. The film being printed is moved past a light source which passes through a slit transverse to the direction of movement of the film and exposes a positive material positioned against the film and moving therewith. The light passing through the film and positive material strikes equally spaced photoelectric cells positioned above the film and positive material to produce electrical energy in direct ratio to the light reaching the photo-electric cell. Each photo-electric cell is connected through an amplifier to an electro-mechanical piston with the piston arranged to underlie the film with the same transverse spacing as the photo-electric cells. A flexible membrane extends completely along one side of the slit to form one edge of the slit with the electro-mechanical piston engaged thereagainst. Movement of the pistons in a direction toward the slit pushes the flexible membrane into the slit to reduce the overall size of the slit at the point underlying the photoelectric cell controlling the specific piston. The flexible membrane is pressed into a harmonious curve to increase and decrease the area permitted for the light to pass in the slit in accordance with the light reaching the photo-electric cells.

3,722,981

**LOW MELTING POINT OPTICAL TRANSMISSION LINE**

Douglas A. Pinnow, Berkeley Heights, and Le Grand Gerard Van Ultert, Morris, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 17, 1971, Ser. No. 143,877

Int. Cl. G02b 5/14

U.S. Cl. 350—96 WG

16 Claims



Use of material selected from classes of low-melting water-soluble glasses is found to result in low Rayleigh scattering loss. Decreased insertion loss due to this mechanism becomes significant when losses due to other mechanisms have been minimized. Reduction of ultimate insertion loss relative to the more usual insoluble high-melting glasses may justify the additional expense incurred in designing protective systems.

3,722,982

**COHERENT OPTICAL PROCESSING METHOD AND SYSTEM HAVING IMPROVED SIGNAL-TO-NOISE RATIO UTILIZING POLARIZING FILTERS**

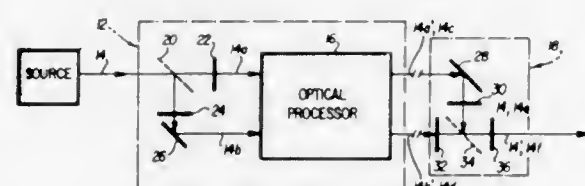
Gerald B. Brandt, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 26, 1971, Ser. No. 192,522

Int. Cl. G02b 27/28; H04b 9/00

U.S. Cl. 350—147

12 Claims



A coherent optical processing method and system for improving signal to noise ratio. A coherent optical beam which can be polarized or unpolarized is split into two component beams which are then polarized to two separate orthogonal states of polarization. Each component beam is operated upon to impart information thereto or sent through a transmission channel during which operation and transmission a small portion of each component beam is unavoidably scattered and depolarized. Each component beam is thereafter optically filtered with a polarizer aligned with the polarization state of each component beam, thereby removing approximately half of the depolarized noise portions of each component beam. The filtered component beams are then recombined, forming a polarized beam with a noise component depolarized with respect to the polarization beam. The combined polarized beam is again filtered in a polarizer aligned with the polarization state of the combined beam to reduce the depolarized noise portion again by about half. The resultant polarized beam has a signal to noise enhancement of about four by the inventive system.

3,722,983

**TWIN TRACK CARTRIDGE STEREOSCOPIC VIEWER**

Samuel M. Brassington, Concord, Calif., assignor to Material Flow Inc., Chicago, Ill.

Filed Nov. 24, 1969, Ser. No. 879,166

Int. Cl. G02b 27/22

U.S. Cl. 350—135

1 Claim

A stereoscopic viewer employs a film strip having two tracks of matched stereoscopic prints or frames which are wound in a magazine for reel-to-reel transport between spaced-apart reels and a binocular eyepiece slidably mounted

3,722,985

**NIGHT-VISION TRAINING GOGGLES**

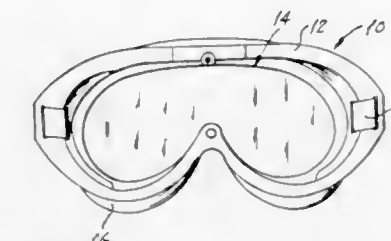
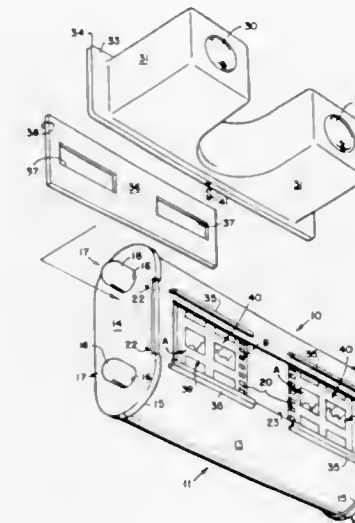
Albert J. Laliberte, Woodstock, Conn., and Ralph A. Richardson, North Brookfield, Mass., assignors to Omnitech Inc., Southbridge, Mass.

Filed Sept. 4, 1970, Ser. No. 69,854

Int. Cl. G02b 5/20

U.S. Cl. 350—311

7 Claims



A night-vision training goggles lens formed as a unitary piece covering both eyes from a single thickness of a press-polished, dark-green-transparent sheet of synthetic resin having a color response providing a visual transmittance peak at a wave length between 5400 A. and 5600 A. and having an optical density between six and seven.

3,722,986

**HIGH TORIC POWER OPHTHALMIC LENSES**

Luc Andre Marcel Tagnon, 6 rue Pastourelle, Paris, France

Continuation-in-part of Ser. No. 771,143, Oct. 28, 1968,

abandoned. This application Oct. 18, 1971, Ser. No. 190,058

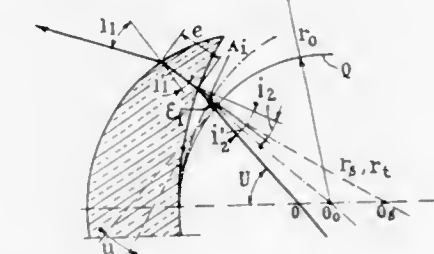
Claims priority, application France, July 26, 1968,

160767; Oct. 30, 1967, 126369

Int. Cl. G02c 7/02

U.S. Cl. 351—176

9 Claims



An ophthalmic aberration corrected toric lens which is derived from a basic toric lens, said basic lens having on a block of refringent material a spherical refracting surface and a toric refracting surface, said basic lens further having first and second main meridian planes at right angles to one another, said ophthalmic aberration corrected toric lens having on a block of the said refracting material two opposite refracting surfaces one of which is identical to one of the two refracting surfaces of said basic lens, while the other refracting surface of said aberration corrected ophthalmic lens is a so-called aberration minimizing surface and is shaped to maintain astigmatism and field curvature aberrations of said ophthalmic lens less than  $\pm 0.50$  Diopters.

3,722,987

**AUTOMATIC SYNCHRONIZATION OF TWO STRIP DRIVES**

Heinrich Cap, Josef Drasch, both of Vienna; Edgar Miesbichler, Vosendorf; Gottfried Pammer, Sudstadt; Robert Scheiber, and Harald Wessner, both of Vienna, all of Austria, assignors to Karl Vochenhuba; Raimund Hauser, both of Vienna, Austria

Filed June 25, 1971, Ser. No. 156,626

Claims priority, application Austria, June 25, 1970, 5740; July 10, 1970, 6337; July 10, 1970, 6338; Nov. 11, 1970, 10166

Int. Cl. G03b 31/04

U.S. Cl. 352—17

46 Claims

A process of synchronizing first drive means for moving a first strip and second drive means for moving a second strip

on the magazine whereby the magazine can be shifted to view the frames in one track as the film is advanced in one direction by the reels and to view the frames of the other track as the

film is advanced in the opposite direction or can be intermittently shifted to the adjacent track for correlating related information on the two tracks.

3,722,984

**DAY-NIGHT MIRROR FOR VEHICLES**

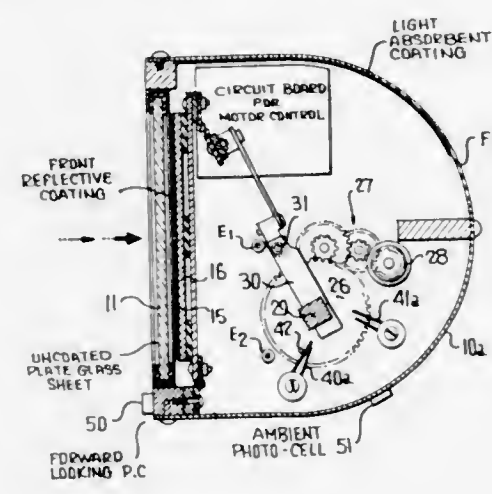
John W. Brean, Cincinnati, Ohio, assignor to D. H. Baldwin Company, Cincinnati, Ohio

Filed June 29, 1971, Ser. No. 157,941

Int. Cl. B60r 1/06; G02b 7/18

U.S. Cl. 350—280

21 Claims



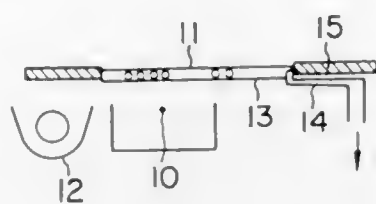
A system for simultaneously sensing, by means of photo-resistors, ambient light and light from an energized headlamp from a vehicle following a vehicle, and in response to the signal outputs of the photo-resistors causing an oscillatory mirror to move selectively into proximity and parallel with a sheet of glass facing always rearwardly of the truck, or, into 45° relation to the pane of the glass. In the latter condition the mirror reflects light into a black absorbing surface, while the sheet of glass reflects light with low efficiency to the eyes of the driver of the truck, whereas in the former condition mirror reflects light with high efficiency to the eyes of the driver. The mirror is in the parallel position during daylight and at night if no following vehicle is close, but goes to the 45° position at night if a following headlamp is sensed. To avoid plural images, the mirror is made of a sheet of glass which is aluminum coated on its front surface, so that light does not pass through the glass of the mirror in proceeding from the following headlamp to the eye of the driver. Electric current is passed through the aluminum coating of the mirror to generate heat and thus to maintain the mirror and the inner surface of the first mentioned sheet of glass free of ice and fog.







from a photosensitive member by the use of a corona



discharger to thereby provide a perfect copy of an original image.

3,722,995

### DATA TERMINAL SYSTEM HAVING IMPROVED MEANS FOR PRODUCING AND DELIVERING FLEXIBLE RECORD SHEETS

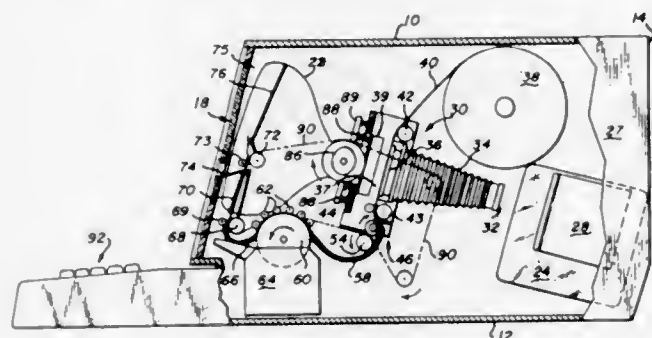
John A. Dahlquist, Palo Alto, Calif., assignor to Photophysics, Inc., Mountain View, Calif.

Filed April 5, 1971, Ser. No. 131,113

Int. Cl. G03g 15/00

U.S. Cl. 355—13

19 Claims



A data terminal system is disclosed comprising a housing having an aperture through which a flexible record sheet may exit, a first cathode ray tube mounted within the housing, and conductive means for transmitting an input signal to the first and second cathode ray tubes.

The system further comprises a photoconductive plate having first and second sides, optic means for projecting an optical image displayed by the second cathode ray tube onto the first side of the photoconductive plate, a conductive base plate mounted in spaced juxtaposition with the second side of the photoconductive plate, the conductive base plate and the photoconductive plate defining an image transfer station therebetween, and means for applying a voltage across the second side of the photoconductive plate and the conductive base plate.

The system further comprises first feed means for intermittently feeding successive portions of an elongated strip of flexible dielectric-coated paper upon which a latent electrostatic image may be formed into the image transfer station, means for severing the successive portions of the elongated strip of flexible dielectric paper into individual flexible record sheets, toner means for developing the latent electrostatic images after the successive portions of the elongated strip of flexible dielectric-coated paper have been severed into individual record sheets, and second feed means for intermittently feeding the individual flexible record sheets from the image transfer station through the toner means and out through the housing aperture.

Inverting means for inverting record sheets moving within the system's housing in a generally horizontal direction towards the exit aperture are also disclosed. The inverting means comprises a set of parallel rollers disposed in mutual engagement substantially parallel a generally upright housing front member which defines the exit aperture. At least one of the rollers is linked by a transmission drive means with a motor disposed within the system housing. The inverting

means further comprises guide means for guiding the flexible record sheets moving in a generally horizontal direction upwardly into engagement with the set of rollers, and baffle means including a generally upright baffle disposed above the set of rollers in spaced juxtaposition with the upright housing front member.

3,722,996

### OPTICAL PATTERN GENERATOR OR REPEATING PROJECTOR OR THE LIKE

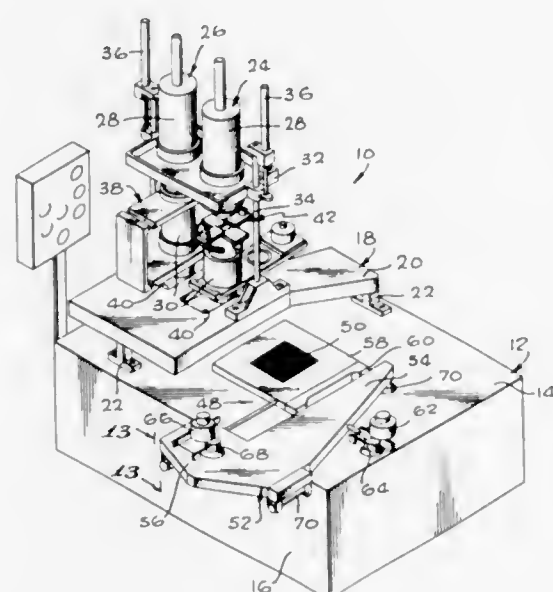
Wayne L. Fox, Castro Valley, Calif., assignor to Electromask, Inc., Van Nuys, Calif.

Filed Jan. 4, 1971, Ser. No. 103,524

Int. Cl. G03b 27/42

U.S. Cl. 355—53

17 Claims



A machine for photographically generating and/or reproducing a selected pattern on a light sensitive emulsion plate. The machine includes a moveable stage for supporting the emulsion plate, either or both an optical pattern generating projector and an optical pattern reproducing or repeating projector each having a longitudinally floating fixed focus lens barrel and a light source for directing a light beam through the barrel onto the emulsion plate, means for driving the stage to translate the emulsion plate edgewise in a prescribed motion opposite the lens barrel of either projector in such a way as to successively locate predetermined positions or addresses of the plate on the barrel axis, and means for flashing the projector light beam at preselected addresses of the emulsion plate in response to control information programmed into the machine. In its pattern generating mode, the machine is programmed to flash the light source of the pattern generating projector in such a way as to produce on the emulsion plate a latent image of a selected pattern. In its pattern repeating mode, a transparent slide or tooling plate bearing a pattern to be repeated, is inserted into the photo repeating projector and the machine is programmed to flash the projector light source at selected addresses of the emulsion plate to produce a latent image of the pattern at each selected address. The primary application of the machine involves the production of photomasks for electronic microcircuit patterns. Major features of the machine reside in an air bearing system with a moveable stage, an air gauging system for positioning each projector lens barrel relative to the emulsion plate to maintain the plate in the image plane of the projector, and a laser interferometry system for sensing the position of the moveable stage along mutually perpendicular axes and controlling the stage drive means to reflect precise positioning of each emulsion plate address on the optic axis of each projector lens barrel.

3,722,997

### CHECKING AND CANCELING DEVICE

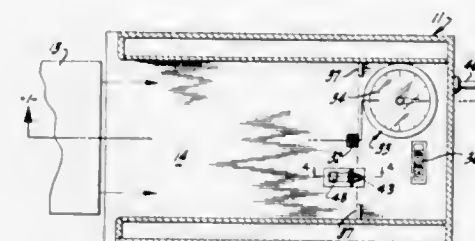
Phyllis E. Mendoza, 208 Anza Vista Avenue, San Francisco, Calif.

Filed May 24, 1971, Ser. No. 146,140

Int. Cl. G03b 17/24

U.S. Cl. 355—64

4 Claims



A device for utilization with checks or bills as may be employed in restaurants, for example, to photograph same with the time and date of photography as well as to mark the bills so as to preclude peculations, including those involving collusion.

3,722,998

### LIQUID CRYSTAL APPARATUS FOR REDUCING CONTRAST

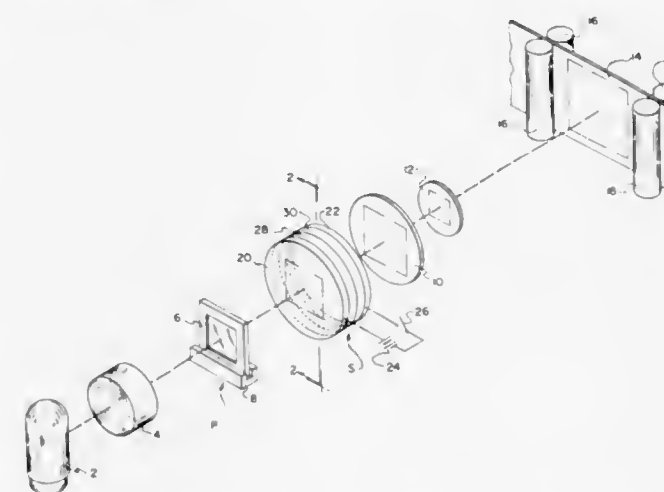
John E. Morse, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 19, 1970, Ser. No. 81,959

Int. Cl. G03b 27/76

U.S. Cl. 355—71

6 Claims



An apparatus is provided for masking a projected image from a slide transparency which apparatus includes interposing in the projection path a photoconductor-liquid crystal sandwich comprising a layered structure having in order, a first transparent electrode, a transparent layer, a liquid crystal layer and a second transparent electrode, and including means for applying a potential between the transparent electrodes. Upon projection of the transparency image, the lighter areas will cause the photoconductive material to become more conductive than will the darker areas so that the corresponding areas of the liquid crystal layer will become diffuse thereby diffusing some of the light away from the optical system in the brighter areas to provide an image on the photosensitive surface which has less contrast than the original transparency image.

3,722,999

### COPYING APPARATUS HAVING CASSETTE AND CUTTING MEANS

Harold Cunha, Pittsford; William M. Dickman, Canandaigua, and Daniel H. Robbins, Rochester, all of N.Y., assignors to Itek Corporation, Lexington, Mass.

Filed Aug. 19, 1971, Ser. No. 173,194

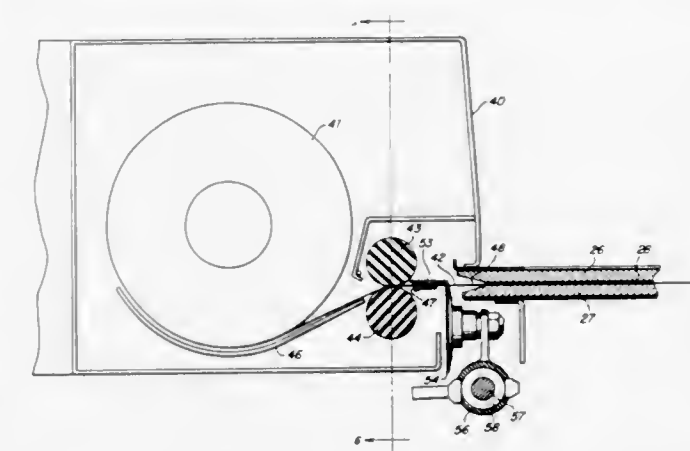
Int. Cl. G03b 27/58

U.S. Cl. 355—45

12 Claims

Reader-printer apparatus for viewing an image of the information stored on a data storage medium and for producing

large sized, uniform intensity, printed copies of that information. The apparatus is designed to permit both viewing and printing to be accomplished at a single imaging station on the machine, eliminating the need for expensive movable optics. Photosensitive printing paper is supplied to the imaging station by means of a reusable cassette conveniently mounted to



the machine. A disc-shaped cutting blade on the machine is adapted to cooperate with a stationary blade on the cassette to smoothly and rapidly cut the exposed paper in a manner so as to minimize paper waste due to fogging, jamming or tearing. The machine is particularly designed to produce high quality uniform intensity prints in a substantially large size format.

3,723,000

### AUTOMATIC EXPOSURE CONTROL FOR CONTACT EXPOSURE PHOTOCOPYING MACHINE

Hitoshi Sone, Kita Chigasaki, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Continuation-in-part of Ser. No. 689,870, Dec. 12, 1967,

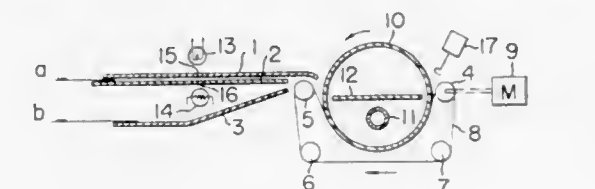
abandoned. This application Aug. 10, 1970, Ser. No. 62,558

Claims priority, application Japan, Dec. 15, 1966, 41/82476

Int. Cl. G03b 27/78

U.S. Cl. 355—83

7 Claims



An automatic exposure control for a contact exposure type photocopying machine wherein the exposure time is controlled automatically in response to the light penetrating coefficient or transmittance of the original form. The light penetrating coefficient is electrically detected and automatically set in a digital counter with the counter contents being converted into an analog exposure control signal for utilization by an exposure-time control device in the machine. Upon completion of one complete exposure, the counter is automatically reset in preparation for receiving the next original and repeating the automatic control cycle.

3,723,001

### PHOTOGRAPHIC EXPOSURE APPARATUS

Bartheld Zeunen, Clarkston; Rex C. Grace, Troy, and Alvie R. Dunn, Madison Heights, all of Mich., assignors to Capitol Reproductions, Inc., Madison Heights, Mich.

Filed Sept. 3, 1970, Ser. No. 69,404

Int. Cl. G03b 27/10

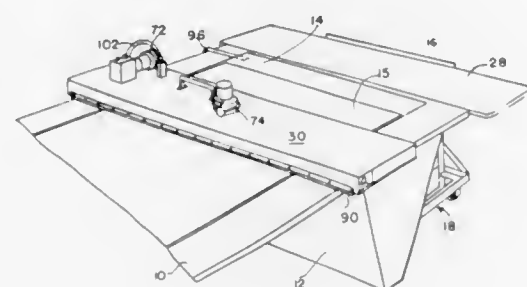
U.S. Cl. 355—84

6 Claims

A portable photographic exposure apparatus for making reproductions of loft drawings, body drafts or the like directly from the drawing table on which the drawing is made. A wheeled cabinet structure has a horizontal supporting surface,



the height of which is adjustable to the height of a drawing table, with an exposure unit adapted to be mounted on the supporting surface and containing a light source, a set of electric motor driven wheels, and a source of static electricity. The exposure unit is driven over the drawing table to expose a sheet of film which is laid over the drawing on the drawing table to



reproduce the drawing. Static electricity projected by the exposure unit presses the film firmly against the drawing to be reproduced. The electric motor is reversible to return the exposure unit to its supporting cabinet. The apparatus may also be used to expose a negative which is subsequently processed to provide positive reproductions of the loft drawing.

#### ERRATUM

For Class 355—83 see:  
Patent No. 3,722,980

#### 3,723,002 RANGEFINDERS

Frank G. Everest, Stevenage, and Raymond L. Albery, Biggleswade, both of England, assignors to British Aircraft Corporation, Limited, London, England

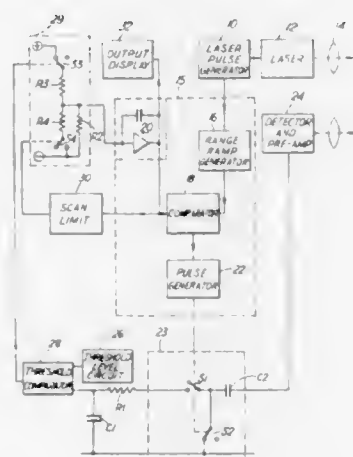
Filed Dec. 7, 1971, Ser. No. 205,596

Claims priority, application Great Britain, Dec. 10, 1970, 58,747/70

Int. Cl. G01c 3/08

U.S. Cl. 356—5

6 Claims



In a laser rangefinder a gating pulse is generated after each laser pulse emission and the time-positions of successive gating pulses in the intervals between laser pulses are progressively shifted and correspond to progressively changing ranges for reflected light pulses. When a signal corresponding to a reflected light pulse falls within the gating pulse period, the gated output is integrated and when the integrated value exceeds a threshold value the progressive alteration of the time positions of the gating pulses is halted.

#### 3,723,003 RANGEFINDER

Karl Vockenhuber, and Eduard Keznickl, both of Vienna, Austria, assignors to Raimund Hauser, Vienna, Austria, by said Keznickl

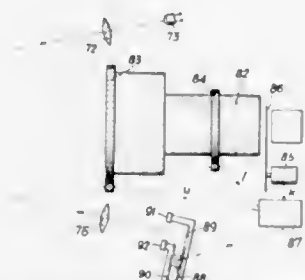
Filed Nov. 18, 1969, Ser. No. 877,738

Claims priority, application Austria, Nov. 25, 1968, A 11 452

Int. Cl. G01c 3/08

U.S. Cl. 356—4

13 Claims



A rangefinding assembly, which comprises a transmitter having emitting means for emitting short waves. A receiver is mounted in fixed relation with respect to the transmitter, which receiver is adapted to receive short waves emitted by the transmitter and reflected by an object. An image forming system is adapted to project the waves reflected from the object on the receiver. The image forming system defines an axis. The axis, the transmitter and the receiver define a plane adapted to pass through the object. The receiver has at least two receiving zones. At least a part of the receiving zones is disposed in the plane and is at least partly offset from the axis, whereby each receiving zone is assigned to a different distance range of the object and delivers a specific output signal, when admitted by the short waves reflected from the object. Transducing means are arranged within at least a part of the receiving zones and are adapted to produce specific output signals in response to the short waves.

#### 3,723,004 LASER VELOCIMETER EMPLOYING DUAL SCATTER DETECTION

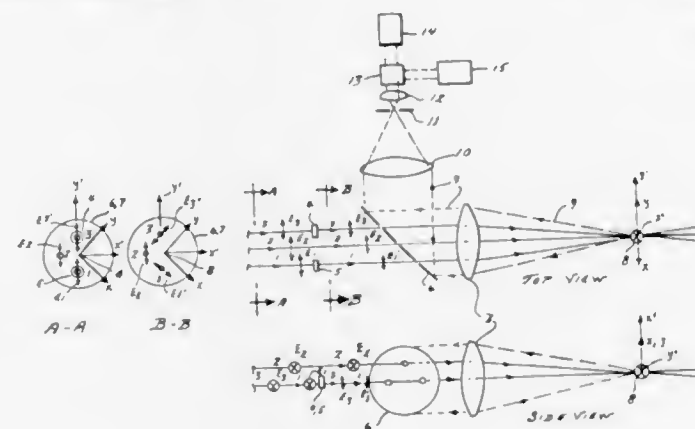
Donald B. Brayton, Tullahoma, Tenn., assignor to the United States of America as represented by the Secretary of the Air Force

Filed May 18, 1971, Ser. No. 144,515

Int. Cl. G01p 3/36

U.S. Cl. 356—28

3 Claims



A doppler shift laser velocimeter is disclosed that employs a self-aligning optical system capable of determining one or more velocity components of a moving substance. The beam from a plane polarized laser source is automatically split into two or more plane polarized parallel path beams by one or more parallel surface glass blocks. Certain ones of these beams are then polarization plane rotated and all beams are directed onto a focusing element which automatically focuses them to a common point P in space. Velocity components of a moving substance are detected by photo-detecting radiations simultaneously scattered from the moving substance and from

the polarization rotated illuminating beams. Means are connected to the outputs of the photodetectors for determining the frequencies of the electrical signals. These frequencies are proportioned to specific velocity components of the moving substance.

#### 3,723,005 WIDE ANGLE SIGHTING APPARATUS

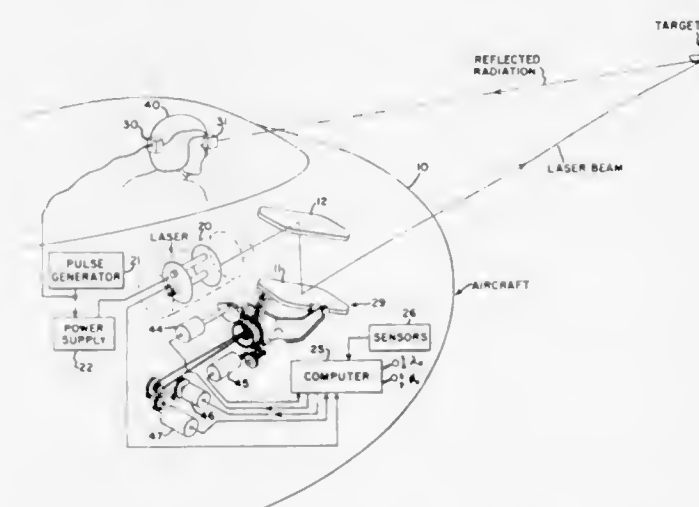
Gene K. Smith, Vestal, and Gene Tye, Endwell, both of N.Y., assignors to General Electric Co.

Filed Dec. 13, 1965, Ser. No. 513,394

Int. Cl. F41g 3/24

U.S. Cl. 356—29

4 Claims



An airborne air-to-ground "wide angle" sighting device which avoids optical aberrations inherent in aligning sights and target with vision through transparencies which are not optically inert or caused by faulty alignment of eye and sight. Narrow beam light, preferably monochromatic, e.g. a laser, is projected from aircraft onto ground and pilot viewing illuminated spot through viewer which enhances spot against varied background uses spot as sight. Device includes means for orienting fixed or moving beam in predetermined relationship to aircraft or armament to allow for various parameters such as altitude, speed, trajectories, etc.

#### 3,723,006 METHOD AND APPARATUS FOR SELECTING AND HANDLING PARTICULATE SPECIMENS USING A VACUUM PROBE

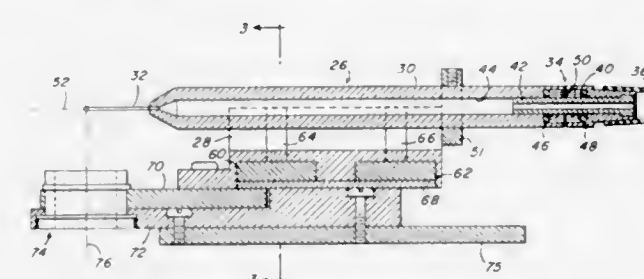
Roy L. Thomas, Jr., Medway, Mass., assignor to Charles Supper Company, Natick, Mass.

Filed May 7, 1971, Ser. No. 141,178

Int. Cl. G01n 23/20

U.S. Cl. 356—30

16 Claims



This disclosure depicts methods and apparatus for selecting, holding, and manipulating particulate specimens, and for assisting in observing, positioning, and mounting such specimens for analysis. In each embodiment illustrated a hollow vacuum probe is supported for rotation and translation in a V-block. In one embodiment the probe is retained on the block by magnetic forces, and in another embodiment by mechanical forces. A method is disclosed for mounting par-

ticulate specimens on a goniometer head for study by X-ray diffraction methods.

#### 3,723,007

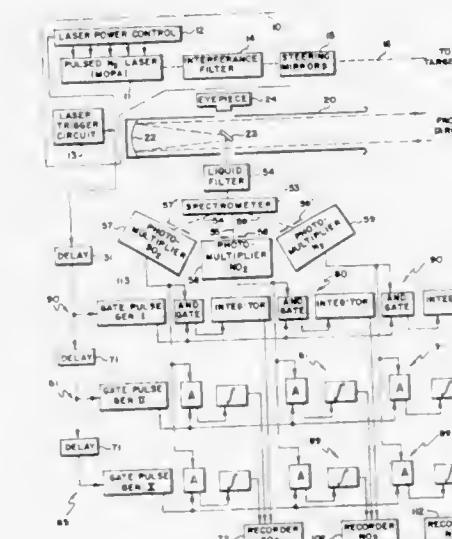
REMOTE QUANTITATIVE ANALYSIS OF MATERIALS  
Donald A. Leonard, Stoneham, Mass., assignor to Avco Corporation, Cincinnati, Ohio

Filed Jan. 22, 1971, Ser. No. 108,710

Int. Cl. G01j 3/44

U.S. Cl. 356—75

3 Claims



The remote quantitative analysis of a material and the range of the material are determined from the Raman scattered radiation from the material, such as for example, a gas where the gas is subjected to intense pulses of laser radiation launched from a remote location. The scattered radiation is filtered to selectively attenuate reflected radiation from the source and transmit the Raman scattered radiation to a detector system which integrates the detected radiation over an interval spaced in time from a laser pulse whereby the spacing represents range to the gas and the integral represents the concentration of a particular species in the gas.

#### 3,723,008

#### DIFFERENTIAL SPECTROPHOTOMETER

Kenji Fukuda, and Tadashi Honkawa, both of Matsuda, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

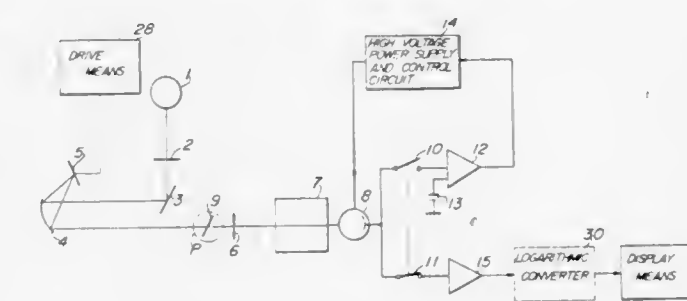
Filed Nov. 23, 1971, Ser. No. 201,454

Claims priority, application Japan, Dec. 24, 1970, 45/102779

Int. Cl. G01j 3/02, 3/42

U.S. Cl. 356—88

10 Claims



A beam of light passes through a sample and the transmitted light beam is detected by a detector. The light beam to be detected by the detector is a monochromatic light beam obtained by a dispersing means and the wavelength of the monochromatic light beam is continuously varied by a wavelength scanner. A transparent plate is obliquely positioned in the path of the monochromatic light beam so that the detector delivers an electrical signal representative of the absorption when the transparent plate lies in the path of the light beam and another electrical signal representative of the ab-



sorption when the transparent plate does not lie in the path of the light beam. A ratio detector or a difference detector compares these electrical signals with each other or subtracts one of these electrical signals from the other thereby obtaining a differential spectrum.

3,723,009

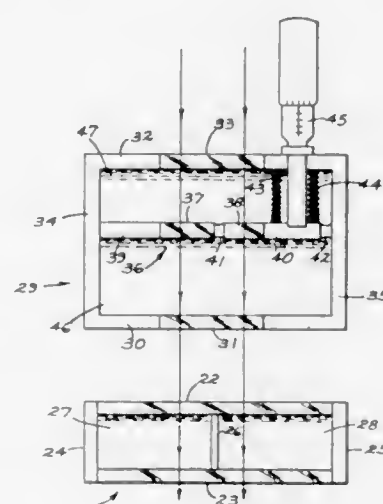
# **DIRECT READING ABERRATION-FREE COMPENSATOR WITH ADJUSTABLE SENSITIVITY FOR USE IN WHITE LIGHT INTERFEROMETRY**

John B. Clark, 3203 Runkle St., Niles, Mich.  
Continuation-in-part of Ser. No. 109,167, Jan. 25, 1971. This application July 19, 1971, Ser. No. 163,862

Int. Cl. G01b 9/02

U.S. Cl. 356—107

5 Claims



An aberration-free compensator for use in white light interferometry is provided in which anomalous fringe shifts characteristic of the difference in refractive dispersion between the two limbs of the interferometer are eliminated. The compensator is designed so that the sole difference in light paths through the compensator elements in the two limbs of the interferometer is through fluid media having refractive dispersions which are substantially identical to that of the material being studied in the interferometer. Use of such a fluid medium compensator permits changing the refractive dispersion thereof without substantially rebuilding the interferometer.

3,723,010

# **HOLOGRAPHIC METHOD AND APPARATUS FOR CHECKING THE OPTICAL CHARACTERISTICS OF TRANSPARENT MEMBERS**

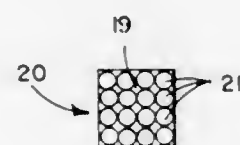
John T. McCrickered, Hawthorne, and Milton M. T. Chang, Gardena, both of Calif., assignors to Northrop Corporation, Los Angeles, Calif.

Filed Feb. 19, 1971, Ser. No. 116,862

Int. Cl. G04b 9/00; G01n 21/16

U.S. Cl. 356—124

10 Claims



Coherent light as may be generated by a laser is passed through pattern forming means to generate a predetermined light pattern. This pattern of light passes through a standard or reference transparent member to a photosensitive plate on which a hologram of the image as optically affected by the transparent member is produced. Coherent light is then passed through a similar transparent member to be tested, the light pattern for the second member preferably differing from that for the first so as to facilitate a qualitative comparison

between the two. The two patterns are compared for alignment with each other and a photographic record made which is capable of indicating the results of this comparison, the optical characteristics of the transparent member under test as compared with those of the reference member being determined from the degree of misalignment between the two patterns.

3,723,011

# **ANGLE SENSOR AND A STEERING SYSTEM BASED THEREON**

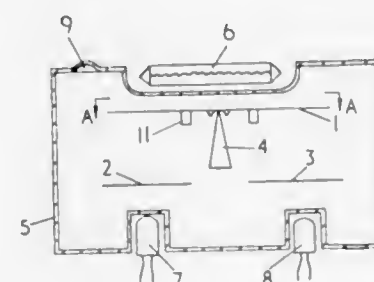
Brian Allen Flory, and Roger Michael Geldard, both of Kent, England, assignors to Sharp and Company Limited, Kent, England

Filed Oct. 1, 1969, Ser. No. 862,737

Int. Cl. G05d 1/00

U.S. Cl. 356—152

7 Claims



The phenomenon of light polarization is exploited to provide an improved angle position sensor having a high speed of response, negligible wear, and high resolution. The sensor has first and second parts movable relative to each other and incorporates a light source, a photosensitive element such as a photocell, and polarizing means disposed in the path of light passing from the light source to the photosensitive element, the signal from the photosensitive element giving a measure of the angle of rotation between the parts. Means for imparting a saturation-type response may be used in conjunction with the sensor with a view to avoiding problems connected with possible ambiguity of angle quadrant. The sensor lends itself to control applications and navigational devices.

3,723,012

# **HOLOGRAPHIC ALIGNMENT SYSTEM**

Eckhard Storck, Munich, and Joachim Ost, Martinsried, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

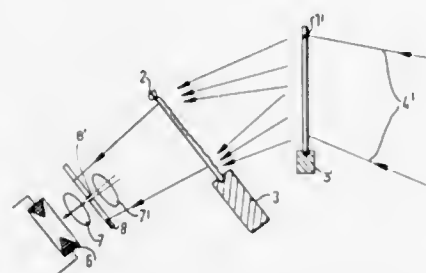
Filed April 5, 1971, Ser. No. 130,971

Claims priority, application Germany, April 8, 1970, P 20 16 815.4

Int. Cl. G01b 11/26

U.S. Cl. 356—152

10 Claims



A method and apparatus for repositioning a body such as a diffuser body, hologram film or a body rigidly attached thereto in a previous position in a system characterized by making or exposing a hologram by use of reference wave and a wave coming from an object with each wave being of coherent radiation with a diffuser interposed in the path of one of the waves. The exposed hologram film is developed and repositioned in the system. Then either a wave from the object or the

reference wave is projected on the hologram to reconstruct the other wave and the diffuser is located in the path of the same one wave to produce direct and diffused radiation. The intensity of the direct radiation of the reconstructed wave is measured to obtain a maximum measurement for the intensity of the direct radiation which will occur when the body is in the previously selected position. The body may be the diffuser and have a surface which will diffusely disperse the wave into direct and diffused radiation.

3,723,013

# **ALIGNMENT SYSTEM**

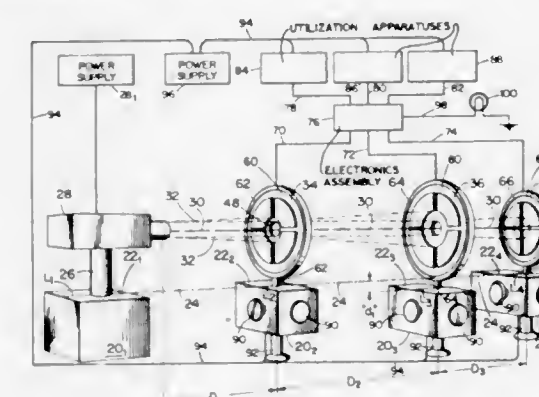
Meade A. Stirland, Los Alamos, N. Mex., and John A. Kalinowski, San Ramon, Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Oct. 23, 1970, Ser. No. 83,567

Int. Cl. G01b 11/26

U.S. Cl. 356—152

8 Claims



This alignment system utilizes intermediate photodetectors having central apertures and a terminal photodetector, each photodetector having four quadrants of active area, with their centers aligned on the axis of a laser beam, their output signals being utilized to indicate alignment, or the degree of misalignment, of their centers with respect to the axis of the laser beam. Alternatively their output signals are utilized to drive servo systems that automatically move the equipments on which they are mounted into alignment. Means for providing orthogonal alignment, and means to avoid air turbulence are also provided.

3,723,014

# **PHOTOELECTRIC LIGHT MEASURING DEVICE**

Yasuhiro Nanba, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka Prefecture, Japan

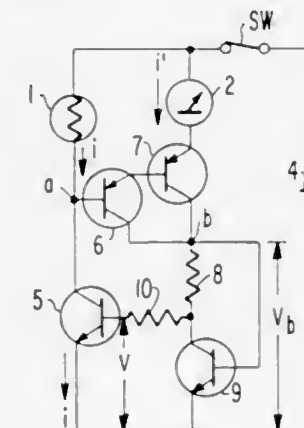
Filed April 13, 1971, Ser. No. 133,495

Claims priority, application Japan, April 13, 1970, 45/31407; Aug. 29, 1970, 45/86037; Aug. 29, 1970, 45/86038

Int. Cl. G01j 1/44; H01j 39/12

U.S. Cl. 356—226

9 Claims



In a photoelectric light measuring device, a photoelectric transducer, such as photoconductive cell, is connected in se-

ries with a transistor, so that the logarithm of incident light on the cell can be graduated uniformly on an ordinary ammeter having a linear current-deflection characteristic, thereby enabling easy reading and affording a simple mechanism in a photometer or an automatic shutter speed control system, without adverse temperature dependency of the indication.

3,723,015

# **BRUSH**

Bernhard Wissler, and Erich Dietsche, both of Black Forest, Germany, assignors to Firma Roman Dietsche, Atersteg/Black Forest, Germany

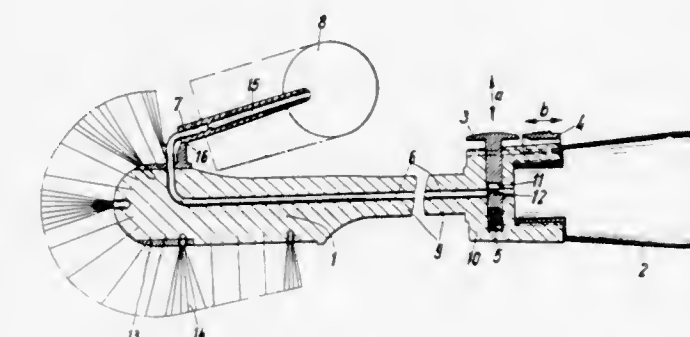
Filed March 5, 1971, Ser. No. 121,441

Claims priority, application Germany, March 7, 1970, P 20 10 852.5

Int. Cl. B43k 11/10

U.S. Cl. 401—278

12 Claims



A toilet brush, which may be advantageously equipped with a rinsing brush as well as a brush head on a brush handle, in which a container for cleaner or disinfectant is detachably mounted on the end of the brush handle, and the container is connected to the bristle head by a tube that can be closed off by a valve.

3,723,016

# **SPINDLE DEPTH CONTROL**

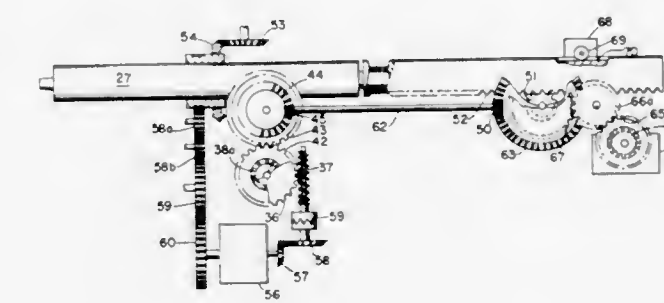
Robert A. Lehmkuhl, Cincinnati, Ohio, assignor to The Carlton Machine Tool Company, Cincinnati, Ohio

Filed Feb. 17, 1971, Ser. No. 116,154

Int. Cl. B23b 47/18

U.S. Cl. 408—3

2 Claims



A horizontal boring machine of the type having a traversing spindle and utilizing fluid motor means for driving the spindle with a tool to a cutting position then moving the tool into the workpiece to a preselected depth with electrical means actuated when said preset depth has been reached to cause a change in the flow of oil in the fluid motor to retract the spindle.



3,723,017

## DRILLING CHUCK

Otto Bilz, Esslingen, and Otto Fauth, Nellingen, both of Germany, assignors to Firma Otto Bilz, Nellingen, Germany

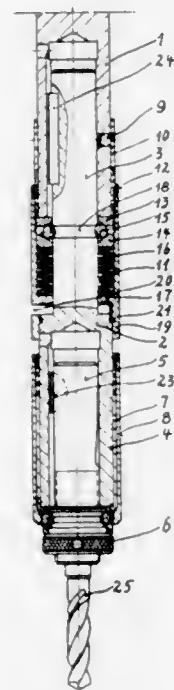
Filed Aug. 23, 1971, Ser. No. 174,050

Claims priority, application Germany, Sept. 5, 1970, P 20 44 137.6; Jan. 15, 1971, P 21 01 704.9

Int. Cl. B23b 49/00

U.S. Cl. 408—16

16 Claims



A chuck unit for a boring or similar tool which is provided with a safety clutch comprising an additional tool spindle which is axially slidable partly within and relative to the machine spindle and carries the boring tool, and clutch balls which normally engage into an annular clutch groove in the tool spindle under the action of an adjustable compression spring which is interposed between and connects the tool spindle to the machine spindle. If because of a dull boring tool the axial back pressure by the workpiece upon the tool exceeds the strength at which the clutch balls are maintained by the preadjusted compression spring in the clutch groove of the tool spindle, the latter shifts toward the rear relative to the machine spindle and thereby forces the clutch balls out of the clutch groove so that the further forward movement of the machine spindle will not be transmitted to the tool spindle and the boring tool thereon. The disengagement of the safety clutch may be visually indicated either directly on the clutch unit or at a remote point and the indication may also be used for switching off the driving means of the machine tool.

3,723,018

## AUTOMATIC VALVE CHANGEOVER APPARATUS FOR A TURBINE

Yoshihiro Uchiyama; Yoshiyuki Nakano; Takashi Kishigami, all of Hitachi, and Ryosuke Arie, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 16, 1971, Ser. No. 208,796

Claims priority, application Japan, Dec. 16, 1970, 45/111750

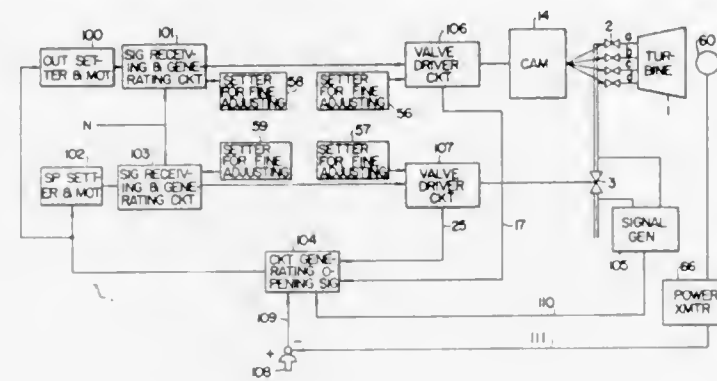
Int. Cl. F01b 25/06

U.S. Cl. 415—30

15 Claims

An automatic valve changeover apparatus for controlling the admission of steam to a turbine. During the starting-up operation of a turbine, the admission of steam is shifted from "full arc admission" to "partial arc admission" in accordance with electrical output signals from an output setter and a speed setter. The output signals of the output setter and the

speed setter respectively control the opening of control valves and a steam stop valve in accordance with the detected open



positions of these valves and the speed or output of the turbine.

3,723,019

## MEANS TO OVERCOME LOW FLOW PROBLEMS OF INDUCERS IN CENTRIFUGAL PUMPS

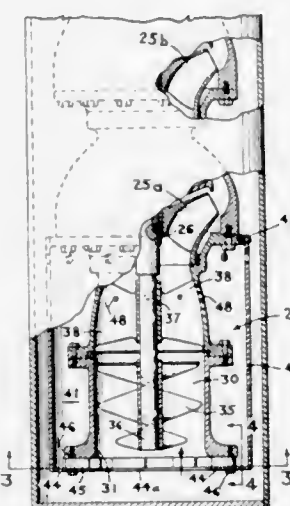
Merril Berman, Shawnee Mission, Kans., assignor to Worthington Corporation, Harrison, N.J.

Filed May 21, 1971, Ser. No. 145,804

Int. Cl. F04d 5/00

U.S. Cl. 415—53

5 Claims



A centrifugal pump having a suction inlet, a discharge outlet and at least one pumping stage with an impeller in direct communication with the suction inlet has an inducer means in the suction inlet operatively associated with the impeller of said pumping system and an annular chamber or passage formed about the suction inlet which is provided with ports or openings in communication with the suction inlet downstream of the inducer means and upstream of the inducer means to permit the automatic bypassing or recirculation of a given portion of the fluid being pumped approximately as a direct function of the differential pressure established across the inducer means by the quantity of fluid being pumped. Angled guide vane means in the portion of the bypass or recirculation chamber or passage which communicates with the upstream side of the inducer means are provided to impart prerotational movement in the recirculated fluid in a direction of rotation the same as that of the inducer means the bypass means and guide vane means acting to maintain a reduced head across the inducer particularly at low or partial flow conditions.

3,723,020

## APPARATUS FOR TRANSFERRING HIGHLY VISCOUS MATERIAL

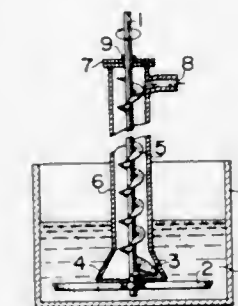
Makoto Watanabe, 1070-4, Oaza-Shiba, Kawaguchi, Saitama, Japan

Filed March 17, 1971, Ser. No. 125,199

Int. Cl. F01d 5/00

U.S. Cl. 415—72

1 Claim



Transfer of highly viscous material can be effected easily by the use of a simple-structured transferring apparatus comprising: a tubular casing having a closed top, a feed introduction port of an inverted funnel shape formed integrally at the bottom of said casing and a delivery outlet formed through the upper side wall of said casing; a rotatable shaft extending through said casing beyond both ends thereof; at least one raking vane fixed to said shaft at a position slightly beyond the end edge of said port and having a curved and twisted face; a helical guide vane fixed to said shaft in said funnel-shaped port at a position close to and above said raking vane; and a continuous helical feed vane provided on said shaft and joining said guide vane and extending along the shaft in said casing up to a position close to said closed top.

3,723,021

## FLEXIBLE AIRFOIL FOR COMPRESSOR

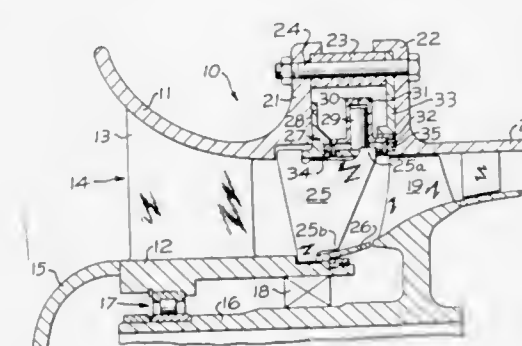
Paul E. Bartholomew, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 28, 1971, Ser. No. 110,461

Int. Cl. F01d 24/02, 17/12

U.S. Cl. 415—147

2 Claims



The inlet guide vanes for a turbine compressor are constructed of thin flexible material and mounted in a manner to be selectively formed into a desirable airfoil shape and camber angle by suitable control means.

3,723,022

## BEARING SUPPORTED COUPLING FOR TURBOCHARGERS

George E. Olson, Lacon, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed March 1, 1971, Ser. No. 122,597

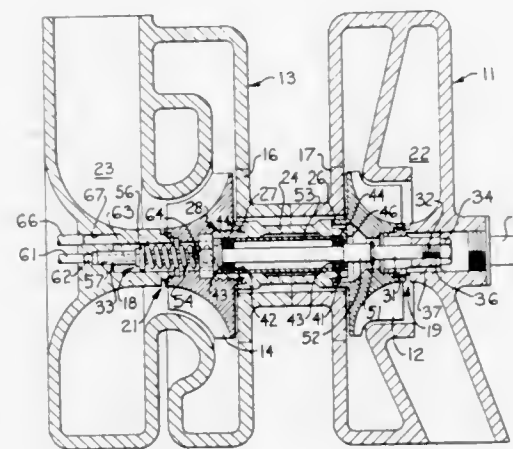
Int. Cl. F01d 5/08; F04b 17/00; F01m 11/00

U.S. Cl. 415—175

4 Claims

A bearing supported coupling arrangement between a turbine wheel and compressor wheel arranged in axially aligned

housings of a turbocharger with the two wheels and housings forming an axial chamber, the coupling including a support shaft secured at one end to one of the housings and supported at its other end by the other housing, a tubular shaft intercon-



necting the wheels and arranged for rotation upon the support shaft by means of a pair of anti-friction bearings, the tubular shaft isolating the axial chamber from the interior of the two housings with means for providing lubricant flow through the axial chamber to lubricate and cool the bearings.

3,723,023

## INDEPENDENT SELF ADJUSTING VIBRATION DAMPER

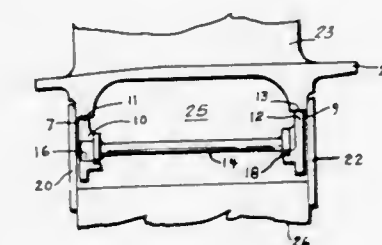
Virion Crick, Southwick, Mass., assignor to The United States of America as represented by the Secretary of the Air Force

Filed May 5, 1971, Ser. No. 140,401

Int. Cl. F01d 5/16

U.S. Cl. 416—219

1 Claim



The torque-transmitting connections between a turbine rotor and the individual turbine blades include centrifugally responsive vibration damping elements having limited freedom to swing an individual coupling shafts between plates securing each blade to the rotor assembly. The torque transfer value varies as the speed varies, to damp vibrations due to speed fluctuations.

3,723,024

## REVERSIBLE ROTARY COMPRESSOR FOR REFRIGERATORS

Satoshi Sawai, Kawachinagano; Jusaburo Maekawa, Tondabayashi, and Yoshimi Tanaka, Sakai, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Dec. 29, 1970, Ser. No. 102,383

Claims priority, application Japan, Dec. 30, 1969, 44/293

Int. Cl. F01c 21/12; F04c 15/02, 29/08

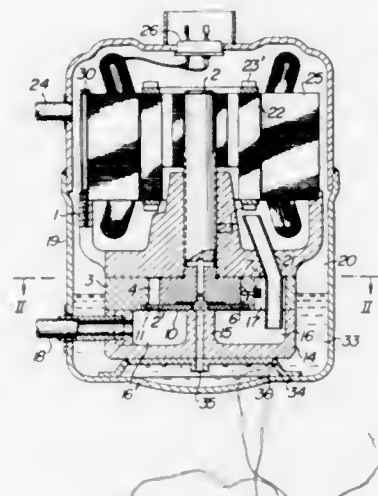
U.S. Cl. 418—159

11 Claims

A reversible rotary compressor for use in refrigerators, in which a suction mechanism and a discharge mechanism are



provided in a rotary member which is rotated in the same direction by a rotor of the compressor in frictional engagement therewith, and sucking and discharging operations of said mechanisms are automatically switched by changing the direction of rotation of said rotor; and which, therefore, is completely free of back flow of gas, is operable with minimum power consumption, has a constant compressing ability in both the counterclockwise rotation and the clockwise rotation



of the rotor, has a minimum number of suction ports and hence a minimum top clearance volume, and is high in compressing efficiency. By employing the compressor in heat pump-type air conditioners, there can be obtained such an advantage that the operation of the air conditioner can be switched from cooling operation to heating operation or vice versa, only by changing the direction of rotation of the compressor rotor without using a directional control valve in a refrigerant circuit, which has been indispensable heretofore.

3,723,025

# VARIABLE BYPASS FOR FLUID POWER TRANSFER SYSTEMS

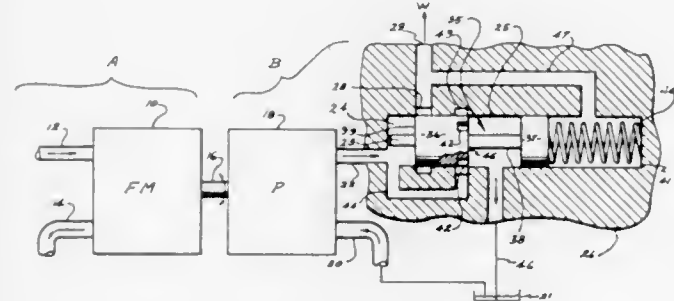
James L. Coakley, Camarillo, Calif., assignor to Abex Corporation, New York, N.Y.

Filed Oct. 23, 1970, Ser. No. 83,330

Int. Cl. F04b 49/00

U.S. Cl. 417—299

6 Claims



Apparatus for variably dividing the output flow of a pump between a work system and a bypass system, in accordance with the flow demanded by the work system. The apparatus includes a metering valve which is progressively opened as the demand for work flow increases, to permit pump output to flow to the work system. The apparatus also includes a bypass valve which regulates flow to a bypass system, and which is progressively closed as the metering valve opens, so that total pump output is distributed as needed between the work and bypass system.

# 3,723,026 EFFECT REGULATOR FOR CONSTANT AND VARIABLE VOLUME-FLOW PUMPS

Ingebret Soyland, and Kristian Soyland, both of 4340 Bryne, Norway

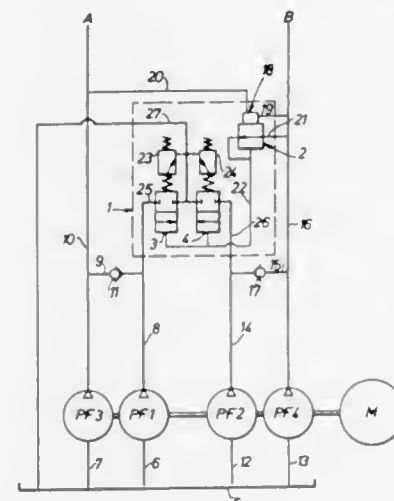
Filed April 9, 1971, Ser. No. 132,668

Claims priority, application Norway, April 22, 1970, 1551

Int. Cl. F04b 49/00

U.S. Cl. 417—286

5 Claims



Means for regulating the flow of fluid from two or more pumps in a hydraulic system, according to the instantaneous demand for energy.

3,723,027

# PUMPING UNITS

Torsten Montelius, Djursholm, Sweden, assignor to Aktiebolaget Imo-Industri, Stockholm, Sweden

Continuation of Ser. No. 883,559, Dec. 9, 1969, abandoned.

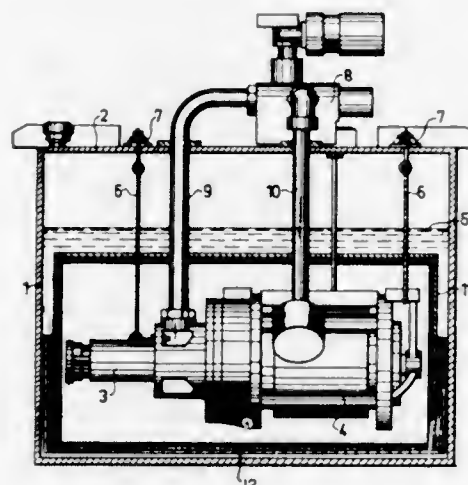
This application Aug. 26, 1971, Ser. No. 175,357

Claims priority, application Sweden, Dec. 13, 1968, 17112/68

Int. Cl. H02k 5/10; F04b 1/99, 21/00

U.S. Cl. 417—313

1 Claim



Sound generated by a submerged motor-pump unit and transmitted through the liquid in which the unit is submerged is attenuated by shielding means comprising a first box-like member having a downwardly facing opening and a second box-like member having an upwardly facing opening and overlapping the first box-like member. The box-like members are made from sheet metal coated with foam rubber or other sound-absorbing material.

3,723,028

# ELECTRICALLY DRIVEN PUMP

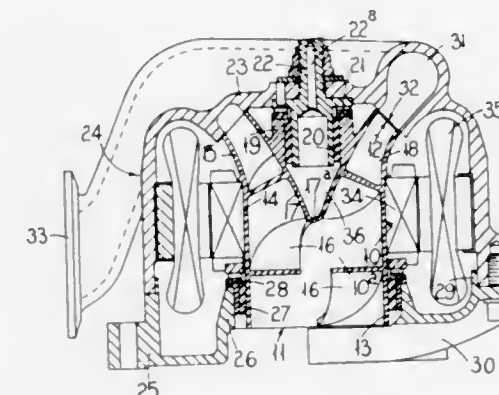
Harry Simister Bottoms, and Geoffrey Arthur Lewis, both of Solihull, England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed May 6, 1970, Ser. No. 35,200

Int. Cl. F04b 17/00

U.S. Cl. 417—356

6 Claims



A pump for liquids has a rotor and a casing which also form part of an induction motor. The rotor has internal helical vanes and includes a conical portion at its downstream end to provide an annular outlet. There are aligned axial through passages in the rotor and casing. The annular rotor outlet is aligned with a volute chamber which communicates with the pump outlet. When pumping the rotor also operates to separate, by centrifugal action, the liquid from any vapor present, the vapor passing out of the pump via the axial passages.

3,723,029

# COOLING WATER PUMP FOR AUTOMOBILES

Nikolaus Laing, 7141 Aldingen near Stuttgart, Hofener, Germany

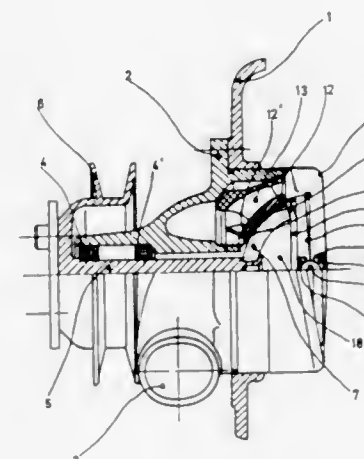
Filed March 15, 1971, Ser. No. 124,211

Claims priority, application Austria, March 17, 1970, 2458

Int. Cl. F04b 17/00

U.S. Cl. 417—420

6 Claims



A coolant pump for liquid cooled engines where the pump casing has a chamber, a rotatable drive shaft in the pump casing, a first pole ring on the drive shaft and a second pole ring rotatably mounted in the pump chamber which has impeller blades thereon and means for hermetically sealing the pump chamber from the drive shaft and first pole ring. Means may also be included for varying the slippage between the first and second pole rings in order to vary pump output.

3,723,030

# PERISTALTIC PUMP WITH STACKED COMPONENTS

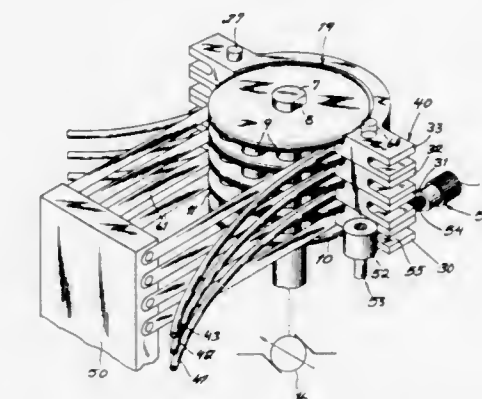
Daniel Gelfand, Brooklyn, N.Y., assignor to Buchler Instruments Division, Nuclear-Chicago Corporation, Fort Lee, N.J.

Filed March 3, 1971, Ser. No. 120,644

Int. Cl. F04b 43/08, 43/12, 45/06

U.S. Cl. 417—475

12 Claims



The roller member and/or the arcuate support member for the tubes of a peristaltic pump are stacked to accommodate a number of tubes. The rotor is stacked from disks having rollers along one surface so that the disks may be assembled in back-to-back relationship to accommodate large-diameter flexible tubing or in a series relationship to accommodate tubing of smaller diameter. The support is similarly made up of flanged members which may be stacked back to back or in series (face-to-back).

## ERRATUM

For Class 418—159 see:  
Patent No. 3,723,024

3,723,031

# ROTARY DISPLACEMENT MACHINES

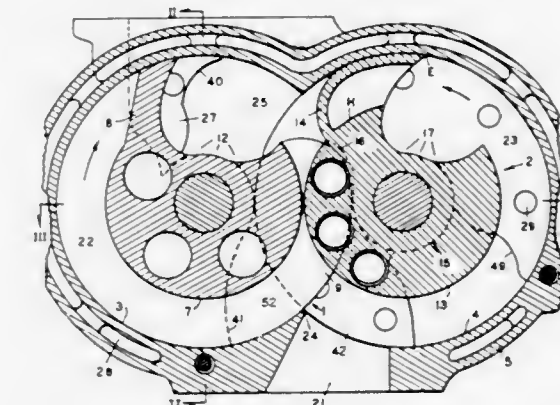
Arthur E. Brown, 117 East 5th St., Corning, N.Y.

Filed Nov. 23, 1970, Ser. No. 91,987

Int. Cl. F01c 21/12; F03c 3/00; F04c 29/08

U.S. Cl. 418—15

23 Claims



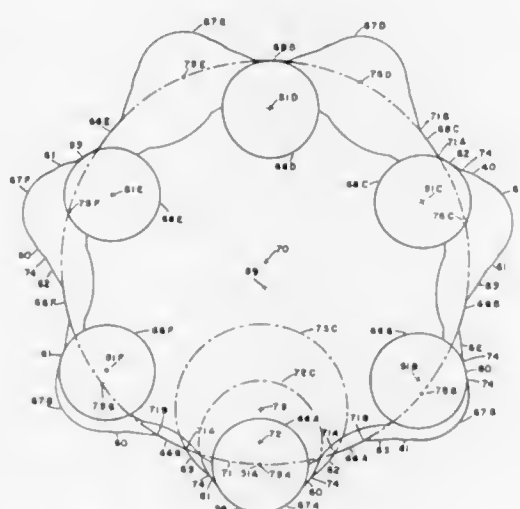
A rotary compressor, vacuum pump, or expansion engine. Two interengaging rotors rotate within bores in a casing structure. Each rotor has a hub and a tooth. Plates are located against the four inside end walls of the two casing bores. The four plates are angularly adjustable so as to vary both the capacity and the internal pressure ratio. The machine has zero (or near zero) clearance volume so that (when operating as a



compressor) substantially all of the compressed gas is delivered to the discharge ports.

3,723,032

**ANTI-FRICTION ORBITAL AND ROTARY DEVICE**  
George V. Woodling, 22077 West Lake Rd., Rocky River, Ohio  
Filed April 5, 1971, Ser. No. 131,130  
Int. Cl. F01c 1/02; F03c 3/00; F04c 1/02  
U.S. Cl. 418—61 17 Claims

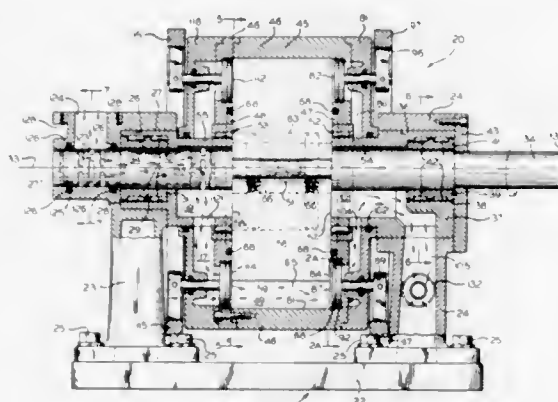


Orbital and rotary device including outer and inner relatively movable body means having a combined relative movement therebetween comprising a relative orbital movement and a relative rotational movement, wherein said inner body means has anti-friction bearing means for making engagement with the internal surface of said outer body means, and wherein all of the contactable wall portions between the inner and outer body means point outwardly in the same direction.

3,723,033

**ROTARY POWER DEVICE**

Henry Tauscher, Oak Park, Ill., assignor to Impact, Inc., Chicago, Ill.  
Filed July 14, 1971, Ser. No. 162,421  
Int. Cl. F03c 3/00; F04c 17/00  
U.S. Cl. 418—173 10 Claims

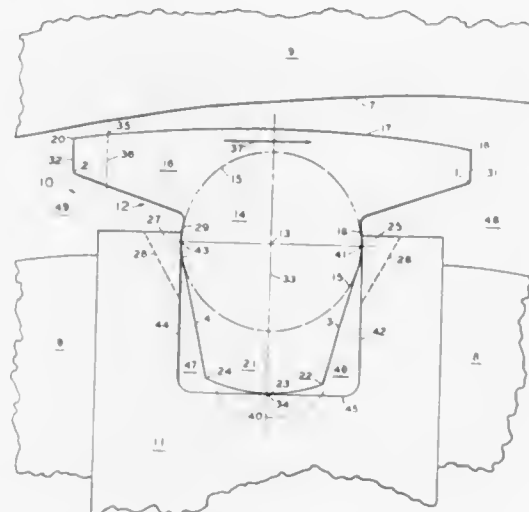


A rotary power device, usable as an engine or as a pump, comprising a rotary piston member concentrically mounted on a shaft within a cylindrical rotary runner member that is eccentrically mounted on the shaft, thus forming a closed, ring-like chamber of varying depth between the piston member and the runner member. The shaft, the piston member and the runner member are keyed together for conjoint rotation. Sliding vanes or other gate members are mounted in the piston member and project outwardly into engagement with the runner member, dividing the chamber into a plurality of chamber segments that vary continuously in volume, between maximum and minimum values, as the piston member and the runner member rotate.

3,723,034

**VANE END AND TIP ASSEMBLY**

Harry T. Johnson, Westerville, and Robert K. Mitchell, Hilliard, both of Ohio, assignors to Battelle Development Corporation, Columbus, Ohio  
Filed Oct. 26, 1971, Ser. No. 192,180  
Int. Cl. F04c 27/00  
U.S. Cl. 418—268 17 Claims

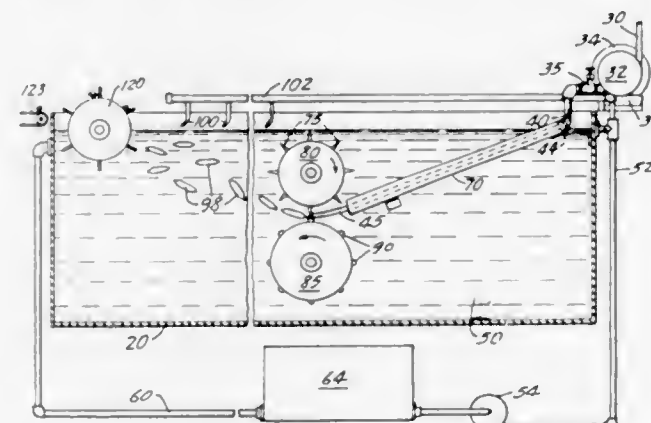


A pivoting vane tip in a sliding-vane rotary moving-fluid device. For increased load capacity the bearing pad is wider than the central cylindrical pivot portion. A moment compensator portion provides outwardly extending surfaces for counteracting, with the same pressures, the moments produced by differential pressures on leading and trailing surfaces of the bearing pad, to provide a net rotational moment of substantially zero and thus to maintain substantially the optimum angle between the bearing surface and the cam during rotation at high speed, to minimize friction and wear.

3,723,035

**APPARATUS FOR FORMING HOT MELT ADHESIVES INTO A READILY PACKAGEABLE FORM**

Willard A. Franke, St. Paul, Minn., assignor to H. B. Fuller Company, St. Paul, Minn.  
Continuation-in-part of Ser. No. 824,244, May 13, 1969, abandoned. This application Oct. 29, 1970, Ser. No. 85,158  
Int. Cl. B29c 25/00; B29d 7/20  
U.S. Cl. 425—71 26 Claims



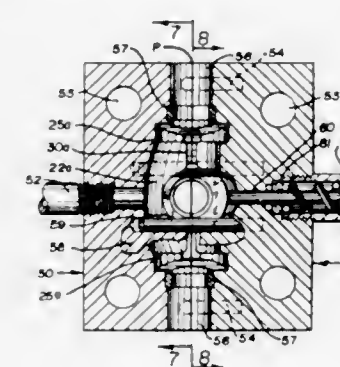
An improved method and apparatus for handling of materials having characteristics such that they are normally solid at room ambient temperatures and are prepared and used at elevated temperatures to transfer the form of the material to a liquid. The improved method and apparatus provides for handling of the material in liquid form and extruding it as a stream or continuous flow, cooling the outer surface of the same to solidify it and severing the stream of material with the hardened exterior and liquid interior such that the individual segments severed therefrom seal themselves and form in-

dividual pillow-like segments which can be then further cooled to a hardened state and readily handled, packaged, shipped and used.

3,723,036

**MOLD FOR THE MANUFACTURE OF A PLASTIC ROPE CONNECTOR**

John Maguire, Jonathan E. Sharp, and Richard H. Frost, all of Littleton, Colo., assignors to Rose Manufacturing Company, Denver, Colo.  
Continuation of Ser. No. 847,884, Aug. 6, 1969, Pat. No. 3,591,215. This application Oct. 21, 1970, Ser. No. 82,693  
Int. Cl. B29f 1/10, 1/14  
U.S. Cl. 425—129 6 Claims

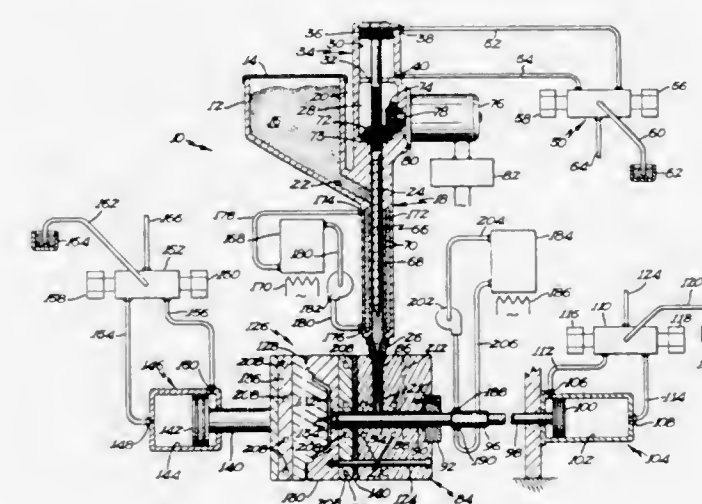


This disclosure concerns a method for forming a plastic, button-like connector for securing a pair of crossed ropes together and also a mold for effecting the operation. The injection molding operation includes the step of holding the ropes in position in the mold cavity while the plastic is being injected thereinto and also a restricted opening where the ropes extend from the cavity to prevent loss of plastic during the injection operation.

3,723,037

**APPARATUS FOR INJECTION MOLDING ARTICLES FROM AMINOPLASTIC MATERIAL**

Jerome L. Formo, St. Paul, Minn., assignor to Plastics, Inc., St. Paul, Minn.  
Filed Nov. 4, 1970, Ser. No. 86,726  
Int. Cl. B29f 1/14  
U.S. Cl. 425—139 3 Claims



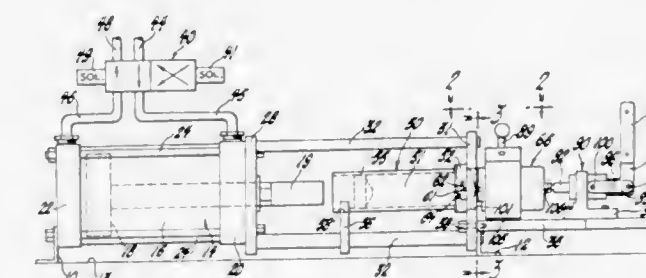
Apparatus performing according to the method for injection molding aminoplastic articles having large, flat, and smooth finished areas is disclosed. In the preferred embodiment shown, the aminoplastic material is metered from a hopper into a transfer cylinder while being maintained at a uniform temperature sufficient to soften it. A plunger in the transfer cylinder then pushes the softened aminoplastic material directly into the mold cavity of a two-part mold in a manner to maintain substantially the same passage area from

the transfer cylinder to and into the mold cavity. The plastic is cured by the application of a second uniform and higher temperature, and the finished article is discharged. Two methods allowed by the present invention of discharging articles from the mold, by plunger movement and by air pressure, are also disclosed.

3,723,038

**INJECTION MOLDING APPARATUS**

Harry H. Little, 202 Cedar Lane, Vienna, Va.  
Filed Sept. 16, 1970, Ser. No. 72,588  
Int. Cl. B29f 1/00  
U.S. Cl. 425—192 1 Claim

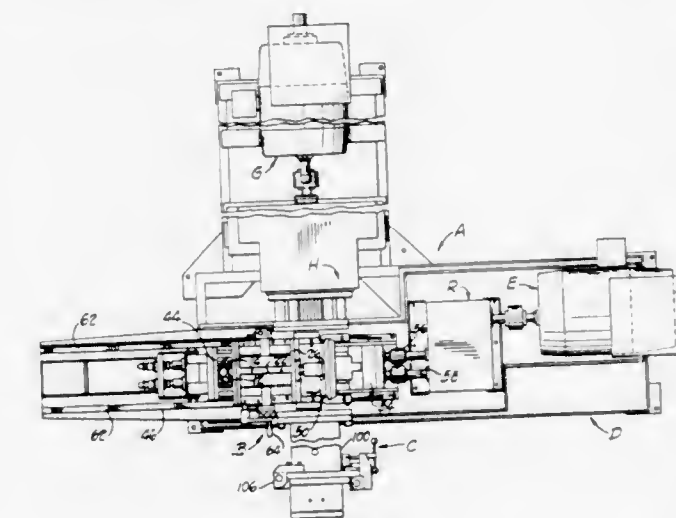


There is disclosed an injection molding apparatus having a cartridge for containing a molding material which is injected by operation of a fluid pressure operated motor through a nozzle into a multipart mold whose parts are clamped together by the camming action of a clamp. The mold has an injection port receiving the cartridge's nozzle to provide for injection of the molding material into the mold. The nozzle and port also cooperate to support the mold relative to the cartridge. A second clamp is provided to clamp the mold to the cartridge during the injection operation.

3,723,039

**INTERNAL MIXER**

James T. Matsuoka, Brecksville, and Armindo Cantarutti, Akron, both of Ohio, assignors to Intercole Automation, Inc., Cleveland, Ohio  
Continuation-in-part of Ser. No. 841,349, July 14, 1969. This application Jan. 4, 1971, Ser. No. 103,537  
Int. Cl. B29b 1/10  
U.S. Cl. 425—204 2 Claims



An internal continuous mixer with parallel mixing rotors and a screw controlled discharge. Each rotor comprises a central bladed mixing portion, a screw infed portion and a screw outfeed portion. The threads of the screw outfeed portion have nonuniform crest diameter thus working the material being mixed, and providing clearance permitting the material discharge rate to be controlled down stream therefrom as by an enclosed material conveyor or feed screw, preferably a screw extruder apparatus.



3,723,040

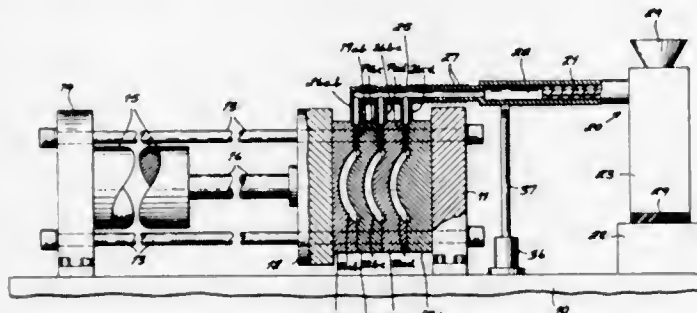
**INJECTION-MOLDING MACHINE WITH TRANSVERSE FEED**

Herbert Rees, Toronto, Ontario, Canada, assignor to Husky Manufacturing & Tool Works Limited, Toronto, Ontario, Canada

Division of Ser. No. 16,442, March 4, 1970, Pat. No. 3,659,997. This application Jan. 17, 1972, Ser. No. 218,625  
Int. Cl. B29f 1/03

U.S. Cl. 425—245

4 Claims



An injection-molding machine with a set of stacked mold plates, defining several axially spaced mold cavities therebetween, includes an injection unit with one or more nozzles movable perpendicularly to the stack for contact with respective inlets, leading to the several cavities, which are aligned with these nozzles in the closed position of the multiple mold. The mold plates may be interconnected by a lazytong linkage or by lost-motion couplings for proper relative spacing in the open mold position.

3,723,041

**TOOL FOR FORMING ASBESTOS LININGS AND THE LIKE**

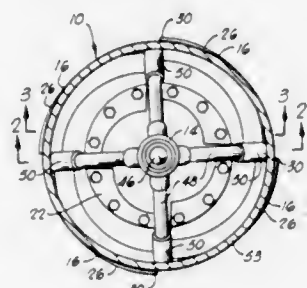
Lester F. Brown, Lubbock, Tex., assignor to Standard Concrete Pipe Company, Inc., Lubbock, Tex.

Filed Nov. 6, 1968, Ser. No. 773,858

Int. Cl. B28b 19/00

U.S. Cl. 425—262

23 Claims



A tool sized to be rotated and moved lengthwise through a cylindrical chamber to form a cement-asbestos composition into a tubular lining around the walls of the chamber. The composition is fed to the tool by air pressure and is directed in a plurality of streams circumferentially spaced around the outer periphery of the tool toward the inner periphery of the chamber. The outer periphery of the tool is shaped to compact the composition against the inner periphery of the chamber as the tool is rotated and moved lengthwise.

3,723,042

**ANIMAL FOOD STUFF PRESS**

Jost-Hinrich Raydt, Bel den Muhren 91, 2000 Hamburg 11, Germany

Filed Aug. 11, 1971, Ser. No. 170,946

Claims priority, application Germany, June 15, 1971, P 21 29 532.9

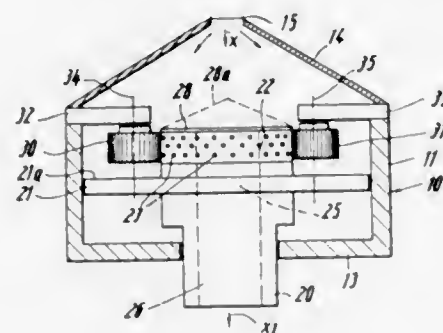
Int. Cl. B29h 3/012

U.S. Cl. 425—331

6 Claims

The press having within a cylindrical press housing a central power-driven barrel matrix and a plurality of mutually spaced

press rollers engaging the outer periphery of the barrel matrix whereby the pivot axes of the barrel matrix and of the rollers are parallel to each other. Press feed may be introduced into the press through a feed hopper mounted on top of the press housing and having a central inlet connection. The press feed



is guided towards the several squeezing zones defined between barrel matrix and each of the press rollers by means of arcuately shaped bars and arcuate pickup devices extending from the press housing wall towards the barrel matrix. The press feed, after passing through perforations in the periphery of the barrel matrix, will be discharged centrally of the barrel matrix.

3,723,043

**TOOL FOR MAKING SERVICE PIPE COUPLING JOINT**

Wilbur R. Leopold; Frank C. Hackman; Carl E. Floren, and Wallace E. Gould, all of Decatur, Ill., assignors to Mueller Co., Decatur, Ill.

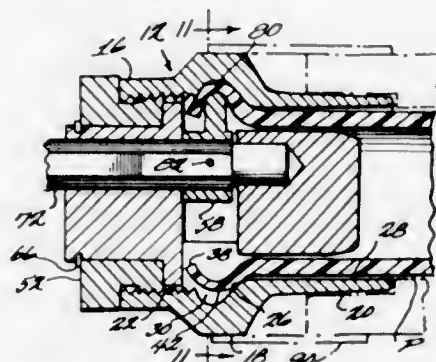
Division of Ser. No. 885,462, Dec. 16, 1969, Pat. No.

3,687,492. This application Oct. 29, 1971, Ser. No. 194,068

Int. Cl. B29c 17/02

U.S. Cl. 425—393

6 Claims



A tool for making a service pipe coupling or joint for use in fluid distribution systems, the coupling or joint utilizing a plastic pipe, a flare-type coupling nut for coupling the plastic pipe into a distribution system, the coupling nut cooperating with a tubular body member which may be another pipe, a valve, or other fitting. The plastic pipe has its end portion cold flared beyond its elastic limit or memory by the tool into an annular upset bead-like portion terminating in an inwardly turned lip, the annular upset bead-like portion trapping the plastic pipe axially with respect to the coupling nut. The application of the tubular body to form the coupling or joint further forms the bead-like flare to provide a seal and packing and to increase the resistance of pipe pullout from the joint.

3,723,044

**CENTRIFUGAL CASTING APPARATUS**

R. B. Motheral, Rt. 4, Box 130, Georgetown, Tex.

Filed June 17, 1971, Ser. No. 154,151

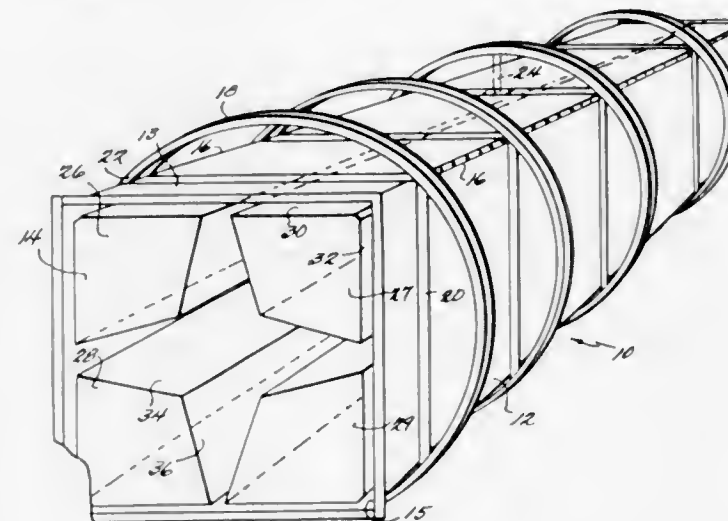
Int. Cl. B28b 21/30

U.S. Cl. 425—435

10 Claims

A centrifugal casting apparatus is provided for casting concrete, flat surfaced articles such as hollow, square beams; a first mold surface having flat walls for forming the exterior surface of the beam is carried on a set of ring members evenly

spaced along the mold enclosure; core members are mounted within the flat walls and spaced therefrom for forming the interior surface of the beam; the core members are shaped and arranged with respect to one another to provide flow passages



for the casting material so that when the mold enclosure is rotated about its axis, casting material may be continuously supplied to the interior of the housing and fed to the forming surfaces.

3,723,045

**LIGHTING SYSTEM**

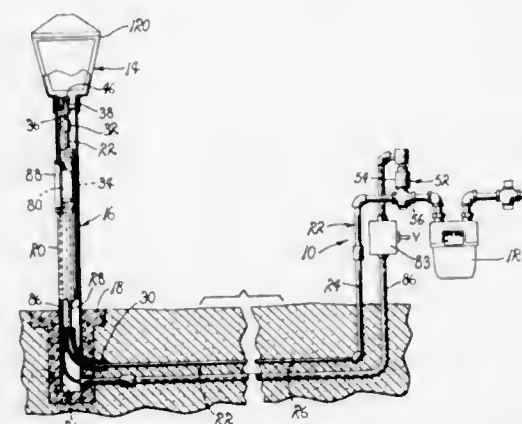
James D. Reese, 11937 Avenue 274, Visalia, Calif.

Filed June 21, 1971, Ser. No. 155,140

Int. Cl. F23m 5/08

U.S. Cl. 431—18

4 Claims



A selectively operable lighting system including a lamp for providing a flame of gas particularly suited for use in illuminating outdoor areas, such as patios, terraces and the like. The system is characterized by a tubular pillar supported by a rigid pedestal embedded beneath the surface of an area being illuminated, and surmounted by a burner connected with a source of gas and encased within a protective and ornamental head. A selectively operable, electrically energizable igniter capable of responding to an absence of an illuminating flame is provided for igniting combustible gas delivered to the burner, whereby a substantially continuous illuminating flame selectively is provided.

3,723,046

**SIMULATED FIRE APPARATUS**

Dan W. Poling, P.O. Box 2006, Lincoln City, Oreg.; Edward E. Calkins, Box 137, Rose Lodge, Oreg., and Robert L. Fagaly, Dept. of Physics and Astronomy, University of Toledo, Toledo, Ohio

Filed Oct. 26, 1971, Ser. No. 192,114

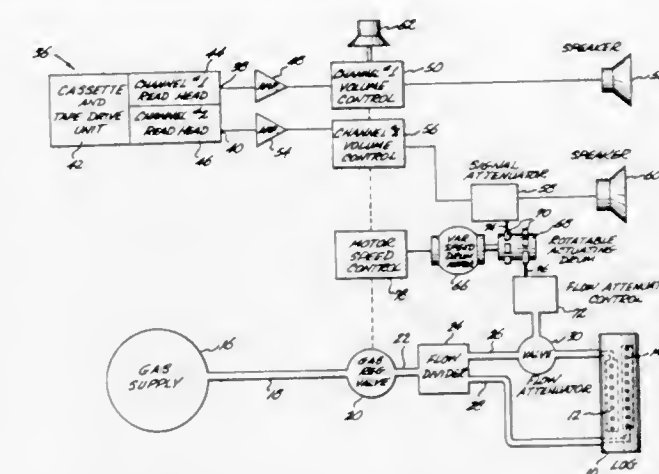
Int. Cl. F23n

U.S. Cl. 431—18

10 Claims

Simulated fire apparatus wherein a gas or electrically

operated flame portrayer is adjusted to vary the type of flame



portrayed. Such adjustments are coordinated with adjustments in sound effects produced by a speaker.

3,723,047

**CONTROL NETWORK FOR BURNING FUEL OIL AND GASES WITH REDUCED EXCESS AIR**

Guy M. Baudet de Livois, Paris, France, assignor to Controle Bailey (Societe Anonyme), Clamart, France

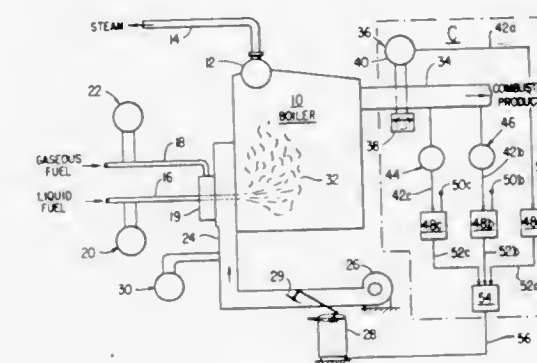
Filed May 25, 1971, Ser. No. 146,669

Claims priority, application France, May 26, 1970, 7019186

Int. Cl. F23n 5/08

U.S. Cl. 431—76

12 Claims



Control networks for combustion processes, utilizing liquid and gaseous fuels burned in either common or separate burners, which minimize heat losses through the flue by providing sufficient combustion air to allow substantially complete burning of both fuels at reduced excess air conditions. Unburned solids and gases sensed in the flue provide a signal causing the excess air to be automatically varied to maintain these unburned substances within acceptable limits. The excess air also may be automatically varied by a coordinated fuel flow to air flow signal which is corrected by the amount of unburned substances in the flue.

3,723,048

**SAFETY LIGHTER**

Barney G. Russell, P.O. Box 873, Camden, Ark.

Filed Oct. 22, 1970, Ser. No. 82,982

Int. Cl. F23q 25/00

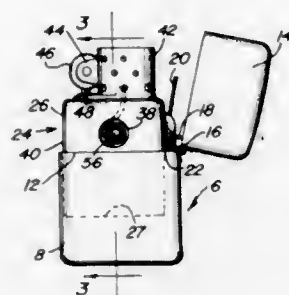
U.S. Cl. 431—151

1 Claim

A safety-type cigarette lighter characterized by a self-contained removable tank unit and a protective jacket or casing for said unit. The casing, which is of a well known type, embodies a cup-type receiver whose upper open end is normally closed by a hinged cap-type cover retained by resilient latch means when in its closing position. The hollow tank of the tank unit is equipped with the usual flint, finger-turned sparking wheel and wick-equipped neck, and is wholly filled with a wad of absorbent fluid storing material. This unit does not have to be fully withdrawn to charge with lighter fluid. The



upper half-portion is withdrawn just enough to uncover and expose a filler hole. Therefore, the lighter does not have to be turned upside down for filling with lighter fluid. Then, too, the



disclosed lighter features a novelly arranged wick which has a coil aligned with and exposed for quick saturation during the fuel filling step.

3,723,049

**RESONANCE CONTROL FOR A MUFFLE BURNER**

Edward L. Juricek, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

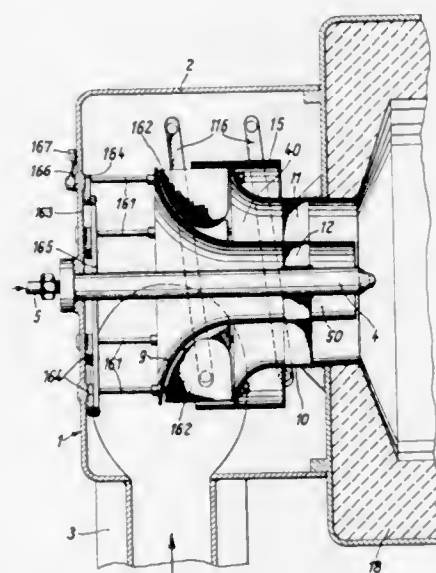
Filed May 26, 1971, Ser. No. 146,978

Claims priority, application Switzerland, May 29, 1970, 8056/70

Int. Cl. F23m 9/00

U.S. Cl. 431—183

6 Claims



Vanes are provided in the inlet to the outer annular combustion air supply duct which are adjustable to change the direction of air flow by a magnitude of up to 10 percent in the tangential velocity component at the outlet of the outer duct. This avoids humming or whistling. The vanes are controlled in unison from a control lever outside the distribution box.

3,723,050

**PILOT CLAMP AND SHIELD**

Walter Chandler Stevens, Jr., Mansfield, Ohio, and Philip M. More, Chattanooga, Tenn., assignors to Universal Refrigeration, Inc., Mansfield, Ohio

Filed Oct. 14, 1971, Ser. No. 189,088

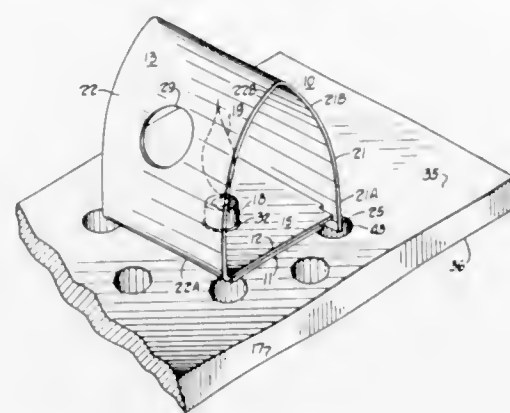
Int. Cl. F24c 3/10

U.S. Cl. 431—191

17 Claims

A combined clamp and shield for a pilot burner is disclosed able to secure the pilot burner to a burner support and to shield a flame of the pilot burner from atmospheric disturbances and to shield adjacent structures from the flame and heat thereof. The combined clamp and shield can be incorporated into a unitary piece which is easy to manufacture.

The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of



operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

3,723,051

**CIGARETTE LIGHTER USING MICROENCAPSULATED FUEL**

Daniel Bouvier, Paris, France, assignor to S. T. Dupont (Societe Anonyme), Paris, France

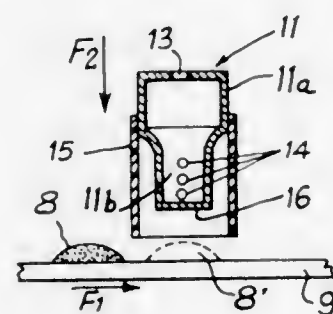
Filed Dec. 24, 1970, Ser. No. 101,288

Claims priority, application France, Dec. 24, 1969, 6944874

Int. Cl. F23q 1/02

U.S. Cl. 431—267

12 Claims



A cigarette lighter which uses microencapsulated fuel, is provided with a mechanism for advancing a predetermined amount of fuel capsules to a burner zone of the lighter from a reservoir thereof and a mechanism for crushing the fuel capsules in the burner zone to effect a release and permit a subsequent ignition of fuel.

3,723,052

**LIQUID FUEL BURNER APPARATUS**

Akihiko Nakashima, Neyagawa; Mitsuhiro Imajima, Yamatokoriyama, and Shigeo Murase, Takatsuki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan

Filed Nov. 1, 1971, Ser. No. 194,246

Claims priority, application Japan, Nov. 13, 1970, 45/100569; Nov. 13, 1970, 45/100570

Int. Cl. F23d 5/02

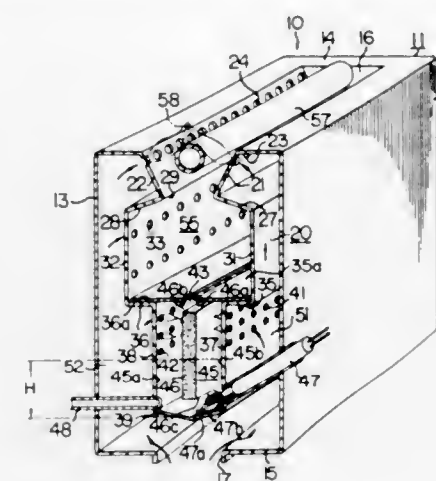
U.S. Cl. 431—339

12 Claims

A substantially flat type liquid fuel burner apparatus comprising a chamber for gasifying liquid fuel, a second chamber above the gasifying chamber for mixing the gasified fuel with an amount of air, and a combustion zone above the mixing chamber into which the gaseous mixture and an additional amount of air are introduced for the complete combustion of the gasified fuel. The air supplied to the gasifying chamber is limited to such an amount to burn only a part of the liquid fuel fed to the gasifying chamber so as to heat a heating element

disposed therein. The heated heating element is operative to pyrolyze the remaining part of the fuel into gasified fuel to

fabrication process, when the temperature of the semiconductor material exceeds its plastic temperature, for minimizing stresses caused by temperature gradients in the material whereby a number of harmful dislocations, which result in undesired electrical characteristics for the semiconductor circuits on the wafer are eliminated.



thereby facilitate blue flame complete combustion of the fuel in the combustion zone.

**ERRATUM**

For Class 432—6 see:  
Patent No. 3,723,053

3,723,053

**HEAT TREATING PROCESS FOR SEMICONDUCTOR FABRICATION**

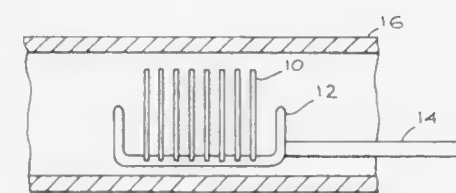
Charles F. Myers, Scottsdale, Ariz., and Sanford Platter, Bolton, Mass., assignors to Robert L. Jarratt, Trustee in Bankruptcy for Semiconductor Electronic Memories Inc., by said Myers and Platter

Filed Oct. 26, 1971, Ser. No. 192,271

Int. Cl. F27b 9/00, 9/14

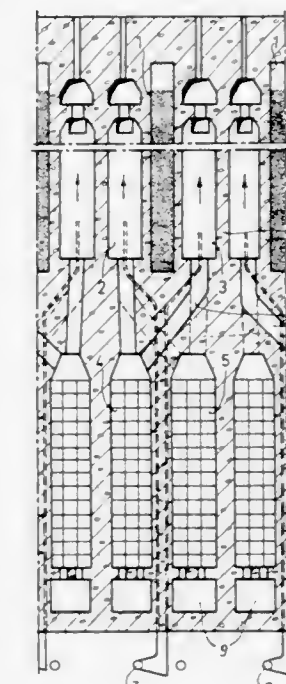
U.S. Cl. 432—6

7 Claims



A method and means for heat treating semiconductor material used in diffusion processes or in any semiconductor

An industrial furnace has at least one furnace chamber and at least two hollow heat-exchange walls each located at and proximal to one lateral side of the furnace chamber so as to exchange heat with the same. At least two regenerators are provided each of which communicates with one of the heat-exchange walls and means is provided for alternately feeding air and flue gas to these regenerators.





## CHEMICAL

### 3,723,055 ONE PASS CONTINUOUS DYEING OF POLYESTER/CELLULOSIC FIBERS A PLURALITY OF COLORS

Gilman S. Hooper, and Alois H. Springer, both of Spartanburg, S.C., assignors to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Dec. 19, 1969, Ser. No. 886,731  
Int. Cl. D06p 3/82

U.S. Cl. 8—21 C 6 Claims  
The process for dyeing polyester/cellulosic textiles which comprises applying to the textile a basic dyestuff and a disperse dyestuff, subjecting the resulting textile to steam under pressure, applying a dyestuff for the cellulosic component before or after said steam treatment and washing the dyed textile. Also, the resulting dyed textile.

### 3,723,056 MIXTURE OF PHENYLAZOPHENYLAZONAPH- THYL TRI(LITHIUM SULFONATE) DYE STUFFS Alvin C. Litke, Seneca, N.Y., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Original application May 12, 1969, Ser. No. 823,989, now Patent No. 3,635,944. Divided and this application Sept. 22, 1971, Ser. No. 182,882  
Int. Cl. D21h 1/46

U.S. Cl. 8—26 1 Claim  
Highly water soluble phenylazophenylazonaphthyl tri-(lithium sulfonate) dyestuffs adapted to dye cellulosic fibers bright, light-fast violet shades.

### 3,723,057 PROCESS FOR STABILIZING ORGANOPHOSPHORUS SOLUTIONS AND IMPARTING ROT AND FLAME RESISTANCE TO ORGANIC TEXTILE MATERIALS

Darrell J. Donaldson, Metairie, and Donald J. Daigle, New Orleans, both of La., assignors to The United States of America as represented by the Secretary of Agriculture  
Division of Ser. No. 845,562, July 28, 1969, Pat. No. 3,625,738. This application July 19, 1971, Ser. No. 164,043  
Int. Cl. C07d 105/02; D06m 13/28; C071 9/28

U.S. Cl. 8—116 P 1 Claim  
Metal salts were found to stabilize tetrakis(hydroxymethyl)phosphonium hydroxide (THPOH)-ammonium hydroxide solutions by formation of complexes thereby making it possible to apply THPOH to cotton fabric from a single bath without the use of gaseous ammonia.

### 3,723,058 REMOVAL OF FREE FORMALDEHYDE FROM SOLUTIONS OF METHYLOLATED CARBA- MATE FINISHING AGENTS AND TEXTILES TREATED THEREWITH

Robert M. Reinhardt, New Orleans, and Russell M. H. Kullman, Metairie, La., assignors to the United States of America as represented by the Secretary of Agriculture  
No Drawing. Filed Apr. 27, 1972, Ser. No. 248,187  
Int. Cl. D06m 15/58

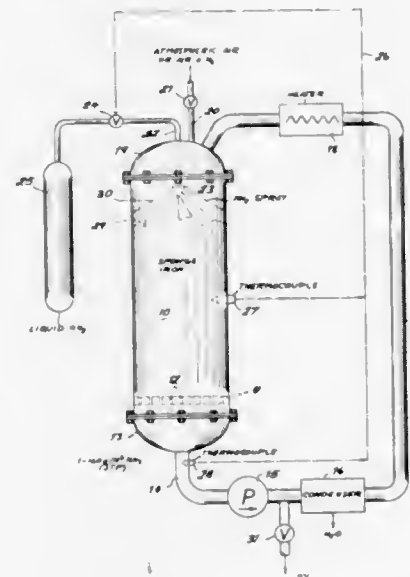
U.S. Cl. 8—182 3 Claims  
The free formaldehyde content of a solution of methyloated carbamate finishing agent is reduced by removal of free formaldehyde through reaction with phthalimide to give an insoluble phthalimide-formaldehyde adduct that is readily separated from the solution. Fabric sensitized by treatment with the so-modified solution has a low level of formaldehyde release. When the sensitized fabric is cured, the resultant fabric is wrinkle resistant and exhibits all the other properties characteristic of the carbamate finish.

### 3,723,059 METHOD OF RESTRICTING THE OXIDATION OF SPONGE IRON

Wilhelm Thumm, Frankfurt am Main, and Horst Nagel, Bergen-Enkheim, both of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Reuterweg, Germany and The Steel Company of Canada, Ltd., Hamilton, Ontario, Canada

Filed Aug. 12, 1971, Ser. No. 171,109  
Claims priority, application Germany, Sept. 11, 1970, P 19 27 300.8

Int. Cl. C23f 11/02, 9/02 5 Claims  
U.S. Cl. 21—2.5

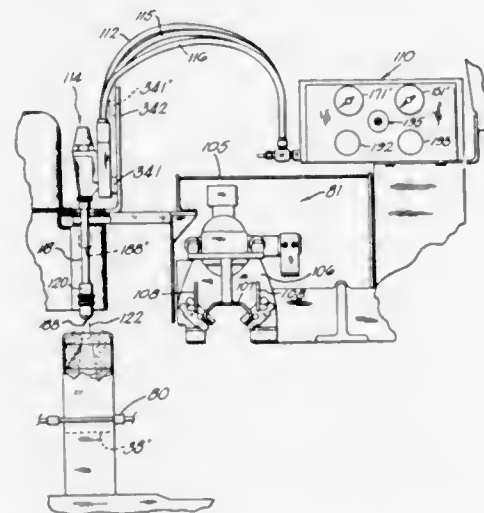


The oxidation of sponge iron, as generally made by the direct reduction of an iron ore, is prevented or limited by circulating through the mass of sponge iron a gas stream containing air and/or nitrogen together with ammonia.

### 3,723,060 ASEPTIC PACKAGING MACHINE Robert E. Lisiecki, Orchard Lake, Mich., assignor to Ex-Cell-O Corporation, Detroit, Mich.

Division of Ser. No. 708,337, Feb. 26, 1968, Pat. No. 3,566,575. This application Jan. 11, 1971, Ser. No. 105,449  
Int. Cl. A611 3/00

U.S. Cl. 21—91 8 Claims



An aseptic packaging machine for forming, antiseptically treating, filling and sealing containers while protecting them with a clear air atmosphere after they have been antiseptically

MARCH 27, 1973

CHEMICAL

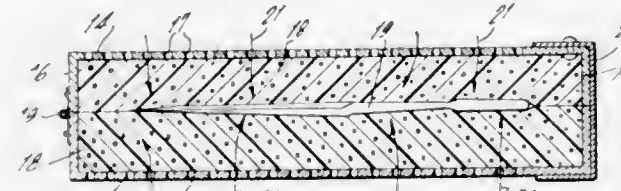
1065

treated by a bactericide. The antiseptic treatment is accomplished by a fogging system to provide for total contact by the bactericide with the internal surfaces of the container and includes ease of removal of the residual bactericide after the treatment.

### 3,723,061 SURGICAL INSTRUMENT CASE

Norman O. Stahl, 201 Eastern Pky., Brooklyn, N.Y.  
Filed Jan. 24, 1972, Ser. No. 220,128  
Int. Cl. A611 3/02; B65d 81/04

U.S. Cl. 21—103 5 Claims

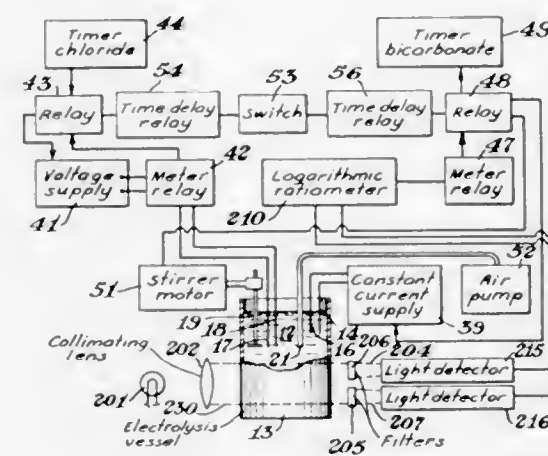


A container for surgical instruments having opposed porous plastic blocks to retain the instruments therebetween. The container together with the blocks and instruments may be sterilized and carried about without disturbing the relative positions of the instruments contained therein, and prevents their hitting against each other and being damaged.

### 3,723,062 PHOTOELECTRIC ENDPOINT DETECTION

Harald Dahms, 22 Lakeview Rd., Ossining, N.Y.  
Continuation-in-part of Ser. No. 690,270, Dec. 13, 1967, Pat. No. 3,551,109. This application Dec. 21, 1970, Ser. No. 100,306

Int. Cl. G01n 21/22, 31/16, 33/16 9 Claims  
U.S. Cl. 23—230 R



A method and apparatus useful for colorimetric titration utilizes an indicator which changes from one colored form to another at or near an endpoint, and an optical endpoint detection system which generates signals responsive to the relative concentrations of the different colored forms of the indicator. The endpoint is indicated when the ratio of the logarithms of the signals reaches a predetermined value.

### 3,723,063 PROCESS FOR DETERMINATION OF CHEMICAL CONSTITUENTS OF PROTEINACEOUS BIOLOGI- CAL FLUIDS

Gerald M. Jones and Cleve W. Laird, Houston, Tex., assignors to Hycel, Inc., Houston, Tex.

No Drawing. Filed Feb. 19, 1971, Ser. No. 117,064  
Int. Cl. G01n 33/16

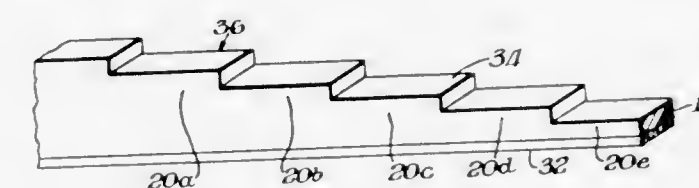
U.S. Cl. 23—230 B 26 Claims  
A process for quantitatively determining a chemical constituent of a proteinaceous biological fluid by heating

a sample of the fluid to clot the protein therein, contacting the sample with the clotted protein therein with a solvent for the chemical constituent, reacting the chemical constituent with a reagent to form a product that can be measured in the presence of the clotted protein, and then measuring the quantity of the chemical constituent present. A number of examples are set forth.

### 3,723,064 METHOD AND DEVICE FOR DETERMINING THE CONCENTRATION OF A MATERIAL IN A LIQUID

Lance A. Liotta, 14004 Mont Ave., East Cleveland, Ohio 44112  
Filed July 26, 1971, Ser. No. 165,471  
Int. Cl. G01n 31/06, 31/22

U.S. Cl. 23—230 R 14 Claims



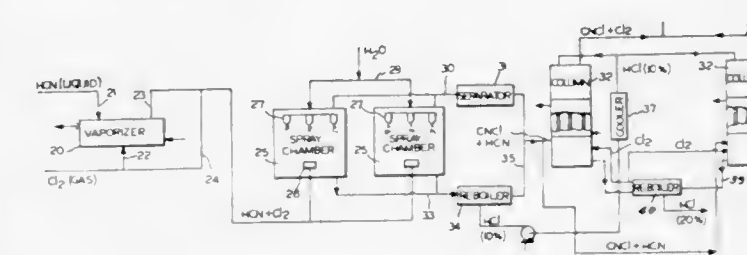
A layered testing device is used for quantitatively determining the concentration of a substance. The layered device includes a first porous layer impregnated with a reagent system adapted to react with the test substance to produce an end product. Adjacent to the first porous layer is a membrane having plural regions each having a different permeability to said end product. The difference in permeability is obtained either by impregnating the regions with different concentrations of a chemical reactive with the end product or by varying the pore size in the regions. Adjacent the membrane there may be a porous element to aid in drawing the end product under test out of the membrane. Immediately adjacent to the porous element is an indicator layer containing an indicator substance for providing a visual indication of any of said end product reaching the indicator layer. By marking the indicator layer in accordance with the region's permeabilities, a visual indicator of and method of determining concentration is available.

### 3,723,065 APPARATUS FOR PRODUCING CYANOGEN CHLORIDE BY SPRAY REACTION MEANS

Yelogondahally Subranianam Suryanarayana, and William Sanford Durrell, both of Mobile, Ala., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 622,332, March 10, 1967, Pat. No. 3,498,761. This application Dec. 30, 1969, Ser. No. 1,908  
Int. Cl. C01c 3/00

U.S. Cl. 23—260 1 Claim

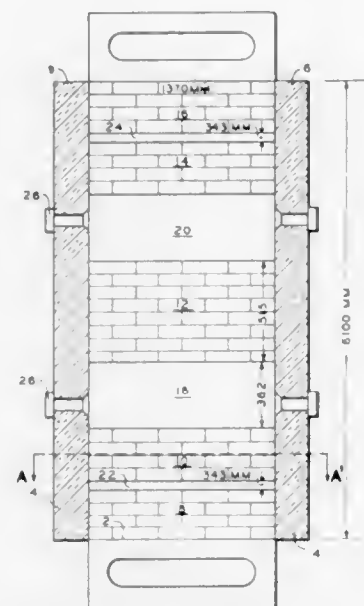


Apparatus for producing cyanogen chloride has a vaporizer in which hydrogen cyanide and chlorine are mixed to produce a gaseous mixture. A spray chamber is provided in which the gaseous mixture is dispersed, and means are provided for

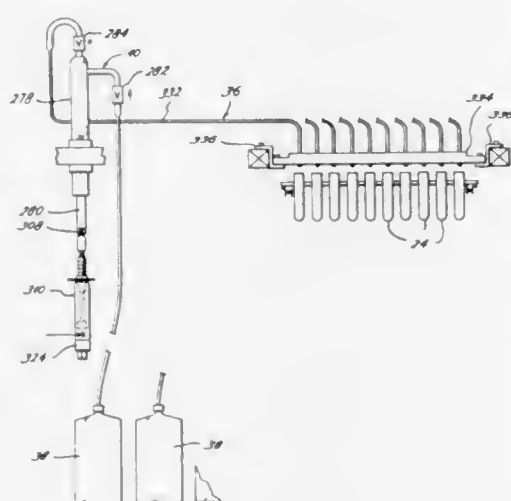


spraying water into the spray chamber, the amount of water being controlled so that the resulting hydrochloric acid is at a concentration of about 10 percent. If necessary to complete the reaction, a cooled reactor can be provided into which the cyanogen chloride, unreacted hydrogen cyanide vapor and chlorine are passed. The reactor should be partially flooded with hydrochloric acid at a concentration of about 10-20 percent and chlorine stripped from the hydrochloric acid produced in the spray chamber is also fed to the reaction column.

the refractory masses. These means for transverse flow in the preheat and quench tile stacks permit crossflow between the



**3,723,066**  
**REAGENT DISPENSING MEANS FOR CHEMICAL TESTING APPARATUS**  
John J. Moran, Houston, Tex., assignor to Hycel, Inc., Houston, Tex.  
Original application June 14, 1968, Ser. No. 737,065, now Patent No. 3,622,279. Divided and this application June 21, 1971, Ser. No. 155,156  
Int. Cl. G01n 1/18, 33/16  
U.S. Cl. 23—253 R 6 Claims

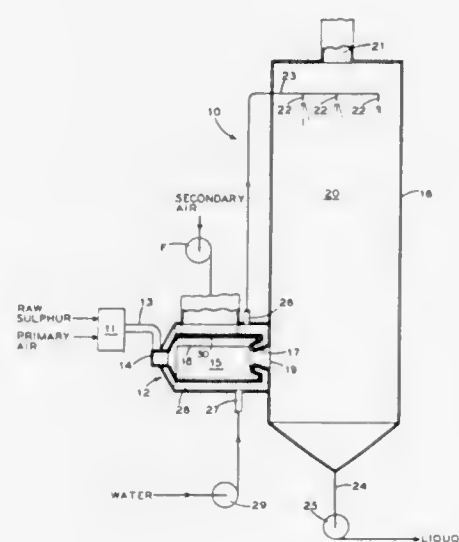


An improved reagent dispensing means for use with an automatic chemical testing apparatus having a cylinder and piston of inert material with two one-way glass check valves having ground glass flat seating surfaces providing accurate control and metering of reagent there-through. The outlet line of the reagent dispensing means is at an angle to the axis of the receiving tubes in the chemical testing apparatus to intimately mix the reagent with the contents of the tubes without requiring a stirrer. The reagent piston and cylinder assembly are loosely connected to a driving means whereby alignment of the piston and the cylinder is unaffected by the driving means.

**3,723,067**  
**PYROLYSIS FURNACE HAVING TRANSVERSE MIXING MEANS IN THE END STACKS**  
Lynn P. Walker, Burghausen, Germany, assignor to Marathon Oil Company, Findlay, Ohio  
Filed Feb. 1, 1971, Ser. No. 111,509  
Int. Cl. C07c 11/24 9 Claims

A regenerative pyrolysis furnace having dual combustion chambers and means for transverse flow in the end stacks of

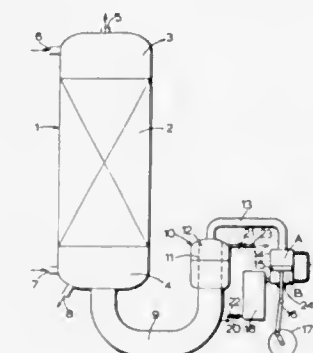
A system for preparing sulfur dioxide gas whereby sulfur is burned within a cyclone furnace supplied with a closely controlled amount of excess air to minimize sulfur trioxide formation. The furnace is constructed to assure substantially complete conversion of the sulfur to sulfur dioxide, with no liquid sulfur droplets entrained in the product gases. The combustion product gases from the furnace can be subsequently passed directly to and through a water spray tower for cooling and to remove any sulfur trioxide present.



**3,723,068**  
**APPARATUS FOR THE PREPARATION OF SULFUR DIOXIDE**  
Robert A. McIlroy, Alliance, Warrick L. Sage, Louisville, and Henry P. Markant, Alliance, Ohio, assignors to The Babcock & Wilcox Company, New York, N.Y.  
Continuation-in-part of application Ser. No. 729,103, May 14, 1968. This application Dec. 14, 1970, Ser. No. 97,529  
Int. Cl. C01b 17/54  
U.S. Cl. 23—262 1 Claim

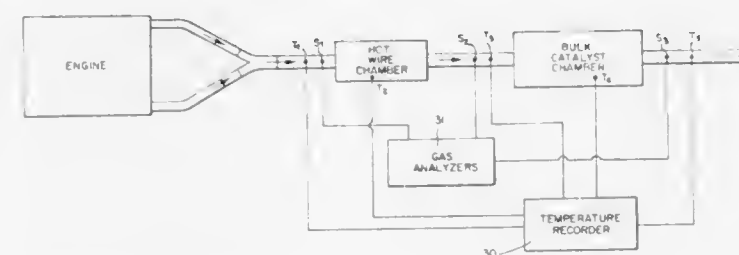
axial flow conduits, thereby minimizing the effects of plugging of these conduits due to carbon formation or shifting of tile.

**3,723,069**  
**PULSE COLUMN WITH PISTON DRIVE AND RESILIENT GAS CUSHION**  
Cristianus W. J. Van Koppen, Sittard, Netherlands, assignor to Stamicarbon N. V., Heerlen, Netherlands  
Filed Feb. 24, 1971, Ser. No. 118,344  
Claims priority, application Netherlands, March 5, 1970, 7003119  
Int. Cl. B01d 11/04; B01f 3/08  
U.S. Cl. 23—267 C 9 Claims



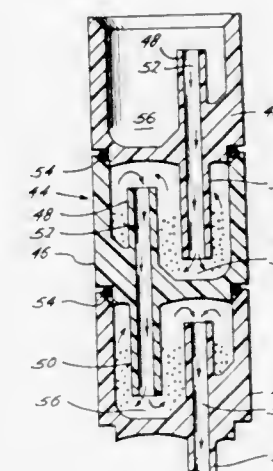
For controlling the amplitude of pulsations of liquid in a column partly filled with the liquid and having a pulsing chamber which communicates with a gas cushion alternately compressed and expanded at a constant amplitude and frequency comprising: increasing and decreasing the amount of gas in the gas cushion. In the installation according to the invention the space behind the piston in the cylinder is connected with a buffer space, the volume of which is at least as large as that of the gas cushion, while the spaces in front of and behind the piston in the cylinder are connected by means providing a restricted communication.

**3,723,070**  
**CATALYTIC OXIDATION APPARATUS**  
Jacques H. Houdry, Villanova, Pa., assignor to Oxy-Catalyst, Inc., West Chester, Pa.  
Filed Nov. 27, 1970, Ser. No. 93,042  
Int. Cl. F01n 3/14  
U.S. Cl. 23—288 F 22 Claims



Internal combustion engine exhaust gases are catalytically oxidized by providing in the gas stream a catalytic hot resistance element of small mass and surface area and a downstream catalyst bed of large mass and surface area. The hot resistance element quickly reaches catalytically effective temperature, and its heat plus heat of catalytic oxidation coact to accelerate the heating of the large catalyst bed accelerating its heating and causing it quickly to reach its effective catalytic operating temperature.

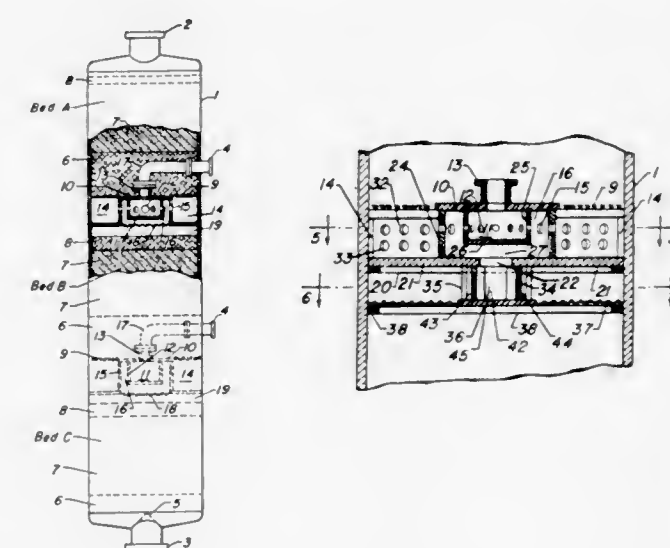
**3,723,071**  
**CONTACT APPARATUS**  
Hart Brown, 5300 Brownway Road, Houston, Tex. 77027  
Continuation-in-part of application Ser. No. 701,906, Jan. 31, 1968. This application Sept. 3, 1970, Ser. No. 69,281  
Int. Cl. B01j 1/00, 9/20; C22b 3/00  
U.S. Cl. 23—283 7 Claims



An apparatus for providing intimate contact between fluid and solid particles having a tray structure with bowls on one side in which the particles are fluidized for contact and passages extend through the tray structure to prevent particle movement therethrough with flow in one direction and to cause particles to move there-through responsive to flow in the opposite direction and also having a tray structure with parallel imperforate trays with tubes extending through each tray and being out of alignment with the tubes of the other tray.

**3,723,072**  
**FLUID CONTACTING APPARATUS**  
Don B. Carson and William R. Hennemuth, Mount Prospect, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.  
Continuation of application Ser. No. 835,449, June 23, 1969. This application Mar. 12, 1971, Ser. No. 123,500  
The portion of the term of the patent subsequent to Aug. 10, 1988, has been disclaimed  
Int. Cl. B01j 9/04 32 Claims

U.S. Cl. 23—288 R



An apparatus for contacting two fluids in a fluid-solids contacting zone, such as an adsorption zone or a reaction zone. A first fluid is passed into a central chamber



having a plurality of fluid openings in the chamber wall, while a second fluid is passed into an annular chamber encompassing the central chamber and spaced apart therefrom. The second fluid is discharged via fluid openings in the inner annular chamber wall, into an annular space between the chambers, and the first fluid is discharged from the central chamber into the second fluid discharge. A resulting fluid mixture is passed from the annular space into a second chamber or conduit for further mixing and then to a bed of particulated contact solids. Specific application is hydrogenation, hydrotreating, hydrocracking, and hydrodealkylation reaction zones.

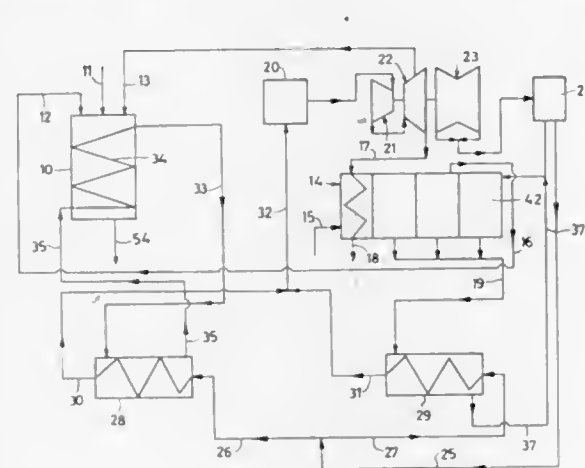
3,723,073

**INSTALLATION FOR RECOVERING ELECTRIC POWER, COMBINED WITH AN ALUMINA MANUFACTURING INSTALLATION**  
 Francesco Ettore Conti, Via Sismondi 3, Milan, Italy  
 Filed May 26, 1969, Ser. No. 827,869  
 Claims priority, application Italy, June 3, 1968, 17,285/68

Int. Cl. C01f 7/06

U.S. Cl. 23—293

12 Claims



An installation for producing electric power from heat recovered in an alumina producing installation run according to the Bayer process is disclosed, in which a combination of heat exchanging means is provided, for recovering the heat produced in the reaction of bauxite with a caustic alkali, and also for recovering the heat from steam used in the several stages of the power-generating turboalternator which is an integral part of the power station fed by waste heat. A considerable overall efficiency is obtained, so that the electric power produced with recovered heat is a remunerative by-product.

3,723,074

**AMMONIUM POLYPHOSPHATE MATERIALS AND PROCESSES FOR PREPARING THE SAME**  
 Paul G. Sears, Lexington, Ky., and Howard L. Vandersall, Ballwin, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation of application Ser. No. 722,499, Dec. 7, 1967, which is a division of application Ser. No. 514,657, Dec. 17, 1965, which in turn is a continuation-in-part of application Ser. No. 301,918, Aug. 13, 1963, all now abandoned. This application Jan. 18, 1971, Ser. No. 107,481

Int. Cl. C01b 15/16, 25/26, 25/28

U.S. Cl. 423—307

18 Claims

Ammonium polyphosphate compositions which are substantially water-insoluble and having the empirical formula



wherein  $n$  is an integer having an average value greater than 10 and  $m/n$  has an average value between about .7 and about 1.1 and the maximum value of  $m$  is equal to

$n+2$ , are disclosed. These ammonium phosphates are prepared by heat treating either (a) the reaction product of a condensed phosphoric acid and a combined ammoniating and condensing agent, (b) reaction product of an orthophosphoric acid and a combined ammoniating and condensing agent, (c) an ammonium orthophosphate and a combined ammoniating and condensing agent, (d) an ammonium pyrophosphate salt and a combined ammoniating and condensing agent, or (e) urea phosphate, at a temperature up to about 260° C. The typical ammoniating and condensing agent is urea. The ammonium polyphosphates are useful as fire retardants, builders in synthetic detergent compositions and as a fertilizer.

3,723,075

**MANUFACTURE OF ALUMINUM TRIBROMIDE**  
 John W. Stevenson, Webster Groves, and Warren T. Trask, Olivette, Mo., assignors to Mallinckrodt Chemical Works, St. Louis, Mo.

No Drawing. Filed Mar. 5, 1971, Ser. No. 121,575

Int. Cl. C01f 7/48, 7/64

U.S. Cl. 423—495

5 Claims

Aluminum tribromide is prepared by reacting metallic aluminum with elemental bromine in a stirred liquid reaction medium consisting essentially of molten aluminum tribromide. Preferably the aluminum in the form of small pieces or particles is suspended in the molten aluminum tribromide and the elemental bromine is added incrementally to the surface of the reaction medium at a rate such that the temperature of the medium is preferably maintained within the range of about 100–140° C. The method is suitable for continuous operation.

3,723,076

**SINTERED TUNGSTEN-BORON ALLOY**  
 Friedrich Benesovsky, Tirol, Austria, assignor to Schwarzkopf Development Corporation, New York, N.Y.

Filed Dec. 10, 1969, Ser. No. 884,053

Claims priority, application Austria, Dec. 23, 1968, 12550/68

Int. Cl. B22f 1/00; C22c 1/00

U.S. Cl. 29—182

15 Claims

This application relates to a sintered tungsten-boron alloy optionally containing small amounts of certain other additives with the boron content of the alloy being less than about 0.05 weight per cent and preferably between 0.005 and 0.02 weight per cent.

3,723,077

SINTERED ALLOYS

Fritz Frehn, Krefeld, Germany, assignor to Deutsche Edelstahlwerke Gesellschaft mit beschränkter Haftung  
 No Drawing. Filed Apr. 21, 1970, Ser. No. 30,596

Int. Cl. B22f 1/00

U.S. Cl. 29—182.7

7 Claims

Sintered alloys are prepared consisting of 50 to 90% of (1) a hard carbide alloy containing 10 to 70% titanium carbide and 30 to 90% steel alloy and (2) 10 to 50% ceramic which is insoluble in the matrix.

3,723,078

**ELECTROLESS ALLOY COATINGS HAVING METALLIC PARTICLES DISPERSED THERE-THROUGH**

Konrad Parker, Park Ridge, Ill., assignor to General American Transportation Corporation, Chicago, Ill.  
 Original application Oct. 25, 1968, Ser. No. 770,573, now Patent No. 3,562,000, dated Feb. 9, 1971. Divided and this application Sept. 28, 1970, Ser. No. 75,829

Int. Cl. B32b 15/00

U.S. Cl. 29—194

37 Claims

There are disclosed herein processes for electroless metallizing workpieces to provide thereon an electroless

plating metal coating incorporating therein metallic particles, workpieces produced by such processes and plating baths which are useful in the practice of such processes and for producing such workpieces. These processes generally comprise contacting the workpieces with an electroless metallizing bath consisting of an aqueous solution of an electroless metal plating salt and a chemical reducing agent therefor and a quantity of metallic particles, wherein said particles are essentially insoluble in said bath and inert and non-catalytic and non-poisonous with respect thereto and non-displacing with respect to the electroless plating metal ions in said bath, the particles being present in said bath in an amount by weight no greater than about ten times the weight of the electroless plating metal in said bath expressed as free metal, and maintaining the particles in suspension throughout the bath during the metallizing of the workpiece; the metallizing bath may contain nickel ions or cobalt ions or mixtures thereof as a source of metal and may contain hypophosphite anion or an alkylborazane or a borohydride as the reducing agent, or may contain copper ions as a source of metal with formaldehyde as the reducing agent; the metallic particles are selected from chromium, molybdenum, tungsten, boron, titanium, vanadium, zirconium, niobium, tantalum and alloys thereof; the metallic particles have dimensions in the range from about 0.1 micron to 50 microns; these metallic particles may be maintained in suspension in the bath by mechanical agitation, by passing the bath including the particles over the workpiece, by passing streams of minute bubbles of gas through the bath, by agitation and movement of the workpiece within the bath, or by slowly rotating the workpiece in conjunction with the rapid circulation of the bath; additionally, the electroless plating metal coating having the metallic particles incorporated therein may be heat-treated by heating to a temperature in the range from about 200° C. to about 1,300° C. for at least one-quarter hour to bond said electroless metal coating and said metallic particles at the interfaces thereof.

3,723,079

STABILIZATION OF COAL

Walter H. Seitzer, Marcus Hook, Pa., assignor to Sun Research and Development Co., Philadelphia, Pa.

Filed July 23, 1971, Ser. No. 165,728

Int. Cl. C10L 5/00

U.S. Cl. 44—1 R

2 Claims

A process for stabilizing dried lignitic and subbituminous coal against spontaneous combustion which comprises treating said dried coal at about 175° to about 225° C. with oxygen in an amount of from about 0.5 percent to about 8 percent by weight of said coal and rehydrating the oxygen treated coal with water in an amount of from about 1.5 percent to about 6 percent by weight of said oxygen treated coal.

3,723,080

**ION-EXCHANGE STRENGTHENED ELECTRICALLY-HEATED GLASS**

Robert G. Howell, Corning, and Joseph N. Panzarino, Big Flats, N.Y., assignors to Corning Glass Works, Corning, N.Y.

No Drawing. Filed Feb. 12, 1971, Ser. No. 115,125

Int. Cl. C03c 17/00, 21/00

U.S. Cl. 65—30

5 Claims

Chemically strengthened, electrically-heatable glass for vehicle windows and the like, and a method of making it, comprising the steps of coating at least one surface of a soda aluminosilicate glass with an electroconductive paste to form a resistance heating grid, drying, firing the coated glass to a temperature sufficient to fuse the paste, and if desired, to sag the glass, and finally subjecting the fired glass to a source of exchangeable K<sup>+</sup> ions at a

temperature below the strain point of the glass for a time sufficient to form a compressively stressed surface layer thereon.

3,723,081

BREAK SEAL

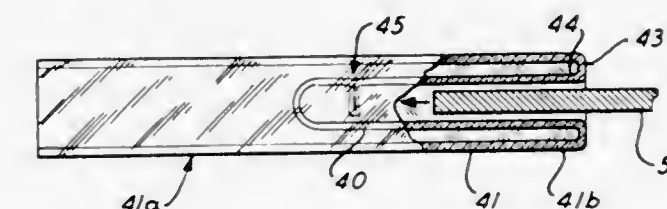
Stephen D. Poulsen, Jr., Florham Park, N.J., assignor to Airco, Inc.

Original application May 21, 1970, Ser. No. 39,193.  
 Divided and this application Nov. 26, 1971, Ser. No. 202,701

Int. Cl. C03b 23/00

U.S. Cl. 65—55

5 Claims



This invention relates to an improved form of break seal which is especially adapted to be used as a closure for a container or which may otherwise be used to form a hermetic seal in laboratory equipment. In its preferred form the break seal is fabricated from soft or borosilicate glass and takes the form of an external tube joined to an internal test tube having an indentation in its sidewall. The indentation forms a weak point in the sidewall of the test tube and in the event that the seal is to be broken an actuating device is pressed against the indentation causing a rupture in the sidewall of the glass tube.

3,723,082

SHEET GLASS THICKNESS CONTROL

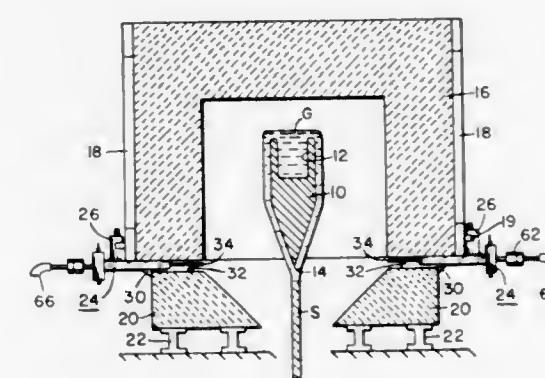
Daniel H. Knowles, Painted Post, George D. Lapinsky, Corning, Kenneth T. Overman, Painted Post, and Raphael A. Simon, Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jan. 6, 1971, Ser. No. 104,413

Int. Cl. C03b 17/00

U.S. Cl. 65—84

4 Claims



In the formation of sheet material from molten glass, a plurality of spot cooling jets are positioned in the forming area, and preferably in a row along the draw line, for directing individual streams of extremely low volume air on discrete portions of the molten glass adjacent to the draw line to control local thickness variations in the sheet and thereby provide uniform glass thickness across its extent.



3,723,083

**TEXTURED CONVEYOR ROLL AND METHOD OF FINISHING THE SAME**

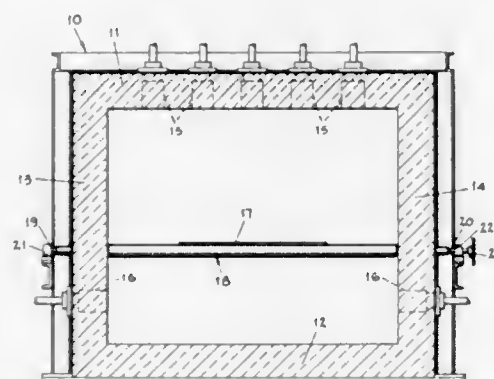
George F. Ritter, Jr., Rossford, and Roger P. King, Toledo, both of Ohio, assignors to Libby-Owens-Ford Company, Toledo, Ohio

Continuation of Ser. No. 676,794, Oct. 20, 1967, abandoned. This application Dec. 23, 1970, Ser. No. 101,196

Int. Cl. C03b 25/04

U.S. Cl. 65—119

3 Claims



The conveyor roll disclosed is provided with a special textured surface finish and is of particular utility for support and conveying glass sheets during heating thereof from room temperature to a relatively high temperature, said textured surface finish reducing the area of contact between the roll and glass sheets, thereby lowering the rate of heat transfer and lessening the liability of breakage of the glass.

3,723,084

**METHOD AND APPARATUS FOR BLENDING MOLTEN GLASS**

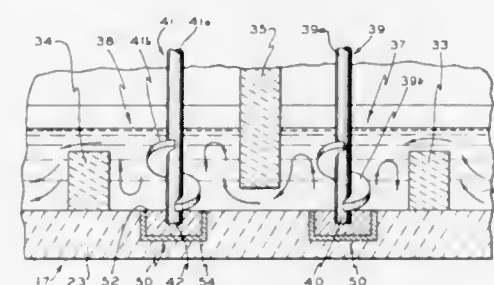
Robert D. Colchagoff, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Filed May 7, 1971, Ser. No. 141,305

Int. Cl. C03b 5/18, 5/32

U.S. Cl. 65—136

24 Claims



In a preferred embodiment of the invention described herein there is disclosed a method for thoroughly mixing molten glass flowing in a refractory receptacle. A stirring means is immersed in the molten glass with molten glass engaging and circulating means disposed closely adjacent the wall means of the receptacle. Protective shielding is interposed between the stirring means and the refractory of the receptacle to prevent erosion of the refractory. The stirring means is driven to remove relatively viscous and cooler molten glass from adjacent the wall means to mix and blend such glass with hotter, less viscous glass away from the wall means of the receptacle. In the preferred embodiments shown the stirring means is disposed closely adjacent a bottom wall of the protective. A pool of protective fluid having a density greater than the molten glass is retained between the stirring means and the refractory of the receptacle. The pool of protective fluid is preferably a molten metal which has a boiling temperature

higher than the temperature of the molten glass. A layer of material is interposed between the pool and the refractory to retain the pool in protective disposition between the stirrer and the refractory.

3,723,085

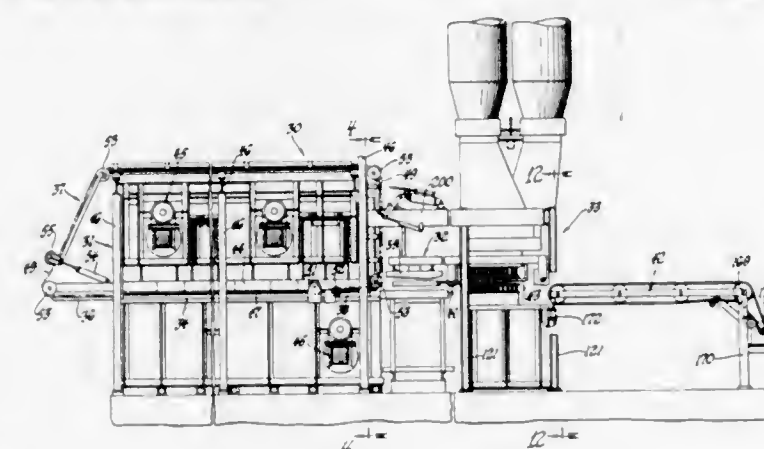
**APPARATUS FOR CONVEYING GLASS SHEETS THROUGH ADJACENT BENDING AND TEMPERING STATIONS**

Harold A. McMaster, Woodville, Ohio, assignor to Guardian Industries Corp., Detroit, Mich. Original application Dec. 18, 1967, Ser. No. 691,326. Divided and this application Apr. 12, 1971, Ser. No. 132,941

Int. Cl. C03b 18/02

U.S. Cl. 65—182 A

31 Claims



An apparatus for curving a sheet of glass including a furnace having an elongated gas support bed for supporting sheets of glass thereover, conveying means for moving a sheet from the first end to the second end of the bed, a bending station disposed adjacent the second end of the bed and including a sheet supporting surface for supporting a sheet of glass on gases thereover, a shuttle means for moving a sheet of glass from the second end of the bed to the gas supporting surface in the bending station, a blasthead adjacent the bending station for impinging fluid against opposite sides of the sheet for cooling thereof, oscillating means in the blasthead for oscillating a sheet therein, and unitary frame means for lifting a sheet from the gas supporting surface in the bending station for bending the sheet and for thereafter moving the sheet into the blasthead while at the same time removing a sheet from the oscillating means in the blasthead to remove the sheet from the blasthead. The independently novel features of the conveying assembly are the shuttle means and its specific structure for moving a sheet of glass from the furnace to the bending station, the single unitary frame means for supporting a sheet in the bending station and moving it into the blasthead while simultaneously removing a sheet from the blasthead, the unique support of the forming surface means in the bending station against which a sheet is pressed for curving thereof, and an oscillating means in the blasthead for removing a sheet from the frame means and oscillating the sheet in the blasthead while it is being cooled.

3,723,086

**PROCESS FOR PRODUCING AMMONIUM PHOSPHATES AND POLYPHOSPHATES**

Paul C. Poyner, 2512 Woodthrus Road, and William H. Kessler, Osage Oak Mobile Homes-E-E of City both of Ponca City, Okla.

Filed May 20, 1971, Ser. No. 148,259

Int. Cl. C05b 7/00

U.S. Cl. 71—29

4 Claims

An improved process for producing ammonium phosphates and polyphosphates in a pipe reactor. The improvement com-

prises the addition of urea to a stream of merchant grade wet process phosphoric acid prior to commingling the acid stream with a stream of ammonia within a confined zone to reduce the formation of insoluble ammonium phosphate materials which tend to block the fluid flow in the confined zone.

3,723,087

**HERBICIDAL COMPOSITIONS AND METHODS**

John P. Chapp, Kirkwood, Mo., assignor to Monsanto Company, Saint Louis, Mo.

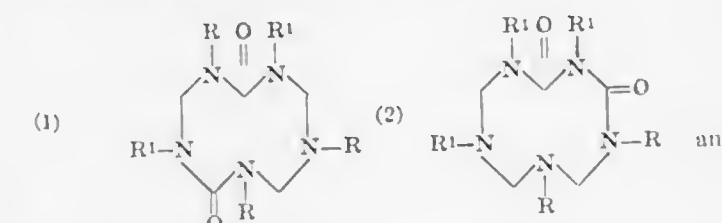
Division of Ser. No. 623,541, March 16, 1967, Pat. No. 3,609,143. This application Sept. 9, 1970, Ser. No. 70,892

Int. Cl. A01n 9/22

U.S. Cl. 71—92

8 Claims

Phytotoxic and soil sterilant compositions containing compounds of the formula  $(CH_2 = N-R)_3(R^1NCO)_2$  and having either of the following structures:



(3) mixtures of (1) and (2)

wherein R is alkyl having a maximum of four carbon atoms and R<sup>1</sup> is selected from the group consisting of mono- and dihalo-substituted phenyl and mononitrosubstituted phenyl are disclosed as well as phytotoxic methods employing such compositions.

3,723,088

**HERBICIDAL COMPOSITIONS AND METHODS**

Dagmar Berrer, Riehn/Baselstadt, and Christian Vogel, Binningen/Baseland, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 807,431, March 14, 1969, Pat. No. 3,583,987. This application Oct. 28, 1970, Ser. No. 84,863

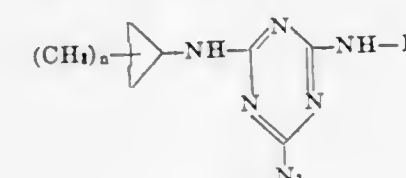
Claims priority, application Switzerland, March 20, 1968, 4148/68

Int. Cl. A01n 9/22

U.S. Cl. 71—93

10 Claims

Herbicidal compositions comprising azido-triazine derivatives of the formula



wherein n means 0 or 1 and R represents certain unsubstituted or substituted alkyl groups having a total of from three to six carbon atoms as herbicidally active compounds of enhanced toxicity to undesirable plant growth and improved selectivity are disclosed. A method of controlling undesirable plant growth with such compounds and compositions containing them as the active ingredient are also described.

3,723,089

**METHOD OF CONTROLLING WEEDS WITH ORGANOTIN COMPOUNDS**

Donald J. Peterson, Springfield Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Mar. 26, 1970, Ser. No. 23,019

Int. Cl. A01n 9/22

U.S. Cl. 71—94

6 Claims

Disclosed herein are compositions and a method for controlling the growth of weeds by contacting weeds with

a growth-controlling amount of certain N,N-disubstituted aminomethyl trialkyl tin compounds or quaternary ammonium salts thereof.

3,723,090

**DICHLORO TRIFLUOROMETHYL BENZOIC ACIDS AS AGROCHEMICAL AGENTS**

William J. Houlihan, Mountain Lakes, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Continuation-in-part of application Ser. No. 816,084, Apr. 14, 1969, which is a continuation-in-part of application Ser. No. 729,944, May 17, 1968, now abandoned. This application Jan. 22, 1971, Ser. No. 109,012

Int. Cl. A01n 9/24

U.S. Cl. 71—115

9 Claims

Dichloro trifluoromethyl benzoic acids are prepared from dichloro trifluoro toluene and are useful as plant growth regulators and herbicides.

3,723,091

**METHOD OF KILLING UNDESIRABLE PLANTS AND INSECTS**

Andre Allais, Les Lilas, and Pierre Girault, Paris, France, assignors to Roussel-Uclaf, Paris, France

No Drawing. Filed July 17, 1968, Ser. No. 745,365

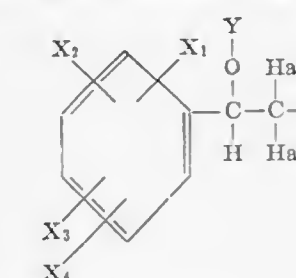
Claims priority, application France, July 18, 1967, 114,639; June 6, 1968, 153,981

Int. Cl. A01n 9/24

U.S. Cl. 71—122

16 Claims

Pesticidal halogenated organic compounds derived from 1-phenyl-2,2-dihalogeno ethanol, of general Formula I:



wherein

X<sub>1</sub> is selected from the group consisting of hydrogen, a halogen atom, a nitro group, a substituted or unsubstituted lower alkyl, and a lower alkyloxy,  
X<sub>2</sub>, identical with X<sub>1</sub> or different from X<sub>1</sub> is selected from the group consisting of hydrogen, a halogen atom, a substituted or unsubstituted lower alkyl and a lower alkyloxy,  
X<sub>3</sub> and X<sub>4</sub>, identical with or different from one another and identical with or different from X<sub>1</sub> and/or X<sub>2</sub> are selected from the group consisting of hydrogen and a halogen atom,  
Y is selected from the group consisting of hydrogen, a lower alkyl, a lower acyl and a group derived from a mineral acid,  
Z is selected from the group consisting of hydrogen and a lower alkyl, Hal is selected from the group consisting of a chlorine, a bromine and a iodine atom.

3,723,092

**COMPOSITE METAL POWDER AND PRODUCTION THEREOF**

John Stanwood Benjamin, Suffern, N.Y., assignor to The International Nickel Company, Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 709,700, Mar. 1, 1968, now Patent No. 3,591,362. This application Sept. 28, 1970, Ser. No. 75,882

Int. Cl. B22f 9/00

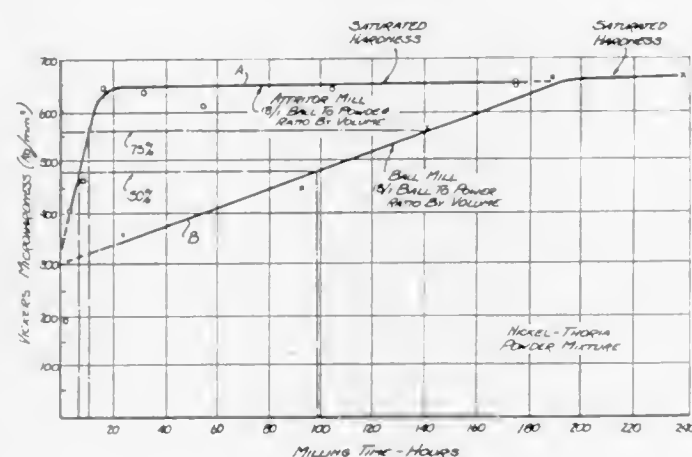
U.S. Cl. 75—5 R

27 Claims

A wrought composite metal powder, or mechanically alloyed metal powder, is provided comprised of a plurality of constituents, at least one of which is a metal capable of being compressively deformed, the composite powder being preferably in the heavily cold worked condition, i.e., having substantially the saturation hardness

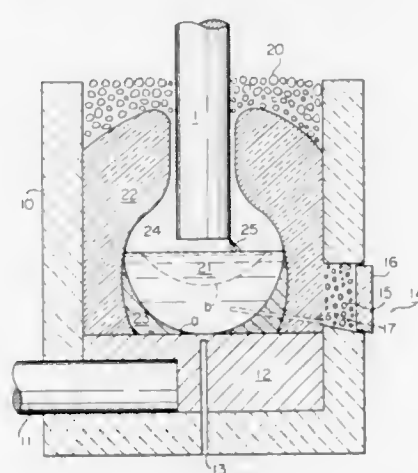


for the system involved, the particles thereof being characterized metallographically by an internal structure comprised of the starting constituents intimately united together and identifiably mutually interdispersed. The process employed in producing the composite metal powder resides in providing a dry charge of attritive elements and a powder mass comprising a plurality of constituents, at



least one of which is a metal capable of being compressively deformed, subjecting the charge to agitation milling under high energy conditions in which a substantial portion or cross section of the charge is maintained kinetically in a highly activated state of relative motion, and continuing the milling to produce wrought composite metal powder in which particles thereof have substantially the saturation hardness for the system involved.

**3,723,093**  
**PROCESS FOR THE CONTINUOUS PRODUCTION OF ALUMINUM**  
Tadahisa Shiba, Tokyo, Tamekazu Saito, Junzo Tsurugi, and Masaru Takahashi, Yokohama, and Kunihiro Goto, Kawasaki, Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan  
Filed May 5, 1970, Ser. No. 34,652  
Int. Cl. C22f 7/00, 21/00; C22d 7/02  
U.S. Cl. 75—10 R 7 Claims



A process for the production of aluminum which comprises subjecting a charge of alumina and carbon to the action of an electric arc in a furnace to form a molten mixture comprising aluminum and aluminum carbide, thereafter repeating the steps of (a) allowing the thus formed mixture to cool within the furnace to a temperature within the range of 1900–1400° C. (b) withdrawing free aluminum still in the molten state in said mixture out of the furnace and recovering the same, and (c) again subjecting the remainder in the furnace to the action of the electric arc, while feeding a subsequent charge of alumina and carbon, to form said molten mixture.

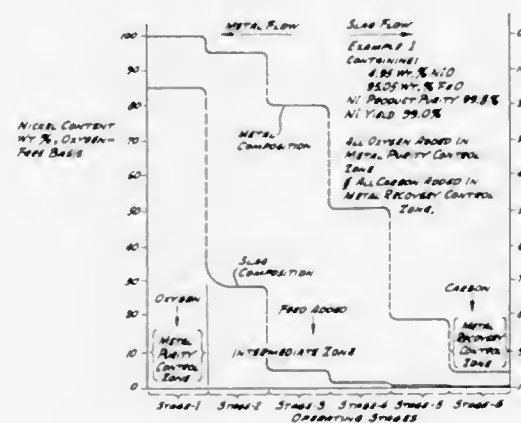
**3,723,094**  
**ELECTROFLUX SLAGS AND METHODS OF ELECTROFLUX REMELTING**  
Rene Schlatter, Derry Township, Westmoreland County, Pa., assignor to Latrobe Steel Company  
No Drawing. Filed Sept. 1, 1971, Ser. No. 177,177  
Int. Cl. C21c 5/52, 7/02

**U.S. Cl. 75—12 6 Claims**  
A method and a slag are provided for remelting sulfurized tool steels so as to retain control of the sulfur. The method of the invention includes melting a sulfurized tool steel, forming the steel into an electrode for electroflux remelting, remelting the electrode in an electroflux remelt practice under a slag having the composition  $\text{CaF}_2$  about 35% to about 60%,  $\text{Al}_2\text{O}_3$  about 20% to about 40%,  $\text{SiO}_2$  about 10% to about 30% and  $\text{CaSO}_4$  about 3% to 10% and finally solidifying the remelted sulfurized tool steel as an ingot.

**3,723,095**  
**EXTRACTION OF COPPER AND NICKEL FROM MANGANESE NODULES**  
Roald R. Skarbo, Lexington, Mass., assignor to Kennecott Copper Corporation, New York, N.Y.  
Filed July 16, 1970, Ser. No. 55,305  
Int. Cl. C22b 3/00, 15/10

**U.S. Cl. 75—21 13 Claims**  
Copper and nickel may be leached from complex ores containing manganese, iron, copper, nickel by leaching the complex ore with a solution containing manganese ions.

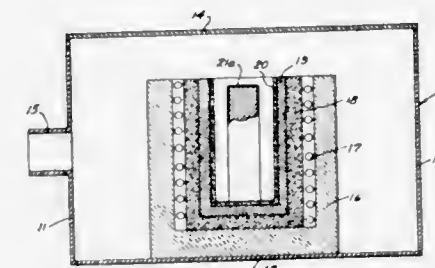
**3,723,096**  
**PRODUCTION OF METALS FROM METALLIFEROUS MATERIALS**  
Norman A. D. Parlee, Los Altos Hills, Calif., and William E. Mahin, Ashland, Oreg., assignors to Kaiser Industries Corporation, Oakland, Calif.  
Continuation-in-part of abandoned application Ser. No. 22,766, Mar. 26, 1970. This application Nov. 9, 1970, Ser. No. 88,023  
Int. Cl. C21b 15/00; C22b 7/00  
U.S. Cl. 75—21 50 Claims



In a furnace system, a process for separating and recovering a desired metal element from metalliferous materials, such as ores and alloys. A liquid slag phase of the oxides of the desired metal element and more oxidizable elements and a liquid metal phase containing the desired metal element and more oxidizable elements are caused to flow in paths extending between and inclusive of a metal purity control zone and a metal recovery control zone. The desired metal in high purity is obtained by maintaining a slag phase in the metal purity control zone that is rich in the oxide of the desired metal. Obtaining the desired metal in high yield is ensured by maintaining a metal phase in the metal recovery control zone that contains predetermined concentrations of the

more oxidizable elements. In one embodiment, the desired metal element and a more oxidizable metal element, both contained in a metalliferous material are recovered in separate liquid metal streams from a single furnace. The removal of certain impurities, such as phosphorus in iron, may require treatment with a reactive flux.

**3,723,097**  
**METHOD OF PREVENTING DROSS FORMATION DURING REMELTING**  
Harold L. Wheaton, Kensington, and Thomas H. Bishop, Alliance, Ohio, assignors to TRW Inc., Cleveland, Ohio  
Filed Jan. 18, 1971, Ser. No. 107,110  
Int. Cl. C22d 7/06  
U.S. Cl. 75—10 V 7 Claims



Method of minimizing dross formation during vacuum remelting of a nickel base or cobalt base alloy which is normally reactive with oxygen, by applying a metallic barrier layer about a charge of the alloy, the barrier layer being composed of a metal having a substantially lower affinity for oxygen than the reactive metals in the alloy, and melting the charge under vacuum conditions.

**3,723,098**  
**METHOD OF MANUFACTURING IRON BASE ALLOYS**  
Charles d'A. Hunt, Moraga, Calif., assignor to Airco Inc.  
Continuation-in-part of application Ser. No. 722,640, Apr. 19, 1968, which is a continuation-in-part of application Ser. No. 636,666, May 8, 1967. This application June 15, 1970, Ser. No. 46,156  
Int. Cl. C21c 5/52; C22d 7/00

**U.S. Cl. 75—12 11 Claims**  
Iron base alloys are manufactured by electron beam bombardment heating of a molten pool of an alloy at a reduced pressure, and controlling the heat input and the throughput rate of the molten alloy. The pressure is maintained no greater than  $10^{-1}$  torr, the power density of the beam is maintained in excess of about 20 kw. per square foot of the surface of the molten pool, and the molten alloy is exposed to the electron beam bombardment for a period sufficient to reduce the volatile metallic impurities to extremely low levels.

**3,723,099**  
**METHOD FOR STATIC CONTROL OF AN OXYGEN BLOWN CONVERTER**  
Katsukiyo Marukawa, Wakayama, Japan, assignor to Sumitomo Metal Industries, Ltd., Osaka, Japan  
Filed Dec. 29, 1970, Ser. No. 102,445  
Claims priority, application Japan, Jan. 28, 1970, 45/6,982  
Int. Cl. C21c 7/00

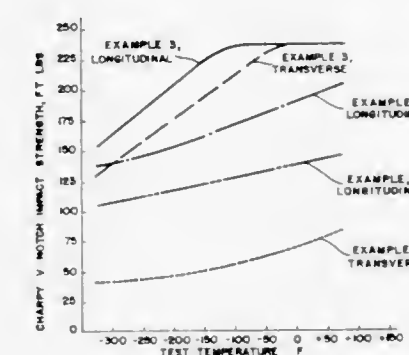
**U.S. Cl. 75—60 2 Claims**  
The method for controlling an oxygen blown converter comprising the steps of accumulating decarburizing characteristic values of the past charges obtained by analyzing waste gases exhausted from the mouth of the converter, sorting out charges of the past having refining conditions similar to those of the present control charge to make

them the reference charges, calculating the total required amount of oxygen blown assuming that the decarburizing conditions of the reference charges will reappear in the present control charges, and blowing oxygen with such values as the predetermined values.

**3,723,100**  
**CORE WIRE MATERIAL FOR WELDING OF SPHEROIDAL GRAPHITE CAST IRON**  
Hiroshi Matsumoto, Yono, Japan, assignor to Tokyo Kakin Kogyo Co., Ltd., Tokyo, Japan  
Filed Mar. 3, 1971, Ser. No. 120,420  
Claims priority, application Japan, Mar. 11, 1970, 45/20,347  
Int. Cl. C22c 37/04

**U.S. Cl. 75—123 CB 1 Claim**  
A core wire material for welding spheroidal graphite cast iron having a spheroidized graphite structure consisting essentially of 2.5 to 4.5% by weight of C, 1 to 4.5% by weight of Si, 0.005 to 0.1% by weight of Mn, 0.003 to 0.08% by weight of P, 0.001 to 0.01% by weight of S, more than 0.006% by weight of Ca, more than 0.0002% by weight of Ba and the balance being essentially Fe.

**3,723,101**  
**IRON BASE ALLOYS HAVING LOW LEVELS OF VOLATILE METALLIC IMPURITIES**  
Charles d'A. Hunt, Moraga, Calif., assignor to Airco, Inc.  
Continuation-in-part of application Ser. No. 722,640, Apr. 19, 1968, which is a continuation-in-part of application Ser. No. 636,666, May 8, 1967, both now abandoned. This application June 15, 1970, Ser. No. 46,443  
Int. Cl. C22c 39/14, 39/20  
U.S. Cl. 75—126 R 13 Claims



Iron base alloys having substantially improved physical and mechanical properties containing between about 4 and about 40% chromium, between 0 and about 15% nickel, low levels of carbon and nitrogen such that the carbon and nitrogen are in solid solution at room temperature, not more than about 6 p.p.m. total of the insoluble volatile metallic impurities lead, bismuth, cadmium, sodium, potassium, silver, calcium, magnesium, and barium, and not more than about 20 p.p.m. of the soluble volatile metallic impurities zinc and antimony.

**3,723,102**  
**HIGH STRENGTH IRON-CHROMIUM-NICKEL ALLOY**  
James H. C. Lowe, Moraga, Calif., assignor to Airco, Inc., New York, N.Y.  
Filed June 15, 1970, Ser. No. 46,393  
Int. Cl. C22c 39/20

**U.S. Cl. 75—128 R 7 Claims**  
Iron-chromium-nickel alloys having improved physical properties containing between 16 and 18 percent chromium and between 7 and 9 percent nickel, low levels of carbon and



nitrogen, not more than 6 ppm of insoluble volatile metallic impurities and not more than about 20 ppm soluble volatile ternary or higher alloys of refractory transition metals with carbon. Consolidation of the composites can be accomplished by melting and casting or powder metallurgy techniques.



metallic impurities. The alloys have yield strengths above 70 KSI at room temperature and impact strengths above 20 foot pounds at -320° F.

### 3,723,103 PROCESS FOR PRODUCING SOFT MAGNETIC MATERIALS

Tetsuo Kato and Katsusi Kusaka, Nagoya, Japan, assignors to Daido Seiko Kabushiki Kaisha, Nagoya-shi, Aichi-ken, Japan

Filed July 10, 1970, Ser. No. 53,893  
Int. Cl. C22c 39/04

U.S. Cl. 75—129 7 Claims

A process for producing soft magnetic alloys having improved cutting properties together with the intrinsic magnetic characters thereof which comprises adding at least one of elements of 0.03–0.30% of lead, 0.03–0.40% of selenium, 0.01–0.10% of tellurium, 0.03–0.40% of bismuth and 0.0010–0.010% of calcium in soft magnetic alloys which contain less than 0.05% of carbon, less than 5.0% of silicon, a part of silicon may be replaced with aluminum, and the remainder of substantially iron with or without elements for improving magnetic characters of the alloys, characterized in that melting is effected under the following conditions for satisfying both insurance of intrinsic magnetic characters of the soft magnetic materials and improvement of their machinabilities:

(i) Harmful elements in molten iron such as carbon, phosphorus and sulfur or oxides thereof are removed as far as possible.

(ii) Oxygen content in the molten iron before the addition of the above elements for improving machinabilities is maintained at most 200 p.p.m.

(iii) Temperature of molten iron at the time of the addition of the alloying elements for improving machinabilities is held at a temperature between 1570–1800° C.

(iv) The alloying elements for improving machinabilities are added in the form of fine particles or liquid state.

(v) The alloying elements for improving machinabilities are added in molten irons with thoroughly stirring.

### 3,723,104 REFRACTORY METAL ALLOY BONDED CARBIDES FOR CUTTING TOOL APPLICATIONS

Erwin Rudy, Beaverton, Oreg., assignor to Aerojet-General Corporation, El Monte, Calif.

Filed July 29, 1970, Ser. No. 59,063

U.S. Cl. 75—134 M 44 Claims

This patent describes a refractory metal bonded carbide alloy for use in cutting tools and in other applications where high hardness and abrasion resistance are required. The desired fine-grained composite structure is obtained preferably by metal phase precipitation of metal alloys within the carbide grains, of previously prepared certain

### 3,723,105 PROCESS FOR PREPARING SELENIUM-TELLURIUM ALLOYS

Nobuo Kitajima and Tatsuo Masaki, Tokyo, and Hideyo Kondo, Ibaragi-ken, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 13, 1971, Ser. No. 180,000

Claims priority, application Japan, Sept. 19, 1970, 45/82,399

Int. Cl. C22c 1/02; G03g 5/02

U.S. Cl. 75—134 H 1 Claim

A selenium-tellurium alloy suitable for electrophotographic photosensitive member is prepared by heating a mixture of selenium and tellurium containing 1–25% by weight of tellurium to a temperature not lower than 350° C. to melt the mixture, cooling gradually the molten selenium and tellurium to around the melting point of the selenium-tellurium alloy at a rate not higher than 100° C./hr. and then quenching to room temperature within 10 minutes.

### 3,723,106 MAGNETIC ALLOY

Juergen Schlenker, Parsippany, and Teh Po Wang, Cedar Grove, N.J., assignors to Wilbur B. Driver Co.

No Drawing. Filed May 23, 1969, Ser. No. 827,180

Int. Cl. C22c 19/00

U.S. Cl. 75—170 3 Claims

A magnetic alloy characterized by high permeability at low flux density and comprising, as expressed in percent by weight:

Molybdenum	4.25–5.25
Nickel	79–81
Manganese	0.25–0.75
Silicon	0.10–0.20
Titanium	0.05–0.15
Iron	Balance

### 3,723,107 NICKEL-CHROMIUM-COBALT ALLOYS FOR USE AT RELATIVELY HIGH TEMPERATURES

Edward Gordon Richards, West Hagley, Paul Isidore Fontaine, Solihull, and Michael John Fleetwood, Berkhamsted, England, assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Mar. 4, 1970, Ser. No. 16,091

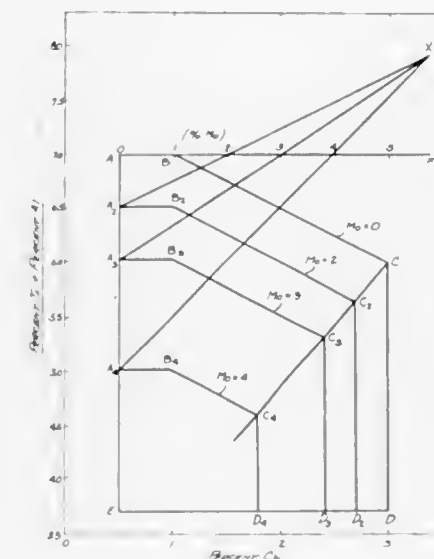
Claims priority, application Great Britain, Mar. 7, 1969, 12,261/69

Int. Cl. C22c 19/00

U.S. Cl. 75—171 2 Claims

Nickel-chromium-cobalt-base alloys containing correlated amounts of titanium, aluminum, columbium and,

when present, molybdenum, as well as carbon and other constituents offer a combination of high temperature stress-rupture strength, ductility and impact resistance



together with good corrosion resistance of such magnitude as to render the materials suitable for various gas turbine engine components.

### 3,723,108 NICKEL-CHROMIUM-COBALT ALLOYS

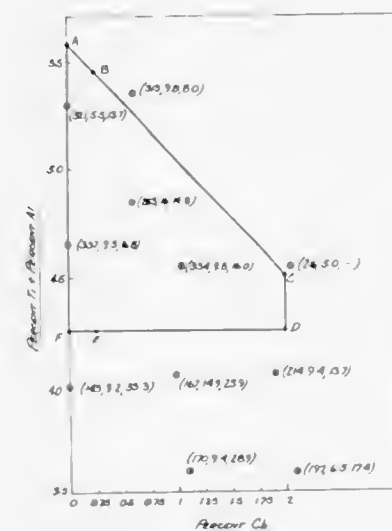
Peter Lindsay Twigg and Philip James Parry, Halesowen, England, assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Mar. 4, 1970, Ser. No. 16,367

Claims priority, application Great Britain, Mar. 7, 1969, 12,260/69

Int. Cl. C22c 19/00

U.S. Cl. 75—171 5 Claims



Nickel-chromium-cobalt-base alloys containing correlated amounts of titanium, aluminum, columbium and molybdenum as well as carbon and other constituents offer a combination of high temperature stress-rupture strength, ductility and impact resistance together with good corrosion resistance of such magnitude as to render the materials suitable for various gas turbine engine components.

### 3,723,109 EXTRUSION OF CANNED METAL POWDERS USING GRAPHITE FOLLOWER BLOCK

Robert Lacock, and John Stanwood Benjamin, both of Suffern, N.Y., assignors to The International Nickel Company, Inc., New York, N.Y.

Filed July 16, 1971, Ser. No. 163,481

Int. Cl. B22f 3/20

U.S. Cl. 75—214 9 Claims

In hot extruding a batch of dispersion-strengthened metal powder confined in a metal can through an extrusion die in which a uniformly high extrusion strain rate must be obtained, a graphite follower block of substantially the same diameter as the can is inserted between the end face of the extrusion ram and an end face of the heated can, the temperature of the block being at least substantially that of the canned powder, such that during extrusion, friction is markedly reduced by substantially inhibiting metal flashback from the can and the necessary high strain rate is obtained.

### 3,723,110 ELECTROPHOTOGRAPHIC PROCESS

William L. Goffe, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of application Ser. No. 608,606, Dec. 19, 1966, now Patent No. 3,573,906. This application Dec. 21, 1970, Ser. No. 99,939

The portion of the term of the patent subsequent to Apr. 4, 1988, has been disclaimed

Int. Cl. G03g 13/22

U.S. Cl. 96—1 PC 9 Claims

An electrophotographic plate and imaging process are disclosed. The plate comprises a conductive substrate coated with a thick organic insulating layer overcoated with a thin photoconductive layer. Images may be formed by electrostatically charging the plate, exposing it to an image and developing with electroscopic marking material.

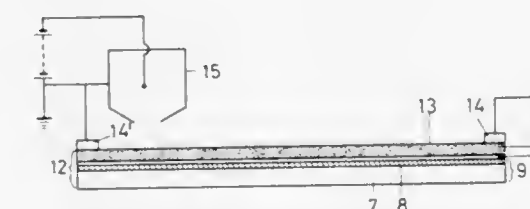
### 3,723,111 METHOD OF GROUNDING FOR AN ELECTRONIC PHOTOSENSITIVE PLATE

Motoki Kojima, Tokyo, Eturo Ochiai, Sagami-hara, and Yoji Katayanagi, Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd.

Filed Dec. 23, 1970, Ser. No. 101,032

Int. Cl. G03g 13/02, 15/02

U.S. Cl. 96—1 C 3 Claims



An improved method of grounding for an electronic photosensitive plate is disclosed. The method is characterized in that the surface of a photoconductive layer in said photosensitive plate comprising at least a conductive supporting base and the photoconductive layer, is partially grounded.

### 3,723,112 MANIFOLD IMAGING METHOD WHEREIN THE ACTIVATOR CARRIES A PLASTIC COATING MATERIAL

Ray H. Luebke, Jr., Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 675,989, Oct. 17, 1967, abandoned. This application July 10, 1970, Ser. No. 53,750

Int. Cl. G03g 13/22, 5/06

U.S. Cl. 96—1.2 13 Claims

An imaging system wherein a structure comprising a cohesively weak imaging layer sandwiched between a donor sheet



and a receiver sheet is used. The imaging layer is activated with an activator comprising at least two components, one of the components being a plastic, the other being a partial solvent for the imaging layer. Upon separation of the receiver and donor sheets a durable, workable, plastic surface is obtained on the image. This surface may then be buffed providing a transparency which will project a true color image.

3,723,113

## POLYCHROMATIC ELECTROSOLOGRAPHIC IMAGING PROCESS

William L. Goffe, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 609,056, Jan. 13, 1967, abandoned. This application Nov. 9, 1970, Ser. No. 87,666  
Int. Cl. G03g 13/04, 13/06, 13/22

U.S. Cl. 96—1.2

14 Claims

A polychromatic migration imaging system is disclosed. Typically, a plate of a conductive substrate coated with a softenable insulating layer overcoated with a mixture of different colored photosensitive particles is electrostatically charged, and exposed to a polychromatic image. The softenable layer is softened, allowing selective migration of some particles to the substrate, resulting in a polychromatic image.

3,723,114

## THERMOSETTING ELECTROSTATOGRAPHIC DEVELOPER OF A CARRIER AND PREPOLYMER OF DIALLYL PHTHALATE, ISOPHTHALATE AND MIXTURES

Robert J. Hagenbach, Rochester, and Robert W. Madrid, Macedon, N.Y., assignors to Xerox Corporation, Rochester, N.Y.

No Drawing. Filed Feb. 4, 1970, Ser. No. 8,710  
Int. Cl. G03g 9/02

U.S. Cl. 96—1.4

23 Claims

Electrostatographic developing powder (toner) comprised of a finely-divided colored resin a substantial portion of the resin being a solid, freeflowing and uncross-linked thermosetting resin which is a polymer of diallyl phthalate, or a polymer of diallyl isophthalate, preferably a homopolymer of diallyl phthalate having a softening range of 80° to 105° C. or a homopolymer of diallyl isophthalate having a softening range of 55°–95° C. The use of this toner in conjunction with a carrier for the development of a latent electrostatic image produces a final copy having improved storage properties.

3,723,115

## ELECTROPHOTOGRAPHIC PHOTSENSITIVE ZINC OXIDE POWDER MIXTURE

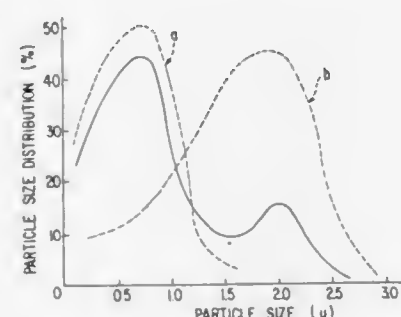
Hajime Miyatsuka, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 15, 1971, Ser. No. 106,721

Claims priority, application Japan, Jan. 16, 1970, 45/4330  
Int. Cl. G03g 5/08

U.S. Cl. 96—1.8

4 Claims



An electrophotographic member comprising a support layer and an electrophotographic photosensitive layer disposed on the support layer, the electrophotographic photosensitive layer comprising a powder mixture dispersed in an electrically

insulative film forming binder material, the powder mixture being a mixture of larger zinc oxide particles and smaller zinc oxide particles, the ratio by weight of the larger particles to the smaller particles being within the range from 4 : 6 to 1 : 9, the larger particles having an average particle diameter of 1.2 microns and the smaller particles having an average particle diameter of 0.8 microns, at least 60 percent by weight of the larger particles having a diameter not less than 1 micron and at least 70 percent by weight of the smaller particles having a diameter not more than 1 micron whereby the particle size distribution curve is characterized by the presence of two peaks respectively corresponding to the smaller and larger particles.

3,723,116

## ELECTROPHOTOGRAPHIC PHOTSENSITIVE MATERIALS

Kikuo Kinjo, Tokyo, Teruo Yamanouchi, Fujisawa, and Eichi Kondo and Yasuo Wada, Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed July 20, 1971, Ser. No. 164,340

Claims priority, application Japan, July 24, 1970, 45/64,834; Sept. 25, 1970, 45/84,522

Int. Cl. G03g 5/04

U.S. Cl. 96—1.6

6 Claims

A photosensitive material comprises a poly-9-vinylcarbazole or its derivative and a cyanine dye. The cyanine dye sensitizes the photosensitivity of poly-9-vinylcarbazole or its derivative and thereby the photosensitive material is suitable for electrophotography.

3,723,117

## METHOD FOR DEVELOPING SILVER HALIDE EMULSIONS

Joze Frans Willems, Wilrijk, Belgium, assignor to Agfa-Gevaert, Mortsel, Belgium

Filed Oct. 7, 1970, Ser. No. 78,914

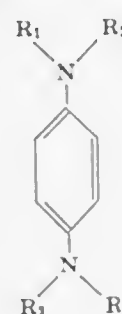
Claims priority, application Great Britain, Oct. 27, 1969, 52,565/69

Int. Cl. G03c 5/54, 5/30

U.S. Cl. 96—29

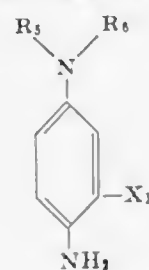
10 Claims

A photographic developing method is described which comprises developing an exposed silver halide emulsion layer of a photographic material with an aqueous alkaline composition in the presence of a hydroxylamine developing agent and a p-phenylene diamine or p-aminophenol derivative corresponding to one of the formulas



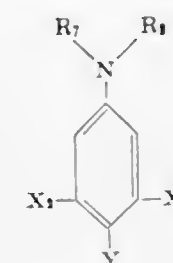
wherein:

R<sub>1</sub> stands for an alkyl group,  
R<sub>2</sub> stands for alkyl or for ethylene, substituted ethylene, propylene or substituted propylene attached to the adjacent ortho-carbon atom of the benzene ring,  
R<sub>3</sub> stands for alkyl, and  
R<sub>4</sub> stands for an alkyl group,  
at most one of R<sub>1</sub> and R<sub>4</sub> being substituted alkyl;



wherein:

each of R<sub>5</sub> and R<sub>6</sub> stands for an alkyl group, and  
X<sub>1</sub> stands for an electron-donating group; and



wherein:

each of X<sub>2</sub> and X<sub>3</sub> stands for hydrogen, halogen or an electron-donating group,  
Y stands for OH or NH<sub>2</sub>,  
R<sub>7</sub> stands for ethylene, substituted ethylene, propylene or substituted propylene attached to the adjacent ortho-carbon atom of the benzene ring, and  
R<sub>8</sub> stands for hydrogen, an alkyl group or has the same significance as R<sub>7</sub>, or  
R<sub>7</sub> together with R<sub>8</sub> and the N-atom to which they are attached from a pyrrolidine ring.

The p-phenylene diamine or p-aminophenol derivative has a super-additive developing affect with the hydroxyl amine developing agent.

3,723,118

## DIFFUSION TRANSFER PROCESS FOR PHOTOGRAPHIC SILVER HALIDE EMULSION

Haruhiko Iwano, Mitsugu Tanaka, Tetsuo Otsuki, and Atsuki Arai, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed June 8, 1971, Ser. No. 150,932

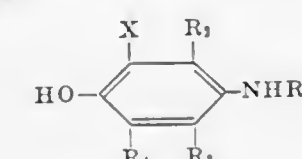
Claims priority, application Japan, June 8, 1970, 45/49,338

Int. Cl. G03c 5/54

U.S. Cl. 96—29

12 Claims

A high speed diffusion transfer process which comprises processing an exposed photographic silver halide material with a processing solution containing a compound represented by the following general formula or acid salt thereof:



wherein X is a lower alkenyl or a lower alkenoxy group, R<sub>1</sub> is hydrogen, or a lower alkyl group, and R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> each is hydrogen, a lower alkyl group, a lower alkenyl group or a lower alkoxy group, in which the term "lower" indicates that the total number of carbon atoms contained is not more than 4.

3,723,119

## PROCESS FOR PREPARING A LITHOGRAPHIC PRINTING PLATE CONTAINING AN OLEOPHILIC DIMER IMAGE OF AN OXIDIZED SILVER HALIDE DEVELOPING AGENT

Toshichi Yoshida, Takashi Nakamura, and Kinji Ohkuho, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of abandoned application Ser. No. 660,366, Aug. 14, 1967. This application Feb. 24, 1971, Ser. No. 118,493

Claims priority, application Japan, Aug. 12, 1966, 41/52,937

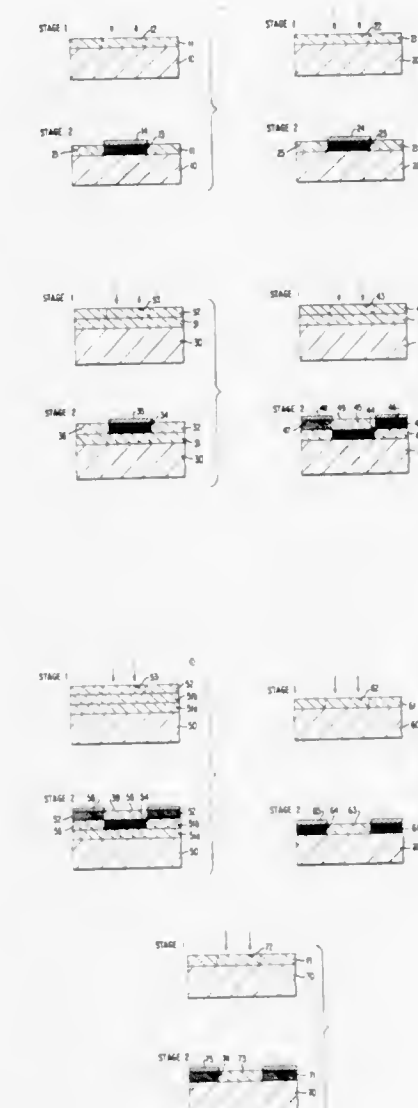
Int. Cl. G03f 7/02

U.S. Cl. 96—33

13 Claims

A lithographic printing plate and a method for its preparation comprising image wise exposing a silver halide

emulsion layer whose surface is hydrophilic and developing said layer with a developing agent which forms an oleophilic dimer from its oxidation product to produce on



the layer an oleophilic dimer image receptive to greasy ink wherein the developing agent is incorporated in either or both the layer and processing solution.

3,723,120

## PROCESS FOR HARDENING PHOTOHARDENABLE IMAGES

Karl Frederick Hummel, Robbinsville, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 763,028, Sept. 26, 1968, abandoned. This application Aug. 30, 1971, Ser. No. 176,309

Int. Cl. G03c 5/14

U.S. Cl. 96—35.1

9 Claims

Photographic images comprising photopolymerizable material on a base support are posthardened by immersing said images in a liquid medium that transmits actinic radiation and which is inert with respect to the photopolymerizable material, and exposing them to an intense source of actinic radiation for a short period.

3,723,121

## PROCESS FOR RECORDING IMAGES WITH LASER BEAMS

William Paul Hauser, Cranbury, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Nov. 3, 1970, Ser. No. 86,588

Claims priority, application Switzerland, Nov. 1, 1969, 16,307/69

Int. Cl. G03c 5/04, 5/24

U.S. Cl. 96—27

8 Claims

A process for laser beam recording by irradiating a layer of a thermochromic material chosen so that under ir-



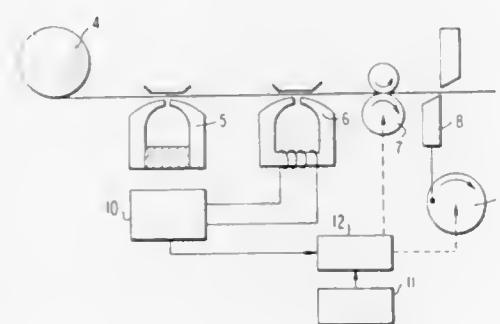
radiation with a laser of a particular color the material is converted by absorption of incident laser radiation to a color which transmits the incident laser beam so that no further change takes place.

**3,723,122**  
**METHOD OF AUTOMATICALLY CUTTING ROLLED PHOTOGRAPHIC PAPER WEB**  
Akira Yano, and Tsutomu Kimura, both of Ashigara-Kamigun, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 22, 1970, Ser. No. 100,738  
Claims priority, application Japan, Dec. 24, 1969, 44/104007

Int. Cl. B26d 5/36  
U.S. Cl. 96—48 R

2 Claims



A running photographic web is severed at predetermined locations by placing magnetizable material on the rear side of the same during printing, magnetizing the material after photo development and severing in response to a detection signal caused by the moving magnetized material passing stationary detecting means.

### 3,723,123 MULTICOLOR REPRODUCTIONS

Rexford W. Jones and William B. Thompson, Columbus, Ohio, assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

No Drawing. Continuation-in-part of applications Ser. No. 796,897, Feb. 5, 1969, now abandoned, Ser. No. 833,771, June 16, 1969, now Patent No. 3,677,759, and Ser. No. 849,493, Aug. 12, 1969, now abandoned. This application Mar. 10, 1971, Ser. No. 123,083

Int. Cl. G03c 5/24; B05c 1/16  
U.S. Cl. 96—48

46 Claims

The method of forming a multicolor reproduction which comprises: coating a substrate bearing a first color in image-wise configuration with a solid, light-sensitive organic layer having a thickness of at least 0.1 micron while maintaining said first color in its image-wise configuration, said light-sensitive organic layer being capable of developing a  $R_d$  of 0.2 to 2.2; exposing said light-sensitive organic layer to actinic radiation in image-receiving manner to establish a potential  $R_d$  of 0.2 to 2.2; applying to said layer of organic material, free flowing powder particles of a second color having a diameter, along at least one axis, of at least about 0.3 micron but less than 25 times the thickness of said organic layer; while the layer is at a temperature below the melting points of the powder and of the organic layer, embedding said powder particles as a monolayer in a stratum at the surface of said light-sensitive layer to yield an image having portions varying in density in proportion to the exposure of each

portion; and removing non-embedded particles from said organic layer to develop a multicolor reproduction.

**3,723,124**  
**DYE IMBIBITION IMAGES**  
Rexford W. Jones and William B. Thompson, Columbus, Ohio, assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

No Drawing. Continuation-in-part of applications Ser. No. 796,897, Feb. 5, 1969, now abandoned, Ser. No. 833,771, June 16, 1969, now Patent No. 3,677,759, and Ser. No. 849,520, Aug. 12, 1969, now abandoned. This application Mar. 10, 1971, Ser. No. 123,085

Int. Cl. G03c 5/24; B05c 1/16  
U.S. Cl. 96—48

42 Claims

The process for forming molecularly dispersed dye imbibition images of improved tonal qualities and handling properties which comprises (1) treating a substrate bearing a solid, organic layer holding a monolayer of powder particles in image-wise configuration, said powder particles comprising a dye, with vapors of a material which is a solvent for said dye and capable of swelling the surface of said substrate, molecularly imbibing said dye into said substrate, and (2) removing said solid, organic layer with a material which is a solvent for said solid, organic layer and a poor solvent for the surface of the substrate.

**3,723,125**  
**PROCESS FOR THE FORMATION OF COLOR PHOTOGRAPHIC IMAGES**  
Jun Hayashi, Reiichi Ohi, Tadao Shishido, and Tokiharu Kondo, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

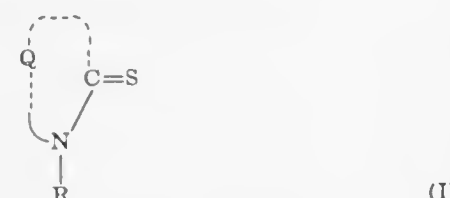
No Drawing. Filed Sept. 8, 1970, Ser. No. 70,555

Claims priority, application Japan, Sept. 5, 1969, 44/7,068; Apr. 2, 1970, 45/28,712

Int. Cl. G03c 7/00  
U.S. Cl. 96—56.2

17 Claims

A process for the formation of color photographic images by processing a multi-layer type color photographic light-sensitive material having at least two silver halide emulsion layers on a support, which comprises developing said light-sensitive material in the presence of a compound having the following general Formula I



wherein Q represents an atomic group necessary to complete a heterocyclic ring which may be substituted, and wherein R is selected from the group consisting of an alkyl group, a substituted alkyl group, an aryl group, a substituted aryl group, and a heterocyclic group, is disclosed.

**3,723,126**  
**PHOTOGRAPHIC DEVELOPERS WITH TITANOUS DIETHYLENETRIAMINEPENTAACETIC ACID**  
Harry J. Price, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Oct. 1, 1971, Ser. No. 185,843

Int. Cl. G03c 5/38  
U.S. Cl. 96—61 M

8 Claims

Certain titanium complex, silver halide developing agents in photographic diffusion transfer systems provide stable, developed images over a broad pH range. They can be employed in monobaths and in combination with various addenda, including other developing agents and silver halide solvents.

### 3,723,127 MULTILAYERED COLOR PHOTOGRAPHIC MATERIAL

Tetsuo Yano, Noboru Itoh, Sigeru Iguchi, Bunzo Ueda, and Eiji Kanada, Kyoto, Japan, assignors to Mitsubishi Paper Mills, Inc., Tokyo, Japan

No Drawing. Filed July 30, 1970, Ser. No. 59,688

Claims priority, application Japan, Aug. 6, 1969, 44/62,156

Int. Cl. G03c 1/76  
U.S. Cl. 96—74

22 Claims

A multilayered color photographic material having increased viscosity and coagulation temperature at application and having excellent permeability of treating solution at development and providing good hard film after fixing can be obtained by incorporating a styrene/maleic anhydride copolymer and/or a condensation reaction product of said copolymer and polyvinyl alcohol in gelatin.

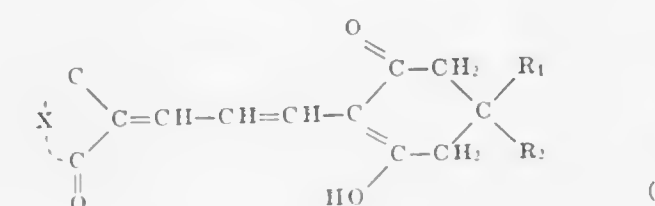
**3,723,128**  
**PHOTOGRAPHIC MATERIAL CONTAINING FILTER DYES**  
Eric MacDonald, Llanbrynmair, Wales, and Frederick Campbell, Manchester, both of England, assignors to Ilford Limited, Ilford, England

Filed June 2, 1971, Ser. No. 149,398  
Claims priority, application Great Britain, June 3, 1970, 26,841/70

Int. Cl. G03c 1/84  
U.S. Cl. 96—84 R

4 Claims

This invention relates to new polymethinioxanol dye-stuffs. They correspond to the formula



wherein X is the residue of a heterocyclic ring system and  $R_1$  and  $R_2$  are hydrogen atoms or optionally substituted alkyl or aryl groups. They are useful for incorporation in photographic silver halide material and able to correct various deficiencies of such material.

**3,723,129**  
**BITE-SIZE BODY OF HAY**  
Richard W. Bushmeyer, Rockford, Ill., and Charles D. Miller, deceased, late of Rockford, Ill., by John Holmstrom, Jr., administrator, Rockford, Ill., assignors to J. I. Case Company

Continuation-in-part of application Ser. No. 770,900, Oct. 23, 1968, which is a continuation of application Ser. No. 638,665, May 15, 1967, which in turn is a continuation of application Ser. No. 236,742, Nov. 9, 1962, all now abandoned. This application May 27, 1970, Ser. No. 40,964

Int. Cl. A23k 1/00  
U.S. Cl. 99—2

1 Claim

A small or bite-size self-sustaining pellet of animal food in the form of a cylindrical continuous ribbon-like body of material which is spirally wound about the axis of the cylinder with the layers having a relatively higher density near the outer perimeter relative to the layers in the open center. The ribbon-like body of material is also helically wound about the axis of the cylinder.

### 3,723,130 FOOD ADDITIVE COMPOSITION OF SQUALENE, OLEYL ALCOHOL AND OLEIC AND LINOLEIC ACID

John L. Stephenson, 9004 Orange Hunt Lane, and Joseph V. Gaven, Jr., 8606 Canterbury Drive, both of Annandale, Va. 22003

No Drawing. Continuation-in-part of application Ser. No. 814,820, Apr. 9, 1969, which is a continuation-in-part of application Ser. No. 675,064, Oct. 13, 1967. This application Dec. 21, 1971, Ser. No. 210,551

Int. Cl. A23k 1/16, 1/10; A23d 5/00  
U.S. Cl. 99—2 F

20 Claims

A composition useful for significantly improving animal acceptance of feeds which consists essentially of effective amounts of squalene, oleyl alcohol, oleic acid and linoleic acid including methods of using the same. Suitable additives also include the use of squalene or oleyl alcohol or mixtures thereof alone as well as in combination with oleic and linoleic acids.

**3,723,131**  
**PREPARATION OF READY-TO-EAT PEANUT BUTTER CONTAINING CEREAL**  
Douglas G. Bixby, Cary, and Kenneth L. Helmke, Elgih, both of Ill., assignors to The Quaker Oats Company, Chicago, Ill.

Filed Oct. 6, 1970, Ser. No. 78,627

Int. Cl. A23i 1/10, 1/18  
U.S. Cl. 99—83

5 Claims

A ready-to-eat breakfast cereal impregnated with a non-heat-degraded liquefied peanut butter is produced by preparing a cereal base, drying the base to below 14 percent by weight moisture, permeating the dried base with liquid peanut butter, and further drying the permeated base.

**3,723,132**  
**SHELF-STABLE PASTRY PRODUCT**  
William V. Hodge, Evansville, Ind., and Charleston R. Lee, Bethel, Conn., assignors to General Foods Corporation, White Plains, N.Y.

No Drawing. Filed Apr. 2, 1971, Ser. No. 130,809

Int. Cl. A21d 13/08  
U.S. Cl. 99—92

4 Claims

Fat-fried pastry product in which stalage is retarded when stored at room temperatures for periods of up to a year or more are prepared from a dough mix comprising a unique combination of flour, starch and stearyl-2-lactylate. The texture is improved to the point of freshness when the fried products are heated prior to consumption.

**3,723,133**  
**METHOD OF PREPARING A DEHYDRATED DEACIDIFIED CITRUS JUICE PRODUCT**  
Robert E. Berry and Charles J. Wagner, Jr., Winter Haven, Fla., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Feb. 7, 1972, Ser. No. 224,281

Int. Cl. A23i 1/02  
U.S. Cl. 99—105

1 Claim

A dehydrated deacidified citrus juice product and the method of preparing said product are disclosed. The method comprises processing citrus juices so as to obtain a low acid dehydrated product of relatively high Brix to acid ratio. The product is powdery, anhydrous, and is useful in blending with other products to lower acidity and improve quality.







butyrate, cellulose propionate, and co-esters thereof, have markedly improved heat stability in regard to color and inherent viscosity when stabilized with combinations of certain sulfides, particularly di-tridecyl-3,3'-thiodipropionate, and certain epoxides, particularly resorcinol bisglycidyl ether, each in a concentration of from about 0.01 to about 10.0 parts by weight per 100 parts by weight of the cellulose ester.

3,723,148

## PROCESS FOR RECOVERING COATING MATERIALS

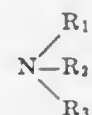
George L. Tupper, St. Clair Shores, Mich., assignor to Oxy Metal Finishing Corporation, Warren, Mich.  
No Drawing. Continuation of abandoned application Ser. No. 798,169, Feb. 10, 1969. This application Mar. 15, 1971, Ser. No. 124,435

Int. Cl. B05c 11/10

U.S. Cl. 106—287 PR

3 Claims

A process for deactivating or "killing" the overspray particles of a paint or similar coating material which comprise contacting the material with an aqueous alkaline solution which contains an organic nitrogen compound of the formula:



wherein  $R_1$ ,  $R_2$  and  $R_3$  are independently selected from the group consisting of hydrogen, alkanol and hydroxy ether groups, which latter groups contains from about 2 to 10 carbon atoms, at least one of  $R_1$ ,  $R_2$  and  $R_3$  being other than hydrogen, the organic nitrogen compound having a boiling point of at least about 100 degrees C. and a molecular weight which is not substantially in excess of about 500. Preferably, the alkaline solution is an aqueous solution of sodium hydroxide and/or sodium silicate and the preferred organic nitrogen compound is triethanol amine.

3,723,149

## TREATMENT OF TITANIUM DIOXIDES

Colin Francis Cole, and Stanley Powell, both of Stockton-on-Tees, England, assignors to British Titan Limited, Billingham, Teesside, England

Filed March 18, 1971, Ser. No. 125,881

Claims priority, application Great Britain, March 21, 1970, 13,780/70

Int. Cl. C09c 1/36

U.S. Cl. 106—300

9 Claims

A process for the neutralization of pyrogenic titanium dioxide in which the dioxide is treated with steam at a temperature not exceeding 300°C in order that the majority of the acidity of the pigment may be removed and with a vapor of an organic amine to enable the neutralization process.

3,723,150

## SURFACE MODIFICATION OF CARBON FIBERS

Melvin L. Druin, West Orange, George R. Ferment, Dover, and Velliyur N. P. Rao, North Plainfield, N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Aug. 20, 1970, Ser. No. 65,456

Int. Cl. C08h 17/08, 17/10

U.S. Cl. 106—307

4 Claims

A continuous process is provided for modifying the surface characteristics of a carbonaceous fibrous material (either amorphous carbon or graphitic carbon) and to thereby facilitate enhanced adhesion between the fibrous material and a matrix material. The fibrous material is continuously passed through a heating zone containing gaseous carbon dioxide under conditions found suitable

for bringing about the desired surface modification. Composite articles of enhanced interlaminar shear strength may be formed by incorporating the fibers modified in accordance with the present process in a resinous matrix material.

3,723,151

## DISPERSING AGENTS

Margaret Peddie Backhouse, South Ascot, Arthur Topham, Middleton, and Bernard Tury, Kempton, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Aug. 20, 1971, Ser. No. 173,628

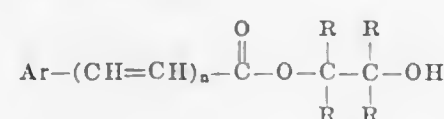
Claims priority, application Great Britain, Sept. 7, 1970, 42,760/70; Nov. 13, 1970, 54,130/70

Int. Cl. C08h 17/02

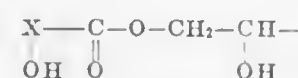
U.S. Cl. 106—308 Q

4 Claims

A dispersant comprising the reaction product of (a) a compound of the formula:



wherein Ar is an aromatic group,  $n$  is 0 or 1, from 2 to 3 R groups are individually hydrogen, methyl and ethyl and the remaining R group or groups individually or the remaining group  $\text{R}-\text{C}-\text{C}-\text{R}$  in combination provides a solvatable chain-like component of at least 12 links, or (b) an addition polymer compound which is solvated by an organic liquid and which contain at least one group of the formula:



wherein X is an aliphatic radical which optionally contains an additional hydroxy group or groups, with an organic monoisocyanate or with an organic diisocyanate which has already been or is simultaneously or subsequently reacted with an alcohol or amine so that in effect it behaves as a monoisocyanate and the use of the said dispersant for preparing dispersions of solids in organic liquids.

3,723,152

## DRYING OIL COMPOSITIONS, COBALT DRIER COMPOSITIONS THEREFOR AND PROCESS OF MAKING SAME

Anthony Alkaitis, Cleveland Heights, and Gordon A. Thomas, Rocky River, Ohio, assignors to Mooney Chemicals, Inc., Cleveland, Ohio

No Drawing. Continuation of abandoned application Ser. No. 566,761, July 21, 1966. This application Nov. 27, 1970, Ser. No. 93,388

Int. Cl. C09f 9/00

U.S. Cl. 106—310

10 Claims

Basic cobalt salts of neodecanoic acid have a stoichiometric excess of cobalt relative to that acid, as compared with neutral cobaltous salt of the acid, and are oil-soluble. Thus they are useful with hydrocarbon diluent as drier compositions and in drying oil compositions. The drier compositions can contain a high cobalt content, e.g., 12% cobalt by weight of the drier compositions. These salts have an amount of metal such that the sum of the stoichiometric amount of the metal and the excess corresponds to at least about 115% of the amount for neutralization of the acid by cobalt metal. The process used to make such salt reacts an excess of the metal with the acid in the presence of water and oxygen-containing gas for a time longer than required to neutralize the acid with metal. Then water is removed.

3,723,153

## PROCESS FOR THE PRODUCTION OF A POWDERY COLORING AGENT AND PELLETS OF POLYALKYLENE RESIN COVERED THEREWITH

Yoshiaki Nagata, Suita, Yatuhiro Higo, Settsu, Satoshi Hirabayashi, Hyoto, and Eiichi Morozumi, Ibaragi, Japan, assignors to Dainippon Ink and Chemicals, Incorporated, Tokyo, Japan

Continuation of abandoned application Ser. No. 844,146, July 23, 1969. This application Nov. 20, 1970, Ser. No. 91,554

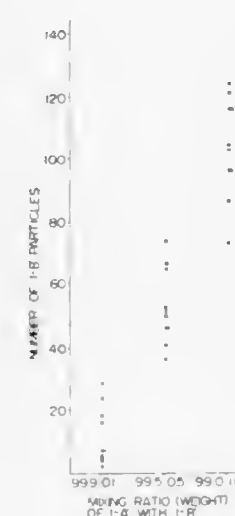
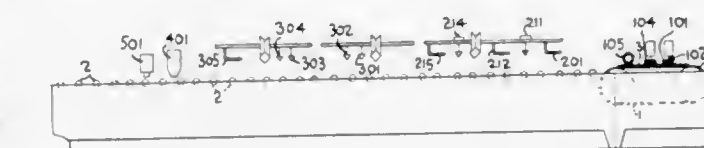
Claims priority, application Japan, July 24, 1968, 43/51,835; July 31, 1968, 43/53,609

Int. Cl. B44d 1/94

U.S. Cl. 117—21

1 Claim

parent coating having a metallic luster and good uniformity. Especially valuable transparent substrates are provided in which the contemplated coatings are certain boron containing metal films. Transparent articles having especially attractive neutral colored films of nickel have been provided. Other articles having films of cobalt and/or iron have also been provided.



A coloring agent for a polyalkylene is obtained by uniformly mixing an antistatic agent with a mixture of a low molecular weight polyalkylene and a pigment. When said coloring agent is blended with pellets of a polyalkylene, the surfaces of the pellets are uniformly covered with said coloring agent and colored pellets of a polyalkylene are obtained.

3,723,154

## PHOTOGRAPHIC ELEMENTS CONTAINING COMPOUNDS DERIVED FROM CYANOMETHYL SULFONES

Gene L. Oliver, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed June 21, 1971, Ser. No. 155,294

Int. Cl. G03c 1/84

U.S. Cl. 117—33.3

12 Claims

Merocyanine dyes derived from certain cyanomethyl-sulfone compounds are useful as ultraviolet filter dyes, especially for photographic elements. 2,2'-bis-([3-(3-sulfopropyl)-2-thiazolidinylidene]ethylidene)-2,2'-decamethylenedisulfonyl]diacetonitrile, disodium salt and tetramethylene bis(11-{3-[3-(3-sulfopropyl)-2-thiazolidinylidene]-1-cyanopropenylsulfonyl}undecanoate), disodium salt are illustrative of the filter dyes of the invention.

3,723,155

## WET CHEMICAL METHOD OF PRODUCING TRANSPARENT METAL FILMS

Charles B. Greenberg, Turtle Creek, and Roy G. Crissman, Lower Burrell, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed July 23, 1970, Ser. No. 57,527

Int. Cl. B32b 17/06; B44d 1/08; C03c 17/10

U.S. Cl. 117—35 S

19 Claims

This invention relates to wet chemical methods of providing non-conductive transparent substrates with a trans-

parent coating having a metallic luster and good uniformity. Especially valuable transparent substrates are provided in which the contemplated coatings are certain boron containing metal films. Transparent articles having especially attractive neutral colored films of nickel have been provided. Other articles having films of cobalt and/or iron have also been provided.

3,723,156

## RECORD MATERIAL

Bruce W. Brockett and Robert E. Miller, Dayton, and Mary L. Hinkle, Middletown, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

No Drawing. Filed June 14, 1971, Ser. No. 153,079

Int. Cl. B41m 5/10

U.S. Cl. 117—36.2

8 Claims

Sensitized record sheet material, suitable for developing useful color in oily, colorless, chromogenic dye-precursor inks applied thereto. Said record sheet material has a coating comprising an oil-soluble metal salt and an oil-soluble phenol-formaldehyde novolak resin.

3,723,157

## PRODUCTION OF RESIN IMPREGNATED FIBROUS GRAPHITE RIBBONS

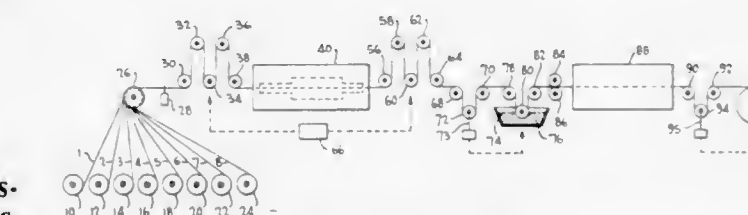
Melvin Druin, West Orange, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Nov. 7, 1969, Ser. No. 874,731

Int. Cl. C01b 31/04

U.S. Cl. 117—46 CB

24 Claims



A process is provided wherein resin impregnated graphite ribbons may be efficiently produced which may be used in the manufacture of fiber reinforced composite structures. A plurality of multifilament bundles of a fibrous material capable of undergoing graphitization are continuously passed through a



graphitization zone from which they are continuously conveyed to and through a coating zone in which they are impregnated with a thermosetting resin. Throughout the continuous process of the invention, the multifilament bundles are provided in an essentially parallel relationship in the form of a ribbon and are continuously passed in the direction of their length. The ribbon product of the invention is particularly suited for use in the formation of strong lightweight composites by filament winding, or other composite forming techniques.

3,723,158

# TRANSPARENT METAL FILMS AND WET CHEMICAL METHOD OF PRODUCING THE SAME

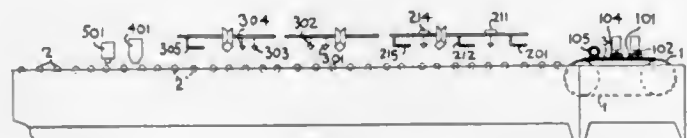
Richard G. Miller, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 829,755, June 2, 1969, now Patent No. 3,672,939. This application July 23, 1970, Ser. No. 57,451

Int. Cl. B44d 1/08; C03c 17/10

U.S. Cl. 117—47 A

24 Claims



This invention relates to wet chemical methods of providing nonconductive transparent substrates with a transparent coating having a metallic luster and good uniformity. Especially valuable transparent substrates are provided in which the contemplated coatings are certain boron containing metal films. Transparent articles having especially attractive neutral colored films of nickel have been provided. Other articles having films of cobalt and/or iron have also been provided.

As one embodiment, this invention relates to the formation of extremely uniform transparent metal-boron films, such as nickel-boron, cobalt-boron, iron-boron or mixtures thereof on transparent plates of glass. These films may be produced by certain essential steps involving: activating a glass substrate in a conventional manner, e.g., by contacting the glass with a dilute aqueous solution of a stannous salt to sensitize said glass; thereafter contacting said glass with an aqueous palladium salt to further activate said glass; and then spraying two aqueous alkaline solutions—one containing a chelated metal salt and the other containing a borohydride reducing agent—onto said activated glass to form a transparent metal and boron containing film by reduction of the metal salt. Transparent viewing closures which exhibit a controlled transmittance and reflectivity (within limits specified herein), which are substantially free from localized deviations that are visible to the eye, and which reflect a large percentage of the solar radiation impinging thereon are produced in this manner.

3,723,159

# METHOD FOR THE PRODUCTION OF A PHOTOGRAPHIC ELEMENT

Sumitaka Tatsuta and Wataru Ueno, Minami Ashigaramachi, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara-shi, Kanagawa, Japan

No Drawing. Filed Jan. 14, 1971, Ser. No. 106,595

Claims priority, application Japan, Jan. 14, 1970,

45/4,163

Int. Cl. G03c 1/78

U.S. Cl. 117—47 A

12 Claims

A method for the production of a photographic element which comprises ozone-oxidizing a roughened, bi-

axially stretched polystyrene film and applying thereon a suspension containing gelatin as the binder, and photographic element thus formed.

3,723,160

# ZINC-PLATING COMPOSITIONS

Jun Tanaka, Toshihiko Taguchi, and Mikio Watanabe, Tokyo, Japan, assignors to Senju Metal Industry Co., Ltd., Tokyo, Japan

Filed Oct. 7, 1970, Ser. No. 78,798

Claims priority, application Japan, Oct. 22, 1969,

44/83,875

Int. Cl. B44d 1/34; C23c 5/00

U.S. Cl. 117—50

3 Claims

A novel zinc-plating composition comprising zinc powder and a flux consisting of a formamide and/or acetamide medium and zinc chloride, ammonium chloride, stannous chloride and lead chloride is provided. This composition gives good zinc plating on the surface of steel materials by simply being applied to the surface and heated. Up to 1% aluminum may be added to said zinc powder. Aluminum prevents growth of the zinc-ion alloy layer. Also a primary flux solution consisting of zinc chloride, ammonium chloride, stannous chloride, hydrochloric acid and water is provided, which is used for pre-treating the surface to be zinc-plating for activation thereof. Use of these compositions makes possible zinc plating of large size steel materials and structures including ship bottoms.

3,723,161

# PROCESS AND APPARATUS FOR THE PRODUCTION OF SYNTHETIC LEATHER

Heinz Fleissner, Egelsbach, Germany, assignor to Vepa AG, Basel/Schweiz, Switzerland

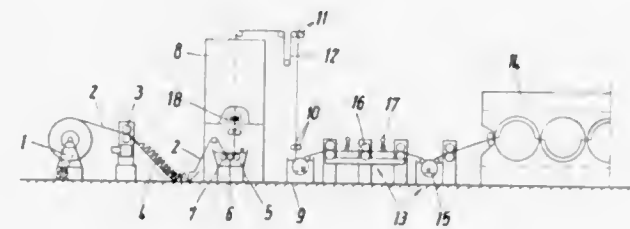
Filed July 31, 1970, Ser. No. 59,877

Claims priority, application Germany, July 31, 1969, P 19 38 966.3; Aug. 12, 1969, P 19 40 954.2; Nov. 5, 1969, P 19 55 653.7; March 2, 1970, P 20 09 662.2

Int. Cl. B44d 1/092

U.S. Cl. 117—66

20 Claims



An apparatus and method for producing synthetic leather comprising the manipulative steps of impregnating, drying and coagulating, shrinking, washing and finally drying a fibrous web.

3,723,162

# PRETREATMENT OF METAL SURFACES

Lambis Leontaritis, Cologne; Nikolaus Schon, Leverkusen, and Hans Hoffmann, Leichlingen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 14, 1970, Ser. No. 98,104

Claims priority, application Germany, Dec. 30, 1969, P 19 65 586.8

Int. Cl. C23f 1/100

U.S. Cl. 117—71 M

9 Claims

Sheet metal whose surfaces have been freshly prepared chemically as by pickling and/or nickel coating, is covered with a coating of a water-soluble polyphosphate which may include an emulsifier and/or a water-soluble organic polymer,

preferably film-forming. The coating protects the fresh surface during storage and/or shaping and the metal may thereafter be enamelled either with or without prior removal of the polyphosphate coating.

3,723,163

# PROCESS FOR SEALING A SURFACE AND RESULTANT SURFACE

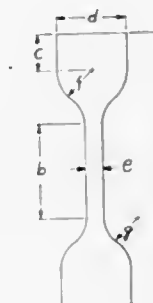
Gerald F. Schumacher, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of abandoned application Ser. No. 814,754, Apr. 9, 1969. This application May 28, 1971, Ser. No. 147,875

Int. Cl. B32b 13/12; B44d 1/14

U.S. Cl. 117—72

16 Claims



A process for sealing concrete by providing a composite of two layers, one layer being capable of bridging cracks in the cement even during extreme temperature variations, and the other layer being tough and abrasion- and wear-resistant, both layers comprising a urethane polymer resulting from in situ curing of evenly applied, separate coatings of moisture curable, isocyanate terminated prepolymer.

3,723,164

# MOTTLE PREVENTING TREATMENT FOR PAPERBOARD

Joseph Marton and Terezia Marton, Silver Spring, Md., assignors to Westvaco Corporation, New York, N.Y.

No Drawing. Filed Apr. 29, 1971, Ser. No. 138,809

Int. Cl. B44d 1/14

U.S. Cl. 117—76 P

4 Claims

Paper and paperboard, for use in packaging detergents containing a persalt such as sodium perborate, are treated with a water-soluble inorganic alkali salt such as sodium nitrite and a buffering agent selected from the group consisting of calcium carbonate, magnesium carbonate and sodium silicate, to stabilize the sodium nitrite in the paperboard, and prevent the paper and paperboard from becoming mottled in the presence of the perborate containing detergent under extremely adverse climatic conditions due to oxidative degradation of carbohydrate and protein materials in and on the paper or paperboard.

3,723,165

# MIXED METAL AND HIGH-TEMPERATURE PLASTIC FLAME SPRAY POWDER AND METHOD OF FLAME SPRAYING SAME

Frank N. Longo, East Northport, L.I., and George J. Durmann, Farmingdale, L.I., both of N.Y., assignors to Metco, Inc., Westbury, L.I., N.Y.

Continuation-in-part of Ser. No. 16,247, March 3, 1970, abandoned. This application Oct. 4, 1971, Ser. No. 186,492

Int. Cl. B44d 1/097; B05b 7/22

U.S. Cl. 117—93.1 PF

14 Claims

The flame spraying of high temperature plastic powder as for example polyimides, polyamide-polyimides, polyester

3,723,166

# UNSATURATED GRADED-RUBBER AND VINYL MONOMER PAINT

Olin B. Johnson, 27406 Vargo, Livonia, Mich. 48152, and Santokh S. Labana, 657 Cronin Drive, Dearborn Heights, Mich. 48127

No Drawing. Filed Dec. 21, 1970, Ser. No. 100,390

Int. Cl. C08g 45/04

U.S. Cl. 117—93.31

10 Claims

A radiation-curable paint which on a pigment and particulate filler-free basis consists essentially of vinyl monomers and particulate graded-rubber having alpha-beta olefinic-unsaturation surface functionality. The coating is applied as a film-forming dispersion to the surface of a substrate and cured thereon by ionizing radiation, e.g., an electron beam. This application is further directed to articles of manufacture coated with this paint using this process of curing.

3,723,167

# ACRYLATE-ESTER-SILOXANE-ESTER-ACRYLATE PAINT

John D. Nordstrom, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.

No Drawing. Continuation-in-part of abandoned applications Ser. No. 888,054 and Ser. No. 888,059, both Dec. 24, 1969. This application Oct. 1, 1971, Ser. No. 185,846

Int. Cl. B44d 1/50

U.S. Cl. 117—93.31

18 Claims

A novel siloxane-ester-acrylate paint binder resin that is crosslinkable with vinyl monomers by exposure to an electron beam is produced in a three step reaction. These resins may be produced by the process wherein (1) a hydroxy acrylate selected from  $C_5-C_{12}$  monohydroxy acrylates which are esters of a  $C_2-C_8$  diol and acrylic or methacrylic acid is reacted with a  $C_4-C_{10}$  anhydride of a dicarboxylic acid, (2) the organic reaction product of the first reaction step is reacted with a  $C_2-C_{21}$  diol, and (3) the organic reaction product of the second reaction step is reacted with a siloxane having two or more hydroxy or alkoxy functional groups per molecule. A second method for producing these resins also involves a three step reaction wherein (1) a siloxane having two or more hydroxy or alkoxy functional groups per molecule is reacted with a  $C_2-C_{21}$  diol, (2) the siloxane-comprising reaction product of the first reaction step is reacted with a  $C_4-C_{36}$  dicarboxylic acid or anhydride thereof, and (3) the siloxane-comprising reaction product of the second reaction step is reacted with either glycidyl acrylate, glycidyl methacrylate, or a  $C_5-C_{12}$  monohydroxy acrylate which is the ester of a  $C_2-C_8$  diol and acrylic or methacrylic acid.

3,723,168

# METHOD OF PRODUCING LAMINATED PLASTIC FOIL TUBING

Kastulus Utz, Freising, and Heinrich Antholzner, Socking, Germany, assignors to Multifoil Patentverwertungs AG, Chur, Switzerland

Filed Jan. 27, 1971, Ser. No. 110,072

Int. Cl. B44d 1/02

U.S. Cl. 117—94

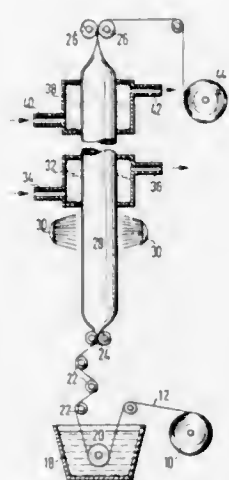
9 Claims

A laminated plastic foil tube having an inner polyethylene layer and an outer nylon layer is passed through an aqueous suspension of vinylidene chloride homopolymer or copolymer while in the flattened condition, thereafter inflated, and the aqueous coating is dried at a temperature high enough to make the polyethylene tacky. The deposited polyvinylidene is sintered at an even higher temperature to make it homogeneous and free from



pores, and the coated tube is cooled, deflated, and stored in the flattened condition. The triple plastic layer is im-

is an elastomeric and thermoplastic block polymer of the structure ABA, wherein A is a thermoplastic polymer block of styrene possessing a number average molecular weight of about 12,000-30,000, and B is an elastomeric



pervious to water vapor and other vapors, grease, and oxygen, and suitable as a wrapper for food and the like.

3,723,169

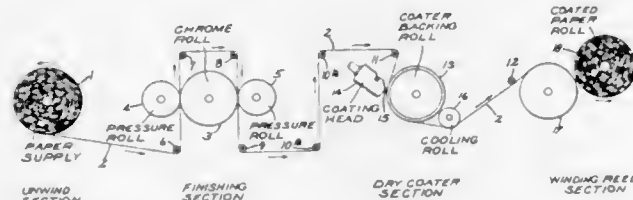
## PROCESS OF COATING PAPER

Samuel L. Guastella, Westminster, Mass., and Jerry J. Larrivee, Jr., Gorham, Maine, assignors to Blandin Paper Company, Grand Rapids, Minn.  
Continuation-in-part of application Ser. No. 866,766, Oct. 15, 1969. This application Jan. 12, 1970, Ser. No. 1,995

Int. Cl. B44d 1/02

U.S. Cl. 117-111 H

8 Claims



The process of coating a paper base with a hot melt coating composition which is comprised of at least 50 weight percent of a coating pigment or a mixture thereof dispersed in an undiluted, heat extrudable binder (e.g., a normally solid thermoplastic resin), said binder comprising less than 50 weight percent of the total weight of the coating composition. For example, a publication paper is prepared by coating an uncoated, prefinished, ground wood paper on both sides with a coating composition that comprises a normally solid ethylene polymer or copolymer and a clay pigment wherein the amount of pigment is greater than 50% by weight of said coating. The total coating weight (both sides) is less than 15 grams per square meter (gms./m.<sup>2</sup>).

3,723,170

## PRESSURE-SENSITIVE ADHESIVE TAPE

Ralf Korpman, East Brunswick, N.J., assignor to Johnson & Johnson

Filed Dec. 5, 1969, Ser. No. 882,570

Int. Cl. C09j 7/02

U.S. Cl. 117-122 P

7 Claims

A pressure-sensitive adhesive tape with improved properties at elevated temperatures within the range of about 212°-280° F. This tape is based on an adhesive wherein a major proportion by weight of the elastomers



polymer block of isoprene possessing a number average molecular weight of at least about 100,000, and wherein the styrene A blocks compose about 10-35 percent by weight of the block polymer.

3,723,171

## PROCESS FOR THE MANUFACTURE OF PVF SHAPED ARTICLES

Otto Fuchs, Holsteinstr. 44, 521 Troisdorf-Oberlar, Germany  
Filed Sept. 15, 1970, Ser. No. 72,475

Claims priority, application Germany, Sept. 15, 1969, P 19 46 611.6

Int. Cl. C09j 7/02

U.S. Cl. 117-122 PF

12 Claims



Improvements in adhering polyvinyl fluoride sheets to other materials by making a novel sheet composed of polyvinyl fluoride in sheet form and a layer of adhesive, preferably a polyurethane adhesive, on an appropriate surface, or portion of a surface of the polyvinyl fluoride sheet. This composite adhesive sheet must be made in a special way by coating a solution or dispersion of the polyvinyl fluoride onto a suitable surface, removing the solvent or dispersing medium to a residual content of about 0.4 to 0.8 weight percent, applying the adhesive, preferably as a solution or dispersion, in the area required, and then removing the remainder of the solvent or dispersant from both the polyvinyl fluoride sheet and the adhesive layer.

3,723,172

## CHEMICAL AND THERMAL STABILITIES AND FIRE RESISTANCE OF SYNTHETIC RESINOUS BODIES

Roshdy Ismail, Neunkirchen, Germany, assignor to Dynamit Nobel AG, Troisdorf, Germany

Filed Sept. 18, 1970, Ser. No. 73,672

Claims priority, application Germany, Sept. 20, 1969, P 19 47 807.0

Int. Cl. B44d 1/09; B32b 27/08

U.S. Cl. 117-138.8 A

10 Claims

Synthetic resinous bodies especially in sheet form, such as plates, foils, webs and non-wovens, have their chemical and thermal stabilities and their fire resistance improved by application thereto of a polyester of an aromatic dicarboxylic acid, such as terephthalic acid optionally admixed with isophthalic acid, and a halogenated dihydric phenol which may be mixed with up to an equal mole percent of a halogen-free dihydric phenol. The synthetic resinous material may be a crude preform wrapped in a sheet of the polyester and formed into final shape with heat and pressure and, optionally, curing. An epoxy resin or polyurethane adhesive may help bond the synthetic resinous material to the polyester sheet.

The synthetic resinous body may comprise a polyamide, polycarbonate, polyvinylchloride, polystyrene or polyester.

3,723,173  
METHOD OF TREATING TEXTILE FIBERS PRIOR TO FORMING THEM INTO YARN

Nikolaus Augustin Schonfeldt, Molndal, Sweden, assignor to MK Research and Development Co.

No Drawing. Filed Apr. 23, 1970, Ser. No. 31,360

Int. Cl. C09k 3/16; C10m 3/14, 3/26

U.S. Cl. 117-139.5 CQ

19 Claims

A process for treating fibers before carding and combing to form yarn to provide increased strength and elongation of the fibers and to reduce the buildup of static electricity during handling is provide which comprises applying to the fibers a reaction product which is obtained from a compound having an alkyl group containing from 2 to 22 carbon atoms at least one nitrogen atom and at least one reactive hydrogen atom, and from two alkylene oxides, one being ethylene oxide containing two carbon atoms, and the other having at least three carbon atoms in the molecule.

3,723,174

## PIGMENT FOR PRESSURE SENSITIVE RECORD MATERIAL

David B. Swanson, Cranford, and Barry S. Miller, Roselle, both of N.J., assignors to Engelhard Minerals & Chemical Corporation, Edison, N.J.

Continuation-in-part of Ser. No. 765,979, Oct. 8, 1968,

abandoned. This application Jan. 6, 1971, Ser. No. 104,474

Int. Cl. D21h 1/28

U.S. Cl. 117-155 UA

3 Claims

This application is directed to the preparation of receiving sheets for printing with transferable colorless, color-forming dye material in which the sensitive pigment that converts the colorless, color-forming dye to colored form is a hydrated aluminum silicate obtained by the hydrothermal treatment of dehydrated kaolin clay. The application discloses the discovery that a high surface area, partially hydrated metakaolin pigment that is capable of producing an intense nonfading printed image may be obtained by terminating the hydration of the dehydrated clay prior to the time when the resulting hydrated aluminum silicate would possess the maximum surface area that could be obtained by the hydrothermal treatment.

3,723,175

## NONLINEAR RESISTORS OF BULK TYPE

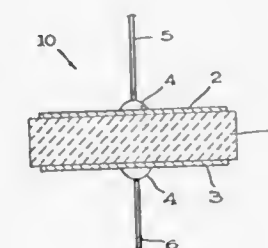
Takeshi Masuyama, Takatsuki-shi, Michio Matsuoka, Hirakata-shi, and Tsuyoshi Nishi, Osaka-shi, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Original application Sept. 27, 1968, Ser. No. 763,285, now Patent No. 3,663,458. Divided and this application June 11, 1970, Ser. No. 57,875

Int. Cl. B44d 1/02; C23c 3/00, 3/04

U.S. Cl. 117-201

6 Claims



Improved nonlinear resistors of high *n*-value, wherein the nonlinearity is due to the bulk thereof and comprising a sintered body of zinc oxide with 0.1 to 1.0 mole percent bismuth oxide on a sintered body of zinc oxide at

a temperature of 600° C. to 1200° C. for a time sufficient to diffuse bismuth ions into the bulk of the sintered body and heating the coated body.

3,723,176

## ALUMINA PALLADIUM COMPOSITE

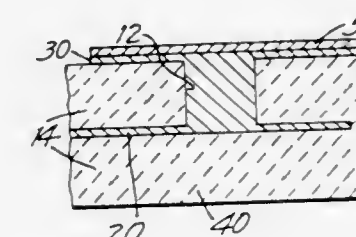
Paul R. Theobald, Chattanooga, and Joseph T. Bailey, Hixson, Tenn., assignors to American Lava Corporation, Chattanooga, Tenn.

Continuation-in-part of applications Ser. No. 831,911, June 10, 1969, now abandoned, and Ser. No. 834,803, June 19, 1969, now Patent No. 3,627,547. This application Feb. 18, 1971, Ser. No. 116,604

Int. Cl. B44d 1/18; C04b 33/26

U.S. Cl. 117-212

5 Claims



Intermediate alumina substrates containing buried palladium conductor patterns and adapted for thick or thin film hybrid integrated circuits are provided which can be fired in air i.e., under normal oxidizing conditions, and yet in which the ceramic of the substrate matures without adversely affecting buried palladium circuits.

3,723,177

## METHOD OF PRODUCING A GROUP III-V SEMICONDUCTOR COMPOUND

Masaharu Toyama, Kashiwa, and Tetuo Sekiwa, Tokyo, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Mar. 17, 1970, Ser. No. 20,215

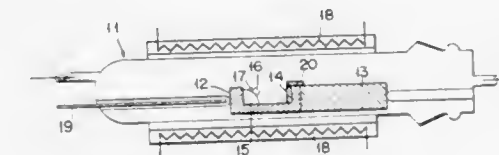
Claims priority, application Japan, Mar. 18, 1969,

44/20,108

Int. Cl. B44d 1/18

U.S. Cl. 117-217

2 Claims



A compound semiconductor epitaxially grown on a transparent and insulating substrate of an aluminum oxide, the compound being formed of elements of Groups III and V of the periodic table. The Group III-V compound semiconductor is produced by epitaxially growing a single crystal of a Group III-V compound from a gallium solution incorporating aluminum, which serves to better the wetting of the substrate.

3,723,178

## PROCESS FOR PRODUCING CONTACT METAL LAYERS CONSISTING OF CHROMIUM OR MOLYBDENUM ON SEMICONDUCTOR COMPONENTS

Heinrich Sohlbarand, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed March 11, 1971, Ser. No. 123,174

Claims priority, application Germany, March 13, 1970, P 20 12 031.4

Int. Cl. H01L 1/14

U.S. Cl. 117-227

9 Claims

The invention relates to a method of producing contact metal layers consisting of chromium or molybdenum on



semiconductor components. A varnish solution containing the metal compound is applied to the surface of the substrate wafer and converted into the pure metal layer through ther-



molysis of the varnish containing the metal compound. The invention is particularly well suited for the production of chromium or molybdenum layers on semiconductor crystal surfaces.

3,723,179

# **METHOD OF PREPARING A SUGAR PRODUCT FOR REFINING**

John Briar Alexander, Westville, Natal, Republic of South Africa, assignor to South African Sugar Association  
No Drawing. Filed Jan. 28, 1971, Ser. No. 110,594  
Claims priority, application Republic of South Africa, Jan. 29, 1970, 70/628

Int. Cl. C13f 3/00

U.S. Cl. 127-63

7 Claims

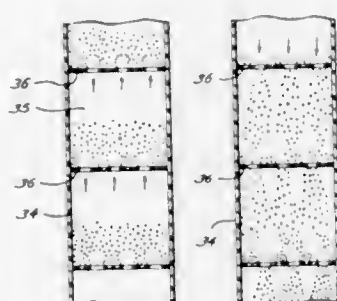
Raw sugar having a polarization of above 99° is coated with an invert syrup, preferably high-test molasses, to produce a raw sugar for refining not for consumption, having a polarization between 97° and 99°. The product contains more crystallizable sucrose than the usual raw sugars having a polarization between 97° and 99°.

3,723,180

# **CONTACT PROCESS AND APPARATUS**

Hart Brown, 5300 Brownway Road, Houston, Tex.  
Division of Ser. No. 701,906, Jan. 31, 1968, Pat. No. 3,549,526. This application Sept. 1, 1970, Ser. No. 68,657  
Int. Cl. B01j 1/00, 9/20; C22b 3/00  
U.S. Cl. 134-25

16 Claims



A method and apparatus for providing intimate countercurrent contact between a fluid and solid particles in which the fluid is directed through a plurality of trays in one direction to fluidize the solid particles and intermittently the flow is reversed to transport the solid particles through passages in the trays to the next subsequent stage. The apparatus includes a plurality of vertically stacked substantially imperforate trays and tubular members defining passages through the trays and extending substantially above and below the trays.

3,723,181

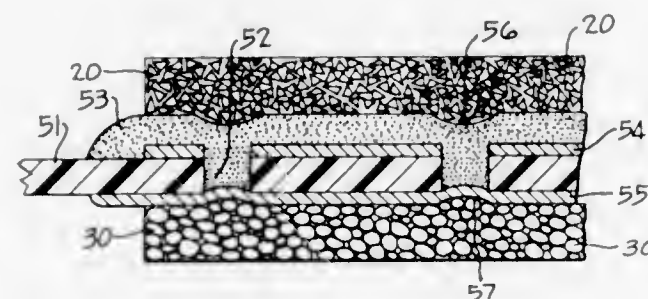
# **DUPLEX ELECTRODE CONSTRUCTION USING CONTINUOUS ELECTRICALLY NONCONDUCTIVE CARRIER STRIP**

Daniel C. Oakley, Madison, Wis., assignor to ESB Incorporated  
Filed Dec. 21, 1970, Ser. No. 100,269  
Int. Cl. H01m 13/00, 35/32  
U.S. Cl. 136-10

9 Claims

Duplex electrodes are constructed by placing intermittent deposits of positive and negative electrodes on

opposite sides of a continuous, electrically nonconductive carrier strip. Electrically conductive material on both sides of and extending through holes in the nonconductive strip is used to conduct current between the positive and negative electrodes. The duplex electrodes are assembled into multicell batteries, preferably while the du-



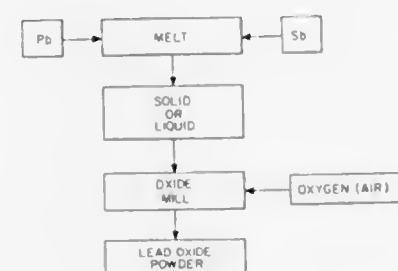
plex electrodes are structurally connected by the continuous carrier strip; the carrier strip is then subsequently cut between duplex electrodes to obtain structurally unconnected batteries. Alternatively, the carrier strip may be cut between duplex electrodes before those electrodes are assembled into multicell batteries.

3,723,182

# **LEAD ACID STORAGE BATTERY WHEREIN A POSITIVE PLATE COMPRISES ANTIMONY DISPERSED THROUGHOUT THE ACTIVE MATERIAL**

C. Joseph Venuto, Philadelphia, Pa., assignor to ESB Incorporated  
Filed Oct. 27, 1971, Ser. No. 192,947  
Int. Cl. H01m 39/00  
U.S. Cl. 136-26

7 Claims



A storage battery positive electrode is disclosed having a grid structure without antimony and a paste containing a small controlled quantity of antimony therein. Methods of preparation of the antimony containing oxide by the use of conventional lead oxide producing equipment is also described.

3,723,183

# **LITHIUM BATTERY ENCLOSURE**

Wilson Greatbatch, Clarence, N.Y., assignor to Wilson Greatbatch Ltd., Clarence, N.Y.  
Filed Feb. 4, 1971, Ser. No. 112,621  
Int. Cl. H01m 1/02  
U.S. Cl. 136-83 R

10 Claims

A lithium-iodine battery comprising an anode of lithium metal completely enclosing a cathode of iodide material in which cathode there is positioned a current collecting element at or near the center thereof. The anode enclosure is completed by a substantially planar member

of lithium metal precision fitted into the open end of the hollow member and bonded thereto. The anode enclosure,

3,723,186

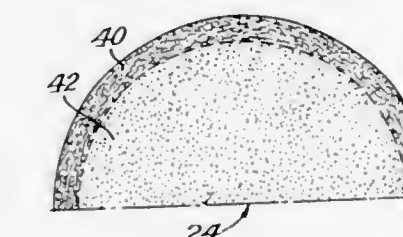
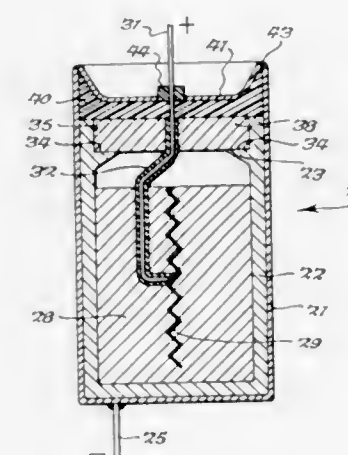
# **ELECTROLYTE SEAL MEANS**

Alina Z. Borucka, Livingston, N.J., Leonard G. Marianowski, South Holland, Ill., and Bernard S. Baker, Brookfield Center, Conn., assignors to Institute of Gas Technology  
Continuation-in-part of application Ser. No. 795,641, Jan. 31, 1969. This application Nov. 5, 1971, Ser. No. 196,168

Int. Cl. H01m 27/02, 43/06

U.S. Cl. 136-153

15 Claims



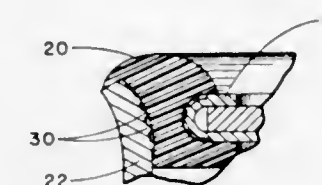
in turn, is located within a moisture-proof, sealing housing.

3,723,184

# **COMPRESSION CELL CLOSURE**

Robert E. Stark and Douglas W. Walker, Littleton, Colo., assignors to The Gates Rubber Company, Denver, Colo.  
Filed Dec. 11, 1970, Ser. No. 97,209  
Int. Cl. H01m 1/02  
U.S. Cl. 136-133

6 Claims



A battery cell closure is described comprising: (1) a cell container having alternate upstanding projections and depressions along the inner sidewall of its mouth portion, (2) a top closure for the cell container, and (3) a compressible insulating and sealing annular polymeric ring engaging and interposed between the top closure and cell container. The seal is effected by radially compressing the mouth of the cell container inwardly toward its longitudinal axis. The annular ring is made to flow into the depressions of the container inner sidewall and form the seal.

3,723,185

# **SOLID STATE ELECTROLYTE**

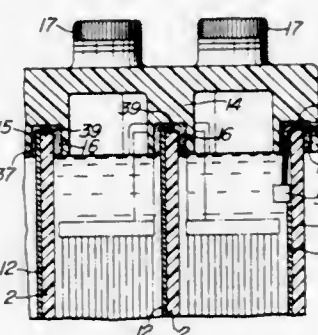
Geoffrey W. Mellors, Strongsville, Ohio, assignor to Union Carbide Corporation, New York, N.Y.  
No Drawing. Original application Feb. 4, 1970, Ser. No. 8,709. Divided and this application Nov. 19, 1970, Ser. No. 91,216

Int. Cl. H01m 11/00

U.S. Cl. 136-153

3 Claims

Novel compounds which are solid ionic conductors at room temperature are disclosed. These compounds conform to the general formula AgI-MCN-AgCN or modifications thereof wherein M is potassium, rubidium, cesium or mixtures thereof.



An electrolyte mass for high temperature electrochemical cells particularly for use in multiple cell batteries wherein the mass includes an integral seal. The electrolyte mass is the molten carbonate electrolyte type and is supported by an inert matrix or filler material. The improvement comprises a substantially rigid and substantially inert load supporting outer electrolyte periphery which is capable of withstanding the compressive forces necessary to hold each of the electrolyte masses in place in a multiple cell battery; the central portion of the electrolyte mass is integrally formed interior of the rigid outer periphery and is the electrochemically active portion of the cell.

3,723,187

# **STORAGE BATTERY WITH HEATER**

Tadao Toydoka, 16-6, Oshimacho-1-chome; Takeo Nishida, c/o Shizuhoso of 72, Nishi-5-chome, Honancho, both of Toyonaka, and Hiroshi Ichihara, 1758, Kameino, Fujisawa, all of Japan  
Division of Ser. No. 708,676, Feb. 27, 1968, Pat. No. 3,623,916. This application Jan. 8, 1971, Ser. No. 105,004  
Claims priority, application Japan, Mar. 2, 1967, 42/18199; Mar. 2, 1967, 42/18214; Mar. 2, 1967, 42/18215; Mar. 2, 1967, 42/18216; Mar. 2, 1967, 42/18217; Mar. 2, 1967, 42/18218; Mar. 2, 1967, 42/18220; Mar. 2, 1967, 42/18221; Mar. 2, 1967, 42/18222; Mar. 2, 1967, 42/18223; Mar. 8, 1967, 42/20258; Mar. 27, 1967, 42/19752; Mar. 27, 1967, 42/19753

Int. Cl. H01m 45/02

U.S. Cl. 136-161

5 Claims

A storage battery comprising electrode plate groups including anode plates and cathode plates, a battery casing for accommodating said electrode plate groups and electrolyte, a closure covering said battery casing, and face heaters so treated as to be of electrolyte-resistance and provided in said battery casing, wherein said electrolyte is effectively heated to prevent the electromotive force from being decreased due to a



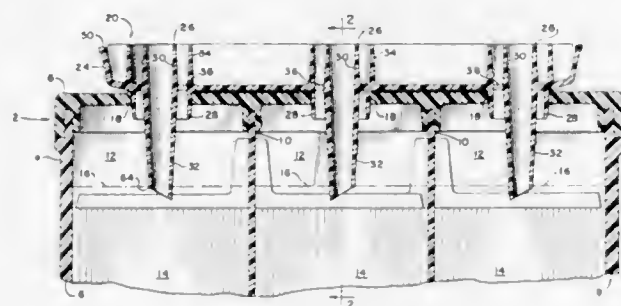
decrease in temperature of said electrolyte, thereby producing a constant electromotive force.

### 3,723,188 FILLING AND VENTING DEVICE FOR A STORAGE BATTERY

Roy Erving Hennen, Mequon, Wis., assignor to Globe-Union Inc., Milwaukee, Wis.  
Continuation of abandoned application Ser. No. 886,460, Dec. 19, 1969. This application Nov. 8, 1971, Ser. No. 196,835

Int. Cl. H01m 7/00  
U.S. Cl. 136—162

5 Claims



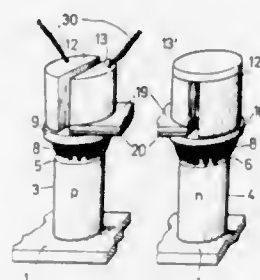
A device for filling and venting each cell of a storage battery comprising a reservoir base forming a reservoir for water on the battery, a standpipe for each cell of the battery, an opening in the bottom of the base operatively associated with each standpipe for introducing the water into the cell, and closure means for sealing the top of the cell to the bottom of the base and for directing water from the opening into the cell. Each standpipe extends vertically through the reservoir into a cell to a level substantially equal to the desired operating level of liquid electrolyte in the battery, whereby water introduced into the reservoir will fill each cell of the battery until the electrolyte level reaches the bottom of the standpipe therein.

### 3,723,189 THERMOELECTRIC DEVICE

Paul Zahn, Ottobrunn, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany  
Filed Aug. 6, 1969, Ser. No. 849,289  
Claims priority, application Germany, Aug. 10, 1968, P 17 64 816.7

Int. Cl. H01v 1/02  
U.S. Cl. 136—205

6 Claims



A staged thermoelectric device comprises a plurality of semiconductor segments and thermocouples. The segments are of different materials chosen according to the particular effective temperature ranges — in the following designated as stages — in which they will operate and according to the required electrical polarity. All the segments of one stage are connected thermally in parallel, whereas the stages are interconnected thermally in series. The arrangement is such that

the number of segments within the individual stages differs and at least two segments of each stage are connected electrically to form segmented legs of an individual thermocouple, while the remaining segments of each stage are connected electrically in series to form additional thermocouples within the respective stage.

### 3,723,190 PROCESS FOR PREPARING MERCURY CADMIUM TELLURIDE

Paul W. Kruse, Edina, and Joseph L. Schmit, Hopkins, Minn., assignors to Honeywell Inc., Minneapolis, Minn.  
Filed Oct. 9, 1968, Ser. No. 766,235

Int. Cl. H01l 3/20  
U.S. Cl. 148—1.5  
A process is described for preparing or treating mercury cadmium telluride ( $Hg_{1-x}Cd_xTe$ ) wherein the material is subjected to two separate heat treatment steps. The treatment improves inferior or mediocre infrared radiation detector material in a controlled manner without adversely affecting originally good material thereby increasing process yield and reproducibility.

11 Claims

### 3,723,191 SOLDERING FLUX COMPOSITION

Julius Goeman Bos, Harm Draaijer, and Jan Duyve, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 9, 1971, Ser. No. 122,381

Int. Cl. B23k 35/36  
U.S. Cl. 148—23  
A solution of sorbitol in a water-alcohol mixture for use in a foam fluxing device. The solution comprises activators. Remainders of the flux may be washed off with water and are not corrosive.

4 Claims

### 3,723,192 COMPOSITION AND PROCESS FOR TREATING METAL

Han Yong Oei and Siegfried Möller, Frankfurt am Main, Germany, assignors to Oxy Metal Finishing Corporation, Warren, Mich.

No Drawing. Filed Mar. 9, 1970, Ser. No. 18,322  
Claims priority, application Germany, Mar. 10, 1969, P 19 11 972.3

Int. Cl. C23f 7/10  
U.S. Cl. 148—6.17  
A composition and process for the treatment of ferrous metal surfaces utilizing a nitrite accelerated zinc phosphate treating solution, wherein undesired concentrations of ferro-nitroso complexes are prevented by incorporating in the phosphating bath a peroxide containing sulfur oxygen compound. Exemplary of preferred compounds which may be used are  $Na_2S_2O_8$  and  $H_2SO_5$ .

5 Claims

### 3,723,193 PROCESS FOR PRODUCING A FINE-GRAINED 316 STAINLESS STEEL TUBING CONTAINING A UNIFORMLY DISTRIBUTED INTRAGRANULAR CARBIDE PHASE

George A. Reimann and William R. Martin, Oak Ridge, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Oct. 27, 1970, Ser. No. 84,283  
Int. Cl. C21d 9/08; C22c 41/02

U.S. Cl. 148—12.3  
A fine-grained metal alloy having a second phase randomly-distributed throughout the structure as fine discrete particles is prepared by initially heating the alloy to a sufficiently high temperature to place essentially all of the second phase forming material in the alloy into solution and thereafter subjecting the alloy to repetitive heat treatments, interspersed with cold work, to cause recrystallization and partial precipitation of said second phase material at the lowest temperature commensurate with the degree of cold work.

2 Claims

tallization and partial precipitation of said second phase material at the lowest temperature commensurate with the degree of cold work.

In one embodiment, austenitic stainless steel Type 316 tubing having a grain size of ASTM-14 (2.4–2.8 microns) and a fine randomly-distributed carbide precipitate (100–1000 angstroms) was prepared. Due to improved metallurgical properties these stainless steels are quite suitable as a cladding for liquid metal fast breeder reactor fuel elements.

### 3,723,194 METHOD OF PROVIDING SUPERPLASTIC STEEL AND OF PRODUCING ARTICLES BY DEFORMATION THEREOF

Frank A. Hultgren, Burton, and Richard A. Kot, Parma, both of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 98,674, Dec. 16, 1970, abandoned. This application Feb. 17, 1972, Ser. No. 227,045

Int. Cl. C21d 7/14

U.S. Cl. 148—12  
Procedure for converting steel, notably ordinary and alloy grades of low carbon, ferritic character, to a superplastic state, e.g. affording very high ductility, and for deforming such superplastic steel in a desired manner, embraces: rapidly heating a body of steel to a temperature, advantageously in the alpha-plus-gamma phase field, where the steel is then found, over a brief interval, to experience a transitional state of severe microstructural instability and to be characterized by superplasticity; and applying stress to the body in such interval to effect the desired deformation. Enhanced effectiveness of the process can be attained in suitable situations where the steel is extensively cold worked, e.g. by reduction upwards of 70 percent, without annealing, prior to the heating stage, the occurrence or progress of recrystallization at the elevated temperature being then found to coact in the transitional condition of microstructure that affords superplasticity. Large and complex deformations can be achieved by the process, at conveniently high strain rates.

18 Claims

### 3,723,195 PROCESSES FOR MAKING CUTTING INSTRUMENTS

Francis E. Flaherty, Canton, and Wyman C. Tupper, Marblehead, Mass., assignors to The Gillette Company, Boston, Mass.

No Drawing. Filed Dec. 3, 1969, Ser. No. 882,345

Int. Cl. C21d 7/02

U.S. Cl. 148—12.4  
The present application discloses novel processes for producing cutting instruments e.g. razor blades, scalpels, knives, etc. from martensitic (Class I) stainless (i.e. containing at least 10% chromium) and semi-stainless (i.e. containing at least 6% chromium) steels. Generally, the processes comprise heating and quenching such steels under conditions which will provide a retained austenite content of at least 35% and thereafter hardening, the areas of the steel in which the cutting edges are to be formed by cold-working.

19 Claims

### 3,723,196 AGE-HARDENING IRON-BASE ALLOY WITH IMPROVED TOUGHNESS

William J. Murphy and Gerald J. Spaeder, Monroeville, Pa., assignors to United States Steel Corporation

No Drawing. Filed June 18, 1970, Ser. No. 47,611

Int. Cl. C22c 39/10, 39/50

U.S. Cl. 148—31  
A maraging steel alloy having, in the aged condition, a yield strength in the 200,000 to 300,000 p.s.i. range and a superior toughness, exhibiting Charpy V-notch values in excess of 100 ft.-lbs. at 80° F. The alloy essentially contains less than 0.005% each of carbon and sulfur, 15–20% nickel, 5–10% cobalt, 3–8% molybdenum, up to

7 Claims

1.5% titanium, up to 0.5% aluminum, and the balance iron with normal incidental impurities. In another embodiment, toughness can be increased appreciably with an insignificant sacrifice in strength by substituting tungsten for molybdenum.

### 3,723,197 METHOD OF MANUFACTURING A BODY HAVING ANISOTROPIC, PERMANENT MAGNETIC PROPERTIES

Kurt Heinz Jurgen Buschow, Frans Frederik Westendorp, and Henricus Petrus Johannes Wijn, all of Emmasingel, Eindhoven, Netherlands

No Drawing. Filed Sept. 11, 1970, Ser. No. 71,376  
Claims priority, application Netherlands, Sept. 20, 1969, 6914311

Int. Cl. B22f 1/00; H01f 1/08

U.S. Cl. 148—103  
A method of manufacturing sintered  $M_5R$  magnet bodies ( $M=Co$ , possibly combined with Fe, Ni, Cu, and R=one or more of the rare earths and/or Th). Starting materials are two castings one of the atomic ratio  $M:R<5$  and one of  $M:R>5$ . They are pulverized, oriented, compressed and sintered in an atmosphere which is very poor in oxygen and water vapour.

4 Claims

### 3,723,198 METHOD OF STRAIGHTENING ELONGATE INDUCTIVELY HEATED WORKPIECES

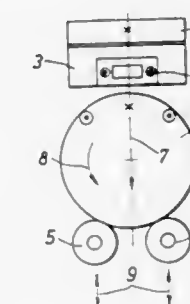
Gerhard Seulen and Friedhelm Reinke, Remscheid, Germany, assignors to AEG-Elotherm G.m.b.H., Remscheid-Hasten, Germany

Filed Nov. 12, 1970, Ser. No. 88,548  
Claims priority, application Germany, Nov. 25, 1969, P 19 58 994.7

Int. Cl. C21d 1/78

U.S. Cl. 148—131

10 Claims



A method and apparatus for inductively heating and straightening an elongate workpiece wherein stop means, such as rollers, are advanced into contact with the heated workpiece not earlier than immediately prior to cessation of inductive heating so that the rotating workpiece is straightened as it cools. In one apparatus the workpiece holding element is pivotable from a position adjacent the inductor to a position adjacent a quenching coil so that the workpiece can be quenched immediately after heating.

### 3,723,199 OUTDIFFUSION EPITAXIAL SELF-ISOLATION TECHNIQUE FOR MAKING MONOLITHIC SEMICONDUCTOR DEVICES

Madhukar B. Vora, Beacon, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 10, 1969, Ser. No. 875,012

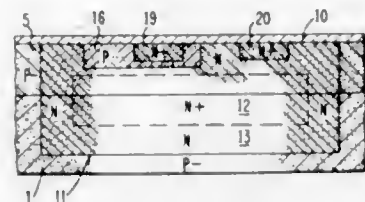
Int. Cl. H01l 7/00, 7/64, 19/00

U.S. Cl. 148—175  
A subcollector window is opened in an oxide covered P-silicon substrate. Two N dopants of different diffusion rates (arsenic and phosphorous) are diffused through the window into the substrate. The oxide covering is removed and a P-silicon epitaxial layer is deposited on the substrate and reoxidized. During the reoxidation cycle, the phosphorous and arsenic are out-diffused, the phosphorous reaching the top surface of the epitaxial layer to produce

9 Claims



an N pocket in the P- epitaxial layer and substrate, the pocket having a heavily doped N<sup>+</sup> region adjacent the germanium substrates utilizing a diffusion mask of polycrystalline silicon.



epitaxial layer-substrate interface. Base and emitter diffusions are made within the N pocket to form a transistor.

### 3,723,200 EPITAXIAL MIDDLE DIFFUSION ISOLATION TECHNIQUE FOR MAXIMIZING MICROCIRCUIT COMPONENT DENSITY

Paul P. Castrucci, Poughkeepsie, Edward G. Grochowski, Wappingers Falls, Martin S. Hess, Poughkeepsie, and Elias B. Zachos, Hopewell Junction, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 26, 1970, Ser. No. 5,449  
Int. Cl. H011 7/00, 19/00

U.S. Cl. 148—175

4 Claims



A monolithic microcircuit fabrication method employing an optimized middle isolation technique for producing specific vertical diffusion walls of minimum critical horizontal dimensions is disclosed to facilitate maximum density of electrically isolated microcircuit components. A first epitaxial layer is grown on a semiconductor substrate and regions of isolation impurities are placed therein at desired locations. A second epitaxial layer is grown over the first epitaxial layer (while the impurities out-diffuse into both epitaxial layers) until the non-isolated thickness remaining in the first epitaxial layer becomes equal to the non-isolated thickness remaining in the second epitaxial layer. Subsequent conventional heat treatment steps such as are required for the oxidation and diffusion cycles of typical microcircuit components continue the out-diffusion of the impurity regions so as to form completed vertical isolation walls between said components.

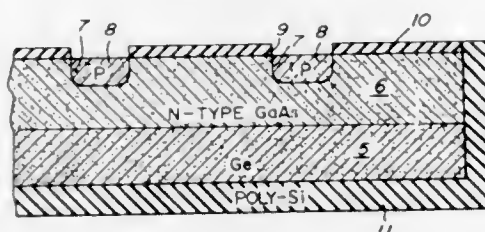
### 3,723,201 DIFFUSION PROCESS FOR HETEROEPITAXIAL GERMANIUM DEVICE FABRICATION UTILIZING POLYCRYSTALLINE SILICON MASK

John G. Keil, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Nov. 1, 1971, Ser. No. 194,467  
Int. Cl. H011 7/44, 7/00; B01j 17/00

U.S. Cl. 148—175

5 Claims



There is disclosed a method of manufacturing light emitting semiconductor structures of GaAs and GaAs<sub>x</sub>P<sub>1-x</sub> on germanium substrates utilizing a diffusion mask of polycrystalline silicon.

### 3,723,202 EXPLOSIVE COMPOSITION CONTAINING LITHIUM PERCHLORATE AND A NITRATED AMINE

John Mann Butler, Archie E. Follett, and Robert A. Cass, Dayton, Ohio, assignors to the United States Atomic Energy Commission

No Drawing. Filed Dec. 9, 1968, Ser. No. 782,422

Int. Cl. C06b 11/00

U.S. Cl. 149—19

7 Claims

An explosive composition comprising a dispersion of a solid explosive such as RDX or HMX in a substantially homogeneous mixture of a polymerizable acrylate, a plasticizer and lithium perchlorate.

### 3,723,203 PROPELLANT CHARGE FOR CASELESS AMMUNITION

Alan D. Craig and Carl A. Lukach, Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed Sept. 2, 1969, Ser. No. 854,755

Int. Cl. C06b 1/00

U.S. Cl. 149—19

13 Claims

A propellant charge for caseless ammunition is provided. The charge is prepared by compression molding an intimate mixture of propellant granules and 0.1 to 10% by weight of the mixture of a polymeric binder which is certain colloiddally dispersible copolymers of ethylene and an  $\alpha$ -olefin and/or a non-conjugated hydrocarbon diene, and preferably an ethylene-propylene copolymer or terpolymer.

### 3,723,204 FLEXIBLE HIGH-VELOCITY EXPLOSIVE

William L. Evans, Blackwood, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Oct. 1, 1969, Ser. No. 862,922

Int. Cl. C06b 3/00, 15/02; C06c 1/00

U.S. Cl. 149—19

8 Claims

Tough, flexible, high-velocity explosive composition comprising an intimate uniform mixture of a cap-sensitive particulate high explosive, a polyethylacrylate rubber, and optionally a plasticizer.

### 3,723,205 GAS GENERATING COMPOSITION WITH POLY-VINYL CHLORIDE BINDER

Robert S. Scheffee, Lorton, Va., assignor to The Susquehanna Corporation, Fairfax County, Va.

Filed May 7, 1971, Ser. No. 141,311

Int. Cl. C06d 5/06

U.S. Cl. 149—19

9 Claims

An inflation system comprising a gas generator and an inflatable device wherein the gas generator contains a gas-generating composition which produces combustion products free from corrosive, toxic, or inflammable components. The gas-generating composition comprises plasticized polyvinyl chloride fuel binder and a mixture of inorganic oxidizing salt and halogen-free alkali metal salt in a stoichiometry sufficient at the least to transform all carbon, hydrogen, and halogen in the composition to carbon dioxide, water and alkali metal halide.

### 3,723,206 CASTABLE ILLUMINANT FLARE COMPOSITION

Vern Thomas Dinsdale and Russell Reed, Jr., Brigham City, and Robert E. Meyer, North Ogden, Utah, assignors to Thiokol Chemical Corporation, Bristol, Pa.

Original application Feb. 10, 1969, Ser. No. 797,906, now Patent No. 3,605,624. Divided and this application

May 18, 1971, Ser. No. 144,679

Int. Cl. C06d 1/10

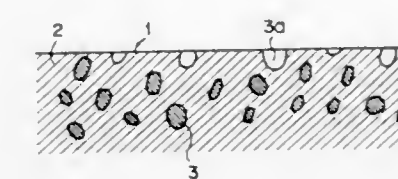
U.S. Cl. 149—19

4 Claims

A flare body for a parachute type flare providing superior brilliance and sustained output of illumination even

after 14 days of 24 hour temperature cycling between -65 and 165° F. is obtained by means of a novel, castable illuminant flare composition comprising an uncured, high oxygen content liquid polymeric binder material, particularly a liquid saturated polyester polymer/liquid epoxy resin system, which is loaded into a flare body casing lined on its inner bottom and side surfaces with at least partially cured liner material comprising the binder material and further comprising an anchor sheet material bonded completely on its inner surface to the outer surface of the liner and on its outer surface to the inner casing wall essentially only by a relatively narrow anchor strip of material running from the top to the bottom of the casing. The loaded casing and its contents then are heated to cure the polymeric binder material in the composition, liner and anchor strip.

surfaces, and washing out the exposed silicide or dichloride from the surface layer with an inorganic acid solution



so as to leave fine exposed hollows in the rubbing surface layer as oil pools.

### 3,723,210 METHOD OF MAKING A SEMICONDUCTOR WAFER HAVING CONCAVE RIM

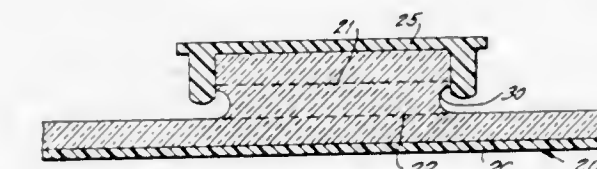
Niels F. Jackson, Los Angeles, Calif., assignor to International Rectifier Corporation, Los Angeles, Calif.

Filed Sept. 29, 1970, Ser. No. 76,422

Int. Cl. H011 7/50

U.S. Cl. 156—11

4 Claims



Two junctions of a controlled rectifier terminate on a concave rim of a semiconductor wafer. Both junctions terminate at an angle which spreads out the voltage gradient across the junction at the rim. The contour is formed by etching through the wafer and etching under an etch-resistant coating in a channel which circumscribes a surface area of the wafer.

### 3,723,211 PREPARATION OF LAYOUT SHEETS FOR PRINTED WIRING

Ivor Howard Etherton, Sutton Coldfield, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

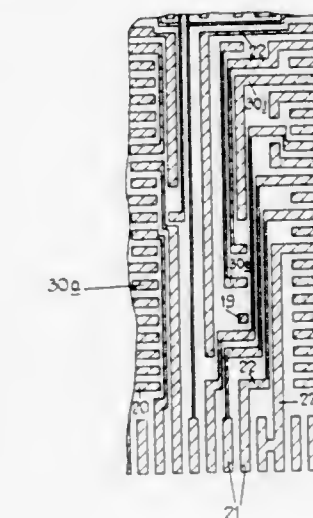
Filed Feb. 16, 1971, Ser. No. 115,645

Claims priority, application Great Britain, Feb. 17, 1970, 7,482/70

Int. Cl. B32b 31/00

U.S. Cl. 156—63

18 Claims



A method of preparing master layout sheets for multilayer printed wiring includes laying transparent sheets over a guide layout marked with a grid and applying opaque material to

### 3,723,207 PROCESS FOR PREPARING STABLE ESSENTIALLY WATER-FREE SLURRIES OF NITROCELLULOSE AND PRODUCTS THEREOF

Albert T. Camp, Indian Head, Md., assignor to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Oct. 23, 1970, Ser. No. 83,659

Int. Cl. C06b 15/02

U.S. Cl. 149—92

8 Claims

A process for forming essentially water-free stable slurries of plastisol nitrocellulose wherein plastisol grade nitrocellulose and other solids such as cyclotetramethyl-ene-tetranitramine, are mixed with an organic liquid diluent capable of forming an azeotrope with water, such as heptane, and a stabilizing amount of metriol trinitrate, and wherein the azeotrope is volatilized from the mixture to form the resultant essentially water-free slurry.

In addition, essentially water-free stable slurries containing plastisol nitrocellulose made by the above process are also provided.

### 3,723,208 NITROCELLULOSE-NITRIC ESTER EXPLOSIVES COMPOSITION CONTAINING HYDROXYALKYL ETHER OF A POLYSACCHARIDE

Errol Linton Falconer, Mont Saint-Hilaire, Quebec, Canada, assignor to Canadian Industries Limited, Montreal, Quebec, Canada

No Drawing. Filed Feb. 29, 1972, Ser. No. 230,522

Int. Cl. C06b 5/00

U.S. Cl. 149—94

2 Claims

A high explosive composition comprising at least one liquid explosive nitric ester gelatinized by means of nitrocellulose and at least 1% by weight of at least one lower aliphatic glycol selected from the group consisting of ethylene glycol diethylene glycol propylene glycol and dipropylene glycol said glycol having dissolved therein an oxygen-supplying salt and being thickened by a material selected from the hydroxyethyl and hydroxypropyl ethers of polysaccharides and mixtures thereof.

### 3,723,209 METHOD FOR INCREASING WEAR RESISTANCE OF A RUBBING SURFACE OF ALUMINUM ALLOY ARTICLES

Arinobu Hamada and Yuuji Ohnishi, Kawasaki, and Tanehisa Sekiguchi, Tokyo, Japan, assignors to Showa Denko K.K., Tokyo, Japan

Filed Apr. 13, 1971, Ser. No. 133,562

Claims priority, application Japan, Dec. 25, 1970, 45/117,495

Int. Cl. C23f 1/00; F02f 7/00; F16j 11/00

U.S. Cl. 156—6

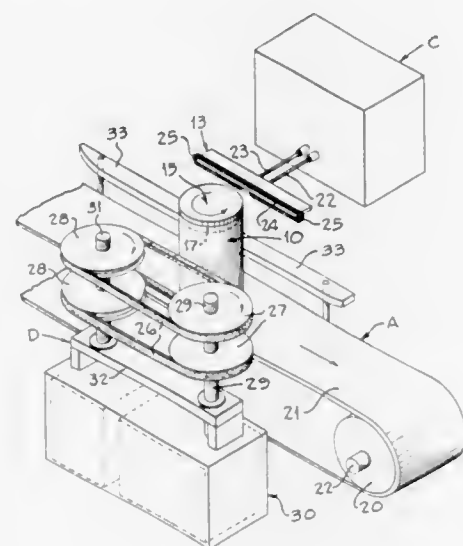
14 Claims

A method for effectively increasing wear resistance of a rubbing surface of aluminum alloy articles which comprises machining said rubbing surface of a cast aluminum alloy article in which there are dispersed fine particles of magnesium silicide or lead dichloride homogeneously so as to expose some of said particles on the rubbing



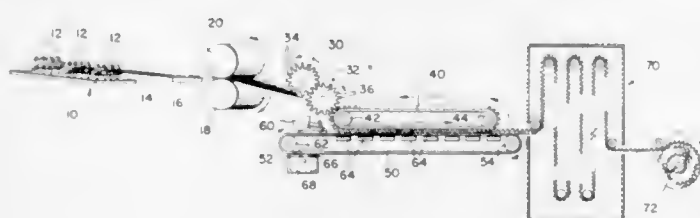
selected areas of the sheets. The grid may include additional lines and areas which correspond to some of the required opaque areas on the sheets. The transparent sheets may be prepared with some of said areas before being laid over the guide layout.

**3,723,212**  
**HEAT SEALING APPARATUS AND METHOD**  
Lee A. Casper, Merion, Pa., assignor to Iron Mountain, Inc., Wilmington, Del.  
Filed Apr. 26, 1971, Ser. No. 137,434  
Int. Cl. B29c 27/04  
U.S. Cl. 156—69 8 Claims



Radio frequency energy is utilized to adhesively secure a plug closure in an end of a laminated cylindrical container having a metallic foil lamina and an interior coated with a thermoplastic adhesive. The closure is inserted and frictionally retained in an end of the container, following which it is adhesively and permanently secured. This is done by conveying it through a heat sealing station wherein it is rotated and subjected to moving tangential contact with a beam of radio frequency energy. The metallic foil lamina, acting as an inductive susceptor, causes selective and sequential sealing of closure and container, as the container is rotated.

**3,723,213**  
**METHOD OF MAKING NON-WOVEN PILE FABRIC**  
Charles Edwin Hoey, Marlton, N.J., assignor to Rohm and Haas Company, Philadelphia, Pa.  
Filed Aug. 18, 1970, Ser. No. 64,722  
Int. Cl. B32b 5/02; D04h 11/00  
U.S. Cl. 156—72 5 Claims



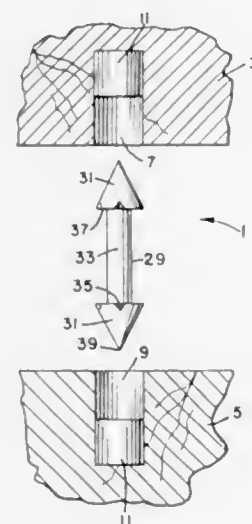
Continuous strands of yarn are formed into loops defining upper and lower bight portions. A body of liquid resinous backing material is formed, and the lower bight portions of the loops of yarn are moved into the liquid backing material so

that these lower bight portions are substantially embedded within and penetrated by the backing material. The backing material is then solidified.

**3,723,214**  
**METHOD OF MAKING A STEEL, GRAPHITE, PHENOLIC ASBESTOS LAMINATE**  
Daniel Meraz, Jr., China Lake, Calif., assignor to the United States of America as represented by the Secretary of the Navy  
Filed Mar. 1, 1971, Ser. No. 119,949  
Int. Cl. B32b 31/00  
U.S. Cl. 156—87 3 Claims

A high temperature laminate and method of fabrication consisting essentially of consecutive layers of steel, graphite and phenolic asbestos held together by a self-supporting adhesive film. This laminate is useful in the manufacture of rocket nozzles which withstand temperatures of 6,000° F. and above.

**3,723,215**  
**METHOD FOR FIXING A FASTENER IN TWO PIECES OF WOOD**  
John W. Kessler, 1172 Glenwood Blvd., Schenectady, N.Y. 12308  
Filed Mar. 18, 1970, Ser. No. 20,591  
Int. Cl. B32b 31/04  
U.S. Cl. 156—92 2 Claims

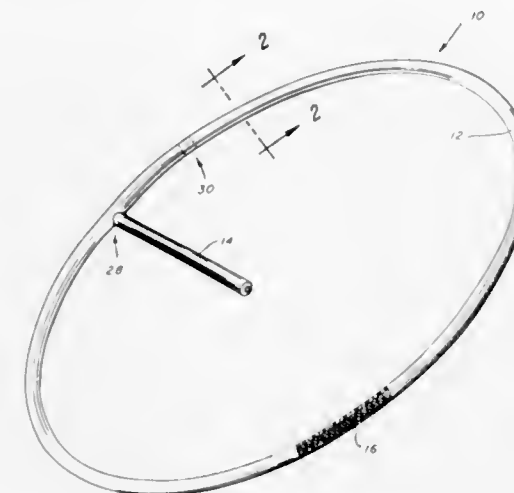


Discloses a fastener and method of fixing same together with two pieces of wood. Cartridges containing thermosetting material, comprising resin and hardener, are disposed in aligned holes drilled in the two pieces of wood. A dowel-like fastener having piercing points is disposed such that one piercing point punctures the cartridge, disposed in the hole of the one piece of wood, to effect bonding of the fastener with such other piece of wood, and thereby fastening together the two pieces of wood.

**3,723,216**  
**METHOD OF MAKING EXPANSIBLE SEAL FOR VALVES**  
Creal E. Kirkwood, 3237 North Lewis, Tulsa, Okla.  
Filed Aug. 25, 1971, Ser. No. 174,717  
Int. Cl. B29c 27/00; B29h 7/04  
U.S. Cl. 156—110 4 Claims

An expandable seal for valves, the seal having a closed resilient tubular loop of expandable material, the loop having an opening therein, and a resilient tubular leader integrally formed with the loop communicating with the opening. The invention also includes the method of manufacturing an ex-

pandable seal by means of a sequence of steps utilizing mandrels and a heated platen for forming a length of expandable

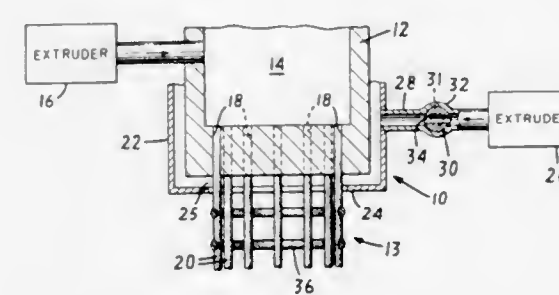


tubing into a closed loop having an integral leader extending therefrom.

**3,723,217**  
**METHOD OF PRODUCING BONDED TEXTILE FABRICS WITH IMPROVED DIMENSIONAL STABILITY**  
Jackson Bauer, Croydon, Pa., assignor to Collins and Aikman Corporation, New York, N.Y.  
Filed July 11, 1969, Ser. No. 841,042  
Int. Cl. B32b 31/08  
U.S. Cl. 156—164 6 Claims

A method is provided for producing a bonded textile fabric with improved laundering and dry cleaning dimensional stability in which a composite comprised of at least two plies of the same or different textile fabrics with the plies bonded together by an uncured to partially cured adhesive being compacted and then completely cured. The bonded textile fabrics of this invention are especially useful in the manufacture of wearing apparel, but also find uses in home furnishings and industrial fabrics.

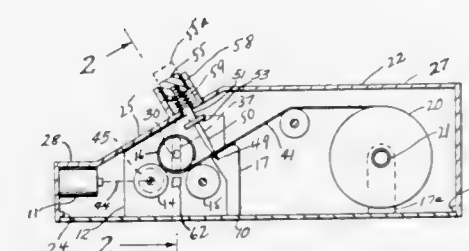
**3,723,218**  
**METHOD FOR THE MANUFACTURE OF NET AND NETLIKE PRODUCTS**  
Bernard J. Gaffney, Stillwater, Minn., assignor to Conwed Corporation  
Filed Oct. 5, 1970, Ser. No. 78,080  
Int. Cl. D01d 5/00; D04h 3/16  
U.S. Cl. 156—167 7 Claims



A method and apparatus for the manufacture of net and netlike products from molten polymer is provided. The apparatus is comprised of at least two die members, one of which has one or more orifices therein for the extrusion of one or more strands or a sheet of polymer. The

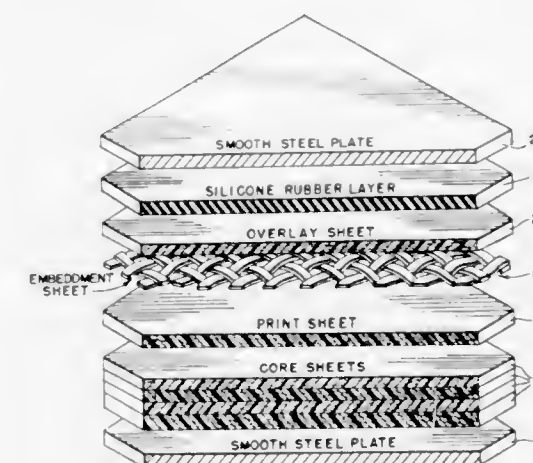
other die member has a single continuous orifice therein to which molten polymer is fed and from which the molten polymer is forcefully ejected at predetermined intervals to contact the extruding strands or sheet to cause bonding therebetween to form the product.

**3,723,219**  
**METHOD AND APPARATUS FOR MAKING HAIR CURLERS**  
Zodell W. Prince, 601 Mulberry Lane, Bellaire, Tex. 77401; Dallas D. Weatherholt, 13207 Buxley 77045; and Adelene L. Trombatore, 9725 Mariposa 77025, both of Houston, Tex.  
Filed Nov. 18, 1970, Ser. No. 90,694  
Int. Cl. B29d 23/10  
U.S. Cl. 156—218 5 Claims



Method and apparatus for making hair curlers wherein a strip of plastic or plastic coated material is bent by passing between three rollers, or the like, to form a circular hair curler shape. The diameter of the hair curlers or hair rollers is adjustable by adjustments of the spacings of the rollers. The strip passes between two rollers on one side and a third roller disposed linearly between the first two rollers at the other side of the strip. The strip is cut by a knife means or by a hot wire means. Only one or more of the rollers may be position-adjustable. The strip ends are joined by heat-bonding, and may be joined at lapped or butt joints. The strip is carried as a roll, like a roll of adding machine tape.

**3,723,220**  
**HIGH-PRESSURE LAMINATES WITH DEEPLY EMBOSSED SURFACE**  
Herbert I. Scher and Israel S. Ungar, Randallstown, Md., assignors to Esso Research and Engineering Company  
Continuation-in-part of application Ser. No. 94,096, Dec. 1, 1970, now Patent No. 3,700,537. This application Aug. 9, 1971, Ser. No. 170,117  
Int. Cl. B32b 3/30  
U.S. Cl. 156—219 7 Claims



A high-pressure laminate with deeply embossed surface is produced using as a decorative sheet beneath the overlay, a relatively thick element of varying cross section,



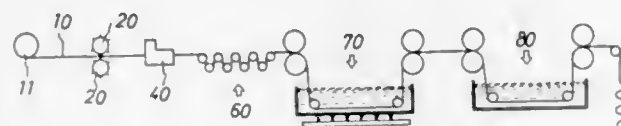
such as woven cane. During laminating, a silicone rubber layer is included between the overlay sheet and the upper caul plate. The resultant laminate is found to be debossed to a depth that is substantially equal to the thickness variation in the ply of varying cross sections, and may even be undercut. In addition, the depressed portions of the laminate surface are fully consolidated. The silicone rubber may be reused.

**3,723,221**  
**PROCESS FOR MANUFACTURING WEIGHTED CORD AND THE SAME**

Yukio Hayashi, Tokyo, Japan, assignor to Kabushiki Kaisha Kaikosha, Tokyo, Japan  
Filed Nov. 2, 1971, Ser. No. 194,861  
Int. Cl. B29c 17/04

U.S. Cl. 156—229

3 Claims



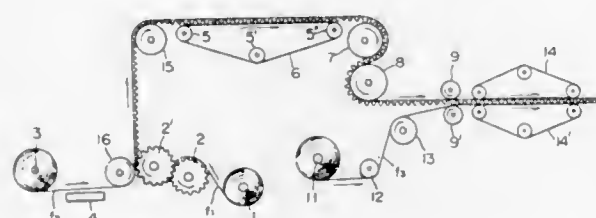
A weighted cord or strip for curtain use, manufactured by the steps of coating a notched core member with a foamed thermoplastic synthetic resin, subjecting the sheathed core member to an external force to thereby cut or divide the core member into core pieces at the notched locations, applying a tensile force under heating condition to the sheath which is thus elongated along the longitudinal direction whereby the cut core pieces are moved away from each other to provide a fixed space between any two adjacent core pieces, and finally cooling the sheath to be cured at its elongated condition so that the core pieces are maintained in the spaced relation from each other within the sheath.

**3,723,222**  
**PROCESS FOR MANUFACTURING CORRUGATED THERMOPLASTIC SYNTHETIC RESIN CARDBOARD SHEET**

Kiyoshi Kurita, Tokyo; Hiroshi Shigematsu, Ichihara; Tomoyuki Koyama, Yokohama; Souichiro Endo, Tokyo, and Kensaku Yamawaki, Ichihara, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan  
Filed May 1, 1970, Ser. No. 33,563  
Int. Cl. C09j 7/04

U.S. Cl. 156—309

6 Claims



A continuous process for manufacturing with good reproducibility a corrugated thermoplastic synthetic resin cardboard sheet free of defects diminishing the commercial value of the produce such as "warp" and "crookedness". This process is characterized in that thin layers of a thermoplastic synthetic resin having a melting point at least 10°C. lower than that of any of thermoplastic synthetic resins constituting the core sheet and surface liner sheets are formed on faces selected from the group consisting of (i) front and back faces of the

continuous thermoplastic synthetic resin sheet to be shaped into a core sheet, (ii) faces to be bonded to the core sheet, of each of said surface liners, and (iii) all the faces mentioned in (i) and (ii), before the shaping of the core sheet and before the melt-press bonding of the surface liners onto the continuous core sheet.

**3,723,223**  
**HEAT CURING ADHESIVE**

Robert A. Le Compte, Mountain Lakes, assignor to National Starch and Chemical Corporation, New York, N.Y.  
Filed Jan. 11, 1971, Ser. No. 105,644  
Int. Cl. C08d 9/10

U.S. Cl. 156—313

19 Claims

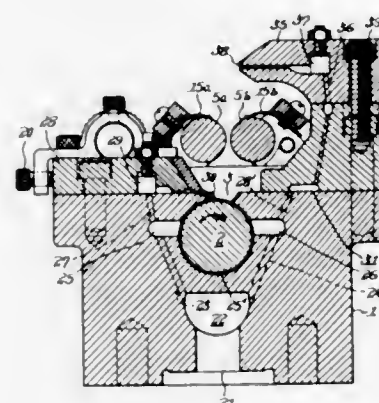
An adhesive material having a long storage life is prepared by applying to a carrier, a coating composition comprising a blend of a solid epoxy resin, solid curing agent for the epoxy resin, a film-forming binder, and a dispersing medium and drying the coating to a tack-free film. The adhesive-coated carrier or the film without the carrier may be used to bond substrates by pressing the substrates together with the adhesive film between them at elevated temperatures.

**3,723,224**  
**APPARATUS FOR MAKING RIBBED SYNTHETIC RESIN BOARDS**

Ryuji Noguchi, Hamamatsu, Japan, assignor to Kabushiki Kaisha Seisan Nipponsha, Tokyo, Japan  
Filed Oct. 14, 1970, Ser. No. 80,617  
Int. Cl. B29f 3/012

U.S. Cl. 156—500

4 Claims



A method and apparatus for producing synthetic resin boards having a pair of parallel synthetic resin film layers connected, but spaced apart by ribbing providing hollow spaces between said film layers and which boards are formed by extruding synthetic resin pass a fluted rotating roll and from there pass two opposing nozzles which apply the film layers to the ribbing from said fluted roll and including means for stretching the ribbing in directions at right angles to the direction of movement of the ribbing to give the ribbing walls the desired thickness and height.

**3,723,225**  
**SLIDE FASTENER COATING APPARATUS AND METHOD**

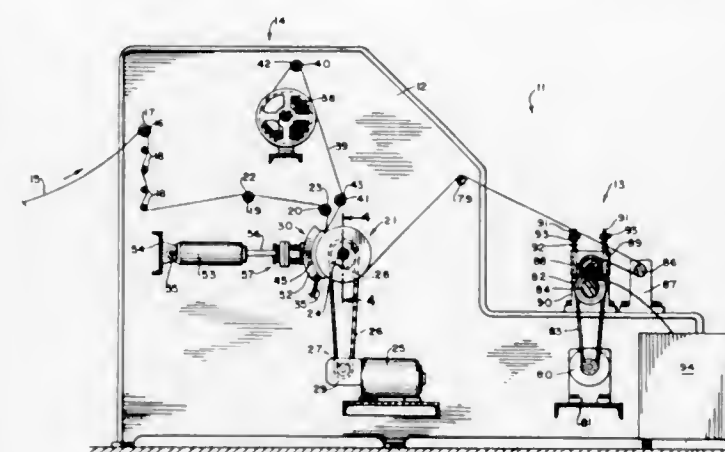
William P. Canepa, Forest Hills, N.Y., assignor to Kay-Cee Industrial Products Inc., New York, N.Y.  
Filed March 30, 1971, Ser. No. 129,449  
Int. Cl. B30b 15/34

U.S. Cl. 156—554

7 Claims

An apparatus and method are disclosed for continuously fusing a thermoplastic material to a slide fastener stringer to enable installation of the slide fastener in a garment or other article by a heat sealing process. The apparatus includes a

heated pressure plate in association with a heated padded roller to fuse a strip of thermoplastic material to a fabric tape



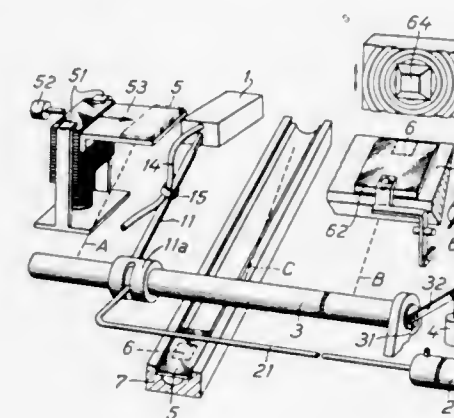
portion of a slide fastener stringer. One or both the pressure plate and the heated roller have non-stick or release-coated working surfaces.

**3,723,226**  
**DEVICE FOR PICKING UP SECTIONS FROM A MICROTOME**

Wolfgang Pfohler, Lauda, Germany, assignor to Ernst Leitz GmbH, Wetzlar, Germany  
Filed June 4, 1971, Ser. No. 149,917  
Claims priority, application Germany, June 12, 1970, P 20 28 898.6  
Int. Cl. B26d 4/46; B65f 35/18

U.S. Cl. 156—556

9 Claims



A device for picking up sections from the blade of a microtome, in particular frozen sections, comprises gripper means for automatically lifting slides from a slide depot, for moving the slides to the blade, bringing the slide into contact with the section, and transporting slide and section to a guide rail where the slide is released. The gripper means is pivotable about a shaft and laterally displaceable thereon. Mechanical elements are provided for controlling the movements of the means in the required order.

**3,723,227**  
**APPARATUS FOR ASSEMBLY OF VENEER SHEETS IN PLYWOOD FABRICATION**

Hiroshi Oono, Nagoya, and Masanori Tamura, Aichi, both of Japan, assignors to Kabushiki Kaisha Taihei Seisakusho (also known as Taihei Machinery Works, Ltd.) and Mizuho Gohan Kabushiki Kaisha, Nagoya-shi, Japan  
Filed Feb. 23, 1971, Ser. No. 117,977

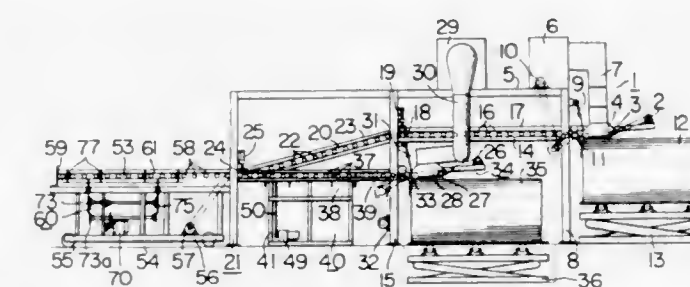
Claims priority, application Japan, Feb. 25, 1970, 45/18504  
Int. Cl. B32b 31/12; B65g 29/00

U.S. Cl. 156—557

9 Claims

First and second pneumatic pickup means include a first and a second suction duct, respectively, thereby successively

to pick up veneer sheets stacked up separately on first and second lifter means. First and second conveyor means extend in succession from the first pneumatic pickup means, whereas third conveyor means extend underneath the downwardly inclined second conveyor means from the second pneumatic pickup means to a point of termination of the second conveyor means, so that the veneer sheets picked up separately by



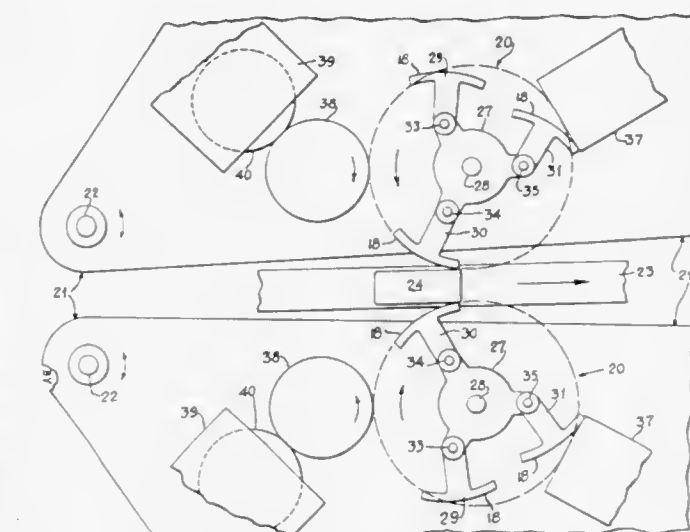
the first and the second pneumatic pickup means are superposed one upon another as they reach fourth conveyor means, from which the veneer sheets are transferred onto a stand positioned on one side thereof. Veneer sheets to be glued are stacked up separately and are fed one by one into gluing means positioned on the other side of the fourth conveyor means and thence are carried over to the aforesaid stand by fifth conveyor means.

**3,723,228**  
**APPARATUS FOR PICKING UP LABELS FROM A SUPPLY STACK AND DIRECTLY APPLYING THE LABELS TO CONTAINERS**

Herbert Schaltegger, P.O. Box 293, New Milford, Conn. 06776  
Filed Feb. 8, 1971, Ser. No. 113,174  
Int. Cl. B65c 9/12

U.S. Cl. 156—568

16 Claims



In a container-labeling machine, a cycloidal motion-inducing cam controls the pivoting movement of rotating label-holding shoes, causing all of the points of each shoe to move along a cycloidal path as the shoe approaches, picks up a label and withdraws from a stationary label stack holder. The cycloidal cusp approach-retract path of the label shoe approximates uniform rolling contact of each shoe with a fresh label, assuring the application of smooth, untorn, unwrinkled labels to each new container. The camming arrangement is further adapted to maintain the arcuate-shaped, peripheral surface of each label shoe coincident with a circle

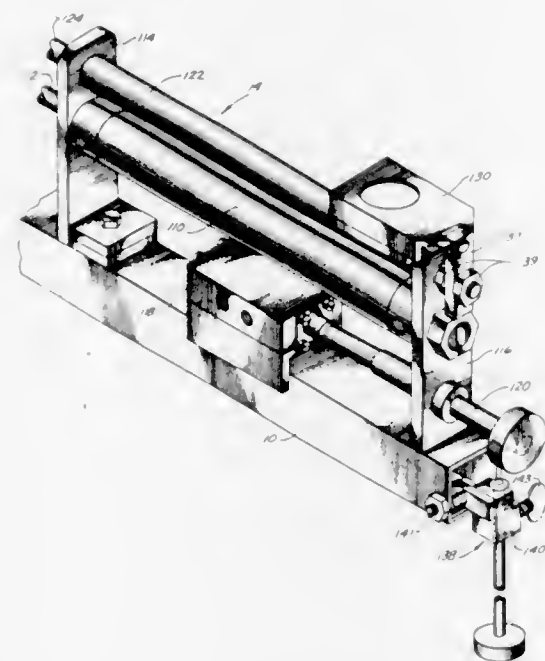
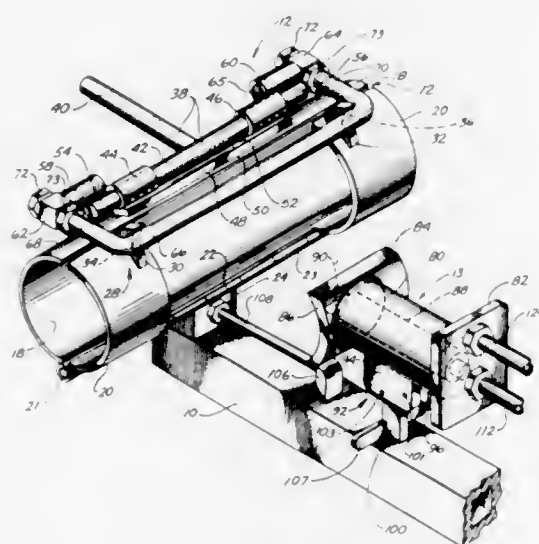


having its center point on the central axis of rotation as the label-holding shoe passes into contact with an adhesion-inducing apparatus and then applies the label to the container. The label is held in intimate contact with the shoe by vacuum, and the label is applied to the container by disconnecting the vacuum or by supplying a pressure to the shoe's holding surface which is greater than atmospheric pressure. In the preferred embodiment, the labeling machine comprises three label-holding shoes each of which continually rotates at a constant speed about a central axis while having its pivoted positions about a second rotating axis controlled by the camming arrangement.

### 3,723,229 FUSION TOOL

Walter C. Hutton, 1567 Waldran Avenue, Los Angeles, Calif.  
Filed May 1, 1970, Ser. No. 33,549  
Int. Cl. B29c 27/02; B32b 31/20  
U.S. Cl. 156—580

17 Claims



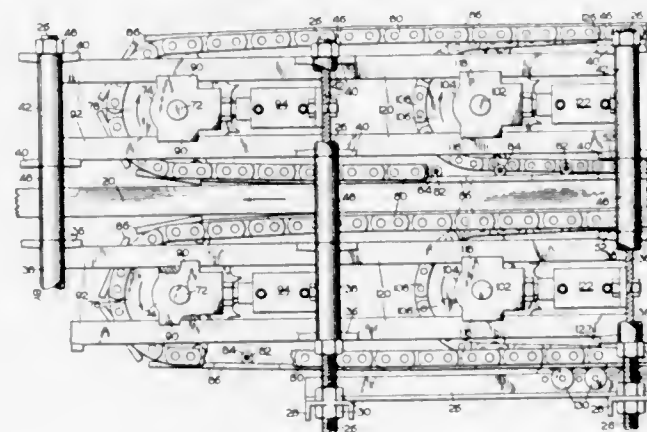
The fusing of a service connector to a main is effected by holding the main firmly in place with a clamp while the service connector is pressed against it with a press, the areas of each being fused, having previously been heated to fusion temperature. The press receives the service connector and holds it

firmly while the connector's saddle and the main are brought into fusion temperature by a pair of heating platens. The heating platen for the main has a hole forming die which effects a hole in the main during its heating. After heating is accomplished, the platens are removed and a pneumatic cylinder actuated to move the press and the connector's saddle against the main with a predetermined force. A mandrel of the press maintains the hole formed in the main open during fusion. A connector locking device is released before fusion to admit to the withdrawal of the press from the connector after fusion without affecting the resultant bond.

### 3,723,230 CONTINUOUS PRESS FOR PRESSING GLUE-COATED CONSOLIDATABLE, PRESS CHARGES

Arthur L. Troutner, Boise, Idaho, assignor to Trus Joist Corporation, Boise, Idaho  
Filed Oct. 12, 1970, Ser. No. 79,839  
Int. Cl. B30b 13/00, 3/00  
U.S. Cl. 156—580

17 Claims



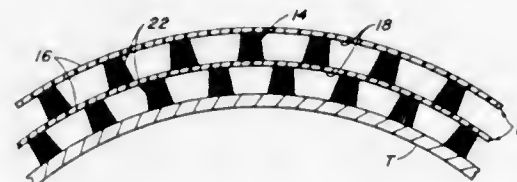
A continuous press for pressing stacked glue-coated laminae and other consolidatable press charges comprises a pair of elongated, vertically-spaced press beds. A pair of vertically-spaced, endless, press belts is positioned between the beds in substantial alignment. A pair of vertically-spaced, endless, anti-friction belts is interposed between the press beds and the press belts in working contact therewith. A suitable drive is connected to the press belts for advancing them in the feed direction at a rate predetermined to effect desired consolidation of the press charge during setting. Clamping pressure is applied to the press belts at predetermined intervals along their length to determine the final thickness of the consolidated product.

### 3,723,231 INSULATION MATERIAL

John P. Clay, San Diego, and Vernon L. Lintvedt, La Mesa, Calif., assignors to General Dynamics Corporation, San Diego, Calif.  
Continuation of abandoned application Ser. No. 670,889, Sept. 27, 1967. This application Oct. 1, 1970, Ser. No. 77,325

Int. Cl. C04b 43/00  
U.S. Cl. 161—53

2 Claims



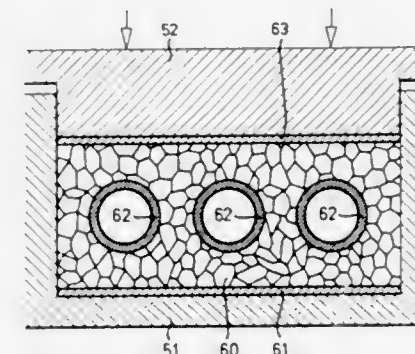
An insulation material comprising a thermal heat reflecting material such as aluminized polyester film, viz,

Mylar, provided with a multiplicity of fiber tufts of flocking material spaced apart and bonded to the Mylar in a substantially polka-dot pattern. The upstanding fiber bristles serve to space the reflecting material away from adjacent structure or other adjacent layers of insulation. Heat transfer by conduction is reduced to a minimum as a result of the tufts of bristles being in point contact only with adjacent material and structure.

### 3,723,232 BODIES OF LOW SPECIFIC GRAVITY

Rudolf Heller, Mattackerstrasse 43, Zurich, Switzerland  
Original application Mar. 17, 1967, Ser. No. 623,882, now Patent No. 3,598,672. Divided and this application Feb. 16, 1971, Ser. No. 115,644  
Claims priority, application Switzerland, Mar. 23, 1966, 4,201/66; July 5, 1966, 9,763/66; July 12, 1966, 10,117/66; Oct. 20, 1966, 15,226/66  
Int. Cl. B32b 3/12, 27/30  
U.S. Cl. 161—68

4 Claims



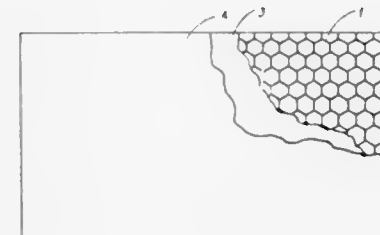
Bodies of low specific gravity are produced by coating a mass of roundish hollow granules, such as expanded or swelled polystyrene granules, with a hardenable liquid binder material, mixing the mass of thus coated granules with a pulverulent solid material so as to adhere particles of the solid material to the coating, and hardening the hardenable binder coating. Shaped cellular structures are formed from the mass of hardenable binder-coated hollow granules having pulverulent material adhering to the coating, by compressing the mass during or prior to the hardening of the hardenable liquid binder material.

### 3,723,233 MARBLE FACED WALL PANELS AND METHOD OF MAKING SAME

Patrick Terence Bourke, Doon House, Maam, Galway, Ireland  
Continuation of abandoned application Ser. No. 706,719, Feb. 19, 1968. This application July 15, 1971, Ser. No. 163,070

Int. Cl. B32b 3/12  
U.S. Cl. 161—68

2 Claims



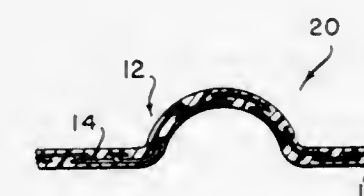
The invention provides surface elements such as tiles or panels consisting of a thin lamina of marble bonded to a backing consisting of a metal sheet of honeycomb or

cellular structure of substantially greater thickness than said lamina which at least on the side remote from the marble lamina has a skin of tenacious sheet material bonded thereto. The resultant composite element is extremely rigid, light and cheap to produce in comparison with solid marble and may be cut into any desired shape and used as a substitute for solid marble, but with the advantages of lightness, strength and low cost thus enabling such surface elements to be used for many purposes where the use of solid marble would be economically or practicably prohibitive.

### 3,723,234 KNIT REINFORCING FABRIC AND RESIN LAMINATE

John A. MacDonald, Hockessin, Del., assignor to Chapman Industries Inc., Avondale, Pa.  
Filed Apr. 27, 1971, Ser. No. 137,791  
Int. Cl. B32b 27/04, 27/06; B65d 25/14  
U.S. Cl. 161—89

5 Claims

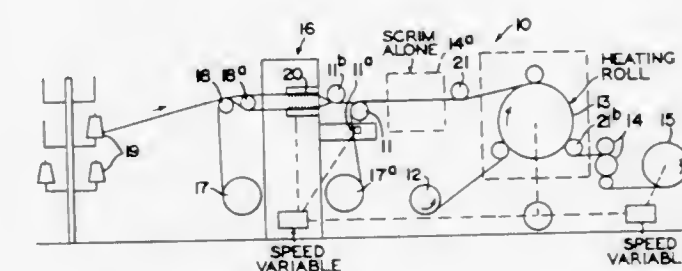


A reinforced fabric and resin laminate wherein the interlaced fabric imparts dimensional stability and strength to the resin component, while the knit character thereof permits shaping the fabric or the composite laminate over irregular or curved surfaces as well as permitting extension of the embedded fabric with elongation of the resin, in addition to enhancing the mechanical bond to the resin.

### 3,723,235 REINFORCED SHEET MATERIAL AND METHOD FOR MAKING THE SAME

Edward T. Armstrong, 490 Pepperidge Tree Terrace, Butler, N.J. 07405  
Continuation-in-part of application Ser. No. 673,164, Oct. 5, 1967, now Patent No. 3,549,455. This application Dec. 21, 1970, Ser. No. 100,238  
Int. Cl. B32b 3/02; D04b 3/12  
U.S. Cl. 161—140

13 Claims



Disclosed is a reinforced sheet material or scrim which consists of filaments extending in wave forms along the material. The filaments preferably extend in overlapping paths along certain portions of the material and along paths of progressively decreasing amplitude on either side of the uniform portion, but with about the same frequency as in the uniform portion, towards the edges of the material, slitting points between adjacent uniform portions,



or lap reinforcements. The scrim material may be self-reinforced and may also include linear extending filaments and/or laminated substrates.

3,723,236

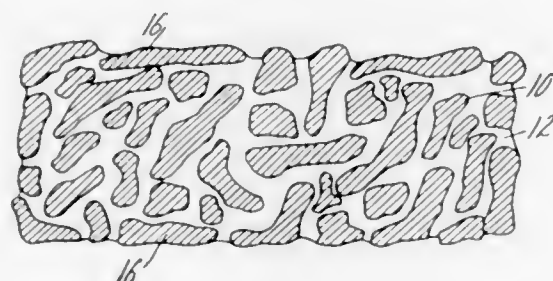
**NONWOVEN FABRICS AND PROCESS THEREFOR**  
Nicholas S. Newman, West Newton, Mass., assignor to The Kendall Company, Walpole, Mass.

Division of Ser. No. 863,273, Oct. 2, 1969, Pat. No. 3,622,422, Continuation-in-part of Ser. No. 563,238, July 6, 1966, abandoned, which is a continuation-in-part of Ser. No. 530,734, Feb. 28, 1966, abandoned, which is a continuation-in-part of Ser. No. 514,079, Dec. 15, 1965, abandoned. This application Jan. 25, 1971, Ser. No. 109,645

Int. Cl. C09j 5/00, 704

U.S. Cl. 161—151

6 Claims



A major portion by weight of an unbonded fibrous fleece is combined by heat and pressure with a minor portion of a thermoplastic film to form soft, conformable, air-permeable nonwoven fabrics suitable for use as disposable clothing.

3,723,237

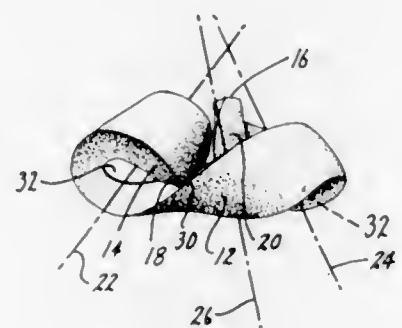
**PACKING MATERIAL AND METHOD**  
Gunter G. Fuss, San Mateo, Calif., assignor to Free Flow Packaging Corporation, Redwood City, Calif.

Filed Feb. 16, 1971, Ser. No. 115,527

Int. Cl. B65d 85/00; B29d 27/00

U.S. Cl. 161—168

10 Claims



An improved free flow packing material particularly characterized by its ability to isolate packed items and to absorb the energy of potentially destructive shocks and impacts, together with a method and means for its manufacture. The individual units of the packing material are structurally in the form of relatively elongate thick continuous strips wherein each strip is formed with a gradually twisting spiral configuration, having curling central and end portions. The individual units are of a size and shape to provide a desired free-flowing characteristic, and are formed of a foamed expanded crushable plastic material which inherently possesses a shock absorbing characteristic.

3,723,238

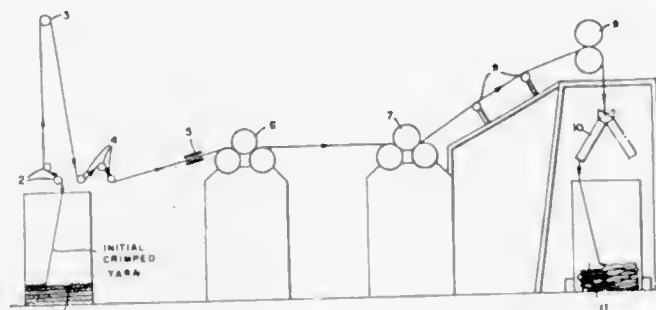
**NON-WOVEN FLEECE OF CONTINUOUS FILAMENTS**  
Helmut Werner, Elsenfeld, and Hans Stapp, Momlingen, both of Germany, assignors to Enka Glanzstoff AG, Wuppertal, Germany

Division of Ser. No. 787,013, Dec. 26, 1968, Pat. No. 3,574,908. This application Sept. 25, 1970, Ser. No. 75,348

Int. Cl. B32b 3/20

U.S. Cl. 161—169

6 Claims



A non-woven fleece article composed of continuous tubular filaments of a spun and stretched synthetic fiber-forming polymer, especially a yarn composed of continuous hollow tubular polyethylene terephthalate filaments, wherein individual permanently crimped filaments have a yarn size of about 0.5 to 20 denier, a crimping arc number of 50 to 120 arcs per 10 cm. and a hollow volume of its tubular structure of 10 to 30 percent. The final desired article is one in which a fleece has been formed by coiling or layering a yarn consisting essentially of these filaments after the yarn has been subjected to a temporary elongation within the range or region of the stress-strain curve which produces an elastic strain but under a load of at least 0.1 grams/denier, the permanent extension or set of the filaments being less than 4 percent, and then releasing the tension on the yarn whereby the crimped structure of the filaments is reformed and the yarn spreads out laterally. The resulting coiled or layered yarn product is useful as a fleece-like filler material in pillows, quilts, jackets and the like.

3,723,239

**RUBBER LAMINATES AND A PROCESS FOR PRODUCING THE SAME**

Satoshi Takemura; Eiichi Yoshino; Toshio Honda; Eishi Kubota, and Yukio Fukuura, all of Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

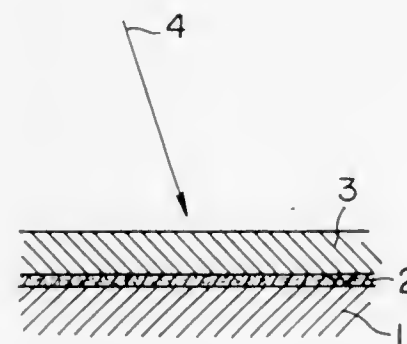
Filed Feb. 19, 1971, Ser. No. 117,020

Claims priority, application Japan, Feb. 23, 1970, 45/14762

Int. Cl. B32b 5/10; D04h 3/12

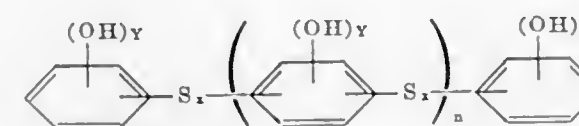
U.S. Cl. 161—170

2 Claims



A laminate of rubber with a polymeric mono-filament having a large curvature radius of the cross-section or a cord formed by twisting said mono-filaments or the organic

polymeric film is prepared by using an aqueous adhesive consisting of a mixture of a liquid adhesive base consisting mainly of a solution of a polyhydric phenol polysulfide having the general formula



wherein  $x$  represents an integer of 2 to 8 and  $x$  in each  $\text{S}_x$  is not always the same integer,  $Y$  represents an integer of 2 to 3 and  $n$  represents 0 or an integer of 1 to 15, dissolved in a resorcin excess resorcin-formaldehyde condensate and RFL solution consisting of a resorcin-formaldehyde resin obtained by reacting resorcin and formaldehyde and a rubber latex.

3,723,240

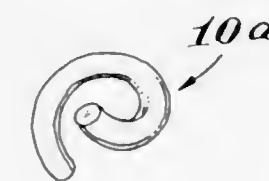
**ASYMMETRICALLY FOAMABLE STRAND**  
Richard E. Skochdopole and Keith R. Denslow, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 27, 1968, Ser. No. 732,270

Int. Cl. B65d 85/30; D02g 3/02

U.S. Cl. 161—173

3 Claims



Generally linear foamable strandular particles which are asymmetrical about a plane generally containing the longitudinal axis provide a desired curled dunnage material when heated to cause foaming. A wide variety of methods may be used to introduce the desired asymmetry.

3,723,241

**BONDING OF AROMATIC POLYAMIDE FILM**

Julius P. Rakus, Bernards Township, and John A. Penoyer, North Plainfield, N.J., and Michael J. Kowalski, Yonkers, N.Y., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Filed Sept. 23, 1970, Ser. No. 74,891

Int. Cl. B32b 27/06, 27/34

U.S. Cl. 161—227

8 Claims

Two or more structures of wholly aromatic polyamides, either the same or different, are adhered or bonded together as by welding, by inserting between them a film prepared by the reaction of a 70:30 mixture of meta- and para-phenylene diamine and isophthaloyl chloride, the film containing about 5 to 30 weight percent of polymer solvent, adherence accomplished by applying heat and pressure in the range of about room temperature–600° F. and 15 to 500 p.s.i., respectively.

3,723,242

**OXIDATION OF SULFIDE PULPING LIQUOR TO FORM POLYSULFIDE LIQUOR IN SITU**

Richard G. Barker, Princeton Junction, N.J., assignor to Union Camp Corporation, Wayne, N.J.

Filed Apr. 1, 1971, Ser. No. 130,320

Int. Cl. D21c 3/02

U.S. Cl. 162—38

7 Claims

A mixture of black liquor and white liquor is oxidized in the presence of wood to be pulped, so as to form a polysulfide pulping liquor which acts immediately upon the wood. The process allows increased yields of pulp with lower sulfidity levels and, thus, lessened pollution.

3,723,243  
**CONTINUOUS DIGESTER HAVING SELF-REGULATING WOOD CHIP LEVEL**

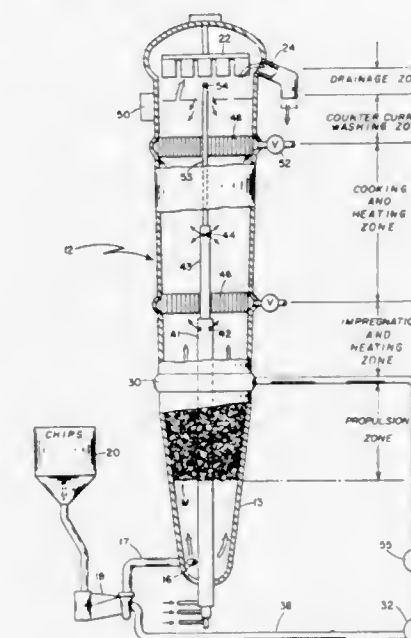
Karl E. Vogel, Hollis, N.H., assignor to Improved Machinery Inc., Nashua, N.H.

Continuation of application Ser. No. 43,559, June 4, 1970, which is a continuation of application Ser. No. 639,336, May 18, 1967. This application Oct. 18, 1971, Ser. No. 190,245

Int. Cl. D21c 3/00

U.S. Cl. 162—52

3 Claims



A continuous upflow digester of the type wherein liquid is advanced upwardly through a compacted mass of wood chips in a propelling zone to create a force for propelling upwardly the columnar mass of wood chips within the vessel, such vessel having a tapered portion adjacent its lower end, the lower end of the chip mass normally being maintained therewithin in a self-regulating manner while wood chips are accreted thereon at relatively low liquid flow rates by reason of the progressively upwardly decreasing velocity of propelling liquid created within said tapered vessel portion and increasing chip mass lifting force created upon downward movement of the lower end of the chip mass.

3,723,244

**FIBROUS FIBRIN SHEET AND METHOD FOR PRODUCING SAME**

Julian P. Breillatt, Jr., Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Jan. 18, 1971, Ser. No. 107,382

Int. Cl. D21h 5/20

U.S. Cl. 162—151

8 Claims

Fibrin in sheet form is prepared by centrifuging an aqueous dispersion of monomeric fibrin under fibrin-polymerizing conditions. The centrifugation is conducted in a vessel having a wall for intercepting centrifuged particles and at a speed pelletizing the resulting strands of polymerized fibrin thereon. The pelletized strands interlock to form a fibrous sheet, which is removed from the vessel.

3,723,245

**APPARATUS FOR THE PRODUCTION OF ASBESTOS-CEMENT PIPES**

Auguste Blary, Paris, France, assignor to Societe Anonyme Francaise Eternit, Paris, France

Filed Dec. 21, 1970, Ser. No. 100,256

Claims priority, application France, Dec. 30, 1969, 6945452

Int. Cl. B28b 21/48, 21/90; B31c 1/02

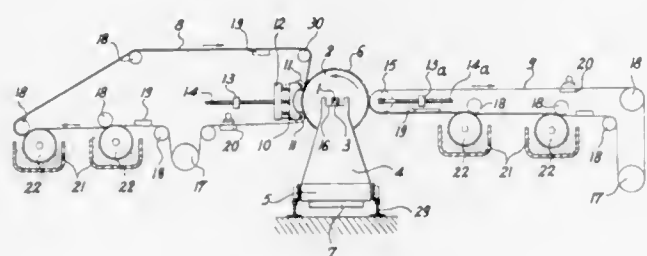
U.S. Cl. 162—284

6 Claims

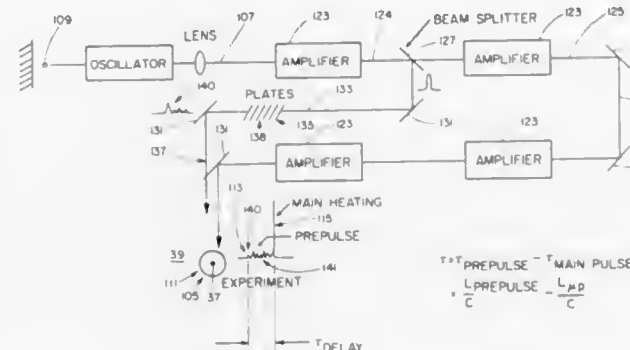
A machine for manufacturing pipes from thin layers of paste material such as asbestos-cement wherein the



layers are transferred to a rotary mandrel from at least one continuously-moving conveyor-belt by bringing the mandrel into contact with the belt along a horizontal generatrix laterally of the surface of the mandrel. The mandrel is supported by a moving carriage on a track which is parallel to the axis of the mandrel and is thus brought close to the conveyor-belts. At least one belt is applied against the mandrel by means of a pressure head which is fitted with elastic means so that the belt and



Means are described for producing a tailored laser light pulse and a tailored target for producing a laser-target



interaction. Laser-target micro-explosions are also contemplated.

3,723,247

**NUCLEAR REACTOR HAVING INTERNAL PUMPS**  
Lars Leine, Sture Gavlefors, and Olle Eriksson, Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

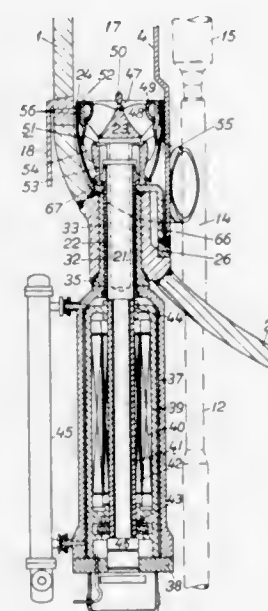
Filed Sept. 15, 1969, Ser. No. 857,686

Claims priority, application Sweden, Sept. 24, 1968, 12,824/68

Int. Cl. G21c 15/24

U.S. Cl. 156—50

4 Claims



In a boiling water reactor having coolant recirculation pumps installed within an annular space between the reactor pressure vessel and an internal core shroud, the pump motors are arranged outside the reactor pressure vessel, the pump shafts penetrate the bottom part of the reactor pressure vessel in vertical shaft bores and the pump impellers are surrounded by pump casings having curved flow passages. The pump casings are rigidly attached either to the shaft bores or to the core shroud and flexibly sealed with respect to the core shroud or the shaft bores. The pump motors may be designed to operate in the reactor coolant and be enclosed in motor housing pressure vessels communicating with the reactor vessel.

3,723,246

**PLASMA PRODUCTION APPARATUS HAVING DROPLET PRODUCTION MEANS AND LASER PRE-PULSE MEANS**

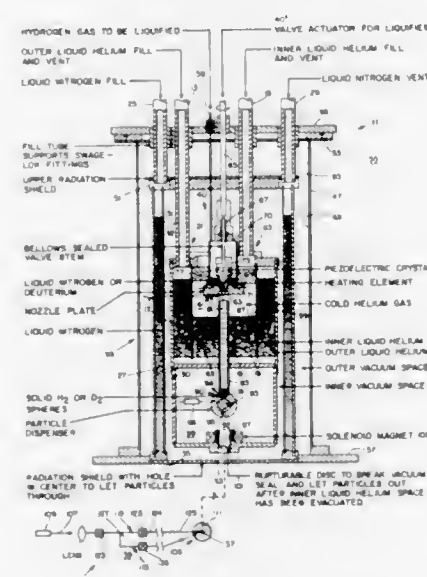
Moshe J. Lubin, Rochester, N.Y., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed May 27, 1971, Ser. No. 147,489

Int. Cl. G21b 1/00

U.S. Cl. 176—1

10 Claims



Apparatus and method for producing a freely expanding high temperature plasma from a high density target that is irradiated with laser light by a tailored laser pulse.

3,723,248  
**METHOD FOR PRODUCING  $\alpha$ -KETOGlutARIC ACID**

Katsunobu Tanaka and Kazu Kimura, Machida-shi, and Ken Yamaguchi, Tokyo, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

No Drawing. Continuation of application Ser. No. 657,483, Aug. 1, 1967, which is a continuation-in-part of application Ser. No. 470,883, July 9, 1965, both now abandoned. This application June 13, 1968, Ser. No. 736,582 Int. Cl. C12d 1/02

U.S. Cl. 195—28 R

15 Claims

The present disclosure relates to a method for producing  $\alpha$ -ketoglutaric acid which comprises culturing a microorganism capable of producing  $\alpha$ -ketoglutaric acid in an aqueous nutrient medium under aerobic conditions in the presence of at least one hydrocarbon as the main source of carbon. The microorganisms capable of producing  $\alpha$ -ketoglutaric acid advantageously belong to the genera *Corynebacterium*, *Brevibacterium*, *Arthrobacter* and *Micrococcus* and the hydrocarbons which are used as the main source of carbon are preferably n-paraffins.

3,723,249  
**METHOD OF PRODUCING L-ARGININE BY MICROORGANISM**

Koji Kubota and Hirotaka Kamijo, Kanagawa-ken, Takiko Onoda, Tokyo, Fumihiko Yoshinaga, Kanagawa-ken, and Shinji Okumura, Tokyo, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

No Drawing. Filed Feb. 12, 1971, Ser. No. 115,116 Claims priority, application Japan, Feb. 21, 1970, 45/15,108

Int. Cl. C12d 1/00

U.S. Cl. 195—47

5 Claims

Certain bacteria of the genera *Brevibacterium* and *Corynebacterium* produce extracellularly L-arginine in amounts sufficient to warrant recovery on a commercial scale when cultured on a glucose or acetic acid medium.

3,723,250  
**PROTEOLYTIC ENZYMES, THEIR PRODUCTION AND USE**

Knud Aunstrup, Farum; Otto Andresen, Copenhagen, and Helle Outtrup, Vaerloose, all of Denmark, assignors to Novo Terapeutisk Laboratorium A/S, Copenhagen, Denmark

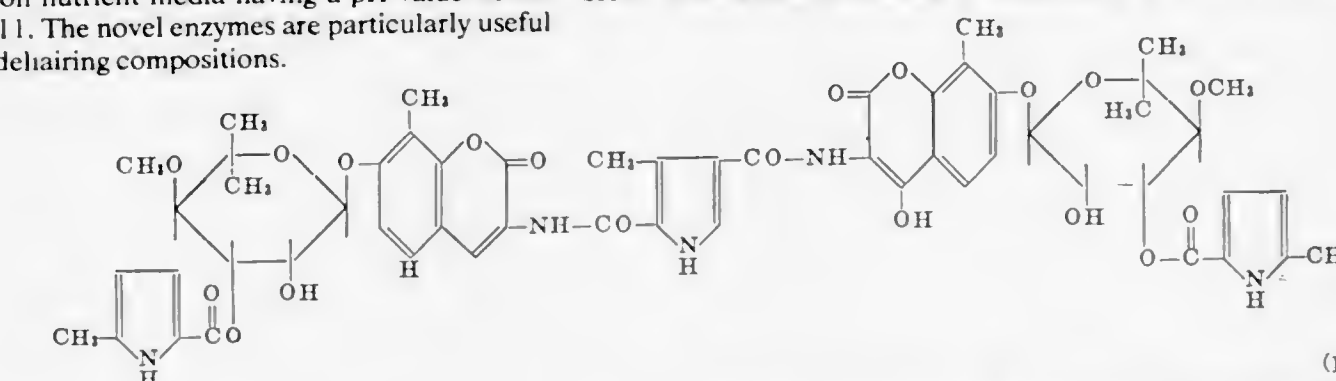
Filed Sept. 23, 1968, Ser. No. 761,546 Claims priority, application Great Britain, Oct. 3, 1967, 45,046/67

Int. Cl. C12d 13/10

U.S. Cl. 195—62

4 Claims

The invention relates to enzyme preparations containing novel proteolytic enzymes produced by cultivation of novel species of the genus *Bacillus* and showing useful activity at high alkalinities. The invention also relates to production of the novel proteolytic enzymes by cultivation of the novel species of the genus *Bacillus* in a nutrient medium having a pH-value within the range of 7 to 12. Finally the invention relates to a process of isolating the novel species referred to by effecting the isolation on nutrient media having a pH-value within the range of 9 to 11. The novel enzymes are particularly useful in detergent and delhairing compositions.



which comprises fermenting the organism *Streptomyces hazeliensis* (NRRL 2938) until activity against gram-positive bacteria is obtained.







or amphibole type while the binder comprises at least one of a group of certain polymeric compounds of the type including synthetic rubbers, and thermoplastic and thermosetting polymers and copolymers of hydrocarbon and substituted hydrocarbon compounds. The polymeric material incorporated into the asbestos matrix glues or binds the fibers of the asbestos in a linked or glued structure to strengthen the diaphragm and prevent rupture during continuous operation of the cell.

### 3,723,265 ELECTROLYTIC PRODUCTION OF MANGANESE DIOXIDE

Eberhard Preisler, Knapsack, Heinz Harnisch, Lovenich, and Gerhard Mietens, Eferen, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

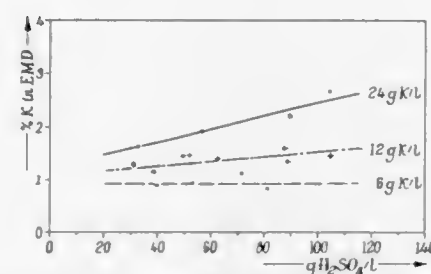
Filed May 20, 1971, Ser. No. 145,331

Claims priority, application Germany, May 30, 1970, P 20 26 597.8

Int. Cl. B01k 1/00; C01b 13/14

U.S. Cl. 204—83

6 Claims



Influence of the Sulfuric Acid Concentration on the Incorporation of Potassium in the Lattice of Electrolytic Manganese Dioxide (EMD) at Different Potassium Ion Concentration in the Electrolyte

Electrolytic production of manganese dioxide from an electrolyte consisting substantially of manganese-II-sulfate solutions in sulfuric acid. Manganese dioxide of which between 5 and 100 percent is  $\alpha$ -modification of  $MnO_2$ , the balance being  $\gamma$ -modification of  $MnO_2$ , is produced with the use of an electrolyte containing potassium ions in a concentration of 1 gram/liter up to the saturation concentration, and free sulfuric acid in a concentration of between 20 and 150 grams/liter. These concentrations are maintained during electrolysis.

### 3,723,266 CATHOLYTE RECIRCULATION IN DIAPHRAGM CHLOR-ALKALI CELLS

John E. Currey, Lewiston, and Walter W. Ruthel, Niagara Falls, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

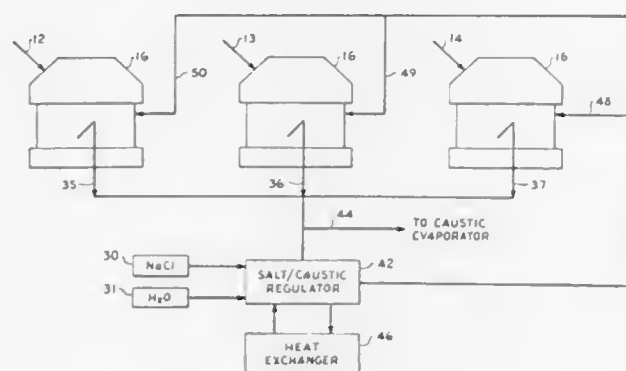
Original application Sept. 23, 1968, Ser. No. 761,752.

Divided and this application Nov. 12, 1970, Ser. No. 89,102

Int. Cl. C01d 1/06

U.S. Cl. 204—98

7 Claims



The caustic concentration, and salt-caustic ratio of catholyte is regulated by addition of an alkali metal chlo-

ride and/or water to withdrawn cell liquor. The temperature of the cell liquor is regulated as desired and an amount of the idealized cell liquor is returned to the cathode compartment of the cell which is approximately one-third to ten times the volume of catholyte withdrawn in the absence of recirculated catholyte. The cell liquor treatment and recycle may be employed in conjunction with anolyte recycle or as an independent means for cell control. Catholyte recirculation increases the cell efficiency and/or produces a cell liquor with a higher caustic concentration than is obtained conventionally.

### 3,723,267 METHOD OF PRODUCING HIGH PURITY ANTIMONY FROM ANTIMONY TRIOXIDE OBTAINED BY BURNING REFINED METAL

Pavel Petrovich Balborodov, Tashkent; Alexandra Vasilievna Uvarova; Ivan Konstantinovich Gerasimov, both of Oshskaya oblast; Alexandr Borisovich Ezhkov, Tashkentskaya oblast Almalyk, and Nikolai Arkadievich Kolbin, Oshskaya oblast, all of U.S.S.R., assignors to Sredneaziaty Nauchno-Issledovatel'skiy I. Proektny Institut Tsvetnoi Metallurgii, Tashkentaskaya oblast, U.S.S.R.

Filed Jan. 5, 1971, Ser. No. 104,168

Int. Cl. C22d 1/00

U.S. Cl. 204—105 R

8 Claims

A method of producing antimony having a total amount of impurities of not higher than 0.01 percent which comprises treating antimony trioxide with an aqueous alkaline solution of glycerine to obtain a solution enriched in antimony and subjecting the solution to electrolysis whereby high-purity antimony is electrodeposited on a cathode.

This method makes possible an increase in the extraction of high purity antimony by as much as 30 percent.

### 3,723,268 ELECTROCHEMICAL MACHINING

Antony Johns, Melton, Mowbray, Michael Tiley, Keyworth, and Patrick J. McDonnell, Burton-on-the-Wold, England, assignors to Production Engineering Research Association of Great Britain, Melton, Mowbray, England

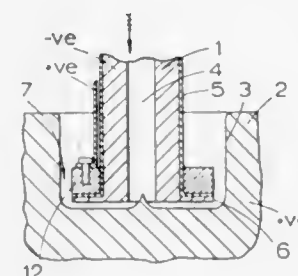
Filed Dec. 20, 1968, Ser. No. 785,559

Claims priority, application Great Britain, Dec. 21, 1967, 58,124/67; May 8, 1968, 21,874/68

Int. Cl. B23p 1/00; B23k 9/16

U.S. Cl. 204—129.1

18 Claims



Methods of electrochemical machining in which stray machining is inhibited and a high feed rate and a constant working gap can be achieved. Stray machining is inhibited by a protective electrode provided on the cathodic tool and maintained at a positive electrical potential relative to the tool to confine electrical current flow between the tool and an anodic workpiece to regions where erosion is desired. High feed rates are achieved by appropriate tapering of a machining land on the tool. Constant working gaps are achieved by normalizing the machining voltage with the aid of voltage sensing probes, by controlling the conductivity of the electrolyte or by

forming stable globules of electrolyte in a dielectric carrier liquid, the globules having a diameter matching the desired gap.

### 3,723,269 METHOD OF PRODUCING TEARING LINES IN METAL CONTAINERS

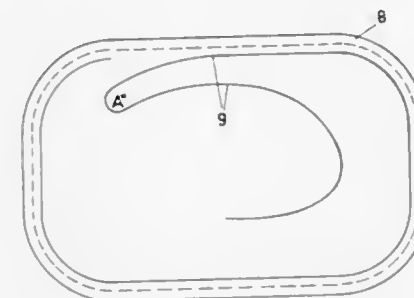
Erich Hoffing, Kreuzlingen, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Apr. 6, 1971, Ser. No. 131,636

Int. Cl. C01b 13/04

U.S. Cl. 204—129.65

7 Claims



Disclosed is a method of continuous production of tearing notches in metal cans. A continuously advancing metal material for the cans is first provided with an insulating mask having channels corresponding to the desired pattern of the tearing lines. The uncovered metal surface portion in the channels is subjected to a controllable electrochemical etching process.

### 3,723,270 PROCESS FOR PRODUCING A COPOLYMER OF TETRAFLUOROETHYLENE AND PROPYLENE USING RADIATION AND A SOLVENT

Yoncho Tabata, Matsudo Chiba, and Gen Kojima, Tokyo, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

No Drawing. Filed Dec. 11, 1970, Ser. No. 97,386

Int. Cl. C08d 1/00; C08f 1/16

U.S. Cl. 204—159.22

4 Claims

Copolymers of tetrafluoroethylene and propylene are prepared in a non-polymerizable medium of a solvent or swelling agent, using high energy ionizing radiation.

### 3,723,271 PRODUCTION OF 4,5-EPOXY-2-PENTENAL FROM CYCLOPENTADIENE USING ACTINIC LIGHT

Karl-Heinrich Schulte-Elte, Chatelaine, Geneva, Switzerland, assignor to Firmenich & Cie, Geneva, Switzerland

No Drawing. Original application July 25, 1969, Ser. No. 845,101, now Patent No. 3,644,430. Divided and this application June 21, 1971, Ser. No. 155,332

Claims priority, application Switzerland, July 29, 1968, 11,323/68

Int. Cl. B01j 1/10

U.S. Cl. 204—162 R

6 Claims

4,5-epoxy-2-penten-1-al, which is useful as an intermediate in various organic syntheses, is disclosed together with a process for its preparation which comprises oxidizing cyclopentadiene by means of singlet oxygen.

### 3,723,272 PREPARATION OF OCTACHLOROCYCLO- PENTENE USING ULTRAVIOLET LIGHT

Stephen Robota, North Tonawanda, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed Oct. 26, 1971, Ser. No. 192,628

Int. Cl. B01j 1/10

U.S. Cl. 204—163 R

4 Claims

Octachlorocyclopentene is prepared from dicyclopentadiene by a simple and direct, two-stage, chlorination process. The first stage provides for depolymerizing the

dicyclopentadiene dimer by thermocracking, and thereafter chlorinating with an excess of chlorine under a heel of chlorinated cyclopentadiene to form polychlorocyclopentanes containing between 4 and 5 chlorine atoms. The second stage provides for the further chlorination of the polychlorocyclopentanes to octachlorocyclopentenes at constant temperature and with an excess of chlorine. Provision is made therein for the chlorination in both stages by both non-catalytic and catalytic methods.

### 3,723,273 ELECTRODIALYTIC PRODUCTION OF STANNIC OXIDE SOL

Harold P. Wilson, Sewickley, Pa., assignor to Vulcan Materials Company, Birmingham, Ala.

No Drawing. Filed Sept. 24, 1971, Ser. No. 183,713

Int. Cl. B01d 13/02

U.S. Cl. 204—180 P

8 Claims

Stannic oxide sol is produced by electrodialytically transferring metal cations of a water-soluble stannate, such as potassium stannate, from the anode compartment of an electrolytic cell to the cathode compartment while simultaneously substantially preventing migration of tin anions from the anode compartment to the cathode compartment by maintaining a cation permselective dialytic membrane between the anode and the cathode.

### 3,723,274 METHOD OF ELECTROCOATING USING A FLOWING MERCURY CATHODE

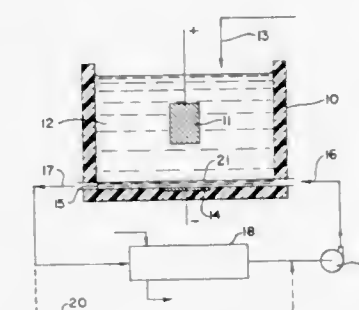
Lowell G. Wise, Cleveland, Ohio, assignor to The Sherwin-Williams Company, Cleveland, Ohio

Filed Oct. 30, 1970, Ser. No. 88,038

Int. Cl. B01k 5/02; C23b 13/00

U.S. Cl. 204—181

7 Claims



Process and apparatus for anodically electrodepositing a resin film from an aqueous bath of a water-dispersible polycarboxylic acid resin with an alkali metal hydroxide dispersal agent using a flowable liquid mercury cathode. Alkali metal ions are removed from the aqueous coating bath by cathodic deposition, while the resin is deposited on a metal anode. Mercury and alkali metal values from the amalgam are recovered for reuse.

### 3,723,275 DUAL FEED SYSTEM FOR ELECTROCOATING BATH

William Bonfich, Parma, Ohio, and James C. Hoffman, Jamesburg, N.J., assignors to Mobil Oil Corporation

No Drawing. Filed Mar. 15, 1971, Ser. No. 124,604

Int. Cl. B01k 5/02

U.S. Cl. 204—181

6 Claims

An aqueous emulsion electrocoating bath is maintained by separately supplying: (1) an oil-in-water emulsion having an emulsified phase comprising water insoluble organic solvent having dissolved therein an at least partially esterified resinous polyol and a continuous phase comprising water and resinous polycarboxylic acid emulsifying agent in partially neutralized base-deficient condi-



tion; and (2) a pigmented, base-satisfied, water-bearing and water reducible solution comprising resinous emulsifying agent dissolved in water miscible organic solvent.

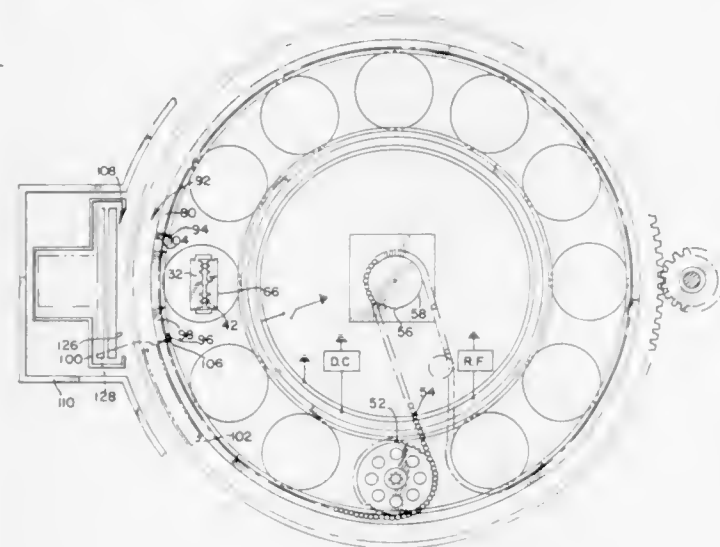
3,723,276

## ARTICLE COATING METHOD

George C. Lane, Danbury, Cyril A. Cartwright, Monroe, and Keith W. Elmslie, Guilford, Conn., assignors to Warner-Lambert Company, Morris Plains, N.J.  
Filed June 3, 1969, Ser. No. 829,906  
Int. Cl. C23c 15/00

U.S. Cl. 204—192

9 Claims



An apparatus and method for coating articles or substrates, particularly razor blades or other cutting instruments, in which means are provided for establishing a radio frequency alternating electrical field between electrodes within a vacuum chamber for sputtering a coating from a target having the coating material thereon to the article, or substrate to be coated. The described apparatus includes means for providing preliminary cleaning of the substrate as well as the target before coating, such cleaning operation being capable of operating in any one of several different operational modes. Various mechanical handling and protective devices are described for carrying out the operations in a single vacuum chamber. Preferably, the substrate is first cleaned by so-called reverse sputtering (using the intended substrate as a target) or glow discharge cleaning, or sputter etching, then protected against contamination while the target is cleaned, with the substrate thereafter being exposed to coating by sputtering. In another embodiment, simultaneous substrate cleaning and deposition takes place, as the target and the substrate are maintained at different potentials while having radio frequency alternating voltages impressed thereon. The apparatus provides a means of performing these operations either simultaneously or in sequence on a plurality of articles at one or more stations without breaking the vacuum in the evacuated chamber, or allowing contamination of the article, substrate or target between cleaning and coating operations.

3,723,277

## METHOD FOR THE PRODUCTION OF MASKS IN THE MANUFACTURE OF SEMICONDUCTOR COMPONENTS

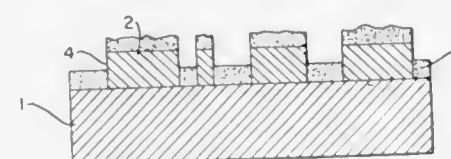
Werner Schmiedeck, Dresden, Germany, assignor to Arbeitsstelle für Molekularelektronik, Dresden, Germany  
Continuation-in-part of abandoned application Ser. No. 794,663, Jan. 28, 1969. This application July 14, 1971, Ser. No. 163,546  
Int. Cl. C23c 15/00

U.S. Cl. 204—192

9 Claims

In a process for the production of masks in the manufacture of semiconductor components, onto a coated or

uncoated semiconductor substrate is sputtered a composition containing a silicon oxide or nitride compound at a power density no greater than about 0.2 watt per cm.<sup>2</sup> until a coating thickness of at least 0.1  $\mu$ m. is attained and then at a power density no greater than about 0.4 watt per cm.<sup>2</sup> until the coating has attained a thickness



of 0.3 to 2.0  $\mu$ m., then the power density is increased to 3 to 5 watts per cm.<sup>2</sup> to partially decompose the photoresist mask and tear open the coating superimposed thereon; this is followed by solvent and ultrasonic treatments to remove the remaining photoresist and superimposed coating.

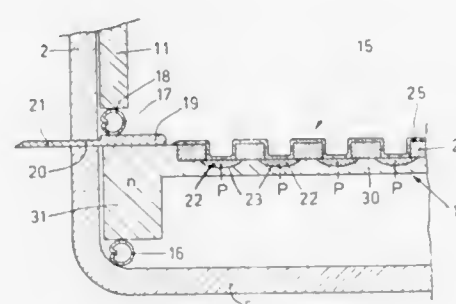
3,723,278

## METHOD OF DEPOSITING HAFNIUM-TANTALUM NITRIDE LAYER BY REACTIVE SPUTTERING

Richard B. Liebert and Thomas H. Conklin, Ridgefield, Conn., assignors to North American Philips Corporation, New York, N.Y.  
Filed July 30, 1971, Ser. No. 167,633  
Int. Cl. C23c 15/00

U.S. Cl. 204—192

2 Claims



A hafnium-tantalum nitride layer having a composition between the mononitride and the dinitride 500–5000 Å. thick is deposited on an oxidized silicon substrate in an argon atmosphere containing nitrogen at a partial pressure of  $5-10 \times 10^{-3}$  torr by RF sputtering of hafnium mononitride and tantalum mononitride. After subsequent annealing such layers have sheet resistivities of at least  $2 \times 10^{13}$  ohms/ $\square$  and are particularly suited as an electron discharge layer on the oxide surface of a silicon vidicon target wafer, i.e. as a resistive sea.

3,723,279

## APPARATUS FOR OXYGEN DETERMINATION

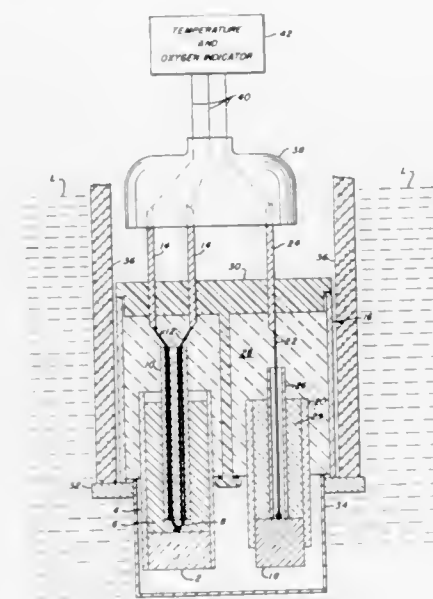
Richard J. Fruehan, Franklin Township, Westmoreland County, and Ethem T. Turkdogan, Pittsburgh, Pa., assignors to United States Steel Corporation  
Continuation-in-part of application Ser. No. 727,314, May 7, 1968. This application May 21, 1970, Ser. No. 39,530  
Int. Cl. G01n 27/46

U.S. Cl. 204—195 S

10 Claims

A device for measuring oxygen content of fluids at elevated temperature comprises a galvanic cell with a solid oxide electrolyte and a reference electrode of a mixture of chromium or an alloy thereof and  $\text{Cr}_2\text{O}_3$ . When the

fluid, acting as the other electrode, contacts the electrolyte, the resulting EMF indicates oxygen content. Provision is



also made for simultaneous temperature determination and for electrical contact with fluids, such as liquid steel.

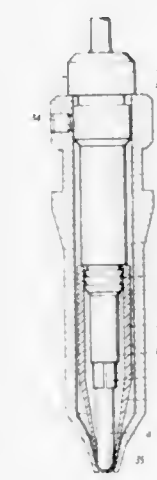
3,723,280

## ELECTRODE ARRANGEMENT FOR THE MEASUREMENT OF PARTIAL PRESSURES OF GASES

Karl Harnoncourt, and Rudolf Zeiringer, both of Graz, Austria, assignors to Hans List, Graz, Austria  
Filed Nov. 25, 1970, Ser. No. 92,683  
Claims priority, application Austria, Dec. 4, 1969, A 11343/69; Sept. 3, 1970, A 8040/70  
Int. Cl. G01n 27/30, 27/40

U.S. Cl. 204—195 P

5 Claims



An electrode arrangement for the measurement of partial pressures of gases such as carbon dioxide and oxygen for analysis of blood gases and in which the electrode has a sensitive extremity covered by a liquid-proof membrane permeable to gases and a reference electrode arranged in spaced relation to the sensitive extremity and electroconductively connected therewith by means of an electrolytic layer.

3,723,281

## BICARBONATE ION SENSITIVE ELECTRODE

Warren M. Wise, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.  
Filed Jan. 31, 1972, Ser. No. 222,023  
Int. Cl. G01n 27/46

U.S. Cl. 204—195 L

3 Claims

Electrode for measuring the concentration of bicarbonate ions in the presence of chloride ions in an aqueous

solution. The ion sensing portion of the electrode is an organic solution consisting of a high molecular weight quaternary ammonium salt dissolved preferably in a dual solvent system consisting of a trifluoroacetyl-p-alkylbenzene and an alcohol of low water solubility. The preferred electrode has a selectivity for  $\text{HCO}_3^-$  over  $\text{Cl}^-$  of between about 15 to 1 and 40 to 1.

3,723,282

## EXTRUDED CONSUMABLE ANODES WITH ANODIZED CORE-CLADDING INTERFACE

John F. Pashak, Linwood, Mich., assignor to The Dow Chemical Company, Midland, Mich.  
No Drawing. Filed Nov. 23, 1970, Ser. No. 92,305  
Int. Cl. C23f 13/00

U.S. Cl. 204—197

10 Claims

An extrusion process for forming consumable anodes and the product produced therein. The process comprises the co-extrusion of a wire core having a non-ferrous light metal surface with an overcoating of a dissimilar light metal. A synthetically produced non-ferrous metal oxide layer is interposed between the dissimilar light metal surfaces to reduce the incidence of core wire breakage during extrusion operations. It is believed that alloying of the light metal core surface with the dissimilar extruded overcoating is inhibited by the oxide layer, thereby substantially eliminating adherence of a low melting, non-ferrous alloy to the extrusion die. Breakage of the core wire during extrusion is thereby minimized.

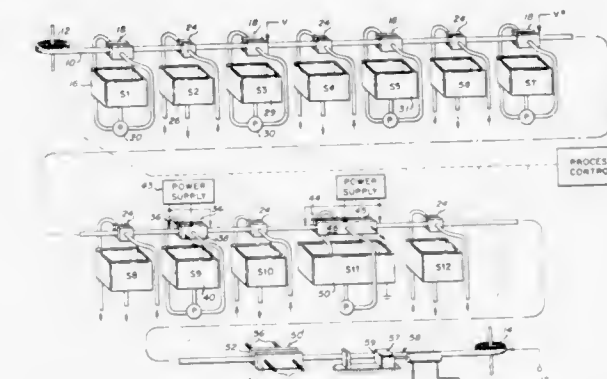
3,723,283

## SELECTIVE PLATING SYSTEM

Frank J. Johnson, San Jose, Nelson L. Walker, Saratoga, and John P. Ross, Cupertino, Calif., assignors to Select-Au-Matic, Santa Clara, Calif.  
Filed Dec. 23, 1970, Ser. No. 100,915  
Int. Cl. B01k 3/00; B23p 1/02, 1/12

U.S. Cl. 204—206

15 Claims



A selective plating system in which a continuous strip or web of work material is passed through the system without deformation and selected discrete areas of the web surface may be uniformly plated without the use of adhesive masks or other techniques heretofore utilized. The system includes several stations through which the web is drawn in order to perform the required cleaning, rinsing and electroplating operations. The system also includes a novel electrolyte handling structure which engages the web to mask off those surface areas not to be plated and which causes the electrolyte to be passed in flowing relationship with the discrete areas to be plated.



3,723,284

## INDEX COMMUTATOR MEANS FOR OSCILLATING BARRELS

Paul E. Ziebarth, Hillegossen, and Reinhold Ritter, Herford-Elverdissen, both of Germany, assignors to Langheim & Co., Heepen b. Bielefeld, Germany

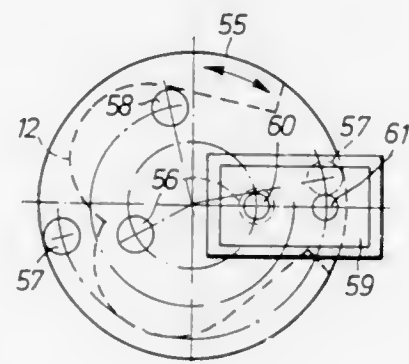
Filed May 20, 1971, Ser. No. 145,254

Claims priority, application Germany, Feb. 11, 1971, P 21 06 544.1

Int. Cl. 259 89; C23b 5/78

U.S. Cl. 204—213

12 Claims



A galvanizing device comprising a pivoted drum to hold workpieces, means for rocking the drum to a limited extent, a carrying frame in which the drum is pivoted, pierced longitudinal walls of plastics material within the drum the cross-section of the walls being partially heart-shaped, longitudinal strengthening bars attached to the walls and to the ends of the drum, the bars carrying partially exposed current-carrying contact rods, and connections from the rods to a low-voltage high current electric supply. The drum dips into a vat containing treatment liquid which penetrates the holes in the walls and contacts the workpieces in the drum.

3,723,285

## SYSTEM FOR PROTECTING ELECTROLYTIC CELLS AGAINST SHORT CIRCUITS

Giorgio Abbate Daga, Lino Cerrocchi, and Pietro Fracassi, all of Milan, Italy, assignors to Montecatini Edison S.P.A.; Guardigli S.P.A., both of Milan, Italy

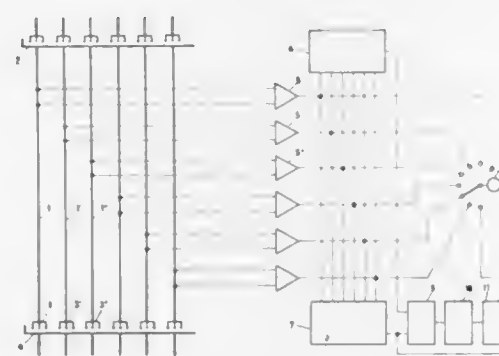
Filed Oct. 13, 1970, Ser. No. 80,433

Claims priority, application Italy, Oct. 16, 1969, 23449 A/69

Int. Cl. B01k 3/00; C22d 1/04

U.S. Cl. 204—228

18 Claims



A device for protecting electrolytic cells against short circuits, having an operational amplifier for each of the ascent bars of said cells, said amplifiers having adjustable gain and being supplied through difference inputs with voltage falls picked up on said bars, circuits being included for compensat-

ing the effects due to temperature variations of the bars as well as circuits for the rejection of the common mode voltages due to anodic transversal voltages, the output voltages from said operational amplifiers supplying an averaging circuit for determining the average voltage and a discriminating circuit for determining the highest voltage, the outputs of said averaging and discriminating circuits terminating at a comparator circuit in its turn associated with an alarm and/or control unit.

3,723,286

## ALUMINUM REDUCTION CELL

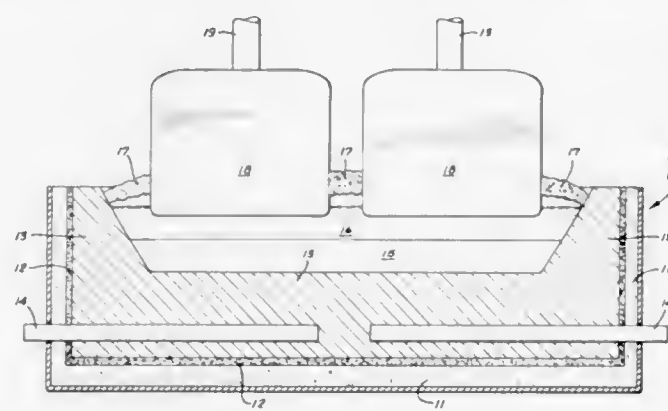
Leland F. Hunt, Diablo, Calif., and Julio R. Lago, New Orleans, La., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Nov. 8, 1971, Ser. No. 196,337

Int. Cl. C22d 3/02; B01k 3/04

U.S. Cl. 204—243 R

10 Claims



The distortion of the carbonaceous cathode lining of an aluminum reduction cell is substantially reduced by incorporating a layer of salt selected from the group consisting of the chloride and fluoride salts of sodium, lithium, calcium and manganese between the carbonaceous lining and the insulating layer of refractory material.

3,723,287

## APPARATUS FOR PRODUCING ALUMINUM FROM ALUMINA

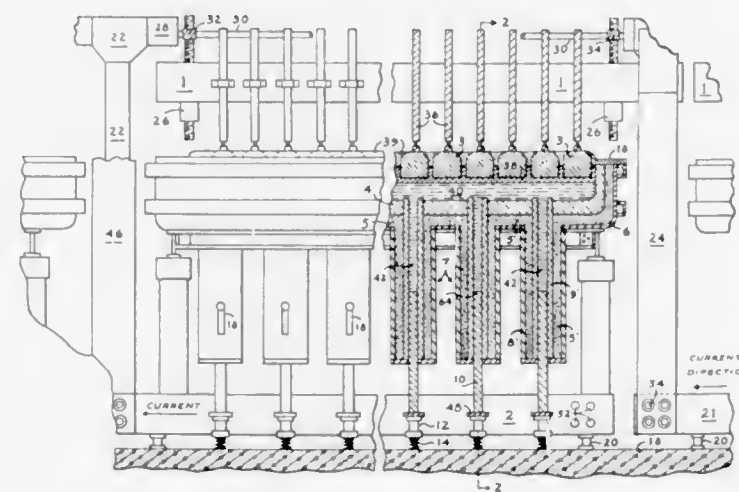
Charles Henry Elliott, 212 Jeff Davis Ave., Waveland, Miss. 39576

Filed Sept. 30, 1970, Ser. No. 76,915

Int. Cl. C22d 3/02, 3/12

U.S. Cl. 204—243 R

12 Claims



Apparatus for alumina reduction comprising substantially vertical cathodes, eliminating previous leaching of

iron into the molten aluminum from horizontal cathodes in the crucible, and the previous wave-like distortions (ridging and motoring) of this aluminum caused by magnetic forces from the horizontal cathodes. The composite vertical cathode comprises: an outer steel tube, fixed to and extending below the crucible shell; an inner carbonaceous hollow member or conduit; a central, current-conducting means in the conduit that comprises a lower rod of conductive metal and a portion of the molten aluminum within an upper part of the conduit. A method is disclosed that comprises dropping a vertical rod of aluminum or copper downward in and thru the cathode hollow member, to rest on a resilient base. When this rod is aluminum it preferably extends well above an outlet tap in the conduit; when of copper its upper end is below the tap. The method also comprises withdrawing molten aluminum from the tap—optionally from the temporarily capped hollow member (in purging it of alumina sludge) or from the crucible (in withdrawing produced aluminum).

3,723,288

## ELECTROPHORETIC IMAGING APPARATUS INCLUDING MEANS TO PROJECT AN IMAGE AT A LIQUID NIP

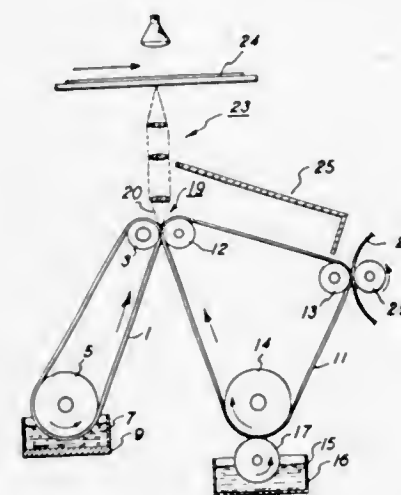
John W. Weigl, West Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of application Ser. No. 760,311, Sept. 17, 1968. This application Jan. 6, 1971, Ser. No. 104,332

Int. Cl. B01k 5/02

U.S. Cl. 204—300

5 Claims



A photoelectrophoretic imaging system and apparatus are described wherein electrically photosensitive particles dispersed in a carrier liquid are subjected to an electric field and exposed to imagewise light causing selective particle migration in image configuration. The imagewise exposure is directed at a liquid nip of the particle-liquid suspension. The exposure is not directed through either nip forming surface.

3,723,289

## METHOD AND APPARATUS FOR PLASMA TREATMENT OF SUBSTRATES

Abraham A. Boom, Martinsville, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Aug. 12, 1971, Ser. No. 171,282

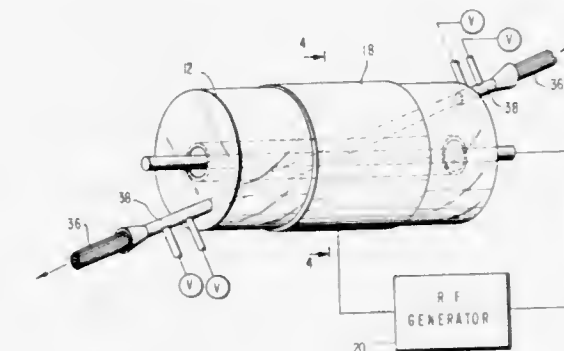
Int. Cl. H01t 19/00

U.S. Cl. 204—312

18 Claims

A method and apparatus for efficiently generating a gaseous plasma particularly for the treatment of substrates. A radio

frequency electrical signal is applied to two electrodes disposed exteriorly of an electrically insulative, gas impervious envelope. A central passage extends into the envelope and one electrode is disposed in the central passage. The electrodes are separated at least in part by the envelope and the radio frequency signal applied to the electrodes excites the gas within the envelope to thereby generate a gaseous plasma therein. The gas conditions within the envelope differ from the gas conditions exteriorly thereof and the amplitude of the radio frequency signal is insufficient to generate a plasma out-



side the chamber defined by the envelope. Since the plasma does not contact the electrodes, efficiency is maximized and the plasma is not contaminated by the electrodes. In addition, the surface areas of the electrodes differ substantially thereby creating a plasma within the envelope which varies in concentration in a predetermined manner, with the concentration being greatest near the center of the envelope. A substrate may therefore be contacted by varying plasma concentration as it passes through the envelope and the outer wall of the envelope is not contaminated by the plasma. A vacuum lock for preventing gas leakage into the envelope is also disclosed.

3,723,290

## HIGH TEMPERATURE CHEMICAL REACTION APPARATUS

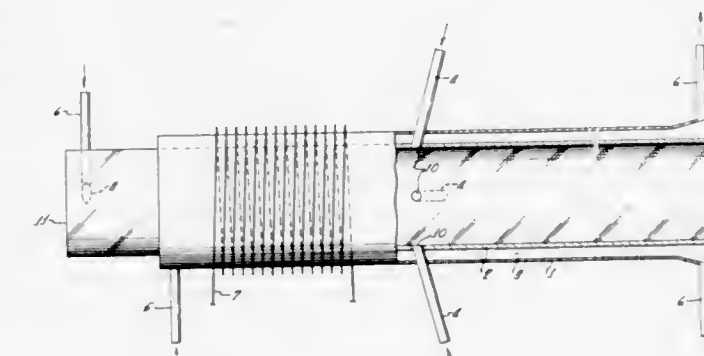
Stephen Mark Lesley Hamblyn, Long Ditton, Anthony Patrick Money, Surbiton, and Ian Malcolm MacKinnon, Kingston-upon-Thames, England, assignors to United States Borax & Chemical Corporation, Los Angeles, Calif.

Filed Jan. 7, 1970, Ser. No. 1,195

Int. Cl. B01k 1/00; C01b 35/00; H05b 7/00

U.S. Cl. 204—328

3 Claims



Improvement in plasma generating apparatus in which the plasma-generating zone and downstream reaction zone are cooled by a cooling jacket surrounding the walls of the reaction vessel.



3,723,291

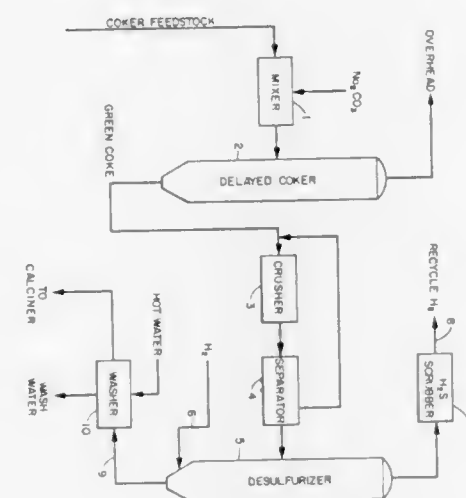
## PROCESS FOR DESULFURIZING COKE

Mahendra T. Thakker, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Continuation-in-part of Ser. No. 799,150, Feb. 10, 1969, abandoned. This application April 16, 1971, Ser. No. 134,909 Int. Cl. C10g 9/14; C10b 57/00

U.S. Cl. 208—46

7 Claims



Petroleum coke of reduced sulfur content is produced by adding an alkali metal carbonate (preferably sodium carbonate) to the coker feedstock prior to coking and then, after coking, treating the coke with hydrogen at an elevated temperature.

3,723,292

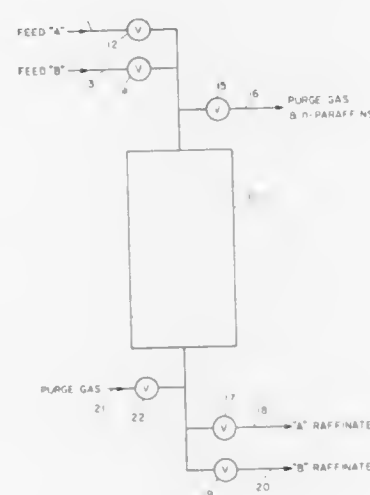
## REMOVAL OF STRAIGHT CHAIN HYDROCARBONS FROM DIFFERENT HYDROCARBON STOCKS

Alfred J. Glessner, Glenolden, Pa., and William Wayne Wentz-heimer, Edgewood, Md., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Aug. 24, 1971, Ser. No. 174,322 Int. Cl. C10g 25/04, 1/00, 35/18

U.S. Cl. 208—85

8 Claims



A cyclic process is disclosed for sequentially treating two different naphtha stocks in the same molecular sieve adsorption bed to produce nonstraight chain hydrocarbon fractions respectively from each stock and a third product composed of straight chain hydrocarbons from both stocks. Also disclosed is the use of this procedure in conjunction with a reforming

process wherein a naphtha feed is first denormalized, the denormalized naphtha is reformed and the resulting reformate is denormalized to yield high octane gasoline blending stock.

3,723,293

## PROCESS FOR PRODUCING GASOLINE BLENDING STOCK OF HIGH ANTINKNOCK VALUE

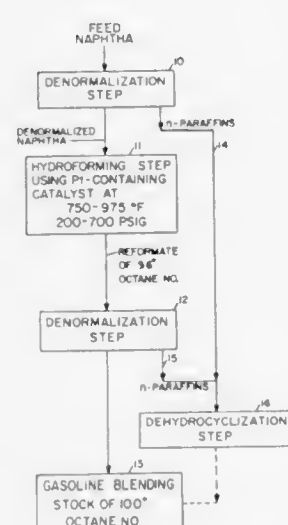
Alfred J. Glessner, Glenolden, Pa., William Wayne Wentz-heimer, Edgewood, Md., and René F. Kress, Media, Pa., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Continuation-in-part of application Ser. No. 112,140, Feb. 3, 1971. This application Nov. 18, 1971, Ser. No. 200,061

Int. Cl. C10g 35/08

U.S. Cl. 208—85

14 Claims



A combination process is disclosed for producing gasoline blending stock having F-1 clear octane number above 100 from naphtha containing normal paraffins and branched paraffins including singly branched paraffins of the  $C_6$ - $C_9$  range, which comprises first denormalizing (i.e., reducing the straight chain hydrocarbon content of) the naphtha, hydroforming the denormalized naphtha via a platinum-containing catalyst under conditions yielding a  $C_{5+}$  reformate with F-1 clear octane number of at least 96, and then denormalizing the reformate. The resulting reformate product not only is substantially free of straight chain hydrocarbons but also, due to this sequence of processing, has an unusually low content of singly branched paraffins of the  $C_6$ - $C_9$  range, which components have poor octane values. Preferably the two denormalization steps are effected by molecular sieve adsorbents. Straight chain hydrocarbons desorbed from the adsorbent in these steps may be dehydrocyclized to increase the yield of high octane gasoline blending stock.

3,723,294

## CONVERSION OF ASPHALTENE-CONTAINING HYDROCARBONACEOUS CHARGE STOCKS

John G. Gatsis, Des Plaines, and William K. T. Gleim, Island Lake, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Oct. 18, 1971, Ser. No. 190,021

Int. Cl. C10g 37/00

U.S. Cl. 208—86

10 Claims

A combination process for effecting the conversion of asphaltene-containing black oils. The charge stock, in admixture with non-stoichiometric vanadium sulfide, and

unreacted asphaltenes, is initially subjected to solvent de-asphalting to provide a solvent-lean mixture of the

same at relatively severe lube hydrogenation conditions whereby color bodies, color body precursors, U.V. adsorbing compounds and sludge precursors are mitigated.

3,723,296

## HYDROCONVERSION OF PETROLEUM OILS

Frederick K. Hahn, Port Arthur, Tex., assignor to Texaco, Inc., New York, N.Y.

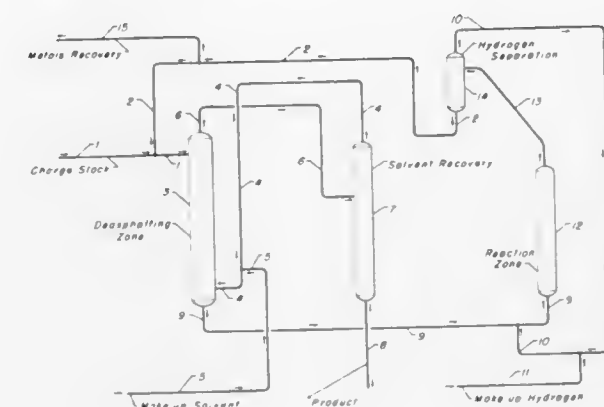
Filed Aug. 16, 1971, Ser. No. 172,259

Int. Cl. C10g 23/00

U.S. Cl. 208—89

13 Claims

In a dual catalyst system such as a petroleum oil hydrotreating - hydrocracking combination in which the first reaction zone is used to control the amount of catalyst deactivant passing into the second reaction zone, and the second reaction zone is a hydroconversion zone the temperature differential between the end-of-run temperature of each catalyst is maintained throughout the on-stream period and the reaction temperatures are regulated to obtain the desired amount of conversion.



vanadium sulfide and the precipitated asphaltenes. This mixture is subsequently reacted with hydrogen to convert the asphaltenes into lower-boiling hydrocarbon products.

3,723,295

## HYDROCRACKING PRODUCTION OF LUBES

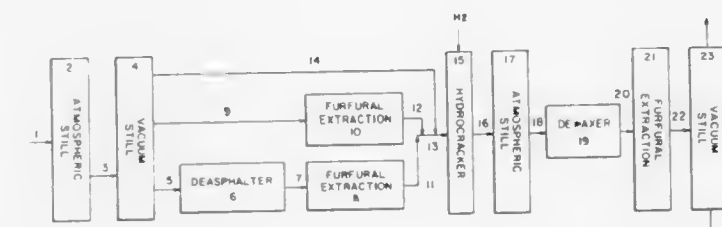
Rene F. Kress, Media, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

Continuation-in-part of application Ser. No. 743,915, July 3, 1968. This application Aug. 17, 1970, Ser. No. 64,656

Int. Cl. C10g 37/00

U.S. Cl. 208—87

18 Claims

3,723,297  
CONVERSION OF ASPHALTENE-CONTAINING CHARGE STOCKS

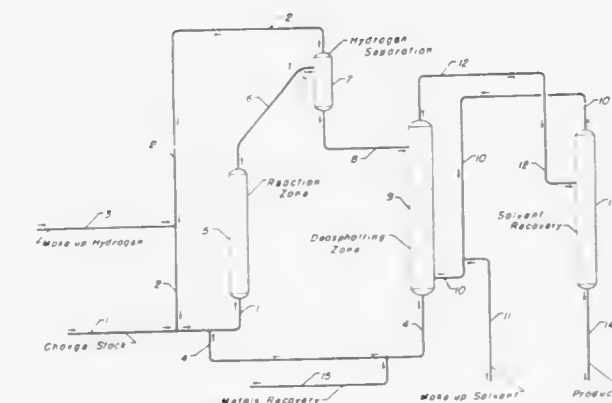
John G. Gatsis, Des Plaines, and William K. T. Gleim, Island Lake, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Oct. 18, 1971, Ser. No. 190,022

Int. Cl. C10g 37/00

U.S. Cl. 208—95

9 Claims



Asphaltene - containing hydrocarbonaceous charge stocks are converted via a combination process which involves (1) hydrogenative conversion utilizing unsupported, non-stoichiometric vanadium sulfide catalyst, followed by (2) solids extraction of the product effluent to recover the vanadium sulfide catalyst interspersed among asphaltenes.

3,723,298

## HYDROGENATION WITH A Y TYPE ZEOLITE-ARSENIC CATALYST

Walter H. Seltzer, West Chester, Pa., assignor to Sun Research and Development Co., Philadelphia, Pa.

Filed April 29, 1971, Ser. No. 138,750

Int. Cl. C10g 23/02

U.S. Cl. 208—143

3 Claims

Hydrogenation of a mineral oil containing aromatic hydrocarbons by use of a hydrogenation catalyst comprised of a Y-zeolite containing arsenic.

3,723,299

## HYDROGENATION PROCESS

Walter H. Seltzer, West Chester, Pa., assignor to Sun Research and Development Co., Philadelphia, Pa.

No Drawing. Filed Nov. 23, 1971, Ser. No. 201,385

Int. Cl. C10g 23/02

U.S. Cl. 208—143

4 Claims

The process of reducing the nitrogen content of a mineral oil containing aromatic hydrocarbons by hydrogenat-

A process for preparing high V.I. lube oils of improved quality comprising solvent extracting at least part of the lube oil hydrocracker charge stock with a solvent having preferential solubility for aromatics, for example, furfural; hydrocracking the raffinate from said extraction under conditions providing for an increased V.I. of said raffinate.

Quality is further enhanced by serially extracting the hydrocracked products with a solvent having preferential solubility for aromatics, such as furfural, under conditions providing for highly selective removal of color bodies, color body precursors, U.V. adsorbing compounds and sludge precursors.

Alternatively, the quality of the hydrocracked product may be further enhanced by selectively hydrogenating



ing said oil in the presence of a catalyst comprised of a Y-zeolite containing cobalt promoted with manganese or zirconium.

3,723,300

# FLUID CONTACTING METHOD FOR FLUID-SOLID CONTACTING

Don B. Carson and William R. Hennemuth, Mount Prospect, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

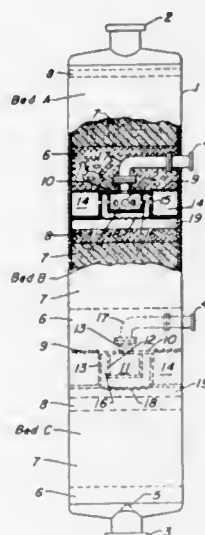
Original application June 23, 1969, Ser. No. 835,449.

Divided and this application Mar. 12, 1971, Ser. No. 123,641

Int. Cl. C10g 13/00

U.S. Cl. 208—146

11 Claims



Method for contacting two fluids in a fluid-solids contacting zone, such as an adsorption zone or a reaction zone. A first fluid is passed into a central chamber having a plurality of fluid openings in the chamber wall, while a second fluid is passed into a solids free annular chamber encompassing the central chamber and spaced apart therefrom. The second fluid is discharged via fluid openings in the inner annular chamber wall, into an annular space between the chambers, and the first fluid is discharged from the central chamber into the second fluid discharge. The fluid openings through which the first fluid is introduced into the annular space between the chambers are in substantially axial radial alignment with the fluid openings through which the second fluid is introduced, thereby providing a region of high turbulence for mixing the first and second fluids. A resulting fluid mixture is passed from the annular space into a second central chamber for further mixing and then to a bed of particulated contact solids. Specific application is in hydrogenation, hydrotreating, hydrocracking and hydrodealkylation reactions.

3,723,301

# PROCESS FOR THE RECOVERY OF HEAT FROM HYDROCARBONS AND THE SEPARATION THEREOF

Lynn H. Rice, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Dec. 1, 1971, Ser. No. 203,794

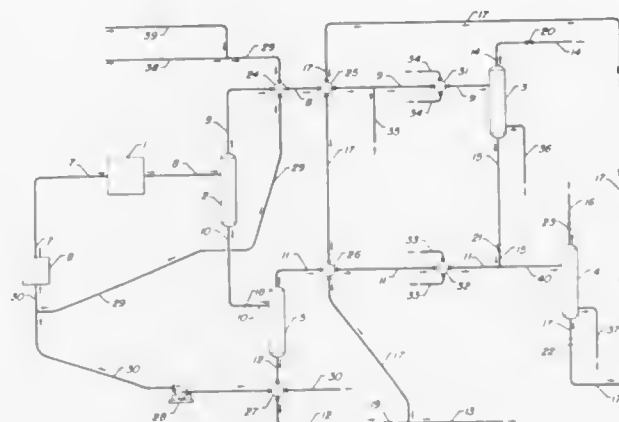
Int. Cl. C10g 23/00

U.S. Cl. 208—213

14 Claims

A process flow scheme is disclosed in which a high temperature and high pressure effluent stream is separated into various valuable hydrocarbon fractions. Heat is also recovered from the hydrocarbon effluent. The disclosure contemplates the use of hydrocarbon processes which produce hydrocarbon effluent materials of 400 p.s.i.g. or

higher pressure and having at least 500° F. temperatures. The hydrocarbon effluent is flashed in various low pressure flash zones and passed through heat exchangers in



order to separate various hydrocarbon components from the effluent while recovering heat from the effluent for improved process efficiencies.

3,723,302

# PROCESS FOR SEPARATING OLEFINS FROM SATURATED HYDROCARBONS

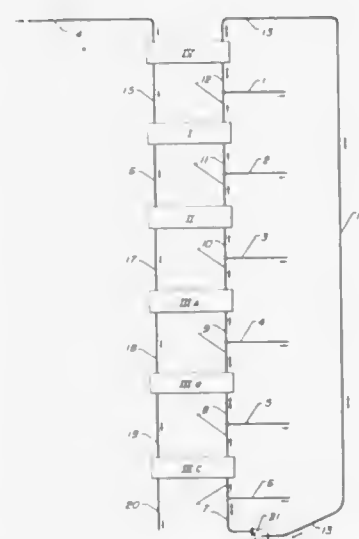
Joe M. Pharis and Frank H. Adams, La Grange Park, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Apr. 30, 1971, Ser. No. 139,032

Int. Cl. C10g 25/00

U.S. Cl. 208—310

10 Claims



An improved process for separating olefinic hydrocarbons in high purity from a feed stream containing a mixture of olefinic and paraffinic hydrocarbons along with contaminants including aromatic hydrocarbons. The general process operations include a contacting operation wherein an olefinic hydrocarbon is preferentially adsorbed by an adsorbent in an adsorption zone. Subsequent contacting with a desorbent material in a desorption zone effects the removal of preferentially adsorbed olefins from the adsorbent. The improvement resides in effecting the removal of product olefins from the adsorbent by using a second desorbent prior to contacting the adsorbent with a first desorbent to effect a desorption of the more tenaciously held contaminant hydrocarbons. The improvement allows a higher concentration of second desorbent to desorb olefins while preventing contamination of the extract olefins with contaminant materials.

3,723,303

# SOLVENT EXTRACTION WITH A SULTONE SOLVENT

Stephen N. Massie, Palatine, and George E. Illingworth, Arlington Heights, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Mar. 22, 1971, Ser. No. 127,027

Int. Cl. C10g 21/16

U.S. Cl. 208—325

11 Claims

A process for the selective extraction of aromatic hydrocarbons from a feed stock containing both aromatic and saturated hydrocarbons. The process employs a solvent which selectively extracts aromatic hydrocarbons with respect to saturated hydrocarbons from a feed stream. The solvent is removed from a mixture of solvent and feed stock and treated to recover a concentrated stream of aromatic hydrocarbons.

3,723,304

# OMNIOLOGICAL FILTER AND PROCESS

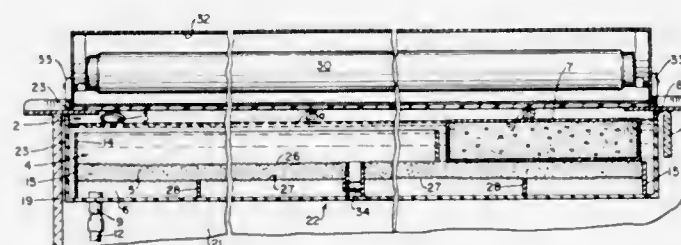
Harold A. Storck, P.O. Box 2034, Suva, Fiji

Filed Mar. 24, 1970, Ser. No. 22,350

Int. Cl. E04h 3/16

U.S. Cl. 210—11

9 Claims



Solid and soluble pollutants are removed from water by means of an apparatus and a process wherein the water is filtered through pads of living marine thread-algae in the presence of light energy entrapping solid pollutants and removing soluble pollutants by photosynthesis.

3,723,305

# HEMODIALYSIS

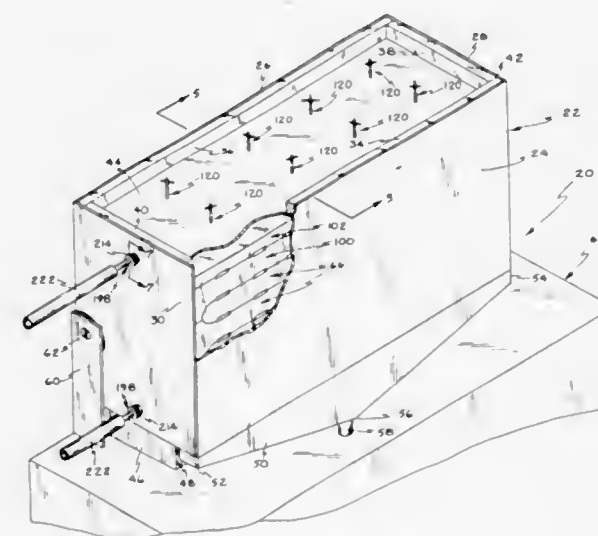
David L. Radford, Salt Lake City, Utah, assignor to Vital Assists, Inc., Salt Lake City, Utah

Filed Jan. 13, 1971, Ser. No. 106,184

Int. Cl. B01d 31/00

U.S. Cl. 210—22

23 Claims



Hemodialyzing method and apparatus including a plurality of elongated separators having surfaces comprised

of densely spaced points. The separators are assembled by generally vertically stacking the separators, the separators being contoured so that a convoluted path exists therebetween. The convoluted path is adapted to removably receive an elongated tubular membrane. Blood is forced through the membrane and dialyzing fluid is forced around the membrane between the spaced points in a direction which crosses the flow of blood. The membrane is replaced by serially removing a separator to expose a portion of the convoluted path, removing the membrane from the exposed portion of the path and removing another separator to support another portion of the path and so on until the membrane can be completely removed. A new membrane is inserted by repeating the mentioned process in reverse order. A novel coupling nipple is disclosed which fits into each end of the tubular membrane, the coupling nipple being attachable at any desired location along the length of the membrane and, once attached, is adjustably mounted in a container for the separators to exert a predetermined tension on the tubular membrane as the membrane traverses the convoluted path.

3,723,306

# SEPARATION OF IONS OR MOLECULES FROM MIXTURES USING GRAFT-POLYMERIZED OR POLYMER DEPOSITED ION EXCHANGE OR PERMSELECTIVE MATERIALS

Douglas J. Bridgeford, Champaign, Ill., assignor to Tee-Pak, Inc., Chicago, Ill.

Continuation of Ser. No. 789,064, Jan. 2, 1969, abandoned, which is a continuation-in-part of Ser. No. 508,597, Nov. 18, 1965, abandoned, which is a continuation-in-part of Ser. No. 413,997, Nov. 25, 1964, Pat. No. 3,227,510, which is a

continuation-in-part of Ser. No. 264,781, March 13, 1963, abandoned, which is a continuation-in-part of Ser. No. 718,995, March 8, 1958, Pat. No. 3,083,118, which is a

continuation-in-part of Ser. No. 594,124, June 27, 1956, abandoned, which is a continuation-in-part of Ser. No. 466,218, Nov. 1, 1954, abandoned, which is a continuation-in-part of Ser. No. 445,451, July 23, 1954, abandoned. This

application Feb. 19, 1971, Ser. No. 117,155

Int. Cl. B01d 31/00, 13/00

U.S. Cl. 210—22

13 Claims

Mixtures of materials including solutions, gaseous mixtures, and colloids are purified or separated by contact with or passing through ion exchange or permselective materials which have been modified by polymer deposition or graft polymerization. The materials used in the separatory process are generally webs, membranes, beads, granules, or other shaped objects which have ion exchange capacity or permselective surface characteristics, which materials have been modified by graft polymerization or polymer deposition to provide the desired permselective or ion exchange characteristics.

3,723,307

# METHOD FOR SEPARATING OIL FROM WATER SURFACE

Raymond E. Hunter, Lomita, Calif., assignor to Ocean Design Engineering Corporation, Long Beach, Calif.

Original application Apr. 8, 1970, Ser. No. 26,666.

Divided and this application Mar. 4, 1971, Ser. No. 121,182

Int. Cl. E02b 15/04

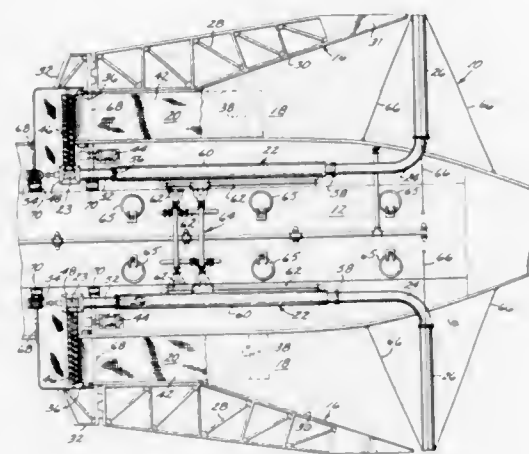
U.S. Cl. 210—33

3 Claims

A method for separating oil from a water surface by distributing many small buoyant bodies of flexible foam material upon such surface, continuously lifting such bodies from the surface, compressing the bodies to remove the absorbed oil, and again distributing the bodies upon the surface for re-use. The method preferably utilizes booms for gathering the distributed bodies of foam material toward a conveyor which lifts the bodies upwardly.



The booms are articulated and include floats so that the booms rise and fall with any wave action of the water, such as would exist in the unprotected waters of the open



sea. The methods preferably includes the steps of compressing the oil from the bodies, and thereafter dropping the bodies onto the water surface for re-cycling.

3,723,308

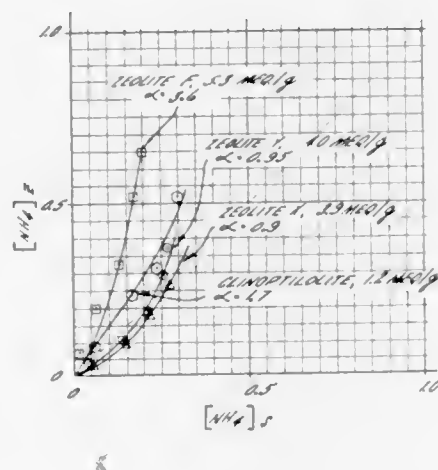
#### PROCESS FOR REMOVAL OF AMMONIA FROM WASTE WATER STREAMS

Donald W. Breck, 289 Hall Avenue, White Plains, N.Y.  
Filed Nov. 16, 1970, Ser. No. 89,782

Int. Cl. C02b 1/44

U.S. Cl. 210—38

1 Claim



Ammonium ions are selectively removed from aqueous solutions containing alkali and/or alkaline earth cations by cation exchange with zeolite F. This is a synthetic crystalline aluminosilicate having a silica-to-alumina oxide mol ratio of about 2 which is derived from a potassium-rich reaction mixture. This zeolite possesses unusual cation exchange capacity and unpredictable selectivity for the ammonium ion.

3,723,309

#### SYSTEM AND METHOD FOR CLEANING OILY SOLID MATERIAL

Juan A. Garcia, Houston, Tex., assignor to Esso Production Research Company  
Filed Sept. 20, 1971, Ser. No. 181,987

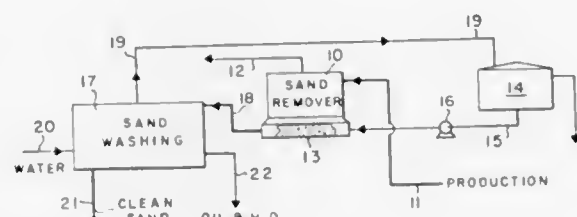
Int. Cl. B01d 17/02

U.S. Cl. 210—44

23 Claims

A slurry of solid material, oil and water is pumped from the bottom of a floatation compartment into a cyclone in which the solid material is washed and separated from the oil and water. The lighter, aerated liquid phase separated from the slurry in the cyclone is recirculated to the floatation compartment where the air

bubbles in the liquid aid in separating the oil from the water. The separated, heavier solid material is discharged from the cyclone into a rinse compartment. An overflow opening between the rinse and floatation compartments



permits liquid in the rinse compartment to overflow into the floatation compartment. A cleansing agent is preferably added to the slurry fed to the cyclone. Additional washing and separating stages may be added as desired.

3,723,310

#### PROCESS FOR FLOCCULATING OIL AND CLAY-CONTAINING SLIMES

William J. Lang, Libertyville, and Donald A. Hentz, Barrington, Ill., assignors to International Minerals & Chemical Corporation

No Drawing. Filed Oct. 7, 1969, Ser. No. 864,518

Int. Cl. B01d 21/01; C02b 1/20

U.S. Cl. 210—53

2 Claims

Finely-divided clay having hydrocarbons in intimate association therewith is flocculated and settled from an aqueous suspension thereof by adding acrylic acid or a water-dispersible anionic acrylic acid-derived polymer, and allowing resulting flocculated solids to settle. Suspended silica may also be flocculated and settled by adding a water-dispersible cationic or nonionic polymer or an inorganic salt as a secondary flocculant.

3,723,311

#### INERT LOW-SOLIDS DRILLING FLUID

James L. Lummus, Tulsa, and Carl D. Edwards, Broken Arrow, Okla., assignors to Amoco Production Company, Tulsa, Okla.

No Drawing. Continuation-in-part of abandoned application Ser. No. 778,813, Nov. 25, 1968. This application Mar. 17, 1971, Ser. No. 125,374

Claims priority, application Canada, July 4, 1969, 56,163; Great Britain, July 29, 1969, 38,101/69; Netherlands, Aug. 29, 1969, 6913278

Int. Cl. C10m 1/06, 3/14

U.S. Cl. 252—8.5 A

12 Claims

A drilling fluid composition includes water, flaxseed gum, gilsonite, asbestos, and a stabilizing agent, such as ethoxylated nonyl phenol, or ethoxylated polypropylene glycol. The water can be fresh or salty. The drilling fluid can be substantially clay-free. It may contain oil, a preservative, such as paraformaldehyde, and other additives, such as starch, if desired.

3,723,312

#### COMBINED STAIN RETARDANT AND SEPARATOR INTERLEAVING MATERIAL FOR GLASS SHEETS

William J. Hay, Jr., Cheswick, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 18, 1970, Ser. No. 99,500

Int. Cl. F16k 31/00

U.S. Cl. 252—11

4 Claims

Sheets of glass are packaged, using in place of interleaving paper a dedusted agglomerated salicylic acid or a mixture of dedusted agglomerated salicylic acid and inert separator material, such as polystyrene beads. A novel method for agglomerating the acid is disclosed with the resulting salicylic

acid agglomerated with polyethylene oxide and comprising substantially spherical particles less than about 30 mesh and having only a minor portion less than about 200 mesh. In accelerated staining tests agglomerated salicylic acid protects against staining slightly less than interleaving paper with its high application cost; agglomerated salicylic acid may be applied to sheets of glass with application costs on the order of those for applying wood flour or Lucite, which have extremely limited or negligible stain-retardant qualities, and this agglomerated material prevents surface scratching better than interleaving paper and nearly as well as an inert spherical separator.

3,723,313

#### LUBRICANT USEFUL IN METAL WORKING

Michael C. Churn, Westcliff, England, assignor to Mobil Oil Corporation

No Drawing. Filed Mar. 24, 1971, Ser. No. 127,763

Int. Cl. C10m 1/10, 1/46

U.S. Cl. 252—33.3

12 Claims

The stability of emulsified lubricant compositions is improved when there is present therein an aromatic oil and a mixture of mono- and dialkyl phosphates, the alkyl having from about 8 to about 20 carbon atoms. The emulsion lubricants containing such materials are useful in the cold rolling of steel.

3,723,314

#### LUBRICANT FOR METALWORKING

Robert H. Davis, Pitman, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed Mar. 24, 1971, Ser. No. 127,764

Int. Cl. C10m 1/06, 1/46

U.S. Cl. 252—33.4

9 Claims

An emulsion lubricant for use in cold-rolling of metals containing, on a water-free basis, from about 20% to about 50% of an organic acid, is improved with respect to its hard water stability by having in the lubricant an amount of a mixture of mono- and dioleil phosphates.

3,723,315

#### COMPOSITIONS COMPRISING MIXTURES OF SUBSTITUTED TRIARYLPHOSPHATES

James D. Sullivan, Chesterfield, Mo., assignor to Monsanto Company, St. Louis, Mo.

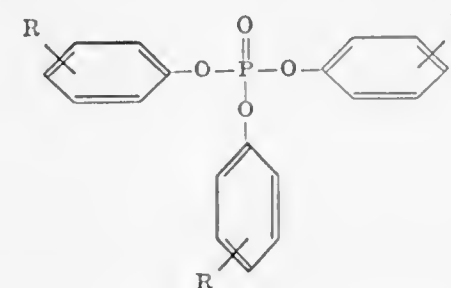
No Drawing. Continuation-in-part of application Ser. No. 110,783, Jan. 28, 1971. This application Mar. 5, 1971, Ser. No. 121,578

Int. Cl. C10m 1/46

U.S. Cl. 252—49.8

17 Claims

Compositions comprising mixtures of phosphate esters having the general structure



wherein each R is hydrogen, an alkyl radical, or an aryl-alkyl radical wherein the aryl is attached through a tertiary carbon atom, provided that as within the total composition, from about 2 to 45 mole percent of the total R groups are alkyl radicals having from about 4 to 18 carbon atoms, from 2 to 45 mole percent of the total R groups are arylalkyl radicals wherein the alkyl linkage has from about 3 to 13 carbon atoms, and from about 50 to 90 mole percent of the total R groups are hydrogen. The compositions are useful as functional fluids and as components of functional fluid formulations.

3,723,316

#### STABILIZATION OF ORGANIC SUBSTANCES

Stephen N. Massie, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Nov. 9, 1970, Ser. No. 88,097

Int. Cl. C10I 1/22; C10m 1/32

U.S. Cl. 252—50

4 Claims

Organic substances normally subject to oxidative deterioration containing, as an inhibitor against said deterioration, a stabilizing concentration of an alpha, beta-unsaturated polynitrile.

3,723,317

#### LUBRICANT GREASES

Harris Ellsworth Ulery, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed May 25, 1970, Ser. No. 40,347

Int. Cl. C10m 7/30

U.S. Cl. 252—51.5 R

16 Claims

Lubricating greases comprising a fluorinated polyether base oil, from about 4 to about 50% by weight of a polymer of tetrafluoroethylene and from about 0.2% to 15% by weight of a 1,3,5-triazine based triazine having as substituents amino, hydroxy and/or melamino groups.

3,723,318

#### PROPELLANTS AND REFRIGERANTS BASED ON TRIFLUOROPROPENE

Anthony J. Butler, Greensboro, N.C., assignor to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 81,123, Oct. 15, 1970. This application

Nov. 26, 1971, Ser. No. 202,656

Int. Cl. C09k 3/06

U.S. Cl. 252—67

4 Claims

Aerosol propellants and refrigerants based on trifluoropropene ( $\text{CF}_3\text{CH}=\text{CH}_2$ ) are disclosed.

3,723,319

#### FUNCTIONAL FLUIDS OF INCREASED FIRE RESISTANCE

Robert S. McCord, Pacific Palisades, Donald H. Nail, Los Angeles, and Martin B. Sheratte, Reseda, Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

No Drawing. Filed May 3, 1971, Ser. No. 139,834

Int. Cl. C09k 3/00; C10m 3/40

U.S. Cl. 252—78

23 Claims

Production of functional fluids, particularly aircraft hydraulic fluids, of improved fire resistance, comprising a functional fluid base stock, such as a phosphate ester, e.g., tri-n-butyl phosphate, or mixtures of such base stocks, and a small amount of a trialkyl or a trialkoxy phosphorus selenide compound, e.g., triethyl phosphorus selenide or triethoxy phosphorus selenide.

3,723,320

#### FUNCTIONAL FLUID COMPOSITIONS CONTAINING EPOXIDE STABILIZERS

John F. Herber, St. Louis, and Robert W. Street and William R. Richard, Jr., Kirkwood, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 210,165, Dec. 20, 1971. This application Mar. 27, 1972, Ser. No. 238,666

Int. Cl. C09k 3/00; C10m 3/40

U.S. Cl. 252—78

14 Claims

Functional fluid compositions comprising a major amount of a base stock material which is an ester or amide of an acid phosphorus, a di- or tricarboxylic acid ester, an ester of a polyhydric compound or mixtures thereof, optionally minor amounts of other base stock materials or base stock modifiers such as viscosity index improvers, cavitation damage inhibitors, and lubricity agents, and an additive amount of an acid scavenger and corrosion inhibitor which is a monoepoxycyclohexyl compound such as  $\text{C}_{1-4}$  alkyl-3,4-epoxycyclohexane carbox-



ylate. The compositions are particularly useful as aircraft hydraulic fluids.

### 3,723,321 SWEEPING COMPOSITION

David W. Thomas, Ocala, Fla., assignor to NL Industries, Inc., New York, N.Y.  
No Drawing. Filed Feb. 16, 1971, Ser. No. 115,833  
Int. Cl. C09k 3/22

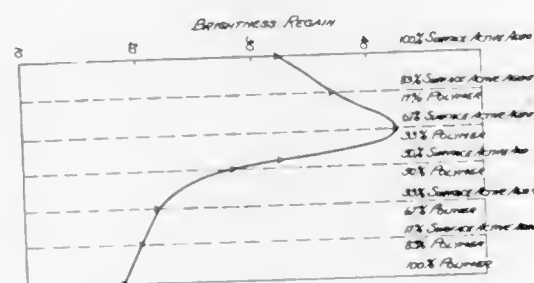
U.S. Cl. 252—88 11 Claims  
A free-flowing particulate sweeping composition consists essentially of a homogeneous calcine of hard absorbent angular ceramic grains. The hard absorbent angular ceramic grains are obtained by mechanically reducing lumps of fired material consisting of a homogeneous mixture of clay and feldspathic material. The firing temperature employed is sufficient to fuse the feldspathic material and to impart hardness to the grains, but is insufficient to fuse the clay. This free-flowing sweeping composition may also contain quantities of sand up to about 60% of the mixture.

3,723,322  
DETERGENT COMPOSITIONS CONTAINING CARBOXYLATED POLYSACCHARIDE BUILDERS  
Francis L. Diehl, Wyoming, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio  
No Drawing. Filed Feb. 25, 1969, Ser. No. 802,256  
Int. Cl. C11d 3/04, 1/12

U.S. Cl. 252—89 1 Claim  
Detergent and laundering compositions comprising an organic water-soluble synthetic detergent and a water-soluble carboxylated alginic acid builder in a proportion by weight of 10:1 to about 1:20; the carboxylated builder having a degree of substitution of 1.3 to 2.0, an equivalent weight of 97 to 185, a degree of polymerization of 20 to 30,000 and a molecular weight of 4,000 to 5,000,000.

3,723,323  
FABRIC TREATING SHAMPOO COMPOSITIONS  
Lee W. Morgan, Racine, Wis., and Shrikishna N. Desai, Bombay, India, assignors to S. C. Johnson & Son, Inc., Racine, Wis.  
Filed Apr. 22, 1971, Ser. No. 136,434  
Int. Cl. C11d 17/00; C08f 15/36

U.S. Cl. 252—90 10 Claims



Fabric treating shampoo compositions comprising a copolymer and at least one surface active agent, the weight ratio of said copolymer to said surface active agent being within the range of about 0.1:1 to about 1:1.

### 3,723,324 PACKAGE FOR DISPENSING A WARMED COMPOSITION

Victor J. Pierce, 2040 Vestal Drive 90026, and Samuel B. Prussin, 2126 Banyan Drive 90049, both of Los Angeles, Calif.  
No Drawing. Continuation of abandoned application Ser. No. 707,993, Feb. 26, 1968. This application May 10, 1971, Ser. No. 142,030  
Int. Cl. C11d 17/00

U.S. Cl. 252—90 17 Claims  
Packages are described which comprise two compositions maintained isolated from each other within a con-

tainer, one of the compositions comprising water and the other composition comprising a suspension in an inert anhydrous vehicle of an agent capable of liberating heat upon contact with water. Valve means communicate with each composition, actuation resulting in mixing of portions of each composition and dispensing of the mixture in a warmed state.

3,723,325  
DETERGENT COMPOSITIONS CONTAINING PARTICLE DEPOSITION ENHANCING AGENTS  
John J. Parran, Jr., Springfield Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio  
No Drawing. Original application Sept. 27, 1967, Ser. No. 671,117, now Patent No. 3,580,583. Divided and this application Mar. 11, 1971, Ser. No. 123,456  
Int. Cl. C11d 3/48, 1/38

U.S. Cl. 252—106 5 Claims  
Detergent compositions containing water-insoluble particulate substances, such as antimicrobial agents, and certain cationic polymers which serve to enhance the deposition and retention of such particulate substances on surfaces washed with the detergent composition.

3,723,326  
DETERGENT COMPOSITIONS  
Wai Ming Cheng, Ellesmere Port, James Francis Davies, Bromborough, and Leonard Wallace Stuttard, Heswall, England, assignors to Lever Brothers Company, New York, N.Y.  
No Drawing. Continuation-in-part of abandoned application Ser. No. 808,336, Mar. 18, 1969. This application Sept. 11, 1970, Ser. No. 71,410  
Int. Cl. C11d 9/50

U.S. Cl. 252—107 2 Claims  
An antibacterial detergent composition, e.g. a toilet bar contains a synergistic mixture of 4,2',4'-trichloro-2-hydroxydiphenylether, 3,4,4'-trichlorocarbanilide and 4,4'-dichloro-3-trifluoromethylcarbonilide.

3,723,327  
GRANULAR PROTEOLYTIC ENZYME COMPOSITION  
Daniel Marten van Kampen, Vlaardingen, and Foscarina Pasztor nee Rozzo, Abcoude, both of Netherlands, assignors to Lever Brothers Company, New York, N.Y.  
Continuation-in-part of Ser. No. 20,019, March 16, 1970, abandoned. This application June 5, 1972, Ser. No. 259,638  
Int. Cl. C11d 7/08, 7/42, 17/06

U.S. Cl. 252—110 5 Claims  
The invention is directed to an improvement in the storage stability of granular proteolytic enzyme compositions. The proteolytic enzymes are contained in granules to which an acidic substance has been added. The granules will comprise a neutral or alkaline carrier material, for example an alkali metal phosphate; a glueing agent, for example a nonionic surface active agent; a proteolytic enzyme and an acidic material, for example citric acid.

3,723,328  
LIQUID DETERGENT COMPOSITION  
Carlo Pelizza, Via Aurelia 38, Nervi, Italy  
No Drawing. Continuation-in-part of abandoned applications Ser. No. 500,320, Oct. 21, 1965, Ser. No. 595,616, Nov. 21, 1966, Ser. No. 643,414, June 5, 1967, and Ser. No. 774,188, Nov. 11, 1968. This application May 3, 1971, Ser. No. 139,926  
Int. Cl. C11d 9/30, 3/066

U.S. Cl. 252—111 5 Claims  
Liquid detergent composition consisting essentially of one or more soaps of fatty acids having from 8 to 22 carbon atoms, the cations of said fatty acid soaps being potassium and a cation selected from the class comprising sodium, ethanolamine and mixtures thereof, a solvent comprising water and a hydrotropic substance selected from the class comprising lower saturated monohydric

alcohol having 1 to 4 carbon atoms, potassium paratoluenesulphonate and mixtures thereof, and wetting or fluidifying agent selected from the class comprising glycerol, ethylene glycol and polyethylene glycol with a molecular weight from 200 to 600. The liquid detergent composition contains also sequestering agents, emulsifying agents and defoaming agents, and inorganic and organic salts.

3,723,329  
SOAP TABLET PRODUCTION  
Elfed Huw Evans, Mold, Wales, assignor to Lever Brothers Company, New York, N.Y.  
No Drawing. Filed Nov. 2, 1970, Ser. No. 86,373  
Claims priority, application Great Britain, Nov. 7, 1969, 54,624/69, 54,625/69  
Int. Cl. C11d 9/32

U.S. Cl. 252—121 5 Claims  
A process for the manufacture of soap tablets incorporating minor amounts of alkaline earth metal alkyl aryl sulphonates, in which process the tablets are superfatted by the addition to a soap base of a minor amount of free alkyl aryl sulphonic acid, is disclosed. Preferably, the alkaline earth metal alkyl aryl sulphonates are formed in situ in a soap base by the addition to the soap base of an anhydrous alkaline earth metal oxide-sulphonic acid slurry, the tablets being formed subsequently from the soap base.

3,723,330  
DETERGENT COMPOSITION  
Bob W. Shefflin, Avon, Conn. (% Tri-D Corporation, 7 Johnson Ave., Plainville, Conn. 06062)  
No Drawing. Filed Oct. 5, 1970, Ser. No. 78,260  
Int. Cl. C11d 3/18

U.S. Cl. 252—153 10 Claims  
A new general purpose aqueous alkaline detergent composition particularly effective against unctuous soil consists essentially of a homogeneous dispersion of soap or synthetic detergent, a volatile alkaline detergent builder, water and volatile water-insoluble organic solvents of the halogenated hydrocarbon and dialkyl ether types. The composition preferably is formulated as a concentrated emulsion and at the time of use is diluted with water to obtain a working concentration.

3,723,331  
STABILIZATION OF SATURATED HALOGENATED ALIPHATIC HYDROCARBONS  
Yves Correia, Saint Auban, France, assignor to Pechiney-Saint-Gobain, Neuilly-sur-Seine, France  
Continuation-in-part of Ser. No. 753,854, Aug. 20, 1968, abandoned. This application March 3, 1971, Ser. No. 120,739  
Int. Cl. C09d 9/02; C11d 7/50

U.S. Cl. 252—165 14 Claims  
Method for stabilizing halogenated solvents derived from aliphatic saturated hydrocarbons wherein trioxane is associated with an aliphatic alcohol and/or epoxide liquid at ordinary temperature and this combination is then added to the halogenated solvent.

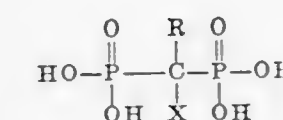
3,723,332  
STABILIZED PERCHLOROFLUOROCARBON COMPOSITIONS

Oliver A. Barton, Florham Park, N.J., assignor to Allied Chemical Corporation, New York, N.Y.  
No Drawing. Filed Nov. 27, 1970, Ser. No. 93,395  
Int. Cl. C09d 9/00; C11d 7/52; C23g 5/02  
U.S. Cl. 252—171 11 Claims  
Compositions comprising a perchlorofluorocarbon are stabilized against reaction with lower molecular weight

alcohols at elevated temperatures by presence therein of a synergistic stabilizing mixture of a mononitroalkane and an epoxy resin. Said compositions including a lower molecular weight alcohol are useful as solvent media for metal cleaning and dry cleaning of textiles.

3,723,333  
METHOD FOR INHIBITING CORROSION AND MINERAL DEPOSITS IN WATER SYSTEMS  
Helmut von Freyhold, Dusseldorf-Oberkassel, Germany, assignor to Henkel & Cie G.m.b.H., Dusseldorf-Holt-Hausen, Germany  
No Drawing. Continuation of abandoned application Ser. No. 821,487, May 2, 1969. This application July 14, 1971, Ser. No. 162,649  
Claims priority, application Germany, May 11, 1968, P 17 67 454.3  
Int. Cl. C23f 11/18

U.S. Cl. 252—175 15 Claims  
Addition to a water system a composition comprising a compound having the following formula



wherein

X is OH or NH<sub>2</sub>, and

R is alkyl radical of 1 to 5 carbon atoms;

and a water-soluble, complex-forming compound which contains at least one phosphonate or N-dimethylene-phosphonic acid group. Water-soluble salts of the first-mentioned compound can also be used. Relative amounts of the compounds in the composition varies from a molar ratio of from 1:3 to 3:1, respectively. Amount of the composition to be used in water may vary from 1 mg./liter and up to 150% of the quantity of composition necessary for substantially completely converting into complexes the substances imparting hardness to the water.

3,723,334  
SCALE REDUCING AGENT IN ZINC PHOSPHATIZING COMPOSITIONS  
James Irvin Maurer, St. Clair Shores, Mich., assignor to Oxy Metal Finishing Corporation, Warren, Mich.  
No Drawing. Filed Oct. 26, 1971, Ser. No. 192,481  
Int. Cl. C02b 1/00, 5/00

U.S. Cl. 252—181 9 Claims  
A process for decreasing the scale formation in zinc phosphate composition comprising adding to the phosphatizing composition an effective scale reducing amount of a carbohydrate.

3,723,335  
ISOMERIC MIXTURE OF DIBROMOCRESYL GLYCIDYL ETHER

Toru Tanaka, Kenichi Mizoguchi, and Hiroto Nagaoka, Yamaguchi-ken, Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan  
No Drawing. Filed July 23, 1971, Ser. No. 165,729  
Claims priority, application Japan, Aug. 7, 1970, 45/68,640  
Int. Cl. C07d 1/04; C08g 51/74

U.S. Cl. 252—182 3 Claims  
The present invention relates to an isomeric mixture of dibromocresyl glycidyl ether, composed of 65 to 95% of meta-isomer, 0 to 25% of ortho-isomer and 0 to 25% para-isomer, which, when combined with an epoxy resin composition prior to curing, confers fire-resistance on the cured product.



3,723,336

**STABILIZED DIBENZOYL PEROXIDES POLYMER INITIATOR COMPOSITIONS**

Jacobus Johannes Antonius Eymans, Deventer, Egbert Willem Holman, Zwolle, and Hans Jaspers, Diepenveen, Netherlands, assignors to Koninklijke Industriële Maatschappij Noury & Van Der Lande N.V., Deventer, Netherlands

No Drawing. Filed Oct. 23, 1970, Ser. No. 83,611  
Claims priority, application Netherlands, Oct. 27, 1969, 6916138

Int. Cl. C01b 15/00; C08f 1/60

U.S. Cl. 252—186

6 Claims

A polymer initiator composition and method for its production are provided, the composition being non-separating and stable and including a substantial amount of a dibenzoyl peroxide and an effective amount of a hydrophobic alkyl group-containing silica in an amount sufficient to prevent the composition from physically separating into its components.

3,723,337

**HYDROTHERMAL PROCESS FOR GROWING CRYSTALS HAVING THE STRUCTURE OF BERYL IN HIGHLY ACID CHLORIDE MEDIUM**

Paul Joseph Yancey, San Diego, Calif., assignor to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 774,180, Nov. 7, 1968, abandoned.

This application Aug. 3, 1970, Ser. No. 67,676

Int. Cl. C09k 1/54; B01j 17/00

U.S. Cl. 252—301.4 F

6 Claims

A hydrothermal process for growing relatively large macro-crystals having the structure of beryl. Growth takes place on seed crystals from an aqueous medium which has a chloride ion concentration of at least 4 molar and contains sufficient hydrochloric acid to give a final pH of not greater than 0.1.

3,723,338

**METHOD OF REDUCING THE RELEASE OF MOBILE CONTAMINANTS FROM GRANULAR SOLIDS**

Wesley L. Godfrey, Pasco, Wash., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed April 28, 1971, Ser. No. 138,371

Int. Cl. C09k 3/00

U.S. Cl. 252—301.1 W

6 Claims

Granular solids, particularly soil and like solids, containing mobile contaminants, as for example sorbed ionic species, are injected with a hardenable liquid, as for example a thermosetting resin, to fill the interstitial voids and enclose the individual particles. In an important specific embodiment, soil containing radioactive species and particularly soil containing <sup>90</sup>Sr and <sup>137</sup>Cs is injected with a thermosettable composition comprising a dicarboxylic acid anhydride partial ester mixed with a polymerizable monomer and, preferably, also a polyfunctional material such as polyepoxide, and allowed to polymerize with or without curing agents whereby the composition polymerizes around particles of the soil and immobilizes the radioactive material.

3,723,339

**LUMINESCENT PHOSPHOR**

Willem Lambertus Wanmaker and Johannus Godefridus Verlijdsdonk, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 20, 1970, Ser. No. 30,141

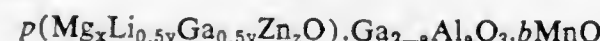
Claims priority, application Netherlands, Apr. 23, 1969, 6906222

Int. Cl. C09k 1/04, 1/68

U.S. Cl. 252—301.6 R

1 Claim

Luminescent gallate activated by bivalent manganese and having the spinel crystal structure, defined by the formula



wherein:

$$x+y+z=1$$

$$0 \leq a \leq 1.0$$

$$0 \leq x \leq 0.96$$

$$0 \leq y \leq 0.95$$

$$0 \leq z \leq 1.00, \text{ wherein } 0.05 \leq a \leq 1.0 \text{ if } 0.90 < z \leq 1.00$$

and wherein

$$0.75 \leq p \leq 1.10$$

$$0.002 \leq b \leq 0.06$$

3,723,340

**METHOD FOR FOAM GENERATION**

Denis Shepherd, South Harrow, Middlesex, England, assignor to Walter Kidde & Company, Belleville, N.J.

Original application Jan. 14, 1969, Ser. No. 791,006.

Divided and this application Nov. 1, 1971, Ser. No. 194,236

Claims priority, application Great Britain, Jan. 15, 1968, 2,208/68

Int. Cl. B01j 13/00

U.S. Cl. 252—307

5 Claims

A method of generating high expansion foam by spraying foaming agents onto a mesh through which gas (usually air) is blown. Pressure sensors on either side of the mesh sense the pressure differential across the mesh and through control means ensure a constant pressure differential despite changes in the back pressure.

3,723,341

**ALKALI-HALOGENATED SOLVENT EMULSION SYSTEM**

Maurice A. Raymond, Northford, and Michael Scardera, Hamden, Conn., assignors to Olin Corporation

No Drawing. Filed Feb. 12, 1971, Ser. No. 115,115

Int. Cl. B01j 13/00; C11d 7/06

U.S. Cl. 252—312

11 Claims

This invention relates to a stable alkali-halogenated solvent emulsion system using selected alkylphenol-glycidol adducts as surfactants.

3,723,342

**DEFOAMER COMPOSITION**

Hugh J. S. Shane, John E. Schill, and John W. Lilley, Guelph, Ontario, Canada, assignors to Hart Chemical Limited, Guelph, Ontario, Canada

No Drawing. Filed Dec. 21, 1971, Ser. No. 210,544

Int. Cl. B01d 17/00

U.S. Cl. 252—358

20 Claims

A number of defoamer compositions based on a system containing an aliphatic diamide and a low viscosity mineral oil are described. Some of the compositions additionally contain spreading agents and a silicone oil and some contain a particular diamide. The compositions are useful in the control of foam in pulp mill operations.

3,723,343

**APPARATUS FOR RECONVERTING FOAM TO THE INITIAL LIQUID**

Peter Herzhoff, Leverkusen, Hans Gref and Fritz Maus, Cologne, Hans Frenken, Leverkusen-Schlebusch, Josef Friedsam, Langenfeld, and Wolfgang Schweicher, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 11, 1970, Ser. No. 62,881

Claims priority, application Germany, Sept. 13, 1969, P 19 46 418.7

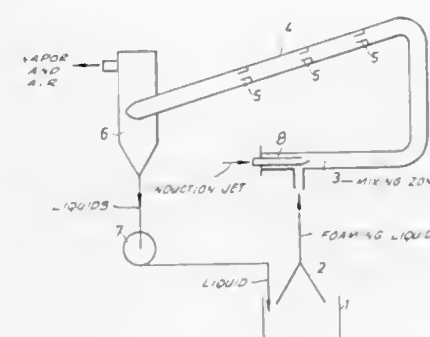
Int. Cl. B01d 19/00

U.S. Cl. 252—361

8 Claims

A physical foam-reconverting apparatus in which the foaming liquid is mixed with vapour flowing at high speed and is exposed to such a pressure drop that turbulent flow occurs. With the mixing of the foam with the vapour, first of all some of the vapour condenses, and this then boils out again towards the end of the pressure drop. The liquid which is released in this man-

ner from the foam should as far as possible be under such a pressure that its relevant boiling temperature corre-



sponds to the temperature of the initial liquid from which foam is to be removed.

3,723,344

**OXO-SYNTHESIS GAS**

Blake Reynolds, Riverside, Conn., assignor to Texaco Development Corporation, New York, N.Y.

Filed Nov. 21, 1969, Ser. No. 878,725

Int. Cl. C07c 1/02

U.S. Cl. 252—373

8 Claims

Oxo-synthesis gas, i.e. a mixture of carbon monoxide and hydrogen containing substantially equal volumes of hydrogen and carbon monoxide is produced by direct partial oxidation of a hydrocarbon fuel with oxygen followed by noncatalytic reaction with carbon dioxide at a temperature of at least 1,500°F., and preferably in the range of about 1,700° to 2,800°F. in one or more reaction zones.

3,723,345

**SYNTHESIS GAS PROCESS**

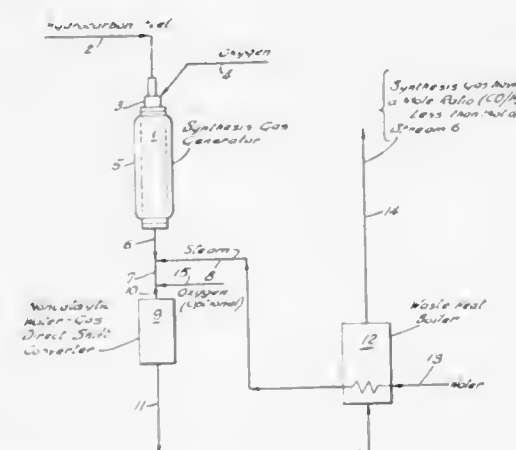
Blake Reynolds, Riverside, Conn., assignor to Texaco Development Corporation, New York, N.Y.

Filed Nov. 21, 1969, Ser. No. 878,728

Int. Cl. C07c 1/02

U.S. Cl. 252—373

9 Claims



Synthesis gas, i.e., a mixture of carbon monoxide and hydrogen is produced by direct partial oxidation of a hydrocarbon fuel with oxygen followed by non-catalytic reaction with steam at a temperature of at least 1500° F. and preferably in the range of about 1700 to 2800° F. in one or more reaction zones.

3,723,346

**TEMPERATURE INDICATOR USING THE SMECTIC C PHASE OF A LIQUID CRYSTAL**

Ted R. Taylor, Stow, and James L. Ferguson, Kent, Ohio, assignors to International Liquid Xtal Company, Cleveland, Ohio

No Drawing. Filed May 24, 1971, Ser. No. 146,520

Int. Cl. G02f 1/16

U.S. Cl. 252—408

10 Claims

Temperatures may sometimes be quickly and conveniently sensed and/or mapped with the use of a variable-tilt

compound of the Smectic C mesomorphic phase. Disclosed are several organic compounds that are capable, within certain temperature ranges, of exhibiting such a phase, such as terephthal-bis(4-n-butylaniline) and other compounds resulting from the reaction of terephthaldehyde with amines or amides of the formula:



where A is —NH<sub>2</sub> or —CONH<sub>2</sub> and R is a saturated alkyl or alkoxy group containing 1–12 carbon atoms. The compound is made, applied to a surface that has been rubbed unidirectionally, and then (while the compound is within its Smectic C phase temperature range) viewed in light that is polarized planarly or circularly. The temperature indication is sensitive to changes in temperature that are quite small, and the response pattern is exceptionally rapid (being on the order of a millisecond at the greatest), since no molecular rearrangement is involved.

3,723,347

**CORROSION INHIBITION COMPOSITIONS CONTAINING SUBSTITUTED DIAMINE PHOSPHONATES AND PROCESSES FOR USING THE SAME**

Robert S. Mitchell, Webster Groves, Mo., assignor to Monsanto Company, St. Louis, Mo.

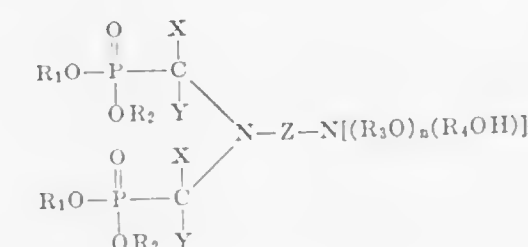
Filed May 17, 1972, Ser. No. 254,008

Int. Cl. C23f 11/16

U.S. Cl. 252—389 A

34 Claims

Substituted diamine phosphonates of the general formula



wherein R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub>, X, Y and Z are hereinafter defined and n is 0–10, alone or in combination with zinc, dichromates, certain thiols, 1,2,3-triazoles, silicates, inorganic phosphates, molybdates, tannins, lignins, lignin sulfonates, certain calcium and magnesium salts and mixtures thereof, are disclosed as inhibiting the corrosion of metals by oxygen-bearing waters.

3,723,348

**COORDINATION CATALYST**

David Apoteker and Norman M. van Gulick, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 699,361, Jan. 22, 1968, which is a continuation-in-part of application Ser. No. 624,243, Mar. 20, 1967. This application May 15, 1970, Ser. No. 37,937

Int. Cl. C08f 3/02

U.S. Cl. 252—429 B

17 Claims

A coordination catalyst system capable of polymerizing alpha-olefins at high efficiency and consisting essentially of a hydrocarbon-soluble vanadium compound, e.g., vanadium oxytrichloride, an organoaluminum halide, e.g., diethylaluminum chloride, a halogen-containing oxidant e.g., benzotrichloride and a hydrocarbon-soluble activator which is more reactive with organoaluminum halides present during polymerization than is said oxidant, e.g., triethylaluminum, the ratios of aluminum atoms, oxidant



moles and activator moles to vanadium atoms being 3-200, 1-2000 and 0.1-150, respectively. The high efficiency of this catalyst system obviates the necessity for removing catalyst residues from a polymer produced by its use.

3,723,349

# THERMOCHROMIC COMPOSITION OF COBALT II CHLORIDE IN CURED POLYESTER

Robert William Heseltine, Aughton, and John Burt Dawson, Ormskirk, both of England, assignors to Pilkington Brothers Limited, Liverpool, Lancashire, England

Filed Dec. 16, 1970, Ser. No. 98,937

Claims priority, application Great Britain, Dec. 19, 1969, 62,069/69

Int. Cl. G03b 5/22; G01k 11/12

U.S. Cl. 252-408

9 Claims

A thermochromic polymer composition is produced by incorporating a methanol solution of cobalt II chloride in an unsaturated polyester resin and then curing the resin without loss of volatiles.

3,723,350

# PROCESS FOR THE POLYMERIZATION OF OLEFINS

Karl Schmitt, Herne, and Fritz Gude, Wanne-Eickel, both of Germany, assignors to Scholwer-Chemie AG, Gelsenkirchen-Buer, Germany

Continuation-in-part of Ser. No. 646,426, June 14, 1967, abandoned. This application Aug. 17, 1970, Ser. No. 64,667

Claims priority, application Germany, June 16, 1966, 39139

Int. Cl. C08f 1/42

U.S. Cl. 252-429 C

6 Claims

Improved olefin polymerization catalyst made by mixing a titanium tetra halide, a zirconium tetra halide, a titanium tetra ester, a chromium oxyhalide or a mixture thereof with a vanadium oxyhalide or a vanadium tetra halide; reducing such admixture with a dialkylaluminum halide, wherein at least one of the mixture components and/or reductant has a fluorine substituent; and reacting the reduction product with an aluminum trialkyl, and alkyl aluminum halide and/or a dialkyl aluminum halide. In a preferred embodiment, the reaction product is heated to above about 20° C, preferably about 20° to 200° C, to even further improve the catalytic activity thereof.

3,723,351

# CATALYST FOR ELEVATED TEMPERATURES

William H. Flank, Broomall, James E. McEvoy, Springfield, and John R. Stuart, deceased, by Clara M. Stuart, successor, Brookhaven, Pa., assignors to Air Products and Chemicals, Inc., Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 693,733, Dec. 27, 1967. This application Jan. 25, 1971, Ser. No. 109,639

Int. Cl. B01j 11/40

U.S. Cl. 252-454

10 Claims

Catalyst carrier particles having a low surface area open pore structure, and low density and consisting of calcium sodium aluminosilicate foam and having a non-zeolitic crystalline structure are prepared by heating precursor pellets at about 900-1150° C. for several minutes. A zeolitic sodium aluminosilicate of a type called Zeolite A is prepared by refluxing meta kaolin in 10% sodium hydroxide solution or by any other Zeolite A synthesis. Such sodium zeolite is at least 50% ion-exchanged to the calcium form to provide said precursor pellets. The ceramic foam particles are impregnated with a liquid containing a metal component. Thereafter the impregnated particle is heated to bond the catalytic metal to the foamed ceramic particle. Such particles comprising catalytic metal components on ceramic foam are catalysts for reactions conducted at elevated temperatures, com-

prising hydrolysis of hydrocarbonaceous material, oxidation reactions, and hydrogenative aromatization of hydrocarbonaceous materials.

3,723,352

# SUPPORTED SILVER CATALYSTS

Warner Alexander, Brookhaven, and James E. McEvoy, Springfield, Pa., assignors to Air Products and Chemicals, Inc., Philadelphia, Pa.

No Drawing. Filed Jan. 25, 1971, Ser. No. 109,640

Int. Cl. B01j 11/40

U.S. Cl. 252-454

3 Claims

A solution of thermally decomposable salt of silver and a gold salt solution are impregnated into a foamed calcium sodium aluminosilicate support and calcined to provide a supported silver catalyst containing a trace amount of gold, said catalyst having effectiveness in the synthesis of ethylene oxide.

3,723,353

# COPPER CATALYST

Jacobus J. M. G. Eurlings, Valkenburg, John W. Geus, Geleen, and Cornelis A. M. Weterings, Stein, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

Filed May 25, 1970, Ser. No. 40,330

Int. Cl. B01j 11/42

U.S. Cl. 252-459

4 Claims

The present invention relates to a process for the preparation of a catalyst mass from dilute aqueous solutions of copper and nickel salts, particularly precipitation of a copper compound out of an aqueous solution onto a thermally stable carrier material suspended therein. The copper compound is secured to the carrier material via a nickel compound and is reduced to metallic copper after being so secured. Copper catalysts have a wide field of application in dehydrogenation reactions, e.g. the dehydrogenation of cyclohexanol to cyclohexanone and of isopropyl alcohol to acetone. Copper catalysts are also very suitable for carrying out selective hydrogenation processes. There are indications that metallic copper surfaces may greatly accelerate the oxidation of hydrocarbons e.g. cumene via radical mechanisms.

3,723,354

# X-RAY ABSORBING GLASS COMPOSITIONS CONTAINING LEAD OXIDE AND CERUM OXIDE

Masamichi Wada, Iwao Ishida, and Isamu Nakagawa, Otsu, Japan, assignors to Nippon Electric Glass Company, Limited, Tokyo, Japan

No Drawing. Filed July 21, 1971, Ser. No. 164,855

Claims priority, application Japan, July 28, 1970, 45/45,396

Int. Cl. C04b 35/68

U.S. Cl. 252-478

8 Claims

Glass compositions consisting essentially, by weight, of 57-62% SiO<sub>2</sub>, 2-3.5% Al<sub>2</sub>O<sub>3</sub>, 4-10% K<sub>2</sub>O, 5-11% Na<sub>2</sub>O, 10-16% BaO, 1-10% ZnO, 0.1-4% WO<sub>3</sub>, 0.2-0.6% CeO<sub>2</sub>, less than 5% CaO, less than 2% MgO and less than 1% PbO, wherein the total of the amounts of CaO, MgO and BaO exceeds 14% and the total of the amounts of BaO, ZnO, WO<sub>3</sub>, and PbO exceeds 12%.

3,723,355

# ELASTOMERIC MIXTURES VULCANIZABLE TO ELECTRICALLY CONDUCTIVE VULCANISATES AND METHODS OF PREPARING THE SAME

Johannes Jacobus and Cornelis Schats, Bussum, and Hendrik Schenk, Santpoort, Netherlands, assignors to Koninklijke Zwavelzuurfabrieken Voorheen Ketjen N.V., Amsterdam, Netherlands

No Drawing. Filed Sept. 30, 1970, Ser. No. 76,984

Claims priority, application Netherlands, Oct. 3, 1969, 6914953

Int. Cl. H01b 1/06; C01b 31/00; C08h 17/08

U.S. Cl. 252-511

20 Claims

Electrically conductive vulcanisates having desirable mechanical properties are obtained by vulcanization of

3,723,359

# CERMET POWDERS

Richard J. Borg, David Y. F. Lai, Neil R. Riley, and James R. Wolfe, all of Livermore, Calif., assignors to California Metallurgical Industries, Inc., Livermore, Calif.

Filed June 8, 1970, Ser. No. 44,608

Int. Cl. H01b 1/02; B22f 3/00

U.S. Cl. 252-513

6 Claims

A metallurgical method for making homogeneous powders characterized by ultra-fine particle size typically in the range .01 - .1 microns. First, dry blend starting materials containing a mixture of carbon and the metal oxides of two or more different metals, one metal having a predetermined carbide forming strength and the other metal having less than the predetermined carbide forming strength. The starting materials are then cold mixed with a liquid pre-polymerized furfuryl alcohol resin binder containing a catalyst until a homogeneous mass is obtained. The mass is cold extruded into the shape of an electrode, cured to the desired hardness and then rapidly baked until electrically conductive. The electrode is then connected as the anode in a high intensity electric arc circuit enclosed in a non-oxidizing atmosphere. The arc process consumes the anode and a homogeneous powder is produced out of the characteristic tail flame. The powder comprises a mixture of finely divided particles of metal carbide and metal useful in manufacturing cemented carbide bodies.

3,723,356

# COMBINATIONS OF HYDROXYALKYL-N-METHYLTaurines AND ANIONIC SURFACTANTS AS SYNERGISTIC EMULSIFIERS

Arno Cahn, Pearl River, N.Y., Joseph Anthony Ackilli, Dover, Del., and Frank Emery Carroll, Wyckoff, N.J., assignors to Lever Brothers Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 828,002, May 26, 1969, now Patent No. 3,649,543, which is a continuation-in-part of abandoned application Ser. No. 573,192, Aug. 18, 1966. This application Oct. 28, 1971, Ser. No. 193,570

Int. Cl. C11d 1/28, 1/37, 1/84

U.S. Cl. 252-526

5 Claims

Emulsifying agents characterized by unusual mildness toward the skin are disclosed which consist essentially of a synergistic combination of a water soluble taurine salt of the general formula:



wherein R<sub>1</sub> is an alkyl radical having from 12 to 18 carbon atoms or an oxaalkyl radical having the formula, C<sub>n</sub>H<sub>2n+1</sub>-O-CH<sub>2</sub>, n being 11 to 17, and M is a water-solubilizing cation and a surface active organic sulfate or sulfonate detergent which may be an amidomethanesulfonate, an acyl isethionate, or an N-(acyloxyethyl) sulfoacetamide. The taurine salt and the detergent are present in a specified weight ratio to obtain maximum synergism.

3,723,357

# LIQUID DETERGENT COMPOSITION

Kenneth R. Hansen, Staten Island, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Nov. 16, 1970, Ser. No. 90,152

Int. Cl. C11d 1/84

U.S. Cl. 252-545

5 Claims

The invention relates to novel liquid detergent compositions consisting essentially of N(2-hydroxy C<sub>10</sub>-C<sub>18</sub> alkyl) derivatives of N-methyl taurine or sarcosine or diethanolamine in combination with on anionic sulfate, zwitterionic, or amphoteric detergent in an aqueous medium. The addition of the N(2-hydroxy C<sub>10</sub>-C<sub>18</sub> alkyl) derivatives results in substantially increased foam-drainage times and better foaming properties.

3,723,358

# FABRIC TREATING SHAMPOO COMPOSITIONS

Lee W. Morgan and John R. Rogers, Racine, Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

No Drawing. Filed Feb. 22, 1971, Ser. No. 117,728

Int. Cl. C11d 1/10, 1/12, 3/20

U.S. Cl. 252-546

11 Claims

Fabric treating shampoo composition comprising an aqueous solution of at least one anionic or nonionic surfactant, and a copolymer of about 50 to 60% styrene and 33 to 43% acrylic or methacrylic acid and up to about 13% of a viscosity modifying monomer such as isobutyl acrylate, said copolymer having a molecular weight from about 5,000 to about 50,000 and being water soluble at alkaline pH values.

3,723,360

# SHAMPOO OF IMPROVED FOAMING AND LATHERING POWER COMPRISING HIGHER FATTY ALCOHOL SULFATE AND SUBSTITUTED IMIDAZOLINE

Gordon Trent Hewitt, Upper Montclair, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Mar. 24, 1971, Ser. No. 127,842

Int. Cl. C11d

U.S. Cl. 252-542

8 Claims

An aqueous shampoo composition of improved foaming and lathering power includes a major proportion of aqueous solvent medium and minor proportions of higher fatty alcohol sulfate and of a 1-hydroxy-lower alkyl, 2-higher alkyl imidazoline, at a slightly basic pH.

# ERRATUM

For Class 260-45.75 R see: Patent No. 3,723,139

3,723,361

# CYANO-SUBSTITUTED POLYEPOXIDES

Herbert A. Newey, Lafayette, and Howard V. Holler, Oakland, Calif., assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Sept. 24, 1970, Ser. No. 75,253

Int. Cl. C08g 30/02, 30/04, 30/08

U.S. Cl. 260-2 EP

14 Claims

Novel cyano- and epoxide-containing resins having at least two epoxide groups and at least one cyano group per molecule are described. These novel resin may be cured with epoxy curing agents to produce hard, flexible, insoluble compositions which are especially suitable as molding compounds, coatings and adhesives.

3,723,362

# LOW DENSITY POLYSTYRENE PEARLS AND METHODS OF MAKING THEM

Jean Battigelli, Rantigny, Oise, France, assignor to Saint-Gobain, Neuilly-sur-Seine, France

Filed Oct. 21, 1968, Ser. No. 769,043

Claims priority, application France, Nov. 14, 1964, 128,060

Int. Cl. C08f 33/02, 47/10

U.S. Cl. 260-2.5 B

11 Claims

Polystyrene pearls are made by insufflating polystyrene particles containing expansion agent by hot air followed by brief insufflation by superheated steam. A further advantage can be obtained by subjecting these expanded



pearls to heat treatment in an autoclave. The successive treatments by hot air and steam are at atmospheric pressure and at temperatures which are adequate to soften the polystyrene and activate the expansion agent. Products can be produced which have any chosen density from 2.5 kg./m.<sup>3</sup> upward. Products of lowest densities are unique.

3,723,363

# TRIMERIZED CRUDE ISOCYANATE MIXTURES AND POLYURETHANE FOAMS PREPARED FROM SAME

Fred D. Shaw, Jr., 6911 W. 69th St., Overland Park, Kans.  
Continuation-in-part of Ser. No. 676,626, Oct. 19, 1967, abandoned. This application Sept. 23, 1970, Ser. No. 74,872  
Int. Cl. C08g 22/44, 22/22

U.S. Cl. 260—2.5 AW

22 Claims  
Polyisocyanate compositions containing phosgenation by-products and isocyanurate radicals. The polyisocyanates are used in the preparation of various polyurethane products such as foams, coatings, adhesives and solid elastomers. The polyisocyanates are particularly valuable in the preparation of low density, rigid foams having high insulation value, high compressive strength and good dimensional stability at low and high temperatures.

3,723,364

# COPOLYMER FOAMS CONTAINING ISOCYANURATE, CARBODIIMIDE AND EITHER AMIDE OR IMIDE LINKAGES

Alexander McLaughlin, Meriden, Herbert G. Nadeau, North Haven, and James S. Rose, Guilford, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.  
No Drawing. Filed Mar. 1, 1971, Ser. No. 119,896  
Int. Cl. C08g 20/20, 20/32, 20/38

U.S. Cl. 260—2.5 AC

11 Claims  
The friability of polymer foams in which the major recurring units are a combination of isocyanurate and either amide or imide or both, is markedly reduced by introducing a minor proportion of carbodiimide linkages into the polymer. This is accomplished by incorporating a carbodiimide-forming catalyst (e.g. a phospholene oxide) into the polymer foam forming reaction mixtures employed to prepare the above type of foam. The resulting foams are highly useful, heat resistant, thermally insulating materials.

3,723,365

# ONE SHOT RIGID FOAMS FROM SUCROSE POLYOLS

George Phillip Speranza and Philip Hotchkiss Moss, Austin, Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.  
No Drawing. Continuation-in-part of application Ser. No. 849,182, Aug. 11, 1969. This application Apr. 2, 1971, Ser. No. 130,792  
Int. Cl. C08g 22/44

U.S. Cl. 260—2.5 AS

5 Claims  
This invention is a new class of rigid polyurethane foams and a process for making these foams using a polyarylisocyanate and unique sucrose based polyols. The polyols are made by modifying conventional sucrose polyols. Conventional sucrose polyols are made by reacting sucrose with alkylene oxides containing 2 to 4 carbon atoms or mixtures thereof. These conventional sucrose polyols are reacted with higher molecular weight alkylene oxides to make the polyols of this invention. The resultant polyols enable rigid polyurethane foams to be made in one step (one shot) from polyarylisocyanates. Sucrose based rigid urethane foams are useful in many areas including insulation, decorative and structural paneling, flotation, and many other applications. Rigid urethane foams made from sucrose based polyols are especially desirable since they can easily be fire-retarded.

3,723,366

# CARBODIIMIDE FOAMS AND IMPROVED PROCESS FOR PREPARING SAME

Peter T. Kan, Wyandotte, Plymouth, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.  
Continuation-in-part of Ser. No. 28,555, April 13, 1970, abandoned. This application June 25, 1971, Ser. No. 157,025. The portion of the term of this patent subsequent to Feb. 28, 1989, has been disclaimed.  
Int. Cl. C08g 22/44, 22/36

U.S. Cl. 260—2.5 BF

8 Claims  
Rigid foam compositions characterized by carbodiimide linkages are prepared from the catalytic condensation of an organic polyisocyanate in the presence of a co-catalyst system consisting essentially of a mixture of 2,4,6-tris (dialkanolamino)-s-triazine and 1,3,5-tris (N,N-dialkylaminoalkyl)-s-hexahydrotriazine.

3,723,367

# ALKALI METAL MERCAPTIDES AS URETHANE-ISOCYANURATE CATALYSTS

Sui-Wu Chow, Somerville, and Markus Matzner, Edison, N.J., assignors to Union Carbide Corporation, New York, N.Y.  
No Drawing. Filed Mar. 27, 1972, Ser. No. 238,588  
Int. Cl. C08g 22/40, 22/44

U.S. Cl. 260—2.5 AB

13 Claims  
Alkali metal mercaptides have been found useful as catalysts in the reaction of organic isocyanates with compounds having a reactive hydrogen atom. The catalysts are particularly effective in the production of urethane and isocyanurate compounds.

3,723,368

# FAST BAKING CORE COMPOSITION AND PROCESS FOR PREPARATION THEREOF

Lloyd H. Brown, Crystal Lake, Daniel S. P. Eftax, Barrington, George S. Everett, Clarendon Hills, and James R. Oldham, Wheeling, Ill., assignors to The Quaker Oats Company, Chicago, Ill.  
No Drawing. Filed Oct. 5, 1970, Ser. No. 78,245  
Int. Cl. C08g 51/18

U.S. Cl. 260—17.2

4 Claims  
This invention relates to fast baking core compositions which have long bench life, high tensile strength on cure, good resistance to humidity on cure and high green strength, yet the core composition is blowable. The fast baking core compositions of this invention comprise a thermosetting resin selected from the group of furan, phenolic resole, and furan-phenolic resins; a gelling agent; water; hydrophobic resin; and sand; said hydrophobic resin being a member selected from the group consisting of solid powdered phenolic novolacs and solid rosins.

3,723,369

# VINYL HALIDE RESINS PLASTICIZED WITH AN ACYLATED POLYESTER OF A DIBASIC ACID AND A MIXTURE OF GLYCOLS

John T. Lutz, Jr., Cornwells Heights, and Constance A. Lane, Philadelphia, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.  
No Drawing. Filed Dec. 1, 1971, Ser. No. 205,710  
Int. Cl. C08f 21/04; C08g 17/16

U.S. Cl. 260—22 CB

3 Claims  
Compositions of improved low temperature service properties comprise a vinyl halide resin and a polyester of the formula



wherein Ac represents a monobasic acyl radical containing 2 to 18 carbon atoms, G is the residue of a mixture of 1,2-propylene glycol, 1,4-butylene glycol and dipropylene glycol, A is the residue of a dibasic acid which is at least one saturated aliphatic dibasic acid having an alkylene chain of 4 to 10 carbons and n is such that the resulting polyester is characterized by a number average molecular weight in the range of 1500 to 4000 as determined by vapor phase osmometry in benzene solution.

3,723,370

# URETHANATED UNSATURATED POLYESTER RESIN AND PROCESS FOR PRODUCING THE SAME

Tadashi Watanabe; Kouichiro Murata; Kiyoshi Nanishi, and Akira Yamamoto, all of Kiratsuka, Japan, assignors to Kansai Paint Company, Limited, Amagasaki-shi, Hyogo-ken, Japan  
Filed March 17, 1971, Ser. No. 125,391  
Int. Cl. C08g 22/10; C09d 3/72

U.S. Cl. 260—22 TN

8 Claims  
An oil modified unsaturated polyester resin in which at least one hydroxyl group is left at a terminal of its molecule, having a number average molecular weight of from about 1,000 to about 4,000 and acid value of from 5 to 60 is made to react with at least one diisocyanate compound having from 0.2 to 1.2 equivalent of isocyanato group with respect to 1 equivalent of hydroxyl group of said unsaturated polyester resin to produce an urethanated unsaturated polyester resin having a molecular weight of from about 2,000 to about 20,000.

3,723,371

# HOT MELT ADHESIVE HAVING IMPROVED CREEP PROPERTIES

Robert H. Campbell, Brookhaven, and Wesley R. Cherry, Prospect Park, Pa., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.  
No Drawing. Continuation of abandoned application Ser. No. 539,298, Apr. 1, 1966. This application Dec. 10, 1970, Ser. No. 97,051  
Int. Cl. C08f 45/52; C08g 51/52

U.S. Cl. 260—28.5 AN

12 Claims  
The creep properties of a hot melt adhesive containing 35 to 65 parts by weight of an ethylene-vinyl acetate copolymer which contains 17 to 30 weight percent vinyl acetate and 30 to 45 parts by weight of an aromatic hydrocarbon-aldehyde resin having a ring and ball softening point in the range of 70 to 150° C. can be improved by adding to this composition 10 to 25 parts by weight of a crystalline wax having a melting point of at least 150° F.

3,723,372

# BLOCKED POLYURETHANES SOLUBLE OR COMPATIBLE IN WATER ORGANIC SOLVENTS AND POLYOLS

Sahuro Wakimoto, Hyogo, Hideyosi Tugukuni, Osaka, Masafumi Kano, Kyoto, Yutaka Matsui, Hyogo, and Jugo Goto, Osaka, Japan; said Matsui and said Goto assignors to Takeda Chemical Industries, Ltd., and said Wakimoto, Tugukuni and said Kano assignors to Dai Nippon Toryo Co., Ltd., both of Osaka, Japan  
No Drawing. Filed Apr. 29, 1970, Ser. No. 33,081  
Claims priority, application Japan, Apr. 30, 1969, 44/33,878  
Int. Cl. C08g 51/24, 51/26, 22/32

U.S. Cl. 260—29.1 R

6 Claims  
Novel partially blocked isocyanate polymers suitable for the preparation of three dimensional coating films are prepared. The coating films are prepared by heating the blocked isocyanates in the presence of an active hydrogen containing compound.

3,723,373

# 0.1% TO ABOUT 2.0% BY WEIGHT POLYTETRAFLUOROETHYLENE EMULSION MODIFIED POLYETHYLENE TEREPHTHALATE WITH IMPROVED PROCESSING CHARACTERISTICS

Howard Robert Lucas, Danbury, Conn., assignor to American Cyanamid Company, Stamford, Conn.  
No Drawing. Filed Oct. 4, 1971, Ser. No. 186,495  
Int. Cl. C08f 45/24; C08g 39/10

U.S. Cl. 260—29.6 F

1 Claim  
Compositions of matter comprising polyethylene terephthalate having incorporated therein small amounts of polytetrafluoroethylene wherein the resultant composition may be extruded, blow molded, film blown etc., are disclosed.

3,723,374

# THERMOSET ORGANIC COMPOSITIONS CONTAINING TRISULFONYLMETHANES

Girish Girdhar Parekh and Werner Josef Blank, Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.  
No Drawing. Filed Apr. 1, 1971, Ser. No. 130,526  
Int. Cl. C08g 51/24

U.S. Cl. 260—29.4 UA

6 Claims  
A coating composition comprising (1) from about 40% to about 95%, by weight, of an anionic acrylic polymer containing at least a carboxyl or alcoholic hydroxyl function, (2) from about 4.9% to about 50%, by weight, of an amine-aldehyde cross-linking agent and (3) from about 0.1% to 10%, by weight, of an acyclic trisulfone is provided. The composition finds utility in coating applications wherein low temperature cure of the said coated resinous compositions can be obtained with attendant high resistance to organic solvents.

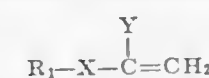
3,723,375

# NOVEL ANHYDRIDE INTERPOLYMERS

Nathan D. Field, Allentown, and Earl P. Williams, Pen Argyl, Pa., assignors to GAF Corporation, New York, N.Y.  
No Drawing. Continuation of abandoned application Ser. No. 625,585, Mar. 24, 1967. This application Nov. 24, 1970, Ser. No. 92,510  
Int. Cl. C08f 15/40, 27/08

U.S. Cl. 260—29.6 TA

10 Claims  
Anhydride interpolymers and their water-soluble derivatives comprising maleic anhydride and vinyl monomers of two different classes, one class being styrene, the other class being represented by the structural formula



wherein R<sub>1</sub> is an organic radical containing C<sub>6</sub> to C<sub>36</sub> carbon atoms, Y is hydrogen, halogen, alkyl or phenyl and X is oxygen, sulphur, carboxy, carbonamido or a chemical bond; said anhydride interpolymers being very useful as thickening agents for solutions of high ionic strength.

3,723,376

# AEROSOL TEXTILE SIZING PRODUCT AND METHOD

Roger C. Steinhauer, 291 Dogwood, Park Forest, Ill. 60466; Leonard A. Falevitch, 5932 Peck Ave., La Grange, Ill. 60525; and David R. Church, 188 Dogwood, Park Forest, Ill. 60466  
Filed Oct. 5, 1970, Ser. No. 77,968  
Int. Cl. C08f 33/04, 33/08

U.S. Cl. 260—29.6 HN

12 Claims  
Aerosol aqueous sizing products characterized in providing highly variable amounts of stiffness are provided, comprising polyvinylpyrrolidone having an average molecular weight of about 10,000 to 400,000 along with a water-soluble siloxane-oxyalkylene block copolymer.

3,723,377

# PROCESS OF REDUCING FORMALDEHYDE ODOR OF AQUEOUS MIXTURES CONTAINING METHYLOLATED CARBAMATES

Myrtle Joanne Spangler, Danville, Va., assignor to Dan River Inc., Danville, Va.  
No Drawing. Filed Dec. 18, 1968, Ser. No. 784,935  
Int. Cl. D06m 15/58, 15/54; C08g 32/28

U.S. Cl. 260—29.4 R

9 Claims  
Process for reducing formaldehyde odor of aqueous mixtures containing methylolated carbamates comprising the steps of mixing such aqueous mixtures with 4,5-dihydroxy-2-imidazolidinone and/or its methylolated and/or alkylated derivatives. The process results in aqueous mixtures containing methylolated carbamates and methylolated 4,5-dihydroxy-2-imidazolidinone, as such or in alkylated form, having a free formaldehyde content of not more than about 1.0 weight percent.



3,723,378

# METHOD FOR PREPARING PLASTICIZED GRANULAR POLYMERS CONTAINING ACRYLONITRILE AS THE MAIN COMPONENT

Masatoshi Yoshida, and Minoru Hirai, both of Suntou-gun, Japan, assignors to Toho Beslon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 24, 1971, Ser. No. 174,330

Claims priority, application Japan, March 3, 1971, 46/11165

Int. Cl. C08f 45/28, 45/46

U.S. Cl. 260—30.8 DS

8 Claims

A method for preparing plasticized granular acrylic polymer is provided. The method comprises polymerizing acrylonitrile or a monomer mixture containing a majority of acrylonitrile with stirring in dispersed state in a ternary system liquid medium comprising at least one non-solvent compound, an organic solvent for acrylic polymers but having no solubility with respect to said compound, and water. The non-solvent compound is a saturated hydrocarbon having five to 10 carbon atoms. The resulting granular polymer each grain of which has approximately 0.1 mm. to 4 mm. diameter is preferably dried in vacuo at a temperature below 60°C after separation from the dispersion polymerization reactant system. If necessary, it may be subjected further to heat treatment at a temperature below 100°C in a sealed vessel. The resulting granular polymer

the first vinyl resin (a), or the second halogen-containing resin (b) at temperatures of about 20–35° C.;

And wherein the first vinyl resin (a) and the second resin (b) are incompletely soluble in plasticizer (f) at temperatures of 20–35° C. and wherein plasticizer (f) is capable of completely solubilizing the third vinyl resin solution (c);

(h) 3.0–23.7 parts by weight of pigments and/or fillers; and, optionally,

(i) 1.6–2.5 parts by weight of at least one polyvinyl chloride stabilizer,

Wherein the total parts by weight of ingredients (a)–(i) amounts to 100 parts.

3,723,380

# AROMATIC AMIDE-HYDRAZIDE COPOLYMER

Frank Dobinson, Gulf Breeze, Fla., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of abandoned application Ser. No. 29,259, Apr. 16, 1970. This application

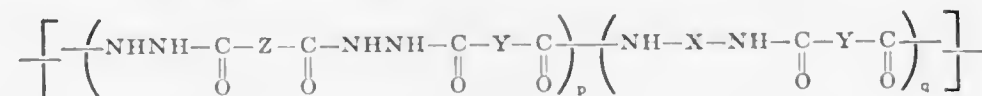
Feb. 4, 1972, Ser. No. 223,699

Int. Cl. C08g 20/00, 51/44

U.S. Cl. 260—32.6 NT

30 Claims

Aromatic amide-hydrazide copolymers are provided. These copolymers are characterized as being fiber-forming and having recurring structural units of



is not necessarily to be subjected to plasticization which is completed by means of said organic solvent and can be subjected directly to semi-melt spinning with the use of an extruder.

3,723,379

# VINYL DISPERSION TEXTURED COATING

Harlan E. Althouse, Pontiac, and Fremont L. Scott, Birmingham, Mich., and Gordon E. Cole, Jr., Greenwich, Conn., assignors to M & T Chemicals Inc., New York, N.Y.

No Drawing. Filed June 8, 1970, Ser. No. 44,625

Int. Cl. C08f 45/40

U.S. Cl. 260—31.8 M

4 Claims

In accordance with certain of its aspects, this invention relates to novel compositions and to a process for preparing an article having a textured coating which comprises bonding to a substrate a self-adhering coating composition containing:

(a) 16.0–34.2 parts by weight of a first vinyl resin having a relative viscosity of 1.98–2.35; a molecular weight of about 75,000–101,000, and an average particle size of about 0.5–7.0 microns;

(b) 3.8–24.0 parts by weight of a second halogen-containing resin having a specific viscosity of about 0.50, an inherent viscosity of about 1.20, a molecular weight average of about 127,000, and a particle size range of at least 7.0 microns to 177 microns;

(c) 1.0–7.6 parts by weight of a third vinyl solution resin with reactive sites having a vinyl chloride content of 75.0 to 91.5 percent copolymerized with at least one member selected from the group consisting of vinyl acetate, vinylidene chloride, or an ester of maleic acid, and having an inherent viscosity of about 0.34–0.46;

(d) 0.2–3.8 parts by weight of a liquid epoxy resin having a viscosity of about 10,000–20,000 centipoises and an epoxy equivalent weight of about 180–220;

(e) 1.2–14.7 parts by weight of an amine resin;

(f) 17–30.4 parts by weight of a plasticizer;

(g) About 0.0–15.3 parts by weight of a solvent-diluent which when present cooperates with plasticizers to dissolve the third vinyl resins (c), the liquid epoxy resin (d), and the amine resin (e) but does not gel or dissolve either

X and Y are divalent aromatic radicals; and Z is a divalent aromatic radical or a chemical bond. *p* and *q* are integers. The aromatic radicals have a molecular weight of less than 250 and are comprised of one or two meta- or para-phenylene linkages. The ratio of *p*:*q* is in the range of from 1:3 through 9:1. Solutions of these polymers in amide solvents are suitable for use in spinning filaments, even though greater than 65% of the arylene moieties are para-phenylene.

3,723,381

# POLY(VINYL ACETATE-DIALKYL MALEATE ACRYLIC ACID) TEXTILE SIZES

Albert E. Corey, East Longmeadow, Donald D. Donermeyer and Joel Fantl, Springfield, and Charles R. Williams, Longmeadow, Mass., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Dec. 16, 1970, Ser. No. 98,915

Int. Cl. C08f 45/30

U.S. Cl. 260—33.8 UA

6 Claims

Disclosed herein are poly(vinyl acetate-dialkyl maleate-acrylic acid) textile sizes and textiles sized therewith.

3,723,382

# FRICTION MATERIALS

John B. Lumb, Bradford, and Michael Edwards, Leeds, both of England, assignors to BBA Group Limited, Cleckheaton, Yorkshire, England

Filed April 13, 1971, Ser. No. 133,765

Claims priority, application Great Britain, April 15, 1970, 17,965/70; Sept. 30, 1970, 46,434/70

Int. Cl. C08g 51/04, 51/10

U.S. Cl. 260—38

8 Claims

A friction material for friction braking or transmission systems including in its finished state a two-part binder system, one part being a phenolic thermosetting resin and the other part being uncombined nickel and sulphur. The nickel and sulphur are capable of reacting together under the action of heat generated during application of the system to form nickel sulphide which provides additional binding in the material and compensates for thermal decomposition of the resin. Friction modifiers and fillers may also be included.

3,723,383

# NOVEL FLAME RETARDANT COMPOSITIONS OF MATTER

Henryk A. Cyba, Evanston, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

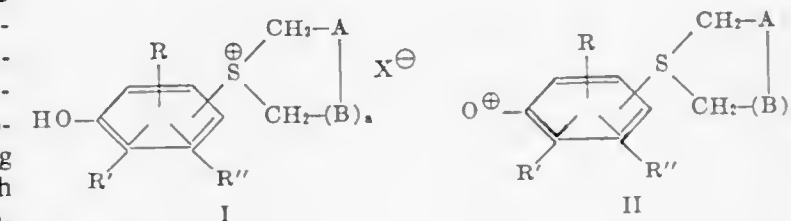
No Drawing. Filed July 26, 1971, Ser. No. 166,242

Int. Cl. C08f 45/04, 45/58

U.S. Cl. 260—41 B

3 Claims

Novel flame retardant compositions of matter comprise a thermoplastic compound, a polychloro-substituted organic compound, a polybromo-substituted organic compound and, if so desired, an antimony-containing compound or a tin-containing compound. The polyhalo-substituted organic compounds are characterized by possessing a low volatility, a high molecular weight, and a high halogen content. These compositions of matter are exemplified by a mixture of polypropylene, 5,6,7,8,9,9-hexachloro-1,2,3,4,4a,5,8,8a-octahydro-5,8-methano-2,3-naphthalene dicarboxylic anhydride, hexabromocyclododecane and antimony trioxide.



3,723,384

# REDUCTION OF OXIDATIVE DEGRADATION AND THE CATALYSIS OF PEROXIDE DECOMPOSITION

Christopher Copping, Waltham Abbey, and Norbert Uri, London, both of England, assignors to The Secretary of State for Defense in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Aug. 12, 1969, Ser. No. 849,399

Int. Cl. C08f 45/62; C08g 51/62

U.S. Cl. 260—45.75 N

9 Claims

Oxidative degradation of many organic materials, particularly polymers such as polyolefins, may be greatly reduced by the incorporation therein of certain transition metal complexes of  $\alpha$ -dithiodiketones. These complexes can offer protection against oxidative degradation induced by many different factors including exposure of the organic materials to heat, light, ultra violet ray and gamma ray irradiation.

3,723,385

# SILOXANE CONTAINING PREPOLYMERS AND POLYAMIDE-IMIDES PREPARED THEREFROM

John T. Hoback and Fred F. Holub, Schenectady, N.Y., assignors to General Electric Company

No Drawing. Filed Oct. 1, 1971, Ser. No. 185,905

Int. Cl. C08f 11/04; C08g 31/24

U.S. Cl. 260—46.5 E

9 Claims

Siloxane containing diamine prepolymers are prepared from a reaction mixture of a polysiloxane diamine, trimellitic anhydride and an organic diamine. Subsequently, the siloxane containing diamine prepolymers are reacted with organic dianhydrides and subjected to a heat treatment to form polyamide-imide products which are useful as protective coatings having heat resistant and corona resistant properties.

3,723,386

# POLYMERS FROM HYDROXYARYLMETHYLENE-SULFONIUM ZWITTERIONS

Melvin J. Hatch, Socorro, N. Mex., and Masao Yoshimine, Hugh B. Smith, and Donald L. Schmidt, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application Oct. 15, 1969, Ser. No. 866,763. Divided and this application Mar. 29, 1971, Ser. No. 129,117

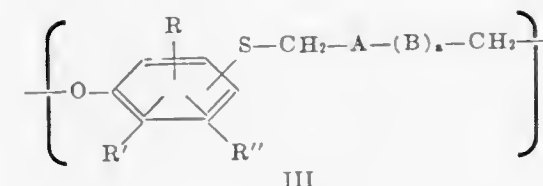
Int. Cl. C08g 23/00, 25/00

U.S. Cl. 260—47 R

10 Claims

Hydroxyarylpolymermethanesulfonium salts of Formula I, prepared by condensation of a phenol and a poly-

methylenesulfide, can be converted into a sulfonium hydroxide inner salt II and then thermally polymerized to yield polymers containing a plurality of groups of Formula III:



These polymers and copolymers are useful water resistant thermoplastic resins and impregnants.

3,723,387

# PREPARATION OF CURABLE AND CURED FLUOROPOLYMER PRODUCTS

Jack Leland Nyce, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed May 12, 1971, Ser. No. 142,793

Int. Cl. C08f 15/40, 29/16

U.S. Cl. 260—47 UP

13 Claims

A curable fluoropolymer which will undergo cross-linking when heated in the presence of a cross-linking agent (e.g. resorcinol) and an acid catalyst (e.g. isopropyltosylate) can be made from a copolymer-forming reaction mixture containing vinylidene fluoride, at least one other fluorinated ethylenically unsaturated monomer containing at least as many fluorine atoms as carbon atoms, and a small amount of allylidene diacetate or acrolein dimethylacetal. The resulting vinylidene fluoride copolymer can be used to make cured or cross-linked fluoropolymer products having beneficial utility in applications where resistance to degradation by steam is required.

3,723,388

# PHENOXYPHTHALATE POLYESTERS

Alan Bell and Winston J. Jackson, Jr., Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Oct. 8, 1971, Ser. No. 187,841

Int. Cl. C08g 17/08

U.S. Cl. 260—47 C

10 Claims

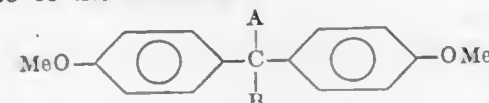
Composition of matter comprising a phenoxyphthalate polyester of at least one aromatic diol, and at least in part at least one phenoxyphthalic acid. These polyesters are characterized by their reduced glass transition temperatures, thermal and oxidative stability and high oxygen indices which makes the compositions readily processable into fire-retardant plastics and fibers.



### 3,723,389 THERMOPLASTIC AROMATIC POLY(ETHER-SULFONES)

Ghazi Khattab, Parsippany, N.J., assignor to Allied Chemical Corporation, New York, N.Y.  
No Drawing. Filed Oct. 27, 1971, Ser. No. 193,195  
Int. Cl. C08g 23/00, 25/00

U.S. Cl. 260—49 7 Claims  
Polymeric condensation products of about equimolar amounts of p,p'-dihalodiphenyl sulfone with alkali metal bisphenates of the formula



wherein Me is an alkali metal, A and B are hydrogen, alkyl, phenyl or alkali metal carboxylate-substituted alkyl, at least one of A and B being alkali metal carboxylate substituted alkyl, or mixtures of the above alkali metal bisphenate with an alkali metal bisphenate of the same formula wherein Me is as stated above and A and B are hydrogen, alkyl or phenyl are resistant to attack by solvents and to environmental stress cracking.

### 3,723,390 HIGH PRESSURE CONTINUOUS PROCESS FOR POLYESTERS FROM DICARBOXYLIC ACID ANHYDRIDES AND MONOPOXIDES

Robert E. Carpenter, Minnetonka, and Curtis R. Peterson, Minneapolis, Minn., assignors to Ashland Oil, Inc., Houston, Tex.  
No Drawing. Continuation-in-part of application Ser. No. 664,384, Aug. 30, 1967. This application Oct. 22, 1970, Ser. No. 83,190  
Int. Cl. C08g 17/007

U.S. Cl. 260—75 M 12 Claims  
A process is disclosed for the production of thermoplastic polyester resins via a continuous operation wherein a dicarboxylic acid anhydride and a terminal monoxide are condensed under a pressure-temperature-time relationship adapted to efficiently provide products corresponding structurally to conventionally prepared polyesterification products as well as providing unique structurally composed variants thereof.

### 3,723,391 CONTINUOUS MANUFACTURE OF POLYESTERS

Ludwig Beer, Ludwigshafen, and Hermann Fischer and Eduard Heil, Limburgerhof, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany  
Filed Nov. 18, 1970, Ser. No. 90,574  
Claims priority, application Germany, Nov. 22, 1969, P 19 58 777.0

U.S. Cl. 260—75 M 10 Claims  
A process for the continuous manufacture of linear polyesters having an intrinsic viscosity of up to 0.40 by polycondensing diglycol terephthalate and/or its precondensates in a bundle of tubes at elevated temperature and reduced pressure. The linear polyesters thus obtained are suitable for film and fiber production.

### 3,723,392 POLYURETHANES BASED ON 2,3-DIBROMO-BUT-2- ENE-1,4-DIOL

Klaus Konig, Erwin Muller, and Kuno Wagner, all of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 38,902, May 19, 1970. This application Jan. 17, 1972, Ser. No. 218,470  
Claims priority, application Germany, May 24, 1969, P 26 661.6

Int. Cl. C08g 22/16 3 Claims  
Noncellular polyurethane plastics are prepared from organic compounds having hydroxyl groups and a molecular

weight from about 800 to about 3,000, organic diisocyanates and 2,3-dibromobut-2-ene-1,4-diol. The polyurethane elastomers due to their improved chemical and thermal stability are eminently suitable in the production of molded articles.

### 3,723,393 AMIDE-TERMINATED POLYETHER PREPOLYMERS AND CURED HYDROPHILIC PRODUCTS THEREOF

John F. Kistner, Afton, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.  
Filed March 25, 1971, Ser. No. 128,171  
Int. Cl. C08g 22/04

U.S. Cl. 260—77.5 B 19 Claims  
Isocyanato- or haloformyl-terminated hydrophilic polyoxyalkylene prepolymers are reacted with certain compounds containing replaceable hydrogen atoms, such as a hydroxy-, thiol-, or amino amide, ammonia, or a primary amine, to form a hydrophilic amide-terminated prepolymer. The latter prepolymer can be crosslinked with a crosslinking agent, such as hexamethoxymethylmelamine, under acidic conditions to provide cured or crosslinked water-insoluble hydrophilic materials useful as coatings, films, and molded or shaped articles.

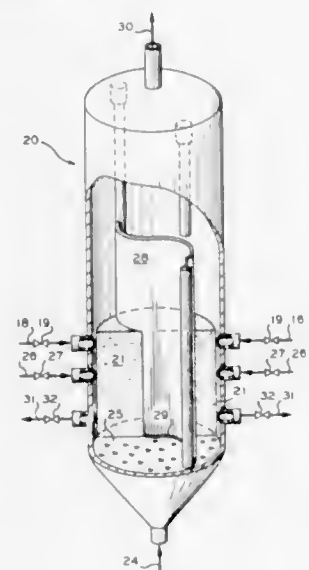
### 3,723,394 PROCESS FOR THE PREPARATION OF POLYURETHANE PREPOLYMERS COMPRISING TERMINAL ISOCYANATE GROUPS

Alain Gibier-Rambaud, "Clos Zanardi" Chemin des Espeselle, and Bernard Blanc, Ledfeyran Boulevard General Philiffe, both of Martigues, France  
Continuation of Ser. No. 804,703, March 5, 1969, abandoned.  
This application May 28, 1971, Ser. No. 148,237  
Int. Cl. C08g 22/04

U.S. Cl. 260—77.5 AA 8 Claims  
Preparation of polyurethane prepolymers having terminal isocyanate groups comprising reacting an organic polyisocyanate with a polyhydroxylated compound having less than 0.1 percent by weight of water in the presence of a hydrolyzable metal halide at a temperature within the range of 50° to 100° C.

### 3,723,395 BATCH-CONTINUOUS REACTION PROCESS IN A FLUIDIZED BED

Fred M. Warzell, Taylors, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.  
Division of Ser. No. 826,399, May 21, 1969, Pat. No. 3,615,253. This application May 10, 1971, Ser. No. 141,998  
Int. Cl. C08f 3/30, 15/02; F26b 3/08  
U.S. Cl. 260—78.5 CL 9 Claims



Material increases in throughput and output of batch-type reactors are obtained by avoiding operational time-losses in

dumping and filling and start-up. The improvements are achieved by a flexible divider which extends upwards from the bottom of the unit and which moves from one side of the reactor to the other to increase and decrease, respectively, the volumes of the sections of the reactor. One section can be functional while the other section is being emptied and refilled. The combined output of the sections approaches the output of a continuous reactor.

### 3,723,396 CATALYTIC PRODUCTION OF POLYAMIDES FROM AROMATIC DIAMINES

Michael Edward Benet Jones, and Graham Jarrett, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England  
Continuation of Ser. No. 839,075, July 3, 1969, abandoned.  
This application April 19, 1971, Ser. No. 135,500  
Int. Cl. C08g 20/20

U.S. Cl. 260—78 R 7 Claims  
A method of producing a polyamide which is of sufficiently high molecular weight to be used in moulding applications or for film or fiber formation from an aromatic diamine, by a high temperature melt procedure comprises heating a diamine component comprising at least one bis(aminophenyl)sulphone with a diacid component comprising at least one dicarboxylic acid at a temperature of from 160° to 300°C under an inert atmosphere and in the presence of a catalytic amount of a salt of hypophosphorous acid and an organic base having a pK<sub>a</sub> of less than 3, the salt being put in the reaction mixture before the latter reaches 150°C. Preferably the organic base is the bis(aminophenyl)sulphone used as the diamine component and the salt is formed in situ by addition of the hypophosphorous acid or a compound or compounds which will produce this acid in the reaction mixture.

### 3,723,397 ETHYLENE/VINYL ESTER/CARBOXYLIC ACID COPOLYMERS

George L. K. Hoh, and Donald E. Tuites, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.  
Division of Ser. No. 726,242, May 2, 1968, Pat. No. 3,594,338.  
This application Feb. 2, 1971, Ser. No. 112,084  
Int. Cl. C08f 15/40

U.S. Cl. 260—80.8 2 Claims  
Ethylene/vinyl ester/carboxylic acid copolymers containing at least 35 weight percent vinyl ester and at least 0.5 weight percent monocarboxylic or dicarboxylic acid or the half ester of the latter. The copolymers are particularly suitable in nitrocellulose lacquers for coating metal substrates where enhanced flexibility and adhesion are required.

### 3,723,398 THERMOSETTING POLYMERS DERIVED FROM COMPOUNDS OF FIVE AND SIX MEMBERED CYCLIC ALPHA, BETA-UNSATURATED ETHERS

Rostyslaw Dowbenko, Gibsonsia, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.  
Division of Ser. No. 4,120, Jan. 19, 1970, Pat. No. 3,637,760, which is a continuation-in-part of Ser. No. 671,990, Oct. 2, 1967, abandoned. This application May 7, 1971, Ser. No. 141,449  
Int. Cl. C08f 15/00, 15/40

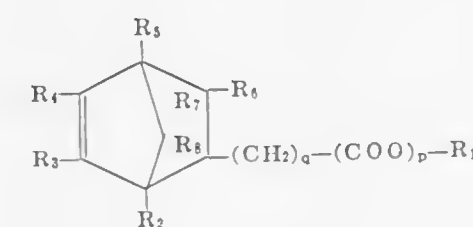
U.S. Cl. 260—80.72 8 Claims  
Compounds containing 2-tetrahydropyranyloxy groups or 2-tetrahydrofuranyloxy groups are formed by reacting carboxylic acid esters containing hydroxyl groups with 2,3-dihydropyran or 2,3-dihydrofuran. Preferred embodiments include 2-(2-tetrahydropyranyloxy)ethyl acrylate, 2-(2-tetrahydropyranyloxy)ethyl methacrylate, and butyl 2-(2-tetrahydropyranyloxy)ethyl fumarate. Homopolymers and interpolymers of the 2-tetrahydropyranyloxy and 2-tetra-

hydrofuranyloxy compounds with other ethylenic monomers are useful as films and coatings which cure very rapidly at low temperatures and are solvent resistant.

### 3,723,399 COPOLYMERS OF OLEFINS OR OLEFINS AND NON- CONJUGATED DIENES WITH NORBORNENE DERIVATIVES

Yves Amiard, Pau; Jean-Paul Bellissent, Billere, and Gilbert Marie, Pau, all of France, assignors to Societe Nationale des Petroles D'Aquitaine, Tour Aquitaine Courbevoie, France  
Filed May 11, 1971, Ser. No. 142,417  
Claims priority, application France, May 11, 1970, 7017017  
Int. Cl. C08f 15/40

U.S. Cl. 260—80.73 20 Claims  
Preparation of new copolymers of olefins or olefins and non-conjugated dienes with norbornene derivatives, by co-ordination catalysis.  
The norbornene derivatives are selected from those with the formula



where q is an integer which may equal from 0 to 12, p equals 0 or 1, R<sub>1</sub> represents a pyridyl radical, where p equals 0, and an alkyl radical, where p equals 1, and R<sub>2</sub> to R<sub>8</sub> represent hydrogen or hydrocarbon radicals with from one to 12 carbon atoms. These derivatives are, notably, the adducts of cyclopentadiene and vinylpyridine or alkyl acrylates or methacrylates.

### 3,723,400 METHOD OF PRODUCING 1,4-CIS-POLYBUTADIENE AND CIS-COPOLYMERS OF BUTADIENE

Boris Alexandrovich Dolgoplosk, Vystavochny pereulok, 3, kv. 36; Elena Ivanovna Tinyakova, ulitsa Krasikova, 19, kv. 104; Solomon Isaakovich Beilin, proezd Shokalskogo, 39, kv. 43; Kirill Lvovich Makovetsky, ulitsa Dybenko, 38, kv. 8; Galina Moiseevna Chernenko, ulitsa Alabyana, 3, kv. 330; Irina Yakovlevna Ostrovskaya, prospekt Mira, 72, kv. 2, all of Moscow; Izmail Vladimirovich Garmonov, ulitsa Saltykova-Schedrina, 20, kv. 18, Leningrad; Boris Vasilievich Mamontov, Narvsky prospekt, 8, kv. 11, Leningrad, and Alexandra Kon, Budapeshtskaya ulitsa, 23, korpus 2, kv. 151, Leningrad, all of U.S.S.R.  
Filed Dec. 30, 1970, Ser. No. 102,912

Claims priority, application U.S.S.R., Dec. 31, 1969, 1391000; Dec. 31, 1969, 1392358  
Int. Cl. C08d 1/30; C08f 19/04; C08d 3/06

U.S. Cl. 260—82.1 8 Claims  
A method of producing 1,4-cis-polybutadiene and cis-copolymers of butadiene with conjugated cyclic dienes having a number of carbon atoms of 5 to 6 or with vinyl-aromatic compounds which involves homopolymerization or copolymerization of the butadiene with monomers. The process is effected in mass or in a medium of an inert hydrocarbon solvent in the presence of a catalyst consisting of nickel or cobalt halide applied onto an inorganic carrier having electron acceptor characteristics and subjected to thermal activation at a temperature of 150°–350°C and under a vacuum of 10<sup>-3</sup> to 10<sup>-1</sup> mm Hg.



3,723,401

## POLYMERIC DERIVATIVE OF 1-PHENYLISOPROPYLAMINE WITH CARBOXYFORMAL OF POLYVINYL ALCOHOL, METHOD OF PRODUCING AND APPLICATION THEREOF

Nadezhda Alexandrovna Kashkina; Milda Yanovna Pormale; Arvid Yanovich Kalninsk; Yan Alexandrovich Surna; Yanis Yanovich Baltkajs, and Yan Shuster, all of Riga, U.S.S.R., assignors to Institut Khimii Drevesiny Akademii Nauk Latvinskoi SSR

Filed Sept. 11, 1970, Ser. No. 71,340

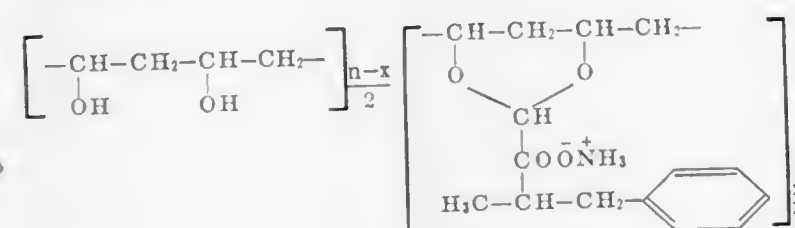
Int. Cl. C08f 27/08

U.S. Cl. 260—91.3 VA

3 Claims

The present invention relates to a new compound which is a polymeric derivative of 1-phenylisopropylamine with carboxyformal of polyvinyl alcohol, to a method of their producing and application.

Said polymeric derivative of 1-phenylisopropylamine with carboxyformal of polyvinyl alcohol conforms to the general formula



where  $n$  is polymerization degree from 100 to 1,200, and  $x$  is substitution degree, in mol. percent, from 3 to 25.

The method of the invention for producing said polymeric derivative of 1-phenylisopropylamine with carboxyformal of polyvinyl alcohol consists in that carboxyformal of polyvinyl alcohol is reacted with 1-phenylisopropylamine in an aqueous medium, and the desired product is subsequently isolated.

Said compound is an active principle of a medicinal preparation of a psycho-stimulating effect.

3,723,402

## COMPOSITION COMPRISING POLYPROPYLENE AND AN ORGANOSILICON COMPOUND

William J. Owen, Penarth, and Bryan E. Cooper, Bridgend, both of Wales, assignors to Midland Silicones Limited, Reading, Berkshire, England

Filed July 20, 1970, Ser. No. 56,659

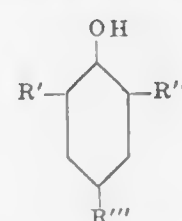
Claims priority, application, England, July 23, 1969, 37,057/69

Int. Cl. C08f 29/02, 45/58, 45/60

U.S. Cl. 260—93.7

3 Claims

The production of shaped polypropylene articles by melt extrusion of thermally degraded isotactic polypropylene can be carried forward at lower temperatures than were heretofore required by incorporating in the polypropylene prior to thermal degradation thereof, from 0.01 to 5 percent by weight, based on the weight of the polypropylene, or (a) a silane or siloxane having at least one  $\text{SiCH}_2\text{NR}_2$  group where R is hydrogen or a hydrocarbon radical, (b) an organosilicon compound of the general formula



wherein  $\text{R}'$ ,  $\text{R}''$  and  $\text{R}'''$  are each a hydrogen atom, an alkyl radical of 1-18 carbon atoms, an aralkyl radical of less than 19 carbon atoms or  $\text{O}_3\text{SiCH}_2$ — where Q is alkyl, alkenyl or aryl of less than 19 carbon atoms, at least one  $\text{R}'$ ,  $\text{R}''$  or  $\text{R}'''$  being  $\text{Q}_3\text{SiCH}_2$ , or (c) mixture of (a) and (b).

3,723,403

## OLEFINE POLYMERIZATION AT HIGH PRESSURES USING A DISPERSED ZIEGLER-TYPE CATALYST

Jeffrey Chester Greaves, and William George Oakes, both of Welwyn Garden City, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 728,347, May 9, 1968, abandoned. This application Oct. 30, 1969, Ser. No. 872,742

Claims priority, application Great Britain, Oct. 30, 1968, 51,471/68; Nov. 8, 1968, 53,064/68

Int. Cl. C08f 3/04, 1/42

U.S. Cl. 260—94.9 B

12 Claims

Ethylene is polymerized at high temperature and high pressure using a finely divided Ziegler catalyst comprising an organo-aluminum compound and a titanium trihalide which has been finely divided by pre-treatment with an olefine or mixture thereof under conditions to form an amorphous polymer. The titanium trihalide can be titanium trichloride which has been prepared by the reduction of titanium tetrachloride with hydrogen, aluminum, or, preferably, an organo-aluminum compound.

3,723,404

## CHLORONITROSULATED POLYMERS AND A PROCESS FOR THE PREPARATION THEREOF

Pauls Davis, Gibraltar, and Herwart C. Vogt, Grosse Ile, both of Mich., assignors to Basf Wyandotte Corporation, Wyandotte, Mich.

Filed Jan. 21, 1970, Ser. No. 4,756

Int. Cl. C08f 27/02, 27/08, 27/00, 27/03; C08d 5/04

U.S. Cl. 260—94.9 GB

10 Claims

Polymers containing chlorine and nitrogen atoms are prepared by the reaction of a hydrocarbon polymer with nitrosyl chloride or chlorine and nitric oxide. The resulting polymers may be cross-linked with heat to provide polymers having improved physical properties.

3,723,405

## TECHNIQUE FOR BONDING ANTIOXIDANTS TO POLYMER FILMS

Martin Louis Kaplan, Whippany, and Paul Goggin Kelleher, Maplewood, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed April 10, 1972, Ser. No. 242,792

Int. Cl. C08f 27/08

U.S. Cl. 260—94.9 GB

8 Claims

A technique is described for stabilizing polyolefins against degradation attributed to thermal oxidation. The described technique involves bonding a carbene, obtained by the decomposition of 3,5-ditertiarybutylbenzene-1,4-diazoxide, to the alpha olefin.

3,723,406

## NORREL PEPTIDES HAVING CHOLECYSTORININ ACTIVITY AND INTERMEDIATES THEREFOR

Miguel A. Ondetti, North Brunswick; Josip Plusec, East Brunswick; John T. Sheehan, Middlesex, all of N.J.; Johan E. Jorpes, Stockholm, and Viktor Mutt, Farsta, both of Sweden, assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

Division of Ser. No. 726,558, May 3, 1968. This application

Dec. 23, 1969, Ser. No. 889,768

Int. Cl. C07c 103/52; C07g 7/00

U.S. Cl. 260—112.5

9 Claims

Novel peptides amides of the general formula



wherein R represents L-aspartyl-O-sulfate-L-tyrosyl, L-aspartyl-L-arginyl-L-aspartyl-O-sulfate-L-tyrosyl, or isoleucyl-L-seryl-L-aspartyl-L-arginyl-L-aspartyl-O-sulfate-L-tyrosyl, and intermediates in the production thereof. The peptide amides of this invention as well as the pharmaceutically acceptable salts thereof have been found to possess cholecystokinin activity.

3,723,407

## METHOD OF PREPARING VEGETABLE PROTEIN CONCENTRATES

David M. Miller, Forest Park, and Morris D. Wilding, Downers Grove, both of Ill., assignors to Swift & Company, Chicago, Ill.

Continuation of Ser. No. 79,655, Oct. 9, 1970, abandoned.

This application April 13, 1972, Ser. No. 243,868

Int. Cl. A23j 1/14

U.S. Cl. 260—123.5

10 Claims

Vegetable protein concentrates of high viscosity are obtained by contacting undenatured, defatted, vegetable protein source material with an aqueous system, acidifying said system and subjecting the material to centrifugal speeds and differential pressure effects while passing it through a shearing orifice so as to disrupt the natural cell structure of the protein bodies. Subjecting the protein material, in a concentrate process, to a momentary pressure build-up and sudden release of the cellular tissue of the protein bodies gives a released protein that has markedly different viscosity properties than are possessed by protein concentrates prepared in accordance with prior art procedures.

3,723,408

## HYDROXYALKYL POLYGALACTOMANNANS BY REACTION WITH CERTAIN HALO FATTY ACID COMPOUNDS

Robert Nordgren; Duane A. Jones, and Harold A. Wittcoff, all of Minneapolis, Minn., assignors to General Mills Chemicals, Inc.

Filed May 26, 1970, Ser. No. 40,744

Int. Cl. C07c 47/18

U.S. Cl. 260—209 R

2 Claims

The hydration rate of hydroxyalkyl polygalactomannans is improved by reaction with certain halo fatty acids or the alkali metal salts thereof. Such products find utility as thickeners for various fluids.

3,723,409

## MIXED DERIVATIVES OF POLYGALACTOMANNANS AND PROCESS OF PREPARING SAME

Mao H. Yueh, Minneapolis, Minn., assignor to General Mills, Inc., Minneapolis, Minn.

Filed May 26, 1970, Ser. No. 40,746

Int. Cl. C07c 47/18

U.S. Cl. 260—209 R

2 Claims

Carboxyalkyl hydroxyalkyl derivatives of polygalactomannans are prepared by reacting the polygalactomannan with both an alkylene oxide of three to eight carbon atoms and a halo fatty acid of two to four carbons or the alkali metal salts thereof. The products find use as thickeners for aqueous fluids when complexed with di- or polyvalent metal ions.

3,723,410

## METHOD OF PRODUCING STEVIOSIDE

Georgia J. Persinos, Rockville, Md., assignor to The Amazon Natural Drug Company, Somerville, N.J.

Filed Dec. 1, 1970, Ser. No. 94,628

Int. Cl. C07c 47/18

U.S. Cl. 260—210 R

9 Claims

A new and improved method for the extraction of stevioside from the leaves of *Stevia rebaudiana* in which the leaves are ground, defatted, treated with an organic extractant, filtered, the resultant filtrate reduced to a syrup, and the syrup thereafter treated by one or more steps to form crystals of stevioside.

3,723,411

## BETA-RHODOMYCIN V

Hans Brockmann, Goettingen, and Martin Scheer, Wuppertal-Elberfeld, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

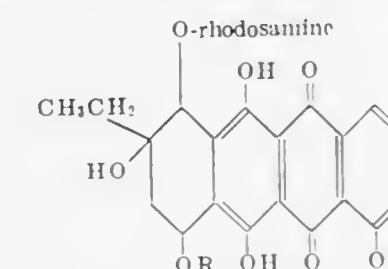
Filed March 12, 1971, Ser. No. 123,882

Claims priority, application Germany, March 18, 1970, P 20 12 808.9

Int. Cl. C07c 47/18

1 Claim

An antibiotic designated  $\beta$ -rhodomycin V and corresponding to the formula



wherein R represents a tetraglycoside consisting of 2 mols rhodiose, 1 mol 2-desoxy-fucose and 1 mol rhodamine is prepared by cultivating *Streptomyces purpurascens*, extracting the culture filtrate and mycelium in a neutral medium and obtaining the antibiotic from the extracts by known methods. The antibiotic is found to possess excellent activity against a broad class of organisms, especially mycoplasmas and gram-positive bacteria.

3,723,412

## PREPARATION OF ACETONE GLUCOSE

James P. Hicks, Galesburg; Robert E. Gramera, Hindsdale, and Hyman M. Molotsky, Chicago, all of Ill., assignors to CPC International Inc., 02

Original application Feb. 13, 1967, Ser. No. 615,307, now Patent No. 3,538,116, dated Nov. 3, 1970. Divided and this application Jan. 26, 1970, Ser. No. 10,698

Int. Cl. C07c 47/18

U.S. Cl. 260—210 R

5 Claims

Covers a method of preparing acetone glucose. Particularly covers a process of making diacetone glucose under carefully controlled conditions via an acid-catalyzed reaction. Also covers a procedure for making monoacetone glucose from diacetone glucose through ion exchange techniques. In addition, covers a continuous method of synthesizing diacetone glucose, and as well is concerned with synthesizing monoacetone glucose from glucose by proceeding through the intermediate diacetone glucose without isolation of the diacetone derivative.

3,723,413

## WATER-INSOLUBLE FLUID-ABSORPTIVE AND RETENTIVE MATERIALS AND METHODS OF MAKING THE SAME

Prinoy K. Chatterjee, Spotswood, and Michael K. Kwok, Princeton, both of N.J., assignors to Personal Products Company, Milltown, N.J.

Filed Oct. 26, 1970, Ser. No. 84,129

Int. Cl. C08b 11/00, 11/20

U.S. Cl. 260—232

12 Claims

Water-insoluble, fluid-absorptive and retentive carboxyalkylated cellulosic materials having an average degree of substitution greater than 0.35 and up to about 1.4 or more carboxyalkyl radicals per anhydroglucose unit in the cellulose and methods of making the same which comprise: (1) treating cellulosic materials such as wood pulp, cotton, cotton linters, rayon, etc., with carboxyalkylating reactants such as chloroalkanoic acids, preferably monochloroacetic acid, and an alkali, such as sodium hydroxide, in the presence of an alcohol, such as propanol, to form water-soluble carboxyalkyl cellulose hav-







3,723,427

**HINDERED TRIS(META-HYDROXYBENZYL)CYANURATE ANTIOXIDANTS**  
 Peter Vincent Susi, Middlesex, N.J., assignor to American Cyanamid Company, Stamford, Conn.

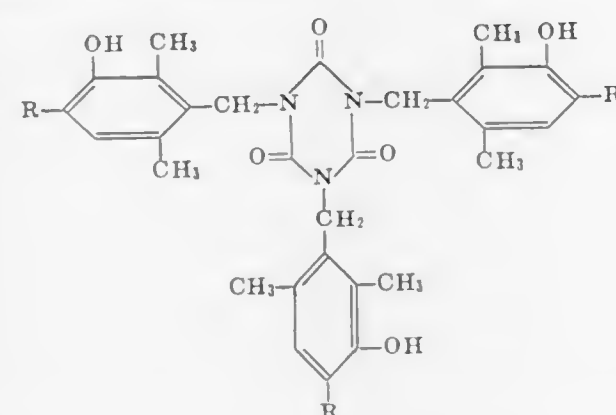
Filed Nov. 16, 1971, Ser. No. 199,340

Int. Cl. C07d 55/38

U.S. Cl. 260—248 NS

2 Claims

Compounds of the formula:



wherein R is a branched chain alkyl group containing three to about 12 carbon atoms are provided. These compounds are useful as antioxidants in organic substrates, such as polyolefins, rubber, etc. They can be prepared by reacting 3 moles of 4-alkyl-3-hydroxy-2,6-dimethylbenzyl chloride with 1 mole of cyanuric acid.

3,723,428

**HINDERED TRIS(META-HYDROXYBENZYLTHIO)-S-TRIAZINE ANTIOXIDANTS**

John Song, Bound Brook, N.J., assignor to American Cyanamid Company, Stamford, Conn.

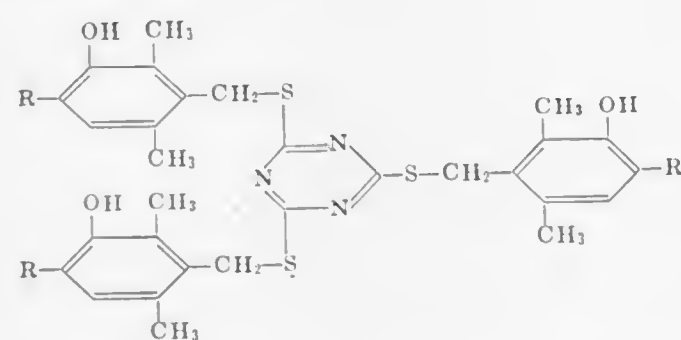
Filed Nov. 16, 1971, Ser. No. 199,341

Int. Cl. C07d 55/50

U.S. Cl. 260—248 CS

2 Claims

Compounds of the formula:



wherein R is a branched chain alkyl group containing three to about 12 carbon atoms are provided. These compounds are useful as antioxidants in organic substrates, such as polyolefins, rubber, etc. They can be prepared by reacting three moles of 4-alkyl-3-hydroxy-2,6-dimethylbenzyl chloride with one mole of 2,4,6-trimercapto-s-triazine or by reacting three moles of 4-alkyl-3-hydroxy-2,6-dimethylbenzyl mercaptan with one mole of cyanuric chloride.

3,723,429

**DI-HYDRO TRIAZINE DERIVATIVES**

Patrick Mamalis, Robins Ruff, Reigate, and Dennis J. Outred, both of England, assignors to Beecham Group Limited, Brentford, Middlesex, England

Filed Nov. 6, 1969, Ser. No. 874,693

Int. Cl. C07d 55/20

U.S. Cl. 260—249.9

6 Claims

N-substituted symmetrical di-hydrotriazine derivatives and salts are described having anti-malarial and antibacterial ac-

tivity as well as effectiveness against some fungi and protozoa. A representative compound is 4,5-diamino-1,2-dihydro-2,2-dimethyl-1-[3'-(2,4,5-trichlorophenoxy)propyloxy]-1,3,5-triazine hydrobromide. The compounds can be prepared by reacting a substituted diguanide with a carbonyl compound in the presence of an acid catalyst to form a substituted triazine which may then be salified or acylated.

3,723,430

**METHOD FOR RECLAMATION OF MELAMINE WASTE GAS**

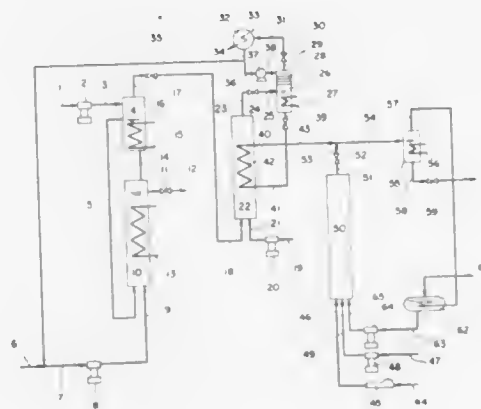
Ryo Kokubo, Koji Yokomichi, Yasuo Takakuwa, and Kozo Takahashi, all of Fuchu, Japan, assignors to Nissan Chemical Industries Ltd., Tokyo, Japan

Filed Oct. 28, 1970, Ser. No. 84,797

Int. Cl. C07d 55/28

U.S. Cl. 260—249.7 A

15 Claims



Method for utilization of melamine waste gas in high pressure liquid phase melamine synthesis using urea or urea-thermal decomposition product as initial material, — characterized by synthesizing urea under the melamine synthesis pressure directly from melamine waste gas obtained as by-product in the synthesis or, depending on the case, with water or aqueous ammonium carbonate solution added thereto, and introducing the obtained lower pressure urea synthesis solution into decomposing stage of main urea synthesis.

3,723,431

**PERCHLORINATED VINYL PYRAZINES**

Sven H. Ruetman, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

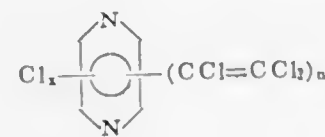
Filed Jan. 28, 1971, Ser. No. 110,753

Int. Cl. C07d 51/76

U.S. Cl. 260—250 R

2 Claims

Compounds corresponding to the formula



wherein x is 2 or 3, n is 1 or 2 and the sum of x+n is always 4. These compounds are prepared by vapor phase chlorination and have utility as pesticides for the control of a variety of plant, insect, bacterial and fungal pests.

3,723,432

**1-SUBSTITUTED-4-ARYL-2(1H)-QUINAZOLINONES AND THEIR PREPARATION**

Hans Ott, Pfeffingen, Basel-Land, Switzerland, assignor to Sandoz-Wander, Inc., Hanover, N.J.

Continuation-in-part of Ser. No. 741,804, July 1, 1968, abandoned, which is a continuation-in-part of Ser. No. 707,932, Feb. 26, 1968, abandoned, which is a continuation-in-part of Ser. No. 672,739, Oct. 4, 1967, abandoned, which is a continuation-in-part of Ser. No. 636,015, May 4, 1967, abandoned, which is a continuation-in-part of Ser. No. 575,511, Aug. 29, 1966, abandoned. This application Nov. 12, 1968, Ser. No. 775,201

Int. Cl. C07d 51/48

U.S. Cl. 260—251 QB

70 Claims

Compounds are of the class of 1-substituted-4-aryl-2(1H)-quinazolinones, e.g., 1-ethyl-4-phenyl-2(1H)-quinazolinone, which are useful as anti-inflammatory agents, antipyretics and analgesics. The compounds are prepared by any one of several processes including, inter alia, the cyclization of a 2-alkylaminobenzophenone with urethane, the cyclization of a 2-alkylaminobenzophenonimine with phosgene, the reaction of a 1-alkali metal salt of a 4-aryl-2(1H)-quinazolinone with an alkyl halide or from a 1-unsubstituted-4-arylquinazolinone which is reacted with a methyl halide to form the corresponding 1-methyl-quinazolinone which is either then directly oxidized or first reduced and then oxidized to obtain the 1-methyl-4-aryl-2(1H)-quinazolinone. Novel intermediates disclosed include the 1-methyl-4-aryl-quinazolinones and compounds which are 1-methyl-4-aryl-3,4-dihydroquinazolinones.

3,723,433

**PYRIMIDINYL PYRAZOLE DERIVATIVES AND METHODS FOR PREPARING THE SAME**

Katsuhiro Ueno, Yoshiaki Ohmura, Reimei Morol, Akira Akashi, Masahiro Arimoto, and Akira Kasahara, all of Tokyo, Japan, assignors to Daiichi Selyaku Co., Ltd., Tokyo, Japan

Filed July 31, 1970, Ser. No. 60,112

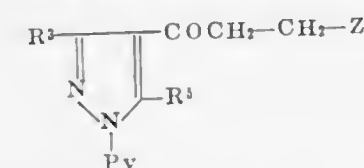
Claims priority, application Japan, Aug. 2, 1969, 44/61218; Aug. 15, 1969, 44/64542

Int. Cl. C07d 51/42

U.S. Cl. 260—256.4 C

32 Claims

Pyrimidinylpyrazole derivatives, having the formula:



wherein R<sub>1</sub> and R<sub>2</sub> are each hydrogen or alkyl of one to five carbon atoms, Py is a pyrimidinyl group optionally substituted by alkyl of one to five carbon atoms, alkoxy of one to five carbon atoms, and/or halogen, Z is N-(optionally substituted)phenyl piperazino, 4-substituted piperidino or 4-substituted-1,2,5,6-tetrahydro pyridino. The compounds are useful either as C.N.S. depressants or as antihypertensive agents.

3,723,434

**PIPERAZINO ISOQUINOLINE BRONCHODILATORS**  
 Timothy H. Cronin, Niantic, and Hans-Jurgen E. Hess, Old Lyme, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed July 17, 1970, Ser. No. 55,964

Int. Cl. C07d 51/70

U.S. Cl. 260—268 C

9 Claims

A series of novel 4-piperazino-6,7-dialkoxyquinazolinones and 1-piperazino-6,7-dialkoxyisoquinolines have been prepared, including their acid addition salts. These compounds are useful in therapy as bronchodilators and as smooth muscle relaxants. Methods for their preparation from known compounds are provided.

3,723,435

**METAL COMPLEXES OF MERCAPTO QUINOLINE N-OXIDES**

Thomas E. Furia, Hartsdale, and David H. Steinberg, Bronx, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

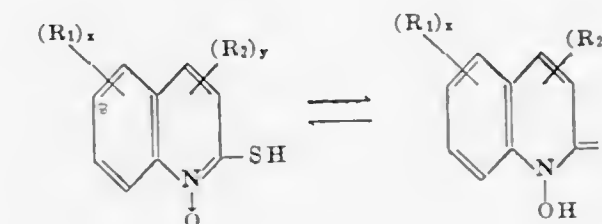
Filed July 16, 1969, Ser. No. 842,377

Int. Cl. C07d 33/62

U.S. Cl. 260—270 R

4 Claims

Novel compounds having the structural formula in tautomeric form:



and metal salts and complexes thereof wherein R<sub>1</sub> and R<sub>2</sub> are hydrogen, alkyl, cycloalkyl, aryl, alkylthio, halogen, nitro, trifluoromethyl or alkoxy; x is an integer from one to four and y is an integer from one to two. The invention also includes anti-dandruff shampoos containing the above metal salts and complexes and to a method of combatting dandruff comprising applying to the hair and scalp a detergent composition containing the above metal complexes.

3,723,436

**PROCESS FOR AROMATIC LACTAMS**

Elmer J. Hollstein, Wilmington, Del., and Arthur M. Brownstein, Cherry Hill, N.J., assignors to Sun Oil Company, Philadelphia, Pa.

Filed Feb. 25, 1971, Ser. No. 119,003

Int. Cl. C07d 39/00

U.S. Cl. 260—281

4 Claims

A process for the preparation of aromatic lactams which comprises hydrogenating an aromatic polycarboxylic acid in the presence of a Raney cobalt catalyst.

3,723,437

**4,10-(METHANIMINOMETHANO)PHENANTHRENE DERIVATIVES**

Karel Wiesner, Fredericton, New Brunswick, Canada, assignor to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 846,962, Aug. 1, 1969, abandoned. This application Sept. 15, 1970, Ser. No. 72,508

Int. Cl. C07d 35/28

U.S. Cl. 260—285

5 Claims

There are disclosed herein organic amines, and their pharmaceutically acceptable acid addition salts, which are 3,4,9,10-tetrahydro-6-methoxy-(2H)-4a,10-(methaniminomethano)-phenanthren-2-ol, 1,3,4,9,10,10a-hexahydro-6-methoxy-(2H)-4a,10-(methaniminomethano)-phenanthren-2-ol, 1,3,4,10,10a-tetrahydro-6-methoxy-(9H)-4a,10-(methaniminomethano)phenanthren-3-ol and 1,2,3,4,9,10-hexahydro-3,6-dimethoxy-α-methyl-α-alkyl-or aralkyl-3,10a-ethano-4a,10-(methaniminomethano)phenanthrene-2-methanol and their corresponding N-(lower alkyl)derivatives. Process for the synthesis of these compound, which includes a facile preparation of the key intermediate, 3,4,9,10-tetrahydro-6-methoxy-12-methyl-4a,10-(methaniminomethano)phenanthrene-2,11(2H)-dione, is also disclosed. The amines possess analgesic, antibacterial and antifungal activities, and methods for their use are disclosed.



3,723,438

## WEB STRETCHING METHOD

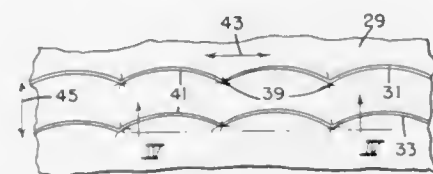
Theodore H. Fairbanks, Liverpool, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Filed July 13, 1970, Ser. No. 54,196

Int. Cl. B29d 7/24

U.S. Cl. 264—289

8 Claims



Web stretching method wherein an unstretched web is elongated between each of adjacent selected locations of a series of such locations which are aligned in the direction of applied stretching tensions, with reinforcing members attached to the web for limiting web elongation between such locations to a predetermined degree.

3,723,439

## THIOCYANOACETAMIDES

Sidney B. Richter, Chicago, and Alfred A. Levin, Skokie, both of Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

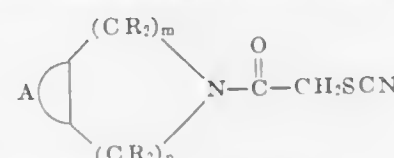
Continuation-in-part of Ser. No. 732,822, May 29, 1968, abandoned. This application July 22, 1971, Ser. No. 165,348

Int. Cl. C07d 33/50, 35/34

U.S. Cl. 260—283 CN

4 Claims

New chemical compositions of the formula



wherein each R is selected from the group consisting of hydrogen and alkyl; A forms a substituted or unsubstituted hydrocarbon ring of six carbon atoms wherein the substituents are selected from the group consisting of alkyl, alkenyl, halogen, haloalkyl, alkoxy, nitro, and dialkylamino; m is an integer from 1 to 3; n is an integer from 0 to 1; and m + n is an integer from 2 to 3. A fungicidal composition comprising an inert carrier and, as an essential active ingredient, in a quantity toxic to fungi, a compound of the above description. A method for the control of fungi which comprises applying to said fungi a fungicidal composition comprising an inert carrier and, in a quantity toxic to fungi a compound heretofore described.

3,723,440

## DERIVATIVES OF 6,7-BENZOMORPHAN

Kurt Freter, and Karl Zelle, both of Ingelheim am Rhine, Germany, assignors to C. H. Boehringer Sohn, Ingelheim am Rhine, Germany

Filed Oct. 12, 1960, Ser. No. 62,099

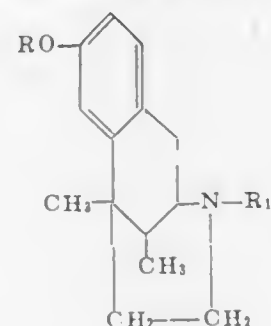
Claims priority, application Germany, Oct. 16, 1959, B 55 207

Int. Cl. C07d 39/00

U.S. Cl. 260—293.54

7 Claims

A benzomorphan selected from the compounds of the formula



wherein R is hydrogen or acyl and R is a saturated or saturated acyclic hydrocarbon radical with three carbon atoms and their non-toxic, pharmacologically acceptable acid addition and quaternary salts exhibit strong analgesic activities without the undesirable side effects of morphine.

3,723,441

## BENZOHETEROCYCLICALKYL DERIVATIVES OF 1-PHENYL-1,3,8-TRIAZASPIRO(4,5)DECAN-4-ONE

Carl Kaiser, Haddon Heights, N.J., and Charles L. Zirkle, Philadelphia, Pa., assignors to Smith Kline &amp; French Laboratories, Philadelphia, Pa.

Division of Ser. No. 771,320, Oct. 28, 1968, Pat. No.

3,629,267. This application March 11, 1971, Ser. No. 123,442

Int. Cl. C07d 63/18

U.S. Cl. 260—293.57

5 Claims

Benzoheterocyclic-alkyl derivatives of 1-phenyl-1,3,8-triazaspiro[4,5]decan-4-one in which the benzoheterocyclic moiety is thianaphthenyl or benzofuranyl, optionally substituted by chloro, bromo, fluoro, methyl, methoxy or trifluoromethyl, have neuroleptic activity. The compounds are generally prepared from either the benzo-heterocyclicalkyl halide by reaction with the appropriate amine or the benzoheterocyclic amine by condensation with a 5,5-bis (β-haloethyl) barbituric acid.

3,723,442

## 3-OXO-1-OXA-4,8-DIAZASPIRO(4,5)DECANES

Michio Nakanishi, Oita; Katsuo Arimura, Fukuoka, and Hideki Ao, Oita, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

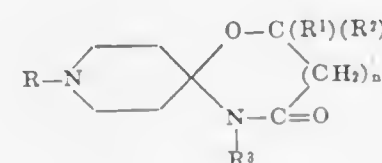
Filed Dec. 31, 1970, Ser. No. 103,322

Int. Cl. C07d 99/02

U.S. Cl. 260—293.66

7 Claims

3-oxo-1-oxa-4,8-diazaspiro[4.5]decanes having the general formula



wherein R, R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup> and n are defined hereinafter, their pharmaceutically acceptable acid addition salts thereof and methods for the preparation of said compounds are disclosed. The compounds are used as agents having strong reserpine antagonistic activity and agents for lowering the blood sugar level.

3,723,443

## 4-(3-SUBSTITUTED AMINO)-2-HYDROXYPROPOXY)-1,2,5-THIAZIAZOLES

Burton Kendall Wasson, Valois, Quebec, Canada, assignor to Charles E. Frost &amp; Co., Kirkland, Quebec, Canada/Taiwan

Division of Ser. No. 818,090, April 21, 1969, Pat. No.

3,655,663, which is a continuation-in-part of Ser. No. 731,333, May 22, 1968, abandoned. This application Sept. 9, 1971, Ser. No. 179,147

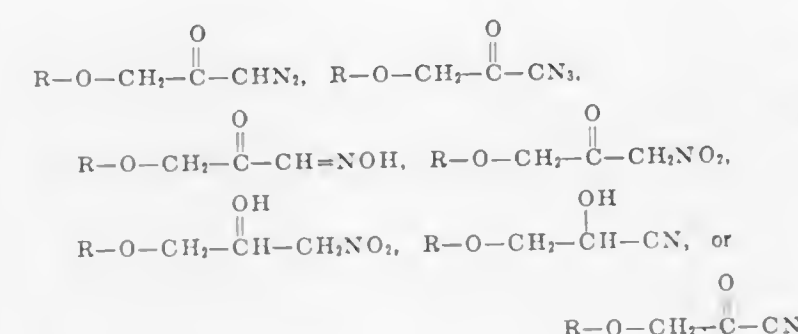
Int. Cl. C07d 91/68

U.S. Cl. 260—293.68

8 Claims

4-[3-(Substituted amino)-2-hydroxypropoxyl]-1,2,5-thiaziazole compounds, substituted by a nitrogen containing group in the 3-position of the thiaziazole nucleus which exhibit β-adrenergic blocking properties and thus are useful in the management of angina pectoris are described. The products are prepared by one of three principal methods (1) reaction of a 4-hydroxy-1,2,5-thiaziazole with epihalohydrin to provide 4-(3-halo-2-hydroxypropoxy)-1,2,5-thiaziazole which, upon treatment with alkali, forms the epoxide which is then reacted with an amine to provide the desired product; (2)

reaction of a 3-chloro(or bromo)-4-(3-substituted amino-2-hydroxypropoxy)-1,2,5-thiaziazole with an amine or an N-containing heterocycle that replaces the 3-chloro group; and (3) reductive alkylation of an



wherein R is the 1,2,5-thiaziazole-4-yl group.

3,723,444

## MANUFACTURING OF BIPYRIDYLUM SALTS

John Edward Colchester, and Thomas Blundell, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed June 16, 1969, Ser. No. 833,710

Claims priority, application Great Britain, July 1, 1968, 31,366/68

Int. Cl. C07d 31/22

U.S. Cl. 260—295 AM

34 Claims

A process for the manufacture of a 1,1'-disubstituted-4,4'-bipyridylum salt which comprises reacting an N-substituted-4-cyano pyridinium salt with ammonia or an alkali metal hydroxide and subsequently oxidizing the resulting interaction product.

3,723,445

## PROCESS FOR THE PREPARATION OF [3-(4-PHENYL)-1-(2H)-3,6-DIHYDRO-PYRIDYL]-PROPOXY OR

PROPYLTHIO-ANILIDES OR DERIVATIVES THEREOF  
Albrecht Edenhofer, Riehen, and Hans Spiegelberg, Basel, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed June 14, 1971, Ser. No. 152,979

Claims priority, application Switzerland, June 17, 1970, 9145/70

Int. Cl. C07d 31/44

U.S. Cl. 260—295 AM

9 Claims

A process of preparing aromatic ethers comprising subjecting an appropriately substituted oxazine to acidic rearrangement is described. The end products are useful as antipruritic, antiallergic, antitussive and analgesic agents.

3,723,446

## α-HALOPENOXY-ISOBUTYROYL-β-NICOTINOYL-GLYCOLS AND PROCESSES THEREFOR

Arthur Scherm, Bad Homburg v.d.H., and Dezso Peteri, Frankfurt/Main, both of Germany, assignors to Merz &amp; Co. Chemische Fabrik, Frankfurt-am-Main, Germany

Filed Aug. 12, 1970, Ser. No. 63,344

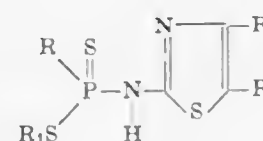
Claims priority, application Germany, Aug. 13, 1969, P 19 41 217.0

Int. Cl. C07d 31/36

U.S. Cl. 260—295.5 R

2 Claims

α-Halophenoxy-isobutyryl-β-nicotinoyl glycols are prepared by esterifying halophenoxy-isobutyric acid with ethylene glycol and then further reacting the obtained semister with a nicotinic acid halide. The prepared compounds are useful as lipid-lowering agents.

3,723,447  
BENZOTHIAZOLE CERTAIN ETHERS AND AMINES OF 1,2,3-BENZOTHIAZOLE

John D. Diekmann, Mountain View, and John B. Siddall, Palo Alto, both of Calif., assignors to Zeecon Corporation, Palo Alto, Calif.

Filed April 5, 1971, Ser. No. 131,454

Int. Cl. C07d 91/56

U.S. Cl. 260—304

27 Claims

Ethers and amines of 1,2,3-benzothiazole prepared by alkylation of hydroxy-1,2,3-benzothiazole and amino-1,2,3-benzothiazole useful for the control of insects.

3,723,448

## N-(4-CYANO-1,2,3-THIAZOL-5-YL) PROPIONAMIDE

Gert Paul Volpp, Princeton, and Harry Douchis, Lawrence Township, both of N.J., assignors to TMC Corporation, New York, N.Y.

Filed June 29, 1971, Ser. No. 158,117

Int. Cl. C07d 91/54

U.S. Cl. 260—306.8 D

1 Claim

A new chemical compound, of the formula N-(4-cyano-1,2,3-thiazol-5-yl)propionamide, has selective pre-emergence and post-emergence herbicidal activity. The synthesis of this compound is described, and its utility is exemplified.

3,723,449

## CERTAIN FLUORESCENT 2-(2-HYDROXY-PHTHALIMIDOMETHYL-PHENYL)-BENZOTHIAZOLES

Joseph G. Wirth, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed July 30, 1971, Ser. No. 167,838

Int. Cl. C07d 99/10, 91/44

U.S. Cl. 260—304

5 Claims

Compared to the parent compound, phthalimidomethyl derivatives of 2-(2-hydroxyphenyl)benzothiazole have much lower vapor pressure and greatly improved ultraviolet stability. Both of these factors make these derivatives much better organic phosphors than the parent compound since they have greatly improved the useful lifetime of compositions where they have been incorporated to impart fluorescent properties. These new derivatives fluoresce with a yellow color.

3,723,450

## PHOSPHONAMIDO THIAZOLES AND THEIR UTILITY AS INSECTICIDES

Llewellyn W. Fancher, Orinda, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

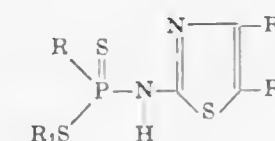
Filed Oct. 29, 1971, Ser. No. 198,012

Int. Cl. C07d 91/34

U.S. Cl. 260—306.8 R

35 Claims

Compounds of the formula



in which R is alkyl; R<sub>1</sub> is alkyl, alkenyl, alkynyl, benzyl, cyanoalkyl or alkylthioalkylene; R<sub>2</sub> is hydrogen or alkyl; R<sub>3</sub> is hydrogen, alkyl or alkylthioalkylene and the use of these compounds as insecticides and acaricides.



3,723,451

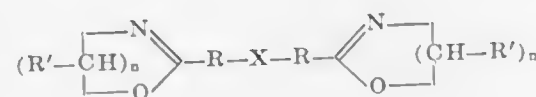
## B1-2-OXAZOLINE AND OXAZINE ETHERS AND THIOETHERS

Donald A. Tomalia, and Janet N. Paige, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

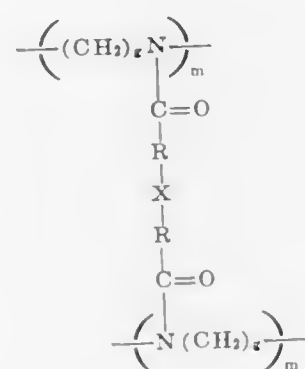
Division of Ser. No. 834,611, June 16, 1969, Pat. No. 3,563,920. This application Sept. 29, 1970, Ser. No. 76,598  
Int. Cl. C07d 85/36

U.S. Cl. 260—307 F

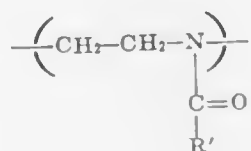
5 Claims



Wherein R is alkylene, phenylene, vinylene, or phenylene-alkylene, wherein, "alkylene" alone or in a combined name, designates an alkylene moiety that is of from one to 10 carbon atoms, and X is —S— or —O—; n is zero or 1; optionally also with an oxazoline as comonomer, are cationically polymerized to polymers containing recurring units of the formula



and, optionally, also units of the formula



wherein g is an integer 2 or 3, m represents the degree of polymerization, and R' is hydrogen or a specified radical.

3,723,452

## 2-HALOPHENYL-4,4-DIALKYL-5-HALO-5-DIHALOMETHYL-OXAZOLINES

Patrick J. McNulty, Wyndmoor; Colin Swithenbank, Perkaskie; Kenneth L. Viste, Warminster, and William C. Von Meyer, Willow Grove, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 829,084, May 29, 1969, Pat. No. 3,661,991. This application April 19, 1971, Ser. No. 135,471  
Int. Cl. C07d 85/36

U.S. Cl. 260—307 F

5 Claims

Compounds belonging to the class of 2-(mono, di or trisubstituted phenyl)-4,4-dimethyl (or ethyl)-5-bromo (or chloro)-5-dibromo (or dichloro) methyl oxazolines and their hydrohalide salts. These compounds are fungicides.

3,723,453

## 1-(BETA-SULPHONYLOXY-ETHYL)-IMIDAZOLES

Boris Gradnik; Andrea Pedrazzoli, both of Milan, and Leone Dall'Asta, Pavia, all of Italy, assignors to Societe D'Etudes de Recherches et D'Applications Scientifiques et Medicales E.R.A.S.M.E., Paris, France  
Filed June 17, 1970, Ser. No. 47,142

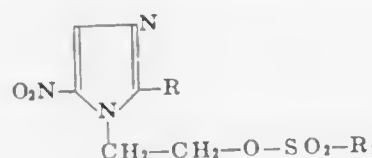
Claims priority, application Great Britain, June 20, 1969, 31,266/69

Int. Cl. C07d 49/36

U.S. Cl. 260—309

9 Claims

1-(β-Sulphonyloxy-ethyl)-imidazoles of formula



where R is hydrogen or lower alkyl and R<sub>1</sub> is an alkyl radical, a cycloalkyl radical, a substituted or unsubstituted benzyl or phenyl radical; or a tetrahydrofurfuryl radical and their pharmaceutically acceptable acid addition salts show activity against a large variety of bacteria, mycetes, pathogenic moulds and protozoa and also show a good cytostatic action *in vitro*. They are prepared by reacting the sodium salt of a corresponding free imidazole with a sulphonyloxy-ethyl halide or a corresponding 1-(β-hydroxy-ethyl)-imidazole with a sulphonyl chloride.

3,723,454

## N,N'-BIS-[(1'-FORMAMIDO-2',2'-TRICHLORO-ETHYL)-IMIDAZOLIDINES]

Walter Ost, and Klaus Thomas, both of Ingelheim am Rhein, Germany, assignors to C. H. Boehringer Sohn, Ingelheim am Rhein, Germany

Filed April 19, 1971, Ser. No. 135,415

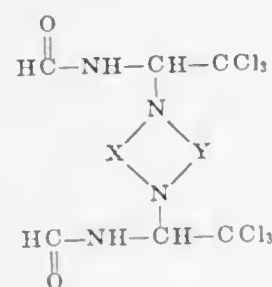
Claims priority, application Germany, April 24, 1970, P 20 19 844.1

Int. Cl. C07d 49/30

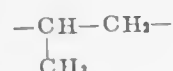
U.S. Cl. 260—309.7

3 Claims

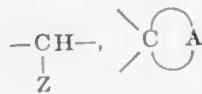
Compounds of the formula



wherein X is —(CH<sub>2</sub>)<sub>2</sub>—, —(CH<sub>2</sub>)<sub>3</sub>— or



and Y is



or, when X is —(CH<sub>2</sub>)<sub>3</sub>—, also —(CH<sub>2</sub>)<sub>2</sub>—; where Z is hydrogen, phenyl, chlorophenyl, 2-furyl or 2-pyridyl; and A is tetramethylene or pentamethylene, each optionally having from 1 to 3 (alkyl of 1 to 4 carbon atoms)-substituents attached thereto, the compounds are useful as agricultural fungicides.

3,723,455

## PREPARATION OF 1,4-SUBSTITUTED-IMIDAZOLIN-2-ONES

John P. Chupp, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed April 22, 1971, Ser. No. 136,611

Int. Cl. C07d 49/34

U.S. Cl. 260—309.6

9 Claims

1,4-Substituted-imidazolin-2-ones optionally substituted in the 5 position are prepared from N-propenyl-carbamoyl azides by thermolysis. The compounds are useful as analgesics, antipyretics, anti-inflammatories, herbicides and as intermediates in the preparation of imidazolidinones by hydrogenation which can be hydrolyzed to diamines which are useful in producing polyamides.

3,723,456

## PYRAZOLO-(THIONO)PHOSPHORIC(PHOSPHONIC) ACID ESTERS

Christa Fest, Wuppertal-Elberfeld, and Ingeborg Hammann, Cologne, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 1, 1971, Ser. No. 185,811

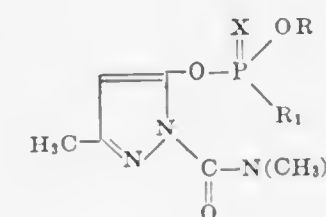
Claims priority, application Germany, Oct. 9, 1970, P 20 49 692.8

Int. Cl. C07f 9/08, 9/16, 9/40

U.S. Cl. 260—310 R

7 Claims

Pyrazolo-(thiono)phosphoric(phosphonic) acid esters of the general formula



in which

R is an alkyl radical with one to six carbon atoms,

R<sub>1</sub> is an alkyl or alkoxy radical with one to six carbon atoms or a phenyl radical, and

X is oxygen or sulfur, which possess insecticidal, acaricidal and rodenticidal properties.

3,723,457

## INDOLINE-2-ONE DERIVATIVES AND PREPARATION THEREOF

Noriyuki Hirose, and Shigeru Souda, both of Tokyo, Japan, assignor to Eisai Co., Ltd., Tokyo, Japan

Filed Sept. 21, 1970, Ser. No. 74,164

Claims priority, application Japan, Sept. 30, 1969, 44/77438; Sept. 30, 1969, 44/77439; Sept. 30, 1969, 44/77440; Sept. 30, 1969, 44/77441

Int. Cl. C07d 27/40

U.S. Cl. 260—325

6 Claims

Indoline-2-one derivatives, more particularly, 1-benzyl-3-substituted or unsubstituted-aminomethyl-3-hydroxy-indoline-2-one derivatives and their pharmacologically acceptable salts as well as the methods for synthesis thereof. The compounds are new and possess strong analgesic and anti-inflammatory activities with low toxicity and accordingly they are useful for therapeutic purposes.

3,723,458

## (1-ALKOXYVINYL)2-OXO-3-INDOLINE ACETATES

Janis Plostnieks, Phila., Pa., assignor to McNeil Laboratories, Inc.  
Division of Ser. No. 799,948, Feb. 17, 1969, Pat. No. 3,577,430, which is a continuation-in-part of Ser. No. 642,685, June 1, 1967, abandoned, which is a continuation-in-part of Ser. No. 553,034, May 26, 1966, abandoned. This application Dec. 21, 1970, Ser. No. 100,525

Int. Cl. C07d 27/40

U.S. Cl. 260—325

2 Claims

The compounds are of the class of 2-oxindole acetamides useful as ultra-violet light absorbers and having central nervous system depressant activity; and of the class of 2-oxo-3-indoline acetate esters useful as intermediates in the preparation of said acetamides.

3,723,459

## 2-OXOSPIRO (INDOLINE-3,4'-THIOCHROMAN) DERIVATIVES

Vasken Paragamian, Dresher, Pa., assignor to McNeil Laboratories, Inc., Fort Washington, Pa.

Filed April 23, 1971, Ser. No. 137,043

Int. Cl. C07d 27/40

U.S. Cl. 260—325

7 Claims

6,7-Dihydro-12H[1]benzothiepine-[5,4-b]indole-5-oxides are utilized as precursors for making certain 2-oxospiro[indoline-3,4'-thiochroman] derivatives, of which the ester and nitrile derivatives are useful as inhibitors of gastric acid secretion and the acid derivatives are useful as precursors for making the ester derivatives.

3,723,460

## POLYMERIC SUCCINIMIDES AND THEIR DERIVATIVES AS FUEL AND MOTOR OIL ADDITIVES

William T. Brannen, West Lake, Ohio, and Roger W. Watson, Highland, Ind., assignors to Standard Oil Company, Chicago, Ill.

Filed Oct. 10, 1969, Ser. No. 865,497

Int. Cl. C07d 27/10

U.S. Cl. 260—326.5 F

1 Claim

(1) The disclosure describes reaction products useful as multipurpose fuel and motor oil additives which are reaction products of about equal molar portions of (1) an intermediate product produced by the condensation reaction between about equal molar portions of a compound selected from the group consisting of an alkenyl substituted succinic acid, an alkenyl substituted succinic anhydride and an alkenyl substituted succinimide or metal salt thereof, said compound having an average molecular weight from about 350 to about 1,000, and a second compound selected from the group consisting of ammonia gas, ammonium hydroxide and hydrazine, and (2) a third compound selected from the group consisting of basic metal compounds, compounds with displaceable halogens, acid halides, alkylene oxides, acid anhydrides, thio anhydrides, triethyl phosphite, boric acid and acrylonitrile. The intermediate product was itself found to be useful as a fuel and motor oil additive.

3,723,461

## 2-AMINOMETHYL-3-HALOPLYNOLINDOLES

Hisao Yamamoto; Shigeo Inaba, both of Nishinomiya; Tadashi Okamoto, Ashiya; Toshiyuki Hirohashi, Kobe; Kikuo Ishizumi, Minoo; Michihiro Yamamoto, Takarazuka; Isami Maruyama, Minoo; Kazuo Mori, Kobe, and Tsuyoshi Kobayashi, Minoo, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Higashi-ku, Osaka, Japan

Division of Ser. No. 762,341, Sept. 16, 1968. This application Nov. 6, 1970, Ser. No. 87,613

Claims priority, application Japan, Sept. 22, 1967, 42/60952

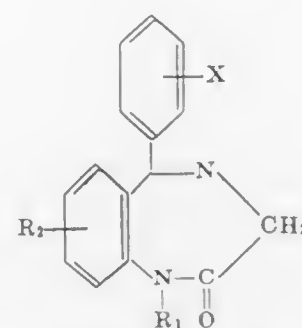
Int. Cl. C07d 27/56

U.S. Cl. 260—326.15

3 Claims

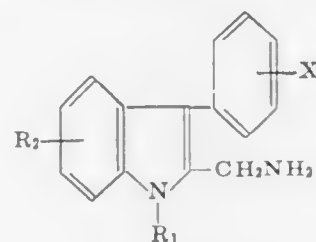
The process for producing benzodiazepine derivatives useful for tranquilizer,





wherein  $R_1$  is hydrogen,  $C_1$ - $C_3$  alkyl group or  $C_4$ - $C_7$  cyclohexylmethyl group and  $R_2$  is hydrogen or halogens and X is halogens

2-Amino-methylindole derivatives or their salts



wherein  $R_1$ ,  $R_2$  and X respectively have the same meanings as above is allowed to react with an appropriate oxidizing agent, such as for example, chromium trioxide.

3,723,462

## EPITHIO DIENOATES

John B. Siddall, and Clive A. Henrick, both of Palo Alto, Calif., assignors to Zeecon Corporation, Palo Alto, Calif.  
Filed Feb. 1, 1971, Ser. No. 111,674  
Int. Cl. C07d 59/00

U.S. Cl. 260—327 E

14 Claims

Novel epithio substituted hydro-carbon esters, derivatives thereof, and amides having diunsaturation, synthesis thereof, useful for the control of insects.

3,723,463

## DIBENZOXAZEPINES AND DIBENZOTHAZEPINES

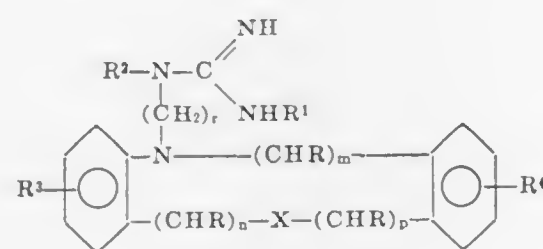
Harry L. Yale, and Jack Bernstein, both of New Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.  
Division of Ser. No. 17,972, March 9, 1970, Pat. No. 3,657,275, which is a continuation-in-part of Ser. No. 551,560, May 20, 1966, abandoned. This application Aug. 17, 1971, Ser. No. 172,570

Int. Cl. C07d 93/42, 93/44

U.S. Cl. 260—327 B

11 Claims

Therapeutically active compounds utilizable as ataractic agents and as sedatives and hypotensive agents having the formula



wherein  $R$ ,  $R^1$  and  $R^2$  are hydrogen, lower alkyl, phenyl or phenyl-lower alkyl;  $R^3$  and  $R^4$  are hydrogen, halogen, lower alkyl, trifluoromethyl, or lower alkoxy; X is oxygen or sulfur, r is 2 to 5; m is 0 or 1; n and p are each 0, 1 or 2; provided that the sum of  $m+n+p$  being from 1 to 3, and that when m equals 1 and n and p are each 0, X is sulfur.

3,723,464  
PROCESS FOR MANUFACTURING  
NITROBENZODIAZEPINE DERIVATIVES

Hisao Yamamoto, Nishinomiya; Shigeo Inaba, Takarazuka; Tadashi Okamoto, Ashiya; Toshiyuki Hirohashi, Kobe; Kikuo Ishizumi, Minoo; Michihiro Yamamoto, Takarazuka; Isamu Maruyama, Minoo; Kazuo Mori, Kobe, and Tsuyoshi Kobayashi, Minoo, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Division of Ser. No. 770,815, Oct. 25, 1968, Pat. No.

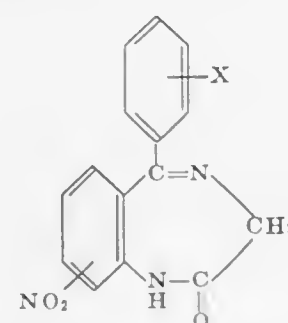
3,658,809. This application April 6, 1971, Ser. No. 131,767

Int. Cl. C07d 27/56

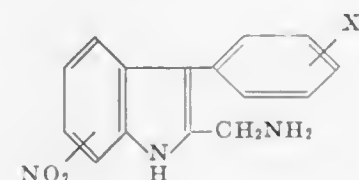
U.S. Cl. 260—326.15

1 Claim

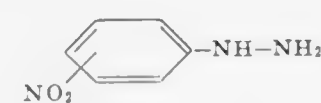
Benzodiazepine derivatives, which have been well known as excellent tranquilizers and which have the formula,



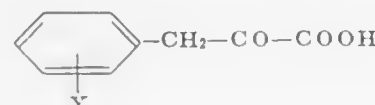
wherein X signifies a hydrogen or halogen atom, are obtained by reacting with an oxidizing agent, such as chromic acid or the like, a novel 2-aminomethylindole derivative of the formula,



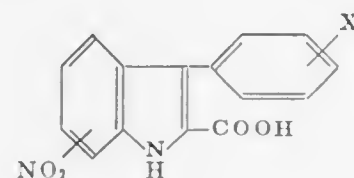
wherein X has the same significance as mentioned above. The starting 2-aminomethylindole derivatives are prepared by reacting a nitrophenylhydrazine of the formula,



with a phenylpyruvic acid derivative of the formula,



wherein X has the same significance as mentioned above, to give an indole 2-carboxylic acid derivative of the formula,



wherein X has the same significance as mentioned above, converting the indole-2-carboxylic acid derivative to a corresponding amide derivative, dehydrating the amide to a corresponding nitrile derivative, and then reducing the formed nitrile derivatives.

3,723,465  
DIBENZOPYRANS, THEIR ISOMERIC FLUORENOLS  
AND IBENZOTHIOPYRANS

Walter L. Hall, Mount Vernon, Ind., and Jimmy L. Webb, Jonesville, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 26, 1971, Ser. No. 147,164

Int. Cl. C07c 39/12; C07d 65/16, 7/42

U.S. Cl. 260—328

14 Claims

In a very strongly acidic liquid media, 2,6-diphenylphenol and 2,6-diphenylthiophenol react with most aldehydes and ketones to produce dibenzopyrans or dibenzothiopyrans. The dibenzopyrans, but not the dibenzothiopyrans, can be isomerized to their corresponding fluorenols. Both the pyran and thiopyran ring can be cleaved to convert these materials into phenols which differ from starting phenols because one of the o-phenyl substituents, itself, now has an ortho substituent characteristic of the aldehyde or ketone reactant. Both these phenols and the fluorenols, being phenolic compounds are useful as antioxidants, stabilizers, etc.

3,723,466

## TRICYCLIC COMPOUNDS

Charles Malen, Fresnes; Monique Desnos, Issy les Moulineaux, and Jean-Claude Poignant, Wissous, all of France, assignors to Societe en nom Collectif "Science Union et Cie, Societe Francaise de Recherche Medicale," Suresne, France  
Filed June 22, 1970, Ser. No. 48,498

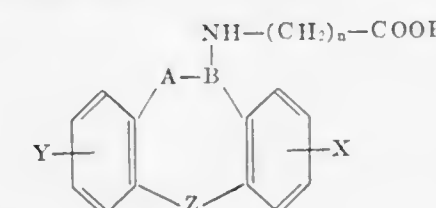
Claims priority, application Great Britain, June 20, 1969, 31,285/69

Int. Cl. C07d 87/54

U.S. Cl. 260—333

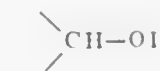
6 Claims

Tricyclic compounds of the formula:

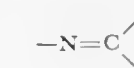


wherein n is an integer from 1 to 11 inclusive; R is hydrogen or lower alkyl; X and Y are hydrogen, halogen, lower alkyl, lower alkoxy, lower alkylthio, lower alkylsulfonyl, trifluoromethyl, nitro or cyano; Z is -O-, -S-, -SO-, -SO2-

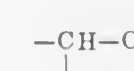
-CO-, or



wherein  $R''$  is hydrogen or lower alkyl; and A-B is



or



wherein  $R'''$  is hydrogen or lower alkyl.

These compounds possess central nervous system acting properties.

3,723,467  
SESAMOLYL ETHERS AND THIOETHERS  
John B. Siddall, and Clive A. Henrick, both of Palo Alto, Calif., assignors to Zeecon Corporation, Palo Alto, Calif.  
Filed Nov. 12, 1970, Ser. No. 89,022  
Int. Cl. C07d 13/10

U.S. Cl. 260—340.5

11 Claims

Novel ethers, thioethers and amines having an oxo-substituted chain and the ketal thereof for the control of insects.

3,723,468

## KETONITRILES AND METHOD FOR THEIR PRODUCTION

Georg Blumenfeld, Troisdorf-Siegler; Gerhard Daum, Cologne-Raderberg, and Hermann Richtzenhain, Schwelbach, all of Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany

Filed Jan. 28, 1970, Ser. No. 6,575

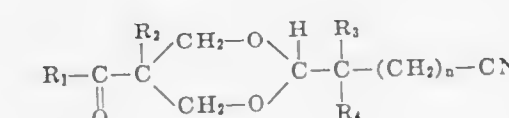
Claims priority, application Germany, Feb. 4, 1969, P 19 05 258.5

Int. Cl. C07d 15/02

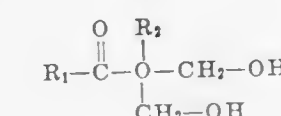
U.S. Cl. 260—340.7

3 Claims

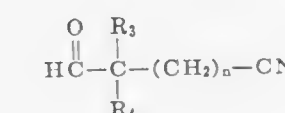
Ketonitriles of the general formula



in which  $R_1$  and  $R_2$  signify alkyl groups with one to four carbon-atoms,  $R_3$  and  $R_4$  are hydrogen atoms or alkyl groups with one to four C-atoms and wherein  $R_3$  and  $R_4$  may also together form a carbocyclic ring preferably with five or six C-atoms and n is zero, 1 or 2 produced by condensing diols of the formula



with cyanaldehydes of the formula



wherein  $R_1$ ,  $R_2$ ,  $R_3$ ,  $R_4$  and n have the same meanings as set forth above, in the presence of strong acid catalysts where the diols may be in the thickly liquid, impure form. These ketonitriles are useful as herbicides.

3,723,469

## PROCESS FOR THE PREPARATION OF CYCLOPROPANE DERIVATIVES AND COMPOUNDS PRODUCED THEREIN

Jacques Martel, Bondy, France, assignor to Roussel UCLAF, Paris, France

Filed July 11, 1969, Ser. No. 841,140

Claims priority, application France, July 12, 1968, 68159066; July 12, 1968, 68159067

Int. Cl. C07d 5/34

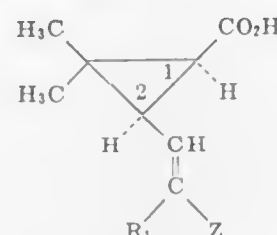
U.S. Cl. 260—343.3

19 Claims

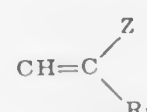
Process for the preparation of an internal hemiacetal of racemic or optically active cis 3,3-dimethyl-2-formyl-



cyclopropane-1-carboxylic acid which are intermediates for the preparation of racemic or optically-active cyclopropane carboxylic acid of the formula



wherein the CO<sub>2</sub>H substituent on the carbon 1 and the



substituent on the carbon 2 are in the cis-position relative to one another, R<sub>1</sub> represents a hydrogen, an alkyl radical, an aralkyl radical, an aryl radical, an alkenyl radical, an alkynyl radical, a cycloalkyl radical, a cycloalkenyl radical, a heterocyclic radical, these radicals being able to be substituted, specifically by lower alkyl or lower alkoxy, or represents a cyano group, an acyl group, a formyl group, an alkoxy-carbonyl group or a nitro group, and Z represents the R<sub>2</sub> residue which has the same meaning as R<sub>1</sub> but is identical or different thereto, or the R<sub>3</sub> residue, which represents an allyl radical, a benzyl radical, a cyano group, an acyl group, a formyl group, an alkoxy-carbonyl group, or a nitro group, or R<sub>1</sub> and Z together form a saturated or unsaturated carbon homocycle or heterocycle, whose ring can support substituents such as lower alkyls or lower alkoxy, or functions such as ketonic functions, or together form a polycyclic aromatic residue such as a fluorene residue.

3,723,470

### 3,4-DIFLUORO- $\alpha$ -PYRONES HAVING A 6-AROMATIC SUBSTITUENT

David Charles England, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

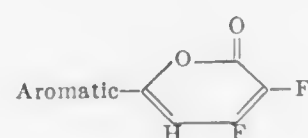
Filed Aug. 31, 1970, Ser. No. 68,495

Int. Cl. C07d 7/16

U.S. Cl. 260—343.5

16 Claims

Disclosed herein are pyrones of the formula



wherein the aromatic radical has six to 12 ring carbons, is attached by nuclear carbon to the 6-position and has up to five halogen, nitro, halo-lower alkyl, lower alkyl, or lower alkoxy substituents. Also disclosed is a process for making the compounds and their usefulness in inhibiting both yeast and mold fungi.

3,723,471

### NOVEL BENZOPYRAN DERIVATIVES

Ulrich Eder, and Gerhard Sauer, both of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

Filed Feb. 4, 1971, Ser. No. 112,764

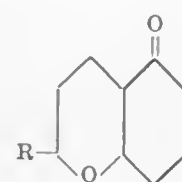
Claims priority, application Germany, Feb. 6, 1970, P 20 06 372.3

Int. Cl. C07d 7/20

U.S. Cl. 260—345.2

8 Claims

Benzopyrans of the formula



wherein R is lower-alkyl are useful as intermediates in the production of steroids, e.g., 4,9(10)-estradiene-3,17-dione.

3,723,472

### SYNTHESIS OF 2,2-DIMETHYL-7-BENZOFURANOL

John F. Start, and Donald L. Towns, both of Trenton, N.J., assignors to FMC Corporation, New York, N.Y.

Filed Nov. 27, 1970, Ser. No. 93,289

Int. Cl. C07d 5/36

U.S. Cl. 260—346.2 R

5 Claims

The hydrolysis of 2,3-dihydro-2,2-dimethylbenzofuran-7-diazonium bisulfate to produce 2,3-dihydro-2,2-dimethyl-7-benzofuranol is carried out in the presence of a catalytic amount of a cuprous compound. The cuprous compound accelerates hydrolysis of the diazonium salt with concomitant reduction of tarry by-products.

3,723,473

### 9-BENZYL OR 9-HALOBENZYL-PENTA HALO-OCTAHYDRO-5,8-METHANONAPHTHALENE-2,3-DICARBOXYLIC ACID OR ANHYDRIDE

Louis Schmerling, Riverside, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Feb. 2, 1970, Ser. No. 7,998

Int. Cl. C07c 61/28

U.S. Cl. 260—346.6

4 Claims

Novel compositions of matter comprising polyhalo-substituted arylpolyhydromethanopolycyclic dicarboxylic acids or anhydrides thereof, as exemplified by 5,6,7,8,9-pentachloro-9-benzyl-1,2,3,4,4a,5,8,8a-octahydro-5,8-methano-2,3-naphthalene dicarboxylic acid, are prepared by reacting an aryl derivative of a halogen-substituted cycloalkadiene with an unsaturated dibasic acid or anhydride thereof. These novel compositions of matter are useful as components of finished plastic compounds, the novel compositions of matter imparting flame retardant properties to the finished compound.

3,723,474

### META-THIOCARBAMYL PHENYLENE AMIDES AND UREAS AND THEIR UTILITY AS HERBICIDES

Eugene G. Teach, El Cerrito, and Duane R. Arneklev, Sunnyvale, both of Calif., assignors to Stauffer Chemical Company, New York, N.Y.

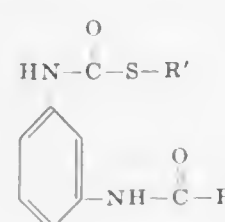
Filed Nov. 2, 1970, Ser. No. 86,379

Int. Cl. C07d 5/16; C07c 153/07

U.S. Cl. 260—347.2

30 Claims

Meta-thiocarbamyl phenylene amides and ureas having the formula



in which R' is alkyl or benzyl and R is alkyl, monoalkylamino, N,N-di-substituted amino wherein said substituents are independently selected from the group consisting of alkyl, alkoxy, furfuryl and cycloalkenyl. The compounds of this invention are useful as herbicides.

3,723,475

### METHOD OF MAKING 2-ALKYLFURAN-3-THIOL AND ALKYL, (2-ALKYL-3-FURYL) DI AND TRISULFIDES

William John Evers, Atlantic Highlands, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 864,227, Oct. 6, 1969, which is a continuation-in-part of Ser. No. 796,923, Feb. 5, 1969, Pat. No. 3,666,495. This application Sept. 13, 1971, Ser. No. 180,201

Int. Cl. C07d 5/16

U.S. Cl. 260—347.2

2 Claims

Novel 3-sulfur derivatives of furan including alkyl furan-3-thiols and bis(alkyl-3-furyl) sulfides and di- and tetrahydro derivatives thereof having meaty and/or roasted aromas and flavors; processes for producing such 3-sulfur derivatives; novel flavoring compositions containing such derivatives; and novel food compositions containing such derivatives.

3,723,476

### 1-HYDROCARBYLAMINO-3-(ORTHO-FURYL METHYLOXYPHENOXY OR TETRAHYDROFURYL METHYLOXY-PHENOXY)-2-PROPANOL COMPOUNDS

Michio Nakanishi; Tomio Muro, both of Oita; Hiroshi Imamura, Chiba, and Nobuharu Yamaguchi, Kanagawa, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

Filed May 15, 1970, Ser. No. 37,895

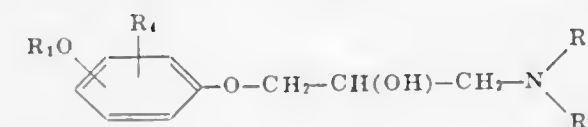
Claims priority, application Japan, May 16, 1969, 44/38137; April 3, 1970, 45/28945; April 3, 1970, 45/28946; Oct. 2, 1969, 44/79477

Int. Cl. C07d 5/16, 5/20

U.S. Cl. 260—347.7

10 Claims

Phenoxy-aminopropanol derivatives of the formula



wherein R<sub>1</sub> is furylmethyl, thienylmethyl, tetrahydrofurylmethyl, pyridylmethyl, or a group of the formula R—X—A—, wherein R is C<sub>1-4</sub> alkyl, C<sub>1-4</sub> alkenyl, phenyl or benzyl, X is —O— or —S—, and A is C<sub>1-4</sub> alkylene or —CH<sub>2</sub>C≡CCH<sub>2</sub>—; —N(R<sub>2</sub>)(R<sub>3</sub>) is C<sub>1-4</sub> alkylamino, dialkylamino (each alkyl being at most four carbon atoms), cyclohexylamino, piperidino, morpholino or 4-methyl-1-piperazinyl; and R<sub>4</sub> is H, CH<sub>3</sub> or Cl, and pharmaceutically acceptable acid addition salts thereof, are useful as  $\beta$ -adrenergic blocking agents.

3,723,477

### 4-FLUORO-3-METHYLPHENYL 5-NITRO-2-FURYL KETONE

Stanford S. Pekosi, Jr., Norwich, N.Y., assignor to Morton-Norwich Products, Inc.

Filed May 15, 1970, Ser. No. 37,923

Int. Cl. C07d 5/30

U.S. Cl. 260—347.8

1 Claim

4-Fluoro-3-methylphenyl 5-nitro-2-furyl ketone is a potent anti-fungal agent.

3,723,478

### MONOEPOXIDIZED PRODUCTS OF DODECATRIENE

Gunther Ohloff, and Karl Heinrich Schulte Elte, both of Geneva, Switzerland, assignors to Firmenich & Cie, Geneva, Switzerland

Filed May 10, 1966, Ser. No. 549,172

Claims priority, application Switzerland, May 11, 1965, 6538/65

Int. Cl. C07d 1/00, 1/06

U.S. Cl. 260—348 C

3 Claims

Mixtures of isomeric monoepoxides of trimethylcyclododecatrienes prepared by monoepoxidizing a mixture

of 3,4,8- and 4,8,12-trimethyl-1,5,9-cyclododecatrienes or a mixture of 1,5,9- and 2,5,9-trimethyl-1,5,9-cyclododecatrienes possess valuable odoriferous properties and also have a fixative effect in mixtures with other odoriferous substances. Certain ketones and lactones derivable from the monoepoxides are also described; these also have useful odoriferous characteristics.

3,723,479

### 2,2'-DIACYLAMINO-1,1'-DIANTHRAQUINONYLS

Alfred Schuhmacher, Ludwigshafen, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

Filed Aug. 26, 1970, Ser. No. 67,226

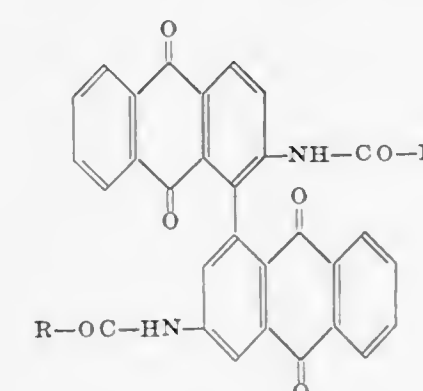
Claims priority, application Germany, Sept. 1, 1969, P 19 44 276.3; Nov. 3, 1969, P 19 55 157.6

Int. Cl. C09b 1/40, 1/42

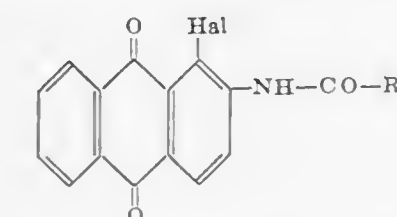
U.S. Cl. 260—368

5 Claims

2,2'-diacylamino-1,1'-dianthraquinonyls having the general formula:



in which R denotes alkyl having one to six carbon atoms or substituted or unsubstituted aryl and to a method for the production of the compounds (I). The compounds (I) may be prepared by reaction of 1-halo-2-acylaminoanthraquinones having the formula:



in which R has the above meanings and Hal denotes a chlorine or bromine atom with copper powder in a solvent which contains the grouping —N—CO—. The compounds (I) represent a valuable intermediate for the manufacture of dyes, e.g. flavanthrene.

3,723,480

### ANTHRAQUINONE DYESTUFFS

Gehrke Gunter; Volker Hederich, both of Cologne; Wolfgang Harms, Leverkusen, and Peter Wegner, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft

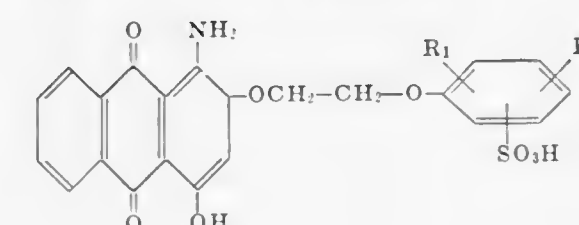
Filed July 8, 1970, Ser. No. 53,282

Claims priority, application Germany, July 17, 1969, P 19 36 400.2

Int. Cl. C09b 1/52

U.S. Cl. 260—373

Anthraquinone dyestuffs of the formula





in which R<sub>1</sub> and R<sub>2</sub>, independently of one another, stand for hydrogen, straight-chain or branched alkyl radicals with one to nine carbon atoms or chlorine atoms.

The new compounds are valuable dyestuffs for the dyeing of fibers of natural or synthetic polyamides. The brilliant red dyeings or prints exhibit excellent fastness to wet processing, very good fastness to light and outstanding fastness to thermofixing.

3,723,481

## ABLATIVE COATING COMPOSITIONS

William J. Bobear, Latham, N.Y., assignor to General Electric Company, Waterford, N.Y.

Continuation of Ser. No. 588,313, Oct. 21, 1966, abandoned, which is a continuation-in-part of Ser. No. 470,892, July 9, 1965, Pat. No. 3,506,607. This application Sept. 22, 1969, Ser. No. 860,121. The portion of the term of this patent subsequent to April 14, 1987, has been disclaimed.

Int. Cl. C08g 51/04

U.S. Cl. 260—37 SB

7 Claims

A silicone elastomer which is quite useful as an ablatative coating composition comprises (A) an organopolysiloxane having a ratio of from about 1.95 to about 2.01 organo radicals per silicon atom consisting essentially of alkyl and aryl radicals in which the ratio of aryl radicals to silicon can have a value of from about 0.20 to about 0.60, inclusive, (B) a reinforcing amount of a silica filler, (C) an effective amount of a member selected from the class of metals, metalloids and mixtures thereof of elements of Groups IIA, IIIB, IVB, VB, VIB, VIIIB, VIII, IB, IIB, IIIA, IVA, and VA of the Periodic Table of Elements, and (D) a char reinforcing material.

3,723,482

## 17β-HYDROXY-17α-(2'-METHALLYL)-9β, 10α-ANDROSTA-1,4,6-TRIENE-3-ONE, METHODS OF PRODUCING THIS COMPOUND AND PHARMACEUTICAL COMPOSITIONS COMPRISING SAID COMPOUND AS AN ACTIVE INGREDIENT

Pieter Westerhof, and Lucas Morsink, both of Van Houtenlaan, Weesp, Netherlands, assignors to U.S. Phillips Corporation, New York, N.Y.

Filed July 13, 1970, Ser. No. 54,616

Claims priority, application Great Britain, July 16, 1969, 35,861/69

Int. Cl. C07c 169/22

U.S. Cl. 260—397.4

1 Claim

A progestationally active 17α-(2'-methallyl)-9β, 10α-androsta-1,4,6-triene-3-one. 17β-hydroxy-17α-(2'-methallyl)-9β, 10α-androsta-1,4,6-trien-3-one, methods of producing this compound and pharmaceutical compositions comprising said compound as an active ingredient.

3,723,483

## 11β-METHYL-17α-PROPADIENYL STEROIDS

Robert V. Coombs, 412 Morris Ave., Summit, N.J.

Filed July 27, 1970, Ser. No. 58,682

Int. Cl. C07c 169/22

U.S. Cl. 260—397.45

7 Claims

11β-methyl-17α-propadienyl substituted steroids, e.g., 17β-hydroxy-11β-methyl-17α-propadienylestra-4-en-3-one, are prepared by reducing the corresponding 11β-methyl-17α-quaternary amino-propynyl steroid salt and are useful as progestational in fertility control.

3,723,484

## 17-CHLORO STEROIDS

Henry Laurent; Rudolf Wiechert, and Karl Heinz Kolb, all of Berlin, Germany, assignors to Schering A.G., Berlin and Bergkamen, Germany

Filed Sept. 15, 1971, Ser. No. 180,898

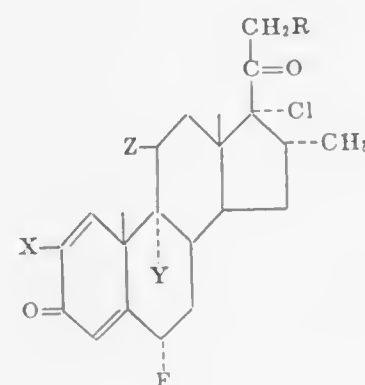
Claims priority, application Germany, Sept. 18, 1970, P 20 47 105.0

Int. Cl. C07c 169/30

U.S. Cl. 260—397.45

18 Claims

17-Chloro anti-inflammatory steroids of the formula



wherein X is H or Cl; Y is F or Cl; Z is OH, F or, when Y is Cl, Cl; and R is a free or esterified OH group, are produced by simultaneously reacting, in the presence of a sulfone, the corresponding 17-hydrogen compound or the corresponding Δ<sup>10,17</sup>-17-hydrogen compound with hydrogen fluoride and with an N-chloroacylamide or N-chloroacylimide.

3,723,485

## PREPARATION OF PERFLUOROACYL FLUORIDES AND PERFLUOROCARBOXYLIC ACIDS

Karl F. Thom, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 872,726, Oct. 30, 1969, Pat. No. 3,615,169. This application Feb. 20, 1970, Ser. No. 13,159. The portion of the term of this patent subsequent to Oct. 26, 1988, has been disclaimed.

Int. Cl. C07c 61/18; C19c 3/00

U.S. Cl. 260—408

4 Claims

Pyrolysis of perfluoroalkanesulfonate salts of yttrium, scandium and rare earth metals in an inert atmosphere provides acyl fluorides when anhydrous salts are employed and carboxylic acids when the hydrated salts are employed. The acyl fluorides and carboxylic acids are useful intermediates known and used in the art.

3,723,486

## PROCESS FOR PRODUCTION OF CARBOXYLIC ESTERS

Tsunetsuke Kajimoto; Shigeru Wakamatsu; Ryoji Nakanishi; Michio Hara; Kiyotaka Ohno, and Jiro Tsuji, all of Kamakura, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

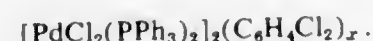
Filed Oct. 21, 1971, Ser. No. 191,361

Int. Cl. C07c 67/00

U.S. Cl. 260—410.9 R

3 Claims

Process for carbonylation of olefinically unsaturated hydrocarbons to produce carboxylic esters by reaction in the presence of a palladium complex represented by the general formula



Carbon monoxide and alcohol are reacted with the olefinically unsaturated hydrocarbons.

3,723,487

## PROCESS FOR EXTRACTING OIL FROM PALM FRUITS AND OLIVES

Raymond Arthur Couche, Ypres Rd., Kelmscott, Australia

Continuation-in-part of Ser. No. 592,631, Nov. 7, 1966, abandoned. This application July 14, 1970, Ser. No. 3,525

Int. Cl. C09f 5/02

U.S. Cl. 260—412.4

5 Claims

Multi-stage, counter-current process for extracting oil from palm fruit and olives, in which the fruit is disintegrated in the presence of the extraction solvent and passes through the successive stages meeting the extraction solvent in counter-current in such a manner that in each stage the slurry of solvent and solids is agitated, whereupon the solvent is separated from the solid material before being passed on for further extracting action.

The solvent used is either acetone, or a mixture of ethyl alcohol, ethyl acetate and acetone in the ratio of 1:1:1 by volume, or ethyl alcohol, ethyl acetate and isopropyl ether in the ratio of 4:2:1 by volume.

The temperature is maintained at 50° to 55°C throughout the extraction process, and the water:solvent ratio adjusted to 1:1 to 1:2 by weight in the first stage. The recovery of oil from the solvent occurs principally from the outgoing liquor of the first stage.

3,723,488

## ETHYLENE-BIS-DITHIOCARBAMATO BIS-CHLOROSTANNANES

George A. Miller, Glenside, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

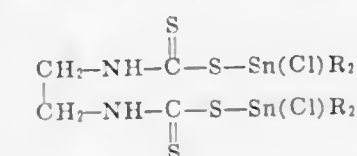
Filed Sept. 17, 1971, Ser. No. 181,562

Int. Cl. C07f 7/22

U.S. Cl. 260—429.7

5 Claims

Certain ethylene-bis-dithiocarbamate bis-chlorostannanes are fungicidal compounds having the formula:



where R is a hydrocarbyl group selected from the group consisting of N-alkyl of one to eight carbon atoms and phenyl.

3,723,489

## METAL DERIVATIVES OF 3,5-DI-T-BUTYL-4-HYDROXYPHENYL PROPIONIC ACID

Martin Dexter, Briarcliff Manor; John D. Spivack, Spring Valley, and David H. Steinberg, Bronx, all of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 25, 1971, Ser. No. 118,969

Int. Cl. C07f 7/22

U.S. Cl. 260—429.7

4 Claims

The preparation of metal salts of alkylhydroxyphenylpropionic acid is described. The metal salts are useful as stabilizers of organic materials which are subject to thermal, oxidative and actinic deterioration.

A typical embodiment is manganese 3(3',5'-di-t-butyl-4'-hydroxyphenyl)propionate.

3,723,490

## PRODUCTION OF AZOMETHINE PIGMENTS

Eric Richard Inman, Bridge of Weir/Renfrewshire; Ian Alexander Macpherson, Paisley, Renfrewshire, and John Andrew Stirling, Glasgow, all of Scotland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed May 20, 1970, Ser. No. 39,164

Int. Cl. C07f 1/08

U.S. Cl. 260—438.1

4 Claims

Copper complexes of substituted bis-2-hydroxyphenylazomethines are prepared by reacting the products of salicylaldehydes and o-aminophenols with a coppering agent. Said compounds are pigments for organic material.

3,723,491

## POLYSILOXANE-POLYALKYLENEGLYCOL BLOCK COPOLYMERS SUITABLE AS FOAM STABILIZERS IN THE MANUFACTURE OF POLYURETHANE FOAMS

Gerd Rossmly, Essen-Werden, and Gotz Koerner, Mulheim (Ruhr), both of Germany, assignors to The Goldschmidt A.G., Essen, Germany

Continuation-in-part of Ser. No. 687,459, Dec. 4, 1967, abandoned. This application Jan. 25, 1971, Ser. No. 109,699

Int. Cl. C07f 7/08, 7/18

U.S. Cl. 260—448.2 B

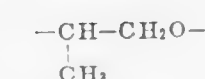
15 Claims

Novel polysiloxane-polyalkylene glycol block copolymers suitable as foam stabilizers in the preparation of flexible polyurethane foams. The novel block copolymers are characterized by the formula A B y, wherein

y is = 1.75 to 5;

A indicates the polysiloxane moiety of the block copolymer and being characterized by a mole weight of between about 250 · y to 1000 · y, 1.9 to 2.02 alkyl and alkoxy groups on the average being associated with each silicon atom, the alkyl and alkoxy groups containing one to four carbon atoms, at least 90 mole percent of the alkyl groups being methyl and the alkoxy groups being present in an amount of at least 10 mole percent calculated on the alkyl groups;

B indicates the polyalkylene glycol monoalkylether moiety or polyalkylene glycol monoarylether moiety which is characterized by a mole weight of between about 2400 to 5000, wherein the alkyl group has one to six carbon atoms and the polyalkylene glycol residue is composed on the one hand of alkyleneoxy groups of the formula



and/or  $-(\text{CH}_2)_4\text{O}-$  and, on the other hand, of the group  $-(\text{CH}_2)_2\text{O}-$  in a weight ratio of about 50:50 to 70:30; and wherein A and B are linked to each other by divalent groups being oxygen, alkylene of one to four carbon atoms,  $-(\text{CH}_2)_2\text{COO}-$  or  $-(\text{CH}_2)_3\text{COO}-$ .

The application also discloses a process of preparing polyurethane foams, wherein the novel block copolymers are used as foam stabilizer.

3,723,492

## PROCESS FOR PREPARING CELLULAR POLYURETHANES

Friedrich Moller, Leverkusen; Manfred Roegler, Bad Godesberg; Walter Simmler, Cologne, and Armand De Montigny, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed June 28, 1971, Ser. No. 157,684

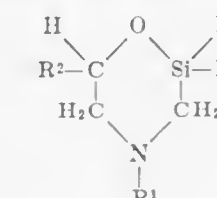
Claims priority, application Germany, June 30, 1970, P 20 32 186 2

Int. Cl. C07f 7/18

U.S. Cl. 260—448.8 R

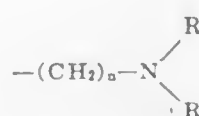
3 Claims

A method is provided for preparing cellular polyurethanes which comprises reacting in the presence of a blowing agent an organic polyisocyanate with a polyether or polyester containing at least two hydroxyl groups in the presence of a catalytic amount of a catalyst having the formula

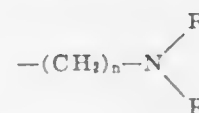


in which R is an alkyl radical having one or two carbon atoms, R<sup>1</sup> is an alkyl radical having one or two carbon atoms or a dialkylaminoalkyl group having the formula



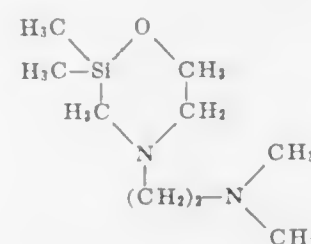
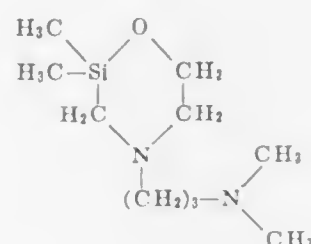
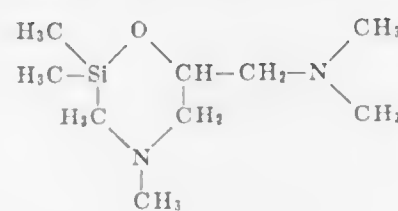


in which  $n$  is an integer of from one to three and  $R$  is an alkyl radical having one or two carbon atoms, and  $R^2$  is a dialkylaminoalkyl group having the formula



in which  $n$  is an integer of from one to three and  $R$  is an alkyl radical having one or two carbon atoms with the proviso that when  $R^1$  is a dialkyl amino alkyl group,  $R^2$  is hydrogen.

This invention also encompasses new silicon compounds having the formulas



## 3,723,493

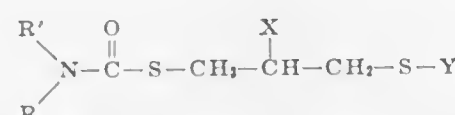
**S-ACYL DERIVATIVES OF 3-MERCAPTO-2-CHLOROPROPYL N,N-DIALKYLTHIOLCARBAMATES**  
William Carter Doyle, Jr., Leawood, Kans., assignor to Gulf Research & Development Company, Pittsburgh, Pa.  
Division of Ser. No. 851,432, Aug. 19, 1969, Pat. No. 3,628,945, which is a continuation-in-part of Ser. No. 625,603, March 24, 1967, Pat. No. 3,510,290. This application March 18, 1971, Ser. No. 125,799

Int. Cl. C07c 155/08

U.S. Cl. 260—455 A

8 Claims

Undesired vegetation, particularly noxious grasses in growing crops, are combated by pre-emergent application of selective herbicides made by reacting an organic compound having a reactive halogen substituent with a 2,3-epithiopropyl N,N-dialkylthiolcarbamate to yield a compound of the structural formula



in which  $R$  and  $R'$  represent hydrocarbon substituents containing less than 10 carbon atoms,  $X$  is halogen, preferably bromine or chlorine and  $Y$  may be alkanoyl, chloroalkanoyl, bromoalkanoyl, alkoxyalkanoyl, N,N-dialkylcarbamyl, carbalkoxycarbonyl, alkoxyethyl, chlorobenzoyl, bromobenzoyl, cyclopropylcarbonyl, cyano, methanesulfonyl, alkanoyl-

methyl alkylmercaptomethyl, nitrobenzoyl, chlorocarbalkoxyl, bromocarbalkoxyl, ethynylmethyl, dialkylphosphono, dialkylthiophosphono or alkylmercaptocarbonyl, said alkanoyl, alkoxy, carbalkoxy and alkyl structures containing less than 10 carbon atoms.

## 3,723,494

**DITHIOCARBAMATE ESTER BACTERICIDES AND FUNGICIDES**

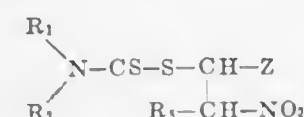
Thomas Andrew Lies, Montgomery Township, and James Wellington Clapp, Princeton, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.  
Filed March 24, 1971, Ser. No. 127,825

Int. Cl. C07c 155/08

U.S. Cl. 260—455 A

6 Claims

The invention is compounds of the formula:



wherein  $R_1$  and  $R_2$  are each lower alkyl  $C_1-C_4$ ;  $R_3$  is hydrogen or lower alkyl  $C_1-C_4$ ; and  $Z$  is phenyl, 1-naphthyl or substituted phenyl and a method for preparing dithiocarbamate esters. The compounds are useful as bactericidal and fungicidal agents.

## 3,723,495

**OLEFINIC BORATE ESTERS**

Hans D. Holtz, Bartlesville, Okla., assignor to Phillips Petroleum Company  
Division of Ser. No. 506,866, Nov. 8, 1965, Pat. No. 3,527,815.  
This application May 15, 1970, Ser. No. 37,933

Int. Cl. C07c 5/04

U.S. Cl. 260—462 A

3 Claims

Unsaturated alcohols such as 1,2-bis(2-hydroxy-3-cyclohexen-1-yl)ethylene are produced by the oxidation of a triolefin in the presence of a boron-containing compound, followed by hydrolysis of the resulting olefinic borate esters.

## 3,723,496

**RESOLUTION OF DL- $\alpha$ -AMINO- $\alpha$ -VANILLYLPROPIONITRILES**

Donald F. Reinhold; Meyer Slettinger, both of North Plainfield, and John M. Chemerda, Watchung, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.  
Division of Ser. No. 642,272, April 10, 1967, Pat. No. 3,505,385, which is a division of Ser. No. 309,379, Pat. No. 3,366,679, which is a continuation-in-part of Ser. No. 229,961, abandoned. This application July 9, 1969, Ser. No. 840,458

Int. Cl. C07c 121/78

U.S. Cl. 260—465 E

1 Claim

A process of resolving DL- $\alpha$ -amino- $\alpha$ -vanillylpropionitrile by the use of 1-10-camphorsulfonic acid.

## 3,723,497

**SILICONE COMPOSITIONS CATALYZED WITH PLATINUM II DIACETYLACETONATE**

Ronald H. Baney, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Nov. 19, 1971, Ser. No. 200,619

Int. Cl. C08f 11/04

U.S. Cl. 260—46.5 UA

13 Claims

A curable organosilicon composition is prepared by mixing an organosilicon polymer containing aliphatic unsaturation, an organosilicon compound containing silicon-bonded hydrogen atoms and platinum II diacetylacetonate. The catalyzed composition remains uncured over extended periods of time but can be cured to a rubber or a resinous product in a short period of time by heating.

## 3,723,498

**PESTICIDAL 1-AMINO-1-MERCAPTO-2-CYANO-ETHENE DERIVATIVES**

Alfred Joos, Frankfurter strasse 250, 61 Darmstadt, Germany  
Filed June 17, 1969, Ser. No. 834,176

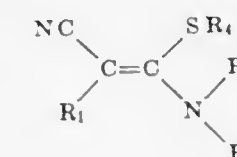
Claims priority, application Germany, June 24, 1968, P 17 68 784.2

Int. Cl. C07c 121/30

U.S. Cl. 260—465.4

22 Claims

Pesticidal, e.g. herbicidal, fungicidal and/or defoliating, compounds are provided of the following formula:

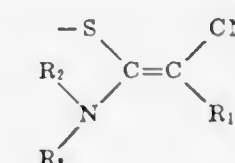


wherein

$R_1$  represents  $CN$ ;  $CONH_2$ ;  $CONHCH_3$ ; or  $COOR_2$ ,

$R_2$  and  $R_3$  each represents hydrogen or alkyl of one to five carbon atoms, or together with the common N-atom, a piperidino, pyrrolidino or morpholine ring, and

$R_4$  is hydrogen,  $NH_4^+$ , an equivalent of a metal cation, or



## 3,723,499

**PROCESS FOR THE PRODUCTION OF CYANOACETIC ACID**

Pierre Barbezat, and Colm O. Murchu, both of Visp, Switzerland, assignors to Lonza Ltd., Gampel/Valais, Switzerland  
Filed June 18, 1971, Ser. No. 154,683

Claims priority, application Switzerland, June 19, 1970, 9301/70

Int. Cl. C07c 121/40

U.S. Cl. 260—465.4

6 Claims

Cyanoacetic acid is prepared from a cyanoacetic ester by said hydrolysis with aqueous hydrochloric acid in a molar ratio of 1:0.25-0.55 at a temperature of  $50^\circ-100^\circ C$ .

## 3,723,500

**BIS(2,3-DIMETHYLENEBUTYL)-CYANOMETHANE COMPOUNDS AND THEIR PREPARATION**

Dale Robert Coulson, Kingsridge, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 21, 1970, Ser. No. 74,195

Int. Cl. C07c 121/30

U.S. Cl. 260—465.8 R

6 Claims

Novel polymer-forming mono- and bis(2,3-dimethylenebutyl)-bis(negatively substituted)methanes (e.g., bis(2,3-dimethylenebutyl)malononitrile) are prepared from allene and corresponding negatively substituted (activated) methanes (e.g., malononitrile in the presence of a palladium (O) or rhodium (I) catalyst).

## 3,723,501

**LUBRICANT CONTAINING AN ALKALI METAL KETONE SALT AND ACRYLONITRILE**

Louis DeVries, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 749,314, Aug. 1, 1968. This application June 2, 1970, Ser. No. 54,077

Int. Cl. C07c 121/00

U.S. Cl. 260—465.9

7 Claims

Dialkyl ketones having a relatively long oil soluble alkyl group are condensed as their anions with an acrylonitrile

under mild conditions to provide lubricating oil detergent additives and emulsifiers.

## 3,723,502

**CARBAMIC ACID DERIVATIVES**

Giorgio Pifferi, Milan, Italy, assignor to Grupp Leptit S.p.A., Milan, Italy

Claims priority, application Italy, Oct. 29, 1968, 23092 A/68  
Filed Oct. 29, 1969, Ser. No. 872,372

Int. Cl. C07c 125/06

U.S. Cl. 260—471 C

4 Claims

New derivatives of carbamic acid esters are referred to, having an anticonvulsant activity. There is also provided a method for preparing them, starting from a benzylamine and a carbonic acid derivative.

## 3,723,503

**3,5-DIALKYL-4-HYDROXYPHENYLALKANOIC ACID ESTERS OF 3-HYDROXY-2,2-DIMETHYLPROPYL 3-HYDROXY-2,2-DIMETHYLPROPIONATE**

Martin Dexter, Briarcliff Manor, N.Y.; John D. Spivack, Spring Valley, N.Y., and David Herbert Steinberg, Bronx, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed July 1, 1971, Ser. No. 159,021

Int. Cl. C07c 69/76

U.S. Cl. 260—473 S

5 Claims

Esters of 3-hydroxy-2,2-dimethylpropyl 3-hydroxy-2,2-dimethylpropionate with 3,5-dialkyl-4-hydroxyphenylalkanoic acids are stabilizers of organic material. The compounds of which 3-hydroxy-2,2-dimethylpropyl-(3-hydroxy-2,2-dimethylpropionate)-bis[3-(3',5'-di-*t*-butyl-4'-hydroxyphenyl)propionate] is a typical embodiment, are prepared through esterification of 3-hydroxy-2,2-dimethylpropyl-3-hydroxy-2,2-dimethylpropionate.

## 3,723,504

**PHARMACEUTICALLY ACTIVE DERIVATIVES OF ETHANOCTA-HYDROPHENANTHRENE**

Kyu Tai Lee, and Joel G. Whitney, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 709,908, March 4, 1968, Pat. No. 3,565,944. This application Feb. 11, 1971, Ser. No. 114,682

Int. Cl. C07c 55/10, 69/14

U.S. Cl. 260—479 R

5 Claims

Certain novel disubstituted and polysubstituted derivatives of 2,4'-ethanoctahydrophenanthrene-2-methanol and 2,4'-ethanohexahydrophenanthrene-2-methanol are useful as antifertility agents when administered to animals.

## 3,723,505

**SALTS OF CYANOCARBAMATES**

Rudolph Schlatter, Chadds Ford, Pa., and Charles DeWitt Adams, Newark, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

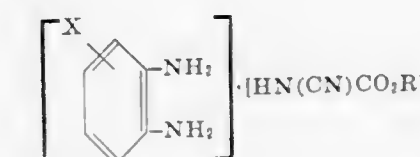
Division of Ser. No. 836,580, June 25, 1969, which is a continuation-in-part of Ser. No. 745,403, July 17, 1968, abandoned, which is a continuation-in-part of Ser. No. 674,739, Oct. 12, 1967, abandoned, which is a continuation-in-part of Ser. No. 594,384, Nov. 15, 1966, abandoned. This application Feb. 4, 1971, Ser. No. 112,790

Int. Cl. C07c 125/04

U.S. Cl. 260—482 C

2 Claims

Compounds of the following formula are useful as fungicides:





where X is hydrogen, halogen, nitro or alkyl and R is alkyl of one to four carbons. Exemplary of these compounds is the salt of methyl cyanocarbamate with o-phenylenediamine.

### 3,723,506 OXIDATION OF SUGARS

Pierre Deslongchamps, Sherbrooke, Quebec, Canada, assignor to Universite De Sherbrooke, Sherbrooke, Quebec, Canada  
Filed Aug. 11, 1971, Ser. No. 170,984  
Int. Cl. C07c 69/66

U.S. Cl. 260—484 R 6 Claims  
The invention relates to a process which comprises treating with ozone a glycopyranoside acetal, wherein the OR grouping is in the equatorial orientation with respect to the anomeric center, thereby to form the corresponding aldonic acid ester, and wherein R is alkyl, aryl, aralkyl or a sugar moiety.

3,723,507  
PERFLUORO CYCLOALKYL ACRYLATES  
Louis Gene Anello, Basking Ridge, and Richard P. Sweeney, Randolph Township, Dover, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.  
Division of Ser. No. 466,831, June 24, 1967, Pat. No. 3,520,863. This application June 8, 1970, Ser. No. 57,006  
Int. Cl. C01c 69/52

U.S. Cl. 260—486 H 10 Claims  
This invention relates to novel fluorinated acrylic monomers and polymers thereof and also to a novel method or approach for preparing certain of said monomers and polymers, together with the provision of certain novel intermediates produced thereby.

3,723,508  
12,17-DIOXY AND 12-OXO-17-OXY-A-NORPROGESTERONES  
Seymour D. Levine, Princeton, and Pacific A. Principe, South River, both of N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.  
Filed June 25, 1965, Ser. No. 467,103  
Int. Cl. C07c 49/44, 69/14, 69/16

U.S. Cl. 260—488 B 5 Claims  
12-17-dioxy and 12-oxo-17-oxy-A-norprogesterones which are useful as anti-androgenic agents.

3,723,509  
PRODUCTION OF CARBOXYLIC ESTERS  
Guenther Matthias, Ludwigshafen; Werner Kasper, Frankenthal, and Gerhard Schulz, Ludwigshafen, all of Germany, assignors to Badische Anilin & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhineland, Rhineland-Pfalz, Germany  
Filed Dec. 11, 1968, Ser. No. 783,109  
Claims priority, application Germany, Dec. 13, 1967, P 16 43 712.0  
Int. Cl. C07c 67/00

U.S. Cl. 260—488 R 7 Claims  
Production of carboxylic esters by reaction of alcohols with ketenes in the presence of a catalyst, if desired in an inert solvent, in the presence of aluminum silicates having exchangeable cations.

3,723,510  
PROCESS FOR PRODUCING ACETIC ESTERS OF BUTENEDIOL  
Isao Ono; Tadahisa Yanagihara; Hiroaki Okada, and Takeshi Uotani, all of Shin-Nanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Oaza-Tonda, Shin Nanyo-shi, Yamaguchi, Japan  
Filed Dec. 9, 1971, Ser. No. 206,539  
Claims priority, application Japan, Dec. 14, 1970, 45/110550  
Int. Cl. C07c 67/04

U.S. Cl. 260—497 R 8 Claims  
Acetic esters of butenediol are prepared by the reaction of butadiene, an oxygen containing gas and acetic acid in the

presence of a catalytic amount of a catalyst system of at least one member being cupric bromide (II) and/or cupric acetate (II), and at least one member being an alkali or alkaline earth metal salt acetate and/or bromide.

3,723,511  
PROCESS FOR PREPARING SALTS OF ALKYL AND ALKENYLGUANIDINES  
Horst Prietzel, Trostberg, Germany, assignor to Sueddeutsche Kalkstickstoff-Werke AG, Trostberg, Germany  
Filed July 2, 1970, Ser. No. 52,113  
Int. Cl. C07c 129/00

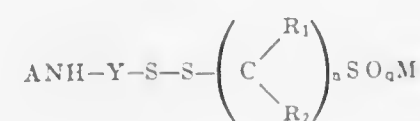
U.S. Cl. 260—501.14 6 Claims  
When monoalkylamines, dialkylamines, monoalkenylamines, or dialkenylamines having 11 to 18 carbon atoms in the hydrocarbon chain or chains are reacted in equimolecular amounts with lower alkanolic acids and cyanamide in the absence of solvents and at a temperature high enough to keep the mixture molten, but not much higher than 170°C., the expected substituted guanidine salts are formed quickly in yields of 90 percent or better. Impurities, such as iron ions, do not interfere and no pH adjustment is needed.

3,723,512  
PERFLUOROALKYL SUBSTITUTED QUATERNARY AMMONIUM SALTS  
Hans Niederprum, Monheim; Peter Voss, and Volker Beyl, both of Leverkusen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany  
Filed June 9, 1970, Ser. No. 44,871  
Claims priority, application Germany, June 11, 1969, P 19 29 665.2  
Int. Cl. C07c 87/02

U.S. Cl. 260—501.15 10 Claims  
Quaternary ammonium salts of perfluorinated alkylsulfonic acids and their production from a tertiary amine, a perfluorinated alkylsulfonyl fluoride and an alkoxy- or aryloxy-silane which contributes its alkyl or aryl radical to make up the fourth substituent of the resulting quaternary ammonium nitrogen atom.

3,723,513  
ORGANIC DISULFIDE SULFINIC ACID COMPOUNDS  
Lamar Field, Nashville, and Robert B. Barbee, Kingsport, both of Tenn., assignors to The United States of America as represented by the Secretary of the Army  
Filed Nov. 6, 1969, Ser. No. 874,677  
Int. Cl. C07c 145/00

U.S. Cl. 260—513.7 5 Claims  
Organic disulfide compounds, useful as antiradiation agents, having the general formula



and their synthesis by subjecting 1,1-dioxides of heterocyclic disulfides to the action of a thiolate ion, whereby cleavage is effected between the sulfur and sulfonyl units. In the general formula: A may be a hydrogen, alkyl, or acyl grouping; Y may be a straight or substituted aliphatic chain having two or three carbon atoms interposed directly between the ANH grouping and the sulfur; R<sub>1</sub> and R<sub>2</sub> may be hydrogen, alkyl, aryl, or cycloalkyl; n may be the integers 3 through 5; q is 2 or 3; and M may be hydrogen or a metallic element as selected from group IA of the Periodic Table such as sodium or potassium.

3,723,514  
(-)-THREO-3-(4-HYDROXY-3-METHOXYPHENYL)-SERINE  
Balthasar Hegedus, 1 Im Marteli, Binningen, and Paul Zeller, 52 Rosenbergweg, Allschwil, both of Switzerland  
Filed Jan. 15, 1970, Ser. No. 3,195  
Claims priority, application Switzerland, Feb. 7, 1969, 1887/69  
Int. Cl. C07c 101/32

U.S. Cl. 260—519 1 Claim  
A hypotensively active phenylserine derivative is described.

3,723,515  
PROMOTION OF THE OXIDATION OF MONONUCLEAR AROMATIC COMPOUNDS  
Bruno J. Barone, Houston, and Louis J. Croce, Seabrook, both of Tex., assignors to Petro-Tex Chemical Corporation, Houston, Tex.  
Division of Ser. No. 755,775, Aug. 28, 1968, Pat. No. 3,678,105. This application Aug. 2, 1971, Ser. No. 168,457  
Int. Cl. C07c 51/26, 63/02

U.S. Cl. 260—523 A 5 Claims  
A process for the oxidation of mononuclear aromatic compounds having at least one oxidizable group selected from methyl, hydroxymethyl, and aldehyde, at moderate temperatures, and in the presence of oxygen, cobaltous or cobaltic ions, and an effective amount of a specified substituted acid function.

3,723,516  
PROCESS FOR THE PREPARATION OF POLYBASIC BENZENE CARBOXYLIC ACIDS  
Helmut Muller, and Karl Peterlein, both of Gladbeck, Germany, assignors to Gelsenberg Benzin Aktiengesellschaft, Gelsenkirchen-Horst, Germany  
Continuation of Ser. No. 708,641, Feb. 16, 1968, abandoned.  
This application Nov. 2, 1970, Ser. No. 86,298  
Claims priority, application Germany, Feb. 16, 1968, G 49309  
Int. Cl. C07d 63/32, 63/14

U.S. Cl. 260—524 R 4 Claims  
Production of aromatic compounds having a multiplicity of carboxy groups pendant therefrom by vapor phase air oxidation of alkyl and nitrile substituted aromatic compounds to first produce the corresponding cyano alkyl substituted aromatic carboxylic acid or anhydride; and then hydrolyzing the nitrile to the free acid product.

3,723,517  
OXIDATION OF ALKYL AROMATIC COMPOUNDS  
Stephen N. Massie, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.  
Filed Dec. 28, 1970, Ser. No. 102,054  
Int. Cl. C07c 47/54, 49/78, 63/02

U.S. Cl. 260—524 R 9 Claims  
Alkyl aromatic compounds, and particularly alkyl aromatic hydrocarbons, are oxidized by treating with an oxygen-containing gas in the presence of a catalyst comprising a thallium-containing compound to form oxygenated aromatic compounds.

3,723,518  
PROMOTION OF THE OXIDATION OF MONONUCLEAR AROMATIC COMPOUNDS  
Bruno J. Barone, and Louis J. Croce, Seabrook, both of Tex., assignors to Petro-Tex Chemical Corporation, Houston, Tex.  
Division of Ser. No. 755,775, Aug. 28, 1968, Pat. No. 3,678,105. This application June 2, 1971, Ser. No. 149,385  
Int. Cl. C07c 63/02

U.S. Cl. 260—524 R 5 Claims  
A process for the oxidation of mononuclear aromatic compounds having at least one oxidizable group selected from

methyl, hydroxymethyl, and aldehyde, at moderate temperatures, and in the presence of oxygen, cobaltous or cobaltic ions, and an effective amount of a specified substituted acid function.

3,723,519  
METHOD OF PRODUCING ALLYLTHIOACETIC ACID  
Vera Alexandrovna Portnyagina, poselok Novo-Boyarka ulitsa Bozhenko 13, and Maria Ivanovna Morgun, ulitsa Pobedy 1, kv. 8, both of Kiev, U.S.S.R.  
Filed March 16, 1972, Ser. No. 235,402  
Int. Cl. C07c 149/20

U.S. Cl. 260—526 S 4 Claims  
The method of producing allylthioacetic acid resides in that allyl bromide is reacted with thiourea at a temperature of 60° to 120°C., then monochloroacetic acid is added to the resulting allylthiouronium bromide and the mixture is heated at a temperature of 60° to 120°C. in an alkaline medium, with subsequent isolation of the resulting desired product.

Allylthioacetic acid thus produced finds application as a catalyst for acrylonitrile polymerization, for synthesizing other high molecular compounds, as well as for producing new kinds of penicillin and in the synthesis of a number of medicinal preparations.

3,723,520  
PROCESS FOR THE PREPARATION OF 1-HALOPHOSPHOLENES  
Curtis P. Smith, Cheshire, and Henri Ulrich, North Branford, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.  
Filed June 1, 1971, Ser. No. 148,997  
Int. Cl. C07d 105/02

U.S. Cl. 260—543 P 20 Claims  
A conjugated diene and a member of the group consisting of phosphorus trichloride, phosphorus tribromide and phosphorus triiodide are reacted together with white phosphorus in the presence of a compound which will inhibit polymerization of the conjugated diene; to prepare the corresponding 1-halophospholenes. The products of the process are novel compounds, useful as intermediates in the preparation of selective solvents and catalyst for the preparation of carbodiimides from isocyanates.

3,723,521  
PROCESS FOR THE PREPARATION OF 1-HALOPHOSPHOLENES  
Curtis P. Smith, Cheshire, and Henri Ulrich, North Branford, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.  
Filed June 1, 1971, Ser. No. 148,998  
Int. Cl. C07d 105/02

U.S. Cl. 260—543 P 7 Claims  
Diels-Alder reaction adducts of a conjugated diene and a member of the group consisting of phosphorus trichloride, phosphorus tribromide and phosphorus triiodide are reduced with white phosphorus in an inert organic solvent, to prepare the corresponding 1-halophospholenes. The products of the process are novel compounds, useful as intermediates in the preparation of selective solvents and catalysts for the preparation of carbodiimides from isocyanates.

3,723,522  
PRODUCTION OF THIOUREA  
Hilde Kersten, Trennfurt; Gerhard Meyer, Obernburg, and Clemens Neuhaus, Erlenbach, all of Germany, assignors to Akzona Incorporated, Asheville, N.C.  
Filed Nov. 12, 1970, Ser. No. 89,038  
Claims priority, application Germany, Nov. 14, 1969, P 19 57 202.2  
Int. Cl. C07c 157/00

U.S. Cl. 260—552 R 7 Claims  
A two-stage process for the production of thiourea from hydrogen sulfide and calcium cyanamide in which the



hydrogen sulfide is introduced into an aqueous suspension of the calcium cyanamide in a first stage at temperatures below about 80°C. and advantageously no higher than about 40–60°C. under a reduced pressure of less than about 300 mm. Hg and the resulting mixture is then further reacted in a second stage at about 60°C. to 100°C. under approximately normal atmospheric pressure. The process is especially useful for the continuous production of thiourea.

3,723,523

# N-(1,1-DIMETHYLPROPYNYL)-3,5-DICHLORO-4-METHYLBENZAMIDE

Bruce W. Horrom, Waukegan; Aldo J. Crovetto, Lake Forest, both of Ill., and Kenneth L. Viste, Warminster, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 804,678, March 5, 1969, which is a continuation-in-part of Ser. No. 671,946, Oct. 2, 1967, Pat. No. 3,534,098, which is a continuation-in-part of Ser. No. 608,271, Jan. 10, 1967, abandoned. This application Nov. 4, 1971, Ser. No. 195,824

Int. Cl. C07c 103/30

U.S. Cl. 260—558 D

1 Claim

The novel compound N-(1,1-dimethylpropynyl)-3,5-dichloro-4-methylbenzamide.

3,723,524

# POLAR-SUBSTITUTED PROPYLAMINES AS ANTI-ANGINA AND ANTI-HYPERTENSIVE AGENTS

Joachim Augstein, Linford; Allan L. Ham, Leeming; Peter R. Leeming, and Michael Snarey, both of Kent, all of England, assignors to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 877,006, Nov. 14, 1969, abandoned. This application May 11, 1970, Ser. No. 36,461 Claims priority, application Great Britain, Nov. 18, 1968, 54534/68; June 5, 1969, 28492/69

Int. Cl. C07c 103/28

U.S. Cl. 260—559 S

12 Claims

Novel propylamine derivatives, especially 3-phenoxy-1-phenoxyalkylamino-2-propanols, useful in the treatment of hypertension and cardiac conditions, such as angina pectoris and cardiac arrhythmias.

3,723,525

# 2,4'-DIAMINO DICYCLOHEXEN

Robert J. Freure, Clarkson, Ontario, and Maurice Moyle, Oakville, Ontario, both of Canada, assignors to Gulf Oil Canada Limited, Toronto, Ontario, Canada

Division of Ser. No. 839,665, July 7, 1969, abandoned.

Filed Nov. 12, 1970, Ser. No. 89,053

Int. Cl. C07c 87/36

U.S. Cl. 260—563 R

1 Claim

A novel dicyclohexyl diamine is provided. A sequence of steps is disclosed whereby the novel diamine may be formed from diphenyl.

3,723,526

# POLY (N-CYCLOALKYLAMINOMETHYL) CYCLOPENTANES

William H. Edgerton, Strafford-Wayne, Pa., assignor to Smith Kline & French Laboratories, Philadelphia, Pa.

Filed May 20, 1971, Ser. No. 145,565

Int. Cl. C07c 87/32

U.S. Cl. 260—563 R

3 Claims

Poly(N-cycloalkylaminomethyl)cyclopentanes and mixed poly(N-cycloaminomethyl)poly(hydroxymethyl)cyclopentanes are prepared by reducing the corresponding polyamido and polyamidopolyester derivatives of cis-cyclopentanetetra-carboxylic acid. The compounds are useful as organic intermediates and in the polymer art.

3,723,527

# 1-NAPHTHYL-1-HYDROXY-ACETAMIDINE DERIVATIVES, THEIR PREPARATION AND USE

Louis Lafon, Paris, France, assignor to Societe anonyme dite: Orsymonde, Paris, France

Filed April 22, 1970, Ser. No. 31,007

Claims priority, application France, April 24, 1969, 6913031

Int. Cl. C07c 123/00

U.S. Cl. 260—564 R

3 Claims

1-Naphthyl-1-hydroxyacetamides and their non-toxic salts are useful for treating arterial hypertension.

3,723,528

# PROSTAGLANDIN OXIMES AND OXIME ETHERS

John E. Pike, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 673,979, Oct. 9, 1967, Pat. No. 3,636,120.

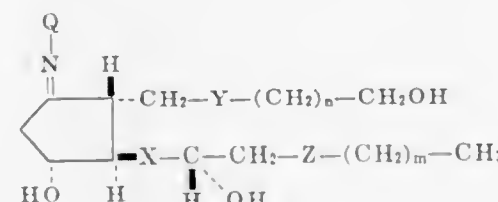
This application Aug. 20, 1971, Ser. No. 173,660

Int. Cl. C07c 131/02

U.S. Cl. 260—566 A

7 Claims

This invention is a class of new organic compounds having the formula



wherein Q is —OH, —OR<sub>2</sub> wherein R<sub>2</sub> is alkyl of one to four carbon atoms, inclusive, or —NHCOHN<sub>2</sub>, wherein X is —CH<sub>2</sub>CH<sub>2</sub>— or trans—CH=CH— and both Y and Z are —CH<sub>2</sub>CH<sub>2</sub>—, or wherein X is trans—CH=CH—, Y is cis—CH=CH—, and Z is —CH<sub>2</sub>CH<sub>2</sub>— or cis—CH=CH—, wherein m is 0, 1, or 2, and wherein n is 2, 3, 4, or 5. These compounds are useful intermediates for the preparation of the corresponding ketones having pharmacological activity e.g., nasal decongestants.

3,723,529

# DECOLORIZATION OF POLYETHYLENE POLYAMINES

James William Pitts, Port Neches, and Charles Sam Steele, Nederland, both of Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.

Filed Oct. 19, 1970, Ser. No. 82,167

Int. Cl. C07c 85/16

U.S. Cl. 260—583 N

10 Claims

A process is provided for decolorizing "polyethylene polyamines," such as triethylenetetramine, and higher homologues, such as tetraethylenepentamine, by treatment with active carbon at elevated temperatures followed by distillation.

3,723,530

# PRODUCTION OF MIXTURES OF MONOETHANOLAMINE AND TRIETHANOLAMINE

Walter Goetze; Peter Wolf; Gerhard Schulz, all of Ludwigshafen, and Horst Luedemann, Limburgerhof, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Rhine, Germany

Filed Nov. 4, 1970, Ser. No. 86,988

Int. Cl. C07c 85/06

U.S. Cl. 260—584 R

13 Claims

The production of mixtures of monoethanolamine and triethanolamine by reaction of diethanolamine and ammonia with ethylene oxide in certain molar proportions.

3,723,531

# 2-SUBSTITUTED-THIO-2-CYCLOHEXENE-1-ONE AND METHOD FOR PREPARING THEM

Michael A. Tobias, Edison, and Jerry G. Strong, Westfield, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed July 11, 1968, Ser. No. 743,970

Int. Cl. C07c 49/30, 45/100

U.S. Cl. 260—586 R

6 Claims

2-Aliphatic- and arylthio-2-cyclohexen-1-ones are prepared by reacting a mercaptan (aliphatic or aryl) with 2,3-epoxycyclohexanone in the presence of an alkaline catalyst. Using techniques such as described in U.S. Pat. No. 3,317,552, the product cyclic ketones can be dehydrogenated to 2-(aliphatic- and arylthio) phenols, which are converted to N-methylcarbamates by reaction with methyl isocyanate. These carbamates have insecticidal activity against the housefly and mosquito larva [e.g., Metcalf et al., J. Agr. Food Chem., 13, 473 (1965)].

3,723,532

# PROCESS FOR PREPARING CYCLOALKENONES

James J. Louvar, Evanston, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Sept. 16, 1968, Ser. No. 760,071

Int. Cl. C07c 45/04

U.S. Cl. 260—586 B

7 Claims

Cycloalkenone compounds are prepared by contacting a mixture of water and a cycloalkene compound with an activated crystalline aluminosilicate at reaction conditions to form the desired product.

3,723,533

# SUBSTITUTED NAPHTHALENE AND NAPHTHALENE DIONE COMPOUNDS

Marinus Los, Edinburg, Scotland, assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 708,498, Feb. 27, 1968, Pat. No.

3,565,958. This application June 17, 1970, Ser. No. 47,164

Int. Cl. C07c 49/76

U.S. Cl. 260—590

3 Claims

This invention relates to substituted naphthalenes and naphthalenediones useful in the synthesis of D-homosteroids. The latter steroids are useful as estrogenic agents in the treatment of laboratory and domestic animals.

3,723,534

# ARYL METHYL PHENACYL SULFONIUM TETRAFLUOROBORATES

Kenneth Wayne Ratts, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

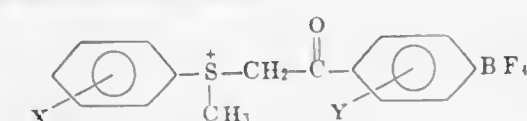
Filed May 28, 1971, Ser. No. 148,196

Int. Cl. C07c 49/76, 49/80

U.S. Cl. 260—590

7 Claims

Compounds of the formula



wherein X and Y are like or unlike radicals selected from the group consisting of hydrogen, nitro, lower alkyl, lower alkoxy and halogen. These compounds are useful as insecticides, particularly in controlling soil insects of the genus Diabrotica.

3,723,535

# PREPARATION OF KETONES

John F. Brennan, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Feb. 20, 1970, Ser. No. 13,195

Int. Cl. C07c 49/06, 49/08, 49/30

U.S. Cl. 260—593 R

6 Claims

Ketones are prepared by treating secondary nitro-substituted compounds in the presence of a catalyst containing a

metal of Group VIII of the Periodic Table at elevated temperatures and in a non-aqueous system. The invention is exemplified by the formation of acetone from 2-nitropropane.

3,723,536

# PRODUCTION OF TRIARYL PHOSPHINES

Adolf Stuebinger, and Herbert Mueller, both of Frankenthal, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Rhine, Land Rheinland-Pfalz, Germany

Filed Feb. 9, 1971, Ser. No. 114,063

Claims priority, application Germany, Feb. 19, 1970, P 20 07 535.8

Int. Cl. C071 7/02

U.S. Cl. 260—606.5 P

10 Claims

The production of triaryl phosphines from phosphorus halides and aryl halides in the presence of alkali metals in a Wurtz-Fittig type reaction. In order to carry out this reaction without risk, a dispersion of an alkali metal in an organic solvent is used which has been prepared with the addition of an aryl halide or a triaryl phosphine.

3,723,537

# PROCESS FOR PREPARING ALKYLIDENE PHOSPHORANES

Joachim Buddrus, Dortmund, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Division of Ser. No. 832,498, June 11, 1969, Pat. No.

3,634,518. This application Aug. 12, 1971, Ser. No. 171,346

Int. Cl. C071 9/28; C07c 31/34

U.S. Cl. 260—606.5 F

5 Claims

A process for forming in a reversible reaction an alkylidene phosphorane as used in the Wittig reaction by dehydrohalogenating the corresponding quaternary phosphonium chloride, bromide or iodide in which the phosphorus atom is connected by a single bond to a saturated carbon atom bearing at least one hydrogen atom wherein an epoxide is used as the dehydrohalogenating agent. The process preferably permits direct conversion of aldehydes or ketones into olefinic compounds by reaction with the quaternary phosphonium halide in the presence of the epoxide.

3,723,538

# POLYCHLORO PARATHIO PHENOLS

William E. Bissinger, Akron; Donald E. Hardies, Wadsworth, and Jerome M. Lavanish, Akron, all of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sept. 28, 1970, Ser. No. 76,651

Int. Cl. C07c 149/32

U.S. Cl. 260—609 F

10 Claims

Chlorinated (alkylthio)phenols, chlorinated (alkenylthio)phenols, chlorinated (alkynylthio)phenols, and are described which are useful as miticides. These phenols often possess herbicidal, insecticidal, and/or fungicidal properties. Examples of these compounds are 2,3,5,6-tetrachloro-4-(methylthio)-phenol and 2,3,6-trichloro-4-(methylthio)phenol.

3,723,539

# POLYMERIZATION OF GLYCIDYL 2,2-DINITRO-2-FLUOROETHOXIDE WITH A PREPOLYMER DIOL

Charles L. Hamermesh, Tarzana, and Stanley M. Hirshfield, Canoga Park, both of Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.

Filed Sept. 8, 1969, Ser. No. 857,628

Int. Cl. C07c 43/12

U.S. Cl. 260—615 BF

7 Claims

An epoxide monomer such as Glycidyl 2,2-dinitro-2-fluoroethoxide is polymerized by a cationic method using a Friedel-Crafts catalyst in the presence of a previously prepared diol whereby the diol is added to the growing end of the new chain of the polymerized epoxide monomer and ter-



minates its growth resulting in a new  $\alpha,\omega$ -dihydroxy polyether of a higher molecular weight.

3,723,540

## PREPARATION OF HEXACHLOROPHENE

Edwin B. Michaels, Gregory Ct., East Norwalk, Conn., and John W. Lee, Glen Ave., Norwalk, Conn.

Filed Nov. 26, 1969, Ser. No. 880,373

Int. Cl. C07c 37/00

U.S. Cl. 260—619 A

7 Claims

A novel process is provided for preparing the well known germicidal compound hexachlorophene [i.e., bis-(3,5,6-trichloro-2-hydroxyphenyl)methane] by the condensation of a completely emulsified mixture of two mols of 2,4,5-trichlorophenol and about 1 mol of formaldehyde in the presence of sulfuric acid in concentrations of from above about 80 percent to less than about 92 percent at temperatures ranging from about 5°C. to about 75°C. above the temperatures at which emulsification is effected.

3,723,541

## MANUFACTURE OF TRIMETHYL HYDROQUINONE

Ludwig Schuster, and Rudolf Oster, both of Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Land Rheinland-Pfalz, Germany

Filed Aug. 5, 1970, Ser. No. 61,492

Int. Cl. C07c 39/08

U.S. Cl. 260—621 H

4 Claims

A catalytic process for the manufacture of trimethyl hydroquinone by reducing trimethyl p-quinone with hydrogen in the presence of an aliphatic alcohol of from three to five carbon atoms as solvent at temperatures ranging from 60° to 180°C.

3,723,542

## PROCESS FOR PRODUCING 2-PINANOL

Rocco R. Risco, Oradell, and Seymour Lemberg, Elizabeth, both of N.J., assignors to Stephan Chemical Company, Maywood, N.J.

Filed Jan. 23, 1970, Ser. No. 5,364

Int. Cl. C07c 35/22, 73/00

U.S. Cl. 260—631.5

12 Claims

2-Pinanol is obtained upon oxidation of pinane in the presence of base, such as sodium hydroxide, and a free radical initiator, such as azobisisobutyronitrile. Oxygen is introduced into a mixture (anhydrous or aqueous) of pinane, base and initiator until the desired yield of pinanol is obtained, and the pinanol is recovered, as by extraction and distillation.

3,723,543

## PROCESS FOR PREPARING 2,4,4,4-TETRACHLOROBUTANOL

Donald W. Kaiser, Hamden, and Craig K. Wood, North Haven, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Dec. 21, 1970, Ser. No. 100,351

Int. Cl. C07c 31/34

U.S. Cl. 260—633

10 Claims

Carbon tetrachloride and allyl alcohol are reacted, in the presence of an improved catalyst system comprised of iron powder, iron chloride and a free radical generating azo compound, to obtain 2,4,4,4-tetrachlorobutanol in high yield and purity. The resulting chlorinated alcohol product is of utility in preparing 4,4,4-trichlorobutylene oxide which in turn is a useful intermediate in the preparation of chlorinated polyether polyols employed in making flame-retardant polyurethane foam.

3,723,544

## PROCESS FOR CLEAVING DICHLOROISOPROPYL ETHER

Reginald F. Roberts, Jr., Baton Rouge, La., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 22, 1971, Ser. No. 191,631

Int. Cl. C07c 31/34

U.S. Cl. 260—633

3 Claims

Process for the acidolysis or ether cleavage of dichloroisopropyl ether to convert it into propylene dichloride and propylene chlorohydrin by the steps of adding a catalytic amount of zinc chloride, aluminum chloride or ferric chloride to the dichloroisopropyl ether, heating the mixture in an atmosphere of hydrogen chloride gas, and recovering the products. The process is useful to convert waste streams containing dichloroisopropyl ether into valuable products.

3,723,545

## PRODUCTION OF ALKYNOLS AND ALKYNEDIOLS

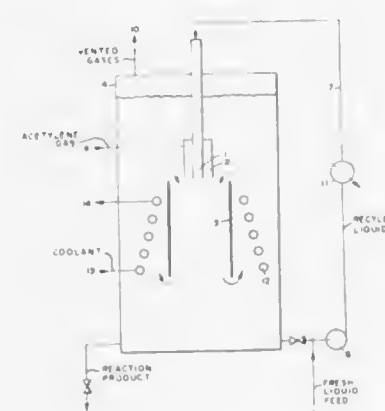
Otto Nagel, Hambach; Rolf Platz, Mannheim, and Werner Fuchs, Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rheinland, Rheinland-Pfalz, Germany

Filed Feb. 6, 1970, Ser. No. 9,211

Int. Cl. C07c 33/04, 33/06

U.S. Cl. 260—635 Y

6 Claims



Production of alkynols and/or alkynediols by reaction of acetylene with aldehydes in a liquid reaction medium in the presence of a heavy metal acetylide as catalyst and in the presence or absence of basic reagents, at least one of the starting materials being introduced in gaseous form. The catalyst is suspended in the liquid medium and during the reaction a portion of the reaction medium is withdrawn and returned at the entry point below the level of the liquid of the gaseous starting material(s) at a speed of 5 to 100 meters per second into the reaction medium and is introduced into a chamber (located in the reaction medium and extending in the direction of the liquid returned) whose inlet opening has a mean diameter from twice to twenty times the mean diameter of the liquid nozzle and whose length is three to thirty times its hydraulic diameter. The products are important intermediates for example for the production of solvents or may be used in electrolytic baths.

3,723,546

## SELECTIVE PRODUCTION OF NITRO ALKANES

Gustave Bryant Bachman, and Robert Joseph Maleski, both of Lafayette, Ind., assignors to Purdue Research Foundation

Filed Sept. 17, 1971, Ser. No. 181,561

Int. Cl. C07c 79/04

U.S. Cl. 260—644

1 Claim

A process for the selective production of nitroalkanes by condensing a lower nitroalkane with an aldehyde to produce the corresponding nitroalcohol or diol, esterifying same, and reducing the ester group with sodium borohydride.

3,723,547

## POLYSUBSTITUTED DIHYDROPYRENES

Luther A. R. Hall, Woodcliff Lake, N.J.; John A. Gurney, Tarrytown, N.Y., and Harris B. Renfro, Montvale, N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 635,287, April 7, 1967, Pat. No.

3,557,218, which is a continuation-in-part of Ser. No. 499,064, Oct. 20, 1965, abandoned. This application Oct. 16, 1970, Ser. No. 81,631

Int. Cl. C07c 79/10

U.S. Cl. 260—645

6 Claims

Photochromic 1,3,6,8-tetra(lower)alkyl-15,16-dimethyl-15,16-dihydropyrenes and 1,3,6,8-tetra(lower)alkyl-15,16-methylene-15,16-dihydropyrenes substituted with a nitro group in one or both of the 2- and 7- positions are prepared via substitution of the parent hydrocarbon. A typical embodiment is 2-nitro-1,3,5,6,8,15,16-hexamethyl-15,16-dihydropyrene.

3,723,548

## CHLOROMETHYLATION PROCESS

Frank S. Adams, Wyoming, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 14, 1971, Ser. No. 189,277

Int. Cl. C07c 25/14

U.S. Cl. 260—651 HA

6 Claims

An improved process for the chloromethylation of polyalylbenzene employing a particular combination of chloromethylation agents, an emulsifier and specific reaction conditions.

3,723,549

## PROCESS FOR PREPARING VINYLIDENE FLUORIDE

Franz Kaess, Traunstein; Klaus Lienhard, Trostberg-Mogling, and Horst Michaud, Trostberg, all of Germany, assignors to Sueddeutsche Kalkstickstoff-Werke Aktiengesellschaft, Trostberg, Oberbayern, Germany

Division of Ser. No. 756,329, Aug. 29, 1968. This application Aug. 11, 1971, Ser. No. 171,023

Claims priority, application Germany, Aug. 29, 1967, S 111 575; Aug. 29, 1967, S 111 576

Int. Cl. C07c 21/18

U.S. Cl. 260—653.3

8 Claims

Vinylidene fluoride is produced by the gaseous phase reaction of vinylidene chloride with at least 2 mols of hydrofluoric acid per mol of vinylidene chloride at a temperature of from 200° to 400°C. in presence of a catalyst selected from trivalent chromium salts and aluminum fluoride activated with a vanadium, tin or lanthanum compound.

3,723,550

## PURIFICATION OF VINYL CHLORIDE

Russell Thomson McFadden, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 10, 1970, Ser. No. 62,724

Int. Cl. C07c 21/06

U.S. Cl. 260—656 R

3 Claims

A method for removing unsaturates, particularly diolefins such as butadiene, from vinyl chloride, by contacting the impure vinyl chloride with catalytic amounts of a Lewis Acid such as aluminum chloride.

3,723,551

## PROCESS FOR THE REMOVAL OF MINUTE QUANTITIES OF 1,3-CYCLOPENTADIENE FROM ISOPRENE AND/OR CYCLOPENTENE

H. Dieter Kohler; Gunther Schnuchel, and Helmut Scherb, all of Dormagen, Germany, assignors to Erdolchemie Gesellschaft mit beschränkter Haftung, Cologne, Germany

Filed Aug. 17, 1971, Ser. No. 172,576

Claims priority, application Germany, Aug. 21, 1970, P 20 41 548.9

Int. Cl. C07c 7/12

U.S. Cl. 260—666 A

4 Claims

1,3-cyclopentadiene is removed from isoprene and/or cyclopentene when present in amounts of less than 2,000 ppm

by contact with a basic ion-exchanger which has been converted into the hydroxy form by preliminary treatment with a strong base.

3,723,552

## PROCESS FOR THE ISOMERIZATION OF HYDROCARBONS

Roy T. Mitsche, Island Lake, and Edward Michalko, Lombard, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 20,024, March 16, 1970, Pat. No. 3,677,973. This application Dec. 28, 1970, Ser. No.

101,675

Int. Cl. C07c 5/24

U.S. Cl. 260—668 A

11 Claims

A process for isomerizing isomerizable hydrocarbons using a catalytic composite comprising a zeolite with a mordenite crystal structure containing alumina fixed in combination therewith. Elimination of hydrogenation in the isomerization reaction results in a higher rate of conversion to the desired products.

3,723,553

## CYCLOTRIMERIZATION OF BUTADIENE, USING NICKEL CATALYST

Ching Yong Wu, Pittsburgh, and Harold E. Swift, Gibsonia, both of Pa., assignors to The B. F. Goodrich Company, New York, N.Y.

Filed Dec. 27, 1971, Ser. No. 212,726

Int. Cl. C07c 3/10

U.S. Cl. 260—666 B

6 Claims

Butadiene is cyclotrimerized to 1,5,9-cyclododecatriene in the presence of a catalyst consisting of a trialkyl aluminum, nickel (II) acetylacetonate, and a Schiff base prepared by the condensation of the aldehyde or ketone of a heterocyclic compound with an aniline or toluidine compound.

3,723,554

## HYDROCARBON ISOMERIZATION PROCESS

Frederick C. Wilhelm, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Division of Ser. No. 852,463, Aug. 22, 1969, Pat. No.

3,630,961, which is a continuation-in-part of Ser. No. 835,218, June 20, 1969, abandoned. This application Feb. 16, 1971, Ser. No. 115,699

Int. Cl. C07c 5/24

U.S. Cl. 260—668 A

18 Claims

A process for isomerizing isomerizable hydrocarbons, utilizing a catalytic composite comprising a combination of a platinum group component and a lead component uniformly distributed throughout a porous carrier material wherein the catalytic composite contains, on an elemental basis, about 0.01 to about 2 wt.% platinum group component and lead in an atomic ratio of lead to platinum group component of from about 0.05:1 to about 0.9:1, is disclosed.

3,723,555

## PRODUCTION OF 1-METHYL-3-PHENYLINDANS

Herbert Armbrust, Gruenstadt; Gerhard Kilpper, Mannheim; Waldemar Koehler; Hans-Georg Schecker, both of Ludwigshafen, and Hans-Juergen Sturm, Gruenstadt, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed June 3, 1971, Ser. No. 149,779

Int. Cl. C07c 15/20

U.S. Cl. 260—668 F

10 Claims

The production of 1-methyl-3-phenylindans by dimerization of styrenes in the presence of catalysts and polymerization inhibitors. The products are valuable starting materials for the production of dyes and pesticides.



3,723,556

**HYDROCARBON ISOMERIZATION PROCESS**

Frederick C. Wilhelm, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.  
Division of Ser. No. 36,375, May 11, 1970, Pat. No. 3,705,111, which is a continuation-in-part of Ser. No. 15,960, March 2, 1970. This application March 1, 1972, Ser. No. 231,033  
Int. Cl. C07c 5/24

U.S. Cl. 260—668 A

20 Claims

Isomerizable hydrocarbons are isomerized using a catalytic composite comprising a combination of a platinum group component, a Group IV-A metallic component, and a nickel component with a porous carrier material. A catalytic composite comprising a platinum group component, a Group IV-A metallic component, a nickel component and a Friedel-Crafts metal halide component combined with a refractory inorganic oxide is also disclosed.

3,723,557

**DEHYDROGENATION WITH A CATALYTIC COMPOSITE CONTAINING PLATINUM, RHENIUM, GERMANIUM AND AN ALKALI OR ALKALINE EARTH METAL**

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.  
Division of Ser. No. 13,777, Feb. 24, 1970, Pat. No. 3,649,564, which is a continuation-in-part of Ser. No. 839,086, July 3, 1969, abandoned. This application Jan. 13, 1972, Ser. No. 217,663  
Int. Cl. C07c 5/18

U.S. Cl. 260—668 D

20 Claims

Dehydrogenatable hydrocarbons are dehydrogenated by contacting them at dehydrogenation conditions with a catalytic composite comprising a combination of catalytically effective amounts of a platinum group component, a rhenium component, a germanium component and an alkali or alkaline earth metal with a porous carrier material. A specific example of the catalytic composite disclosed herein is a combination of a platinum component, a rhenium component, a germanium component and an alkali or alkaline earth component with an alumina carrier material, wherein the components are present in amounts sufficient to result in the composite containing, on an elemental basis, 0.01 to 2 wt. % platinum, 0.01 to 2 wt. % rhenium, 0.01 to 5 wt. % germanium and 0.1 to 5 wt. % of alkali or alkaline earth metal.

3,723,558

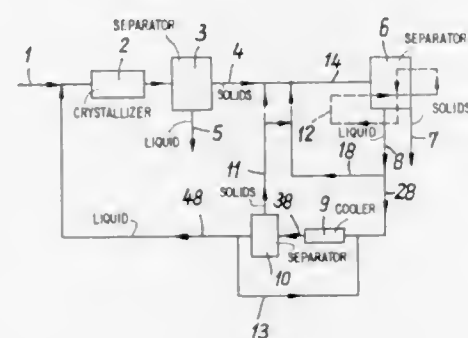
**PRODUCTION OF PURE P-XYLENE**

Friedrich Kramer, Gelsenkirchen, Germany, assignor to Fried Krupp Gesellschaft Mit Beschränkter Haftung, Essen, Germany  
Filed Sept. 30, 1970, Ser. No. 76,711  
Claims priority, application Germany, Oct. 1, 1969, P 19 49 446.3

Int. Cl. C07c 7/14

U.S. Cl. 260—674 A

11 Claims



P-xylene is separated from a liquid hydrocarbon mixture of p-xylene and at least one other isomeric xylene by crystallizing

p-xylene from the mixture and subsequently separating p-xylene crystals in a first and in a subsequent second separator which furnishes a p-xylene end product having a purity of more than 98 percent by weight and from which the liquid effluent containing p-xylene is partially recirculated into the feed stream of the second separator and is partially recirculated through an additional crystallizer and separator so that the resulting crystals are admixed with feed for the second separator and the liquid effluent is admixed with the feed for the first crystallizer.

3,723,559

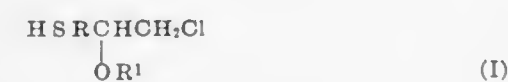
**PROCESS FOR THE PRODUCTION OF EPOXIDES CONTAINING NITROGEN AND SULPHUR**

Richard Alan Oswald, Cambridge, and Bernard Peter Stark, Cambridge, both of England, assignors to Ciba-Geigy AG, Basel, Switzerland  
Continuation of Ser. No. 769,389, Oct. 21, 1968, abandoned.  
This application May 19, 1971, Ser. No. 145,021  
Claims priority, application Great Britain, Oct. 26, 1967, 48,796/67  
Int. Cl. C08g 9/32

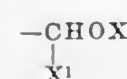
U.S. Cl. 260—67.6 R

11 Claims

Process for preparing a 1,2-epoxide containing nitrogen and sulphur which comprises:



where R is a divalent organic radical and OR<sup>1</sup> is a hydroxyl group or ester group, with a substance (II) containing, directly attached to a nitrogen atom, at least one group of formula



where X<sup>1</sup> is hydrogen or a monovalent organic radical, and X is hydrogen or an alkyl or alkenyl group containing not more than six carbon atoms;

when OR<sup>1</sup> denotes an ester group, hydrolyzing this group to a hydroxyl group; and dehydrochlorinating the intermediary 1,2-chlorohydrin so obtained to the 1,2-epoxide.

3,723,560

**HYDROGENATION CATALYST AND PROCESS**

William K. T. Gleim, Island Lake, and Frederick C. Ramquist, Stickney, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.  
Filed March 19, 1971, Ser. No. 126,262  
Int. Cl. C07c 11/02; B01j 11/06

U.S. Cl. 260—677 H

9 Claims

Group V-B metal hydrides as hydrogenation catalysts. Especially adaptable for the selective hydrogenation of di-olefins to mono-olefins—e.g., the hydrogenation of butadiene to 1- and 2-butene.

3,723,561

**THE SELECTIVE SEPARATION OF BUTENE-1 FROM A C HYDROCARBON MIXTURE EMPLOYING ZEOLITES X AND Y**

James W. Priegnitz, Elgin, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.  
Filed Dec. 1, 1971, Ser. No. 203,837  
Int. Cl. C07c 11/12

U.S. Cl. 260—677 AD

24 Claims

A process for the separation of butene-1 from other C<sub>4</sub> mono-olefins. A feed stream containing butene-1 along with another C<sub>4</sub> mono-olefin is contacted with a crystalline alu-

minosilicate adsorbent selected from the X or Y zeolites containing barium or potassium cations at conditions to effect the selective adsorption of butene-1. The butene-1 adsorbed by the adsorbent is thereafter recovered as a purified product.

3,723,562

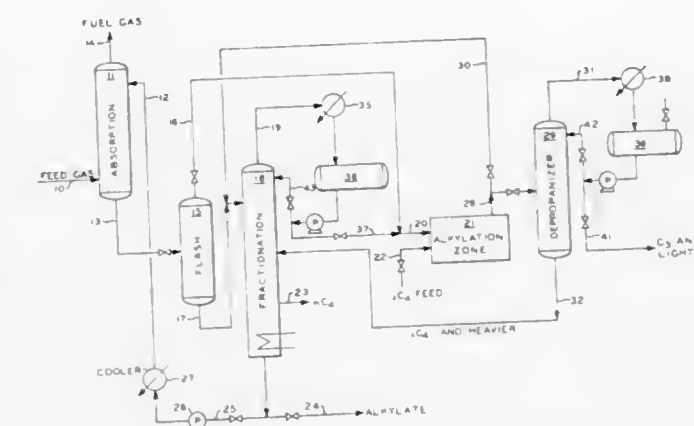
**CONVERSION OF OLEFINS**

Louis F. Heckelsberg, Bartlesville, Okla., assignor to Phillips Petroleum Company  
Continuation of Ser. No. 710,393, March 4, 1968, abandoned.  
This application Oct. 8, 1970, Ser. No. 79,328  
Int. Cl. C07c 3/62

U.S. Cl. 260—683 D

9 Claims

An olefin hydrocarbon, for example, propylene and/or a butene, is converted to at least one other olefin hydrocarbon, for example, isoamylenes, in a catalytic conversion process utilizing simultaneous or sequential contacting of an olefin reaction catalyst and a skeletal isomerization catalyst.



from which an isoparaffin such as isobutane is removed and admixed with flashed vaporous ethylene, and the mixture is charged as feed to an alkylation process.

3,723,563

**DISPROPORTIONATION OF OLEFINS**

Christopher Patrick Cadman Bradshaw, Sunbury-on-Thames, England, assignor to The British Petroleum Company, Limited, London, England  
Continuation of Ser. No. 799,497, Feb. 14, 1969, abandoned.  
This application July 12, 1971, Ser. No. 162,021  
Claims priority, application Great Britain, March 5, 1968, 10,629/68  
Int. Cl. C07c 3/62

U.S. Cl. 260—683 D

6 Claims

A catalyst for olefin disproportionation comprises a molybdenum or tungsten salt and a Group IVb organometallic compound. A preferred system is tungsten hexachloride and tetra-n-butyl tin.

3,723,564

**ISOMERIZATION OF BUTENE-1 TO CIS-BUTENE-2**

Calvin M. Tidwell, and Val G. Henneberg, both of Houston, Tex., assignors to Petro-Tex Chemical Corporation, Houston, Tex.  
Filed Nov. 24, 1969, Ser. No. 879,581  
Int. Cl. C07c 5/30

U.S. Cl. 260—683.2

10 Claims

Butene-1 is isomerized principally to cis-butene-2 by contacting butene-1 in liquid phase with a molecular sieve having an effective pore size of greater than 5 and less than 10 Å. at e.g. 100°C. Prior to use the molecular sieve was activated at a temperature of 400°–450°C. in a stream of nitrogen and 3 percent oxygen. Conversion to butene-2 was 32 mole percent of which 51.3 percent was the cis form. The cis-butene-2 is a useful feed for oxidative dehydrogenation to butadiene.

3,723,565

**OLEFIN FEED PURIFICATION IN AN ALKYLATION PROCESS**

Miles L. Henderson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.  
Filed Aug. 19, 1971, Ser. No. 173,069  
Int. Cl. C07c 3/52

U.S. Cl. 260—683.43

5 Claims

An olefin stream, e.g., ethylene, produced, for example, by naphtha cracking and containing methane and hydrogen impurities is absorbed from the major portion of the impurities using a portion of the subsequently produced alkylate. Alky-

3,723,566

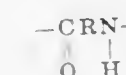
**ORGANOSILOXANE POLYAMIDE BLOCK COPOLYMERS**

John Thompson, Barry, Glamorgan, and Michael James Owen, Penarth, Glamorgan, both of Wales, assignors to Midland Silicones Limited, Reading, Berkshire, England  
Filed April 29, 1971, Ser. No. 138,800  
Claims priority, application United Kingdom, May 4, 1970, 21,379/70  
Int. Cl. C08g 47/10, 41/04

U.S. Cl. 260—824

7 Claims

Organosiloxane-polyamide block copolymers useful as additives to nylon products providing durable low energy surfaces exhibiting low coefficient of friction and as modified nylon exhibiting excellent bonding to glass are defined as block copolymers containing at least one polyamide block of two or more units of the general formula



where R is an alkylene radical of two to 15 carbon atoms and an organosiloxane block containing two or more units of the general formula R'<sub>a</sub>SiO<sub>(4-a)/2</sub> where a is 1, 2 or 3, and R' is a hydrocarbyl or halogenohydrocarbyl of one to 18 carbon atoms or a divalent organic radical, at least one R' being a divalent organic radical linking the siloxane block to the polyamide block.

3,723,567

**STABLE ORGANOSILICON COMPOSITIONS**

Alan E. Mink, and Darrell D. Mitchell, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.  
Filed Aug. 25, 1971, Ser. No. 174,954  
Int. Cl. C08g 47/02

U.S. Cl. 260—825

10 Claims

Organosilicon compositions comprising a first component having at least two monovalent hydrocarbon radicals containing aliphatic unsaturation per molecule, a second component containing at least two silicon-bonded hydrogen atoms, and a platinum catalyst are inhibited by the addition of an amine-functional silane to decrease the rate of curing at room temperature. The compositions can be readily cured at elevated temperatures to provide coating resins, potting compounds and silicone elastomers.



### 3,723,568 SEGMENTED THERMOPLASTIC COPOLYESTERS MODIFIED WITH POLYEPOXIDES

Guenther Kurt Hoeschele, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.  
Filed Feb. 28, 1972, Ser. No. 230,045

Int. Cl. C08g 45/14

U.S. Cl. 260—835

16 Claims

A thermoplastic copolyester composition comprising: (a) at least one segmented copolyester polymer consisting essentially of (1) about 5–85 weight percent of recurring long-chain ester units derived from at least one dicarboxylic acid having a molecular weight below about 300 and at least one poly(alkylene oxide) glycol having a molecular weight between about 400–6,000 and a carbon to oxygen ratio of about 2.0–4.3 and (2) 15–95 weight percent short-chain ester units which are derived from at least one low molecular weight diol having a molecular weight of less than about 250 and at least one dicarboxylic acid having a molecular weight of less than about 300, and (b) from 0.5–10 equivalents, per equivalent of carboxyl group contained in said copolyester of a polyepoxide having a functionality of not less than about 2.

### 3,723,569 BLENDS OF COPOLYESTERS WITH CURED EPOXY RESINS

Guenther Kurt Hoeschele, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.  
Filed March 20, 1972, Ser. No. 236,445

Int. Cl. C08g 45/14

U.S. Cl. 260—835

16 Claims

An improved usually thermosetting copolyester composition comprising:

- at least one segmented copolyester polymer consisting essentially of (1) about 5–85 weight percent of recurring long chain ester units derived from at least one dicarboxylic acid having a molecular weight below about 300 and at least one poly(alkylene oxide) glycol having a molecular weight between about 400–6,000 and a carbon-to-oxygen ratio of about 2.0–4.3 and (2) about 15–95 weight percent of short chain ester units which are derived from at least one low molecular weight diol having a molecular weight of less than about 250 and at least one low molecular weight dicarboxylic acid having a molecular weight of less than about 300,
- about 1.0 to 50 percent by weight based on said copolyester, of a polyepoxide having a functionality of at least two and
- about 0.5 to 1.1 equivalents, per epoxy equivalent, of an epoxy curing agent selected from aromatic and aliphatic polyamines and cyclic anhydrides of polycarboxylic acids.

Optionally from 0.05 to 0.5 weight percent based on said copolyester of an epoxy catalyst may be included in the composition.

### 3,723,570 ETHYLENE-VINYL ACETATE-ALLYL GLYCIDYL ETHER TERPOLYMER WITH POLYVINYL CHLORIDE

Robert Leonard Adelman, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 843,858, July 22, 1969, which is a continuation-in-part of Ser. No. 441,354, March 19, 1965, abandoned. This application July 29, 1971, Ser. No. 167,467

Int. Cl. C08g 45/04

U.S. Cl. 260—836

4 Claims

Specific copolymers of ethylene, a vinyl ester, and allyl glycidyl ether are disclosed as being particularly suitable plasticizers for polymers such as polyvinyl chloride. The copolymers have a molecular weight of about 400–3,000 and comprise 15–40 weight percent ethylene, 35–70 weight percent vinyl ester, and 15–35 weight percent allyl glycidyl ether.

### 3,723,571 DISPERSION POLYMERIZATION OF VINYLIDENE CHLORIDE COPOLYMER

Vernon Charles Haskell, Sleepy Hollow Estates, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 18,391, Feb. 27, 1970, which is a division of Ser. No. 652,684, July 12, 1967, abandoned. This application Nov. 19, 1971, Ser. No. 200,612

Int. Cl. C08f 15/40

U.S. Cl. 260—836

2 Claims

A process for preparing a copolymer of vinylidene chloride is provided wherein the copolymer is of between 70 percent and 85 percent by weight of vinylidene chloride and is of spherical particle form wherein the spherical particles have a diameter between 1 and 5 microns, and wherein the copolymer is prepared in the presence of a polymeric dispersing agent.

### 3,723,572 SYNTHETIC RESINS

Johannes Reese, and Hermann Hotze, both of Wiesbaden-Biebrich, Germany, assignors to Chemische Werke Albert, Wiesbaden-Biebrich, Germany

Filed March 13, 1970, Ser. No. 19,464

Int. Cl. B05b 5/00; C08g 39/10

U.S. Cl. 260—860

9 Claims

A thermosetting resinous composition which comprises a pulverulent mixture of (A) a synthetic resin component containing free hydroxyl groups and (B) a synthetic resin component containing free carboxyl groups, both of said components having a melting point of at least 50°C, a process for powder coating and for forming a moulded article by using said composition.

### 3,723,573 PROCESS FOR PREPARING UNSATURATED POLYESTER

Robert M. Thompson, Wilmington, Del., assignor to Sun Research and Development Co., Philadelphia, Pa.

Filed Nov. 11, 1971, Ser. No. 197,983

Int. Cl. C08f 21/02; C08g 17/12

U.S. Cl. 260—866

21 Claims

An unsaturated polyester is prepared via an epoxide-anhydride process wherein the copolymerization occurs in the presence of a reactive diluent, initiator, mild catalyst and a free radical inhibitor at a temperature of 20°C. – 175°C.

### 3,723,574 BLOCK COPOLYESTERS CONSISTING ESSENTIALLY OF LINEAR SATURATED POLYESTER AND POLYSTYRENE-BUTADIENE UNITS

Ludwig Brinkmann, and Walter Herwig, both of Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft Vormals Meister Lucius & Brunning, Frankfurt am Main, Germany

Continuation of Ser. No. 761,314, Sept. 20, 1968, abandoned. This application Jan. 22, 1971, Ser. No. 108,987

Claims priority, application Germany, Oct. 7, 1967, P 16 94 197.2

Int. Cl. C08g 39/10

U.S. Cl. 260—873

12 Claims

Thermoplastic block copolymers comprising linear saturated polyesters and polystyrene-butadiene units which can be moulded into shaped articles having a high dimensional stability, impact strength and bending strength.

### 3,723,575 METHOD OF PRODUCING GRAFT POLYMERS

William John Kern, Barberton; Thomas Chester Bouton, Akron, and Harold Elwood Adams, Cuyahoga Falls, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed April 14, 1971, Ser. No. 134,058

Int. Cl. C08f 19/08, 15/04, 15/02

U.S. Cl. 260—879

11 Claims

Graft polymers are produced by polymerizing a first monomer charge at a relatively low temperature, heat-treating the polymer, and charging additional monomer. The first monomer charge contains at least one conjugated diene of from four to eight carbons, and the first polymerization step is performed in the presence of a hydrocarbon lithium initiator. The heat-treating step is performed on the base polymer at 70°–130°C. for 2–200 hours.

### 3,723,576 SURFACE COATING COMPOSITIONS COMPRISING BLENDS OF VINYL CHLORIDE HOMOPOLYMERS

Ian A. MacLaine, Lachine; Orest T. Semeniw, L'Acadie, Montreal, both of Quebec, Canada, and Domco Industries Limited, 03, Montreal, Quebec, Canada

Filed May 11, 1970, Ser. No. 36,428

Int. Cl. C08f 29/24, 3/30

U.S. Cl. 260—899

3 Claims

A granular composition for use in the production of decorative surface coatings comprises a dry blended non-homogeneous mixture of non-adherent granules consisting of a first and a second vinyl chloride homopolymer, plasticizer, and heat and light stabilizers, the vinyl chloride homopolymers having specific viscosities in the range 0.10 – 0.15 as measured in a solution of 0.2 grams of homopolymer in 100 ml. of nitrobenzene at 25°C, the specific viscosity and average granule size of the first homopolymer being less than those of the second.

### 3,723,577 FLUORINATED ELASTOMER BLENDS

David A. Stivers, Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 5, 1970, Ser. No. 87,359

Int. Cl. C08f 29/22

U.S. Cl. 260—900

5 Claims

A fluoroelastomer combination is provided having improved processing and handling characteristics. The fluoroelastomer combination comprises at least two highly fluorinated elastomeric polymers, one of said polymers being dispersed throughout a continuous phase of the other of said polymers.

### 3,723,578 PHOSPHATE ESTERS OF ETHERS OF THIOL SUBSTITUTED PHENOLS

Fred S. Eiseman, Jr., Maplewood; Leslie M. Schenck, Mountinside, both of N.J., and John P. G. Beiswanger, Audubon, Pa., assignors to GAF Corporation, New York, N.Y.

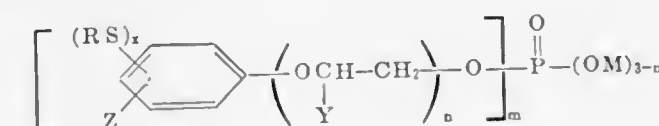
Filed Oct. 13, 1970, Ser. No. 80,477

Int. Cl. C07f 9/12; C10m 7/46

U.S. Cl. 260—949

12 Claims

Sulfur containing phosphate esters of thio ethers of phenols and alkoxyated phenols are described, together with method for their preparation and their use as lubricants. The sulfur containing phosphate esters described are represented by the general formula:



wherein:

R is an alkyl group of one to 20 carbon atoms, phenyl or aralkyl

x is an integer of from 1 to 3 inclusive

n is an integer of from 0 to 50 inclusive (preferably 1–20)

m is an integer of 1 to 3 inclusive

Y is hydrogen, methyl or ethyl

Z is hydrogen or alkyl, of one to 20 carbons atoms and

M is a cation, e.g., H, alkali metal, alkaline earth metal, heavy metal, ammonium or amino.

These sulfur containing phosphate esters have valuable lubricating properties and exhibit good anti-wear extreme pressure properties both alone or in water or as additives to other lubricants, such as mineral oils, especially for use as cutting oils or other metal working applications, gear lubricants, etc.

### 3,723,579 LYOPHILIZED ARYL PHOSPHATE MONOESTERS AND PROCESS THEREFOR

Frank E. Hammer, Chicago, Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Sept. 8, 1969, Ser. No. 856,205

Int. Cl. C07f 9/12; G01n 31/14

U.S. Cl. 260—954

2 Claims

Lyophilized aryl phosphate monoesters having a pH of substantially 1 to 4 upon reconstitution with the amount of water removed during lyophilization; are prepared by lyophilizing an aqueous solution of the aryl phosphate monoesters having a pH of substantially 1 to 4. Diagnostic compositions for the determination of phosphates in which the lyophilized aryl phosphate monoesters are employed.

### 3,723,580 CONTINUOUS PROCESS FOR MANUFACTURING O,O- DIALKYL-CHLOROTHIOPHOSPHATE

Ken Ito, Toyonaka; Shinichiro Terao, Ashiya; Hirotaka Sugahara, Toyonaka; Takashi Yamada, Nishinomiya; Iwao Dohgane, Nishinomiya; Takashi Chinuki, Toyonaka; Hiroshi Yoshitake, Minoo, and Hidekazu Fujino, Moriguchi, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed May 18, 1970, Ser. No. 38,309

Int. Cl. C07f 9/20

U.S. Cl. 260—974

3 Claims

O,O- is continuously prepared in high yield from phosphorus sulfochloride and sodium lower-alcoholate by continuously supplying to a reaction system 2.0 to 2.3 parts by mole of sodium low-alcoholate in a form of a lower alcohol solution, on the basis of one part by mole of phosphorus sulfochloride, along the direction of stream in a divisional manner in 3 to 8 fractions, substantially smaller amounts of the fractions being supplied thereto towards the downstream side of the reaction system, while effecting stirring of the reaction system, keeping an average residence time of reacting solution in the entire system within 6 hours and the temperature of the reaction system at 30°C or less. O,O-di-lower-alkyl-chlorothiophosphate is an intermediate for agricultural chemicals of organic phosphorus series or for lubricants or stabilizers.

### ERRATUM

For Class 264—289 see:  
Patent No. 3,723,438



3,723,581

**METHOD OF PRODUCING FUEL AND/OR BREEDER ELEMENTS FOR NUCLEAR REACTORS**

Alfred Boettcher, Aachen, and Hubertus Nickel, Julich, both of Germany, assignors to Kernforschungsanlage Julich Gesellschaft mit beschränkter Haftung, Julich, Germany  
Filed April 18, 1969, Ser. No. 817,553  
Int. Cl. G21c 21/00

U.S. Cl. 264—0.5

4 Claims

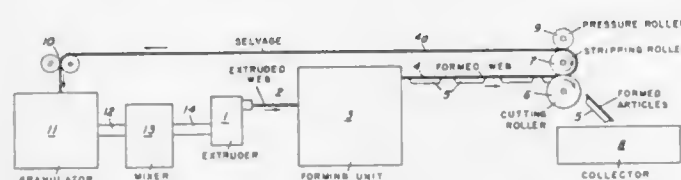
Coated particles used in making fuel and/or breeder elements are mixed with carbides and then heat hardened to form a compound member.

3,723,582

**METHOD FOR RECLAIMING THE SELVAGE OF FOAMED THERMOPLASTIC WEB**

Thomas W. Winstead, 2 Overlook Lane, Baltimore, Md.

Continuation-in-part of Ser. No. 719,057, April 5, 1968, abandoned. This application May 22, 1970, Ser. No. 39,851  
U.S. Cl. 264—37 13 Claims



A method of reclaiming the selvage remaining in an extruded sheet of foamed thermoplastic material after the molding of articles from the sheet, in which the reclaiming steps are integrated with the extrusion and forming steps in a continuous system. Immediately after forming the articles and cutting them from the sheet, the foamed selvage is collapsed and densified before air has penetrated the cells thereof, and thereafter it is granulated, mixed with virgin extrusion pellets, and the mixture is returned to the extrusion step for re-use.

3,723,583

**ORIENTATION OF TUBULAR POLYPROPYLENE FILM**

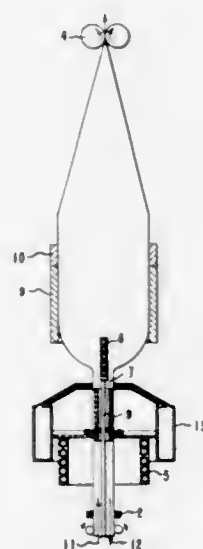
Ralph Allen Hovermale, Clinton, Iowa; George Joseph Ostapchenko, Williamsville, N.Y., and Hung Han Yang, Clinton, Iowa, assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 765,177, Oct. 4, 1968, abandoned.

This application Feb. 10, 1971, Ser. No. 114,355  
Int. Cl. B29c 17/07; B29d 7/24

U.S. Cl. 264—40

3 Claims



A process for orienting tubular polypropylene film to minimize shrinkage and total haze of the oriented film comprising reducing the temperature drop and maintaining a low bubble hoop stress prior to quenching.

3,723,584

**METHOD OF MAKING AN ELECTROFORMED MOLD HAVING HEAT TRANSFER CONDUITS AND FOAM POLYURETHANE FOUNDATION**

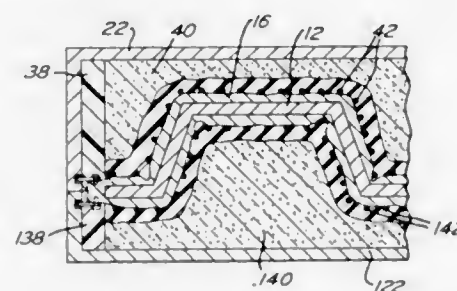
Frank J. Nussbaum, New York, N.Y., assignor to Bischoff Chemical Corporation, Hicksville, N.Y.

Continuation-in-part of Ser. No. 752,518, Aug. 14, 1968. This application Dec. 15, 1969, Ser. No. 884,896

Int. Cl. B29d 27/04

U.S. Cl. 264—45

1 Claim



Molds are produced by providing a master of relatively inexpensive material, preferably wood. The wood is coated with a material which will have the texture and dimensions of the end product to be produced. The coating material must be inert to a plating solution and must be conductive to permit deposition of the plating solution thereon. The master thus produced is electroformed to provide a metallic envelope of copper, nickel, or mixtures thereof thereabout. A box, open at one end, including a rear plate and peripheral frame members is provided for each contoured wall. Wax rods are mounted on the electroformed envelope. The wax rods communicate with the ends of metal tubing. A layer of silicone rubber or similar material is applied over the wax rods and the ends of the tubing. The wax rods are melted thus forming heat transfer conduits. An insulating foundation of polymethane is foamed in place between the rear face of the boxes and the rear face of the contoured walls. Thereafter, the electroformed envelope is severed about its periphery and the mold halves are removed for use with low pressure injection molding apparatus. Floating connectors associate the contoured walls of the mold with the frame members of the box so that relative thermal expansion of the box independently of the contoured walls is possible.

3,723,585

**METHOD OF ELECTROFORMED MOLDS**

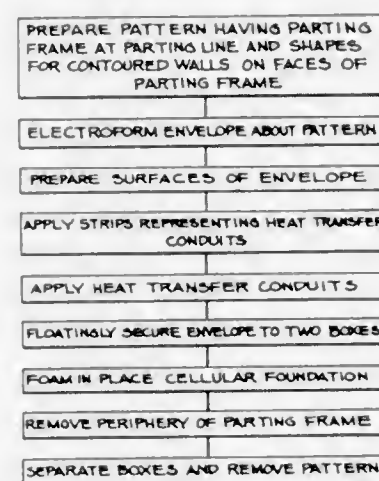
Frank J. Nussbaum, 220 Miller Rd., Hicksville, N.Y.

Continuation-in-part of Ser. No. 752,518, Aug. 14, 1968, abandoned, and a continuation-in-part of Ser. No. 884,896, Dec. 15, 1969. This application March 6, 1970, Ser. No. 17,252

Int. Cl. B29c 1/02

U.S. Cl. 264—45

6 Claims



A pattern for a pair of separable metal molds for a giant plastic article is prepared by a method in which a parting

frame at the location of the contemplated parting line is secured to two sections representing the two parts of the mold. The pattern is immersed in an electrolyte and a metallic envelope is electroformed about the pattern. Insulated protrusions extending from the parting frame are not coated, whereby accurate identification of various zones of the envelope is feasible. Copper is a preferred metal for the major thickness of the electroformed molds, but nickel is desirably first plated onto the pattern and thus is the metal contacting the hot plastic. The surfaces of the envelope are modified to permit construction of heat transfer conduits, desirably by a second stage of electroforming. The periphery of the parting frame is removed, thereby permitting the two portions of the electroform to function as two portions of a mold. Each portion is anchored into a box. A polyurethane foam insulating foundation is positioned between a box wall and a contoured wall of the mold. The relatively thin contoured walls of the electroformed halves of the mold are not readily distorted because they are anchored into their boxes.

3,723,586

**PROCESS OF EXTRUDING A FOAMABLE THERMOPLASTIC RESIN**

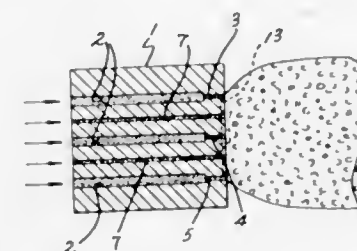
William Rees Foster, Cwmbran, and Stanley John Skinner, Newport, both of England, assignors to Monsanto Chemicals Limited, London, England

Filed May 2, 1968, Ser. No. 726,061  
Claims priority, application Great Britain, May 5, 1967, 21,006/67

Int. Cl. B29d 7/04, 27/00

U.S. Cl. 264—53

6 Claims



Dies and processes for extruding a foamable thermoplastic synthetic resin through a plurality of channels and passages extending from the inlet to the outlet end of a die, each of the channels communicating with a network of slits at the outlet end of the die and each of the passages having its outlet substantially in the center of a mesh of the network of slits, at least the majority of the passages having grooves extending from the outlet end of the passage toward the outlet of its surrounding mesh of slits to ensure that a strand of foamed resin extruded from the passage substantially fills the space formed by the enveloping foamed resin issuing from the surrounding mesh of slits.

3,723,587

**ELIMINATION OF THE GRINDING OF CALCINED FERRITE IN THE PRODUCTION OF ANISOTROPIC MAGNETS**

Keizo Iwase, Shiga-gun; Toshio Takada, Kyoto; Yoshichika Bando, Takatsuki; Masao Kiyama, Kyoto; Itsusaku Naito, Tokyo, and Masao Kazihara, Kawagoe, all of Japan, assignors to Tokyo Shoketsu Kinzoku Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 25, 1971, Ser. No. 118,705

Claims priority, application Japan, March 2, 1970, 45/18072

Int. Cl. C04b 35/26, 35/64

U.S. Cl. 264—61

12 Claims

Anisotropic metal oxide magnets are produced by mixing at least one of  $\alpha$ -FeOOH having rectangular plate or needle crystal form,  $\alpha$ -Fe<sub>2</sub>O<sub>3</sub> obtained by thermally decomposing the above described  $\alpha$ -FeOOH, Fe<sub>3</sub>O<sub>4</sub> obtained by reducing the

above described  $\alpha$ -Fe<sub>2</sub>O<sub>3</sub> and  $\gamma$ -Fe<sub>2</sub>O<sub>3</sub> obtained by reoxidizing the above described Fe<sub>3</sub>O<sub>4</sub> with at least one of barium compounds, strontium compounds and lead compounds so as to adjust the product composition to be approximately MO·6Fe<sub>2</sub>O<sub>3</sub>, wherein M is at least one metal of Ba, Sr and Pb, charging the resulting mixture in a press mold and subjecting to a primary compression molding under a pressure of 0.05 to 6 ton/cm<sup>2</sup>, primary sintering the compressed product at a temperature of 300° to 1,150°C, putting the sintered product in a press mold and subjecting to a secondary compression molding in the same direction as in the primary compression molding under a pressure of 0.3 to 10 ton/cm<sup>2</sup> and secondarily sintering the compressed product at a temperature of 1,050°C to 1,400° C. Optionally, the barium, strontium, or lead compounds can be added either after the first cold pressing step or after the partial sintering step instead of prior to the first cold pressing step.

3,723,588

**METHOD FOR PRODUCTION OF NOVOLAC FIBERS**

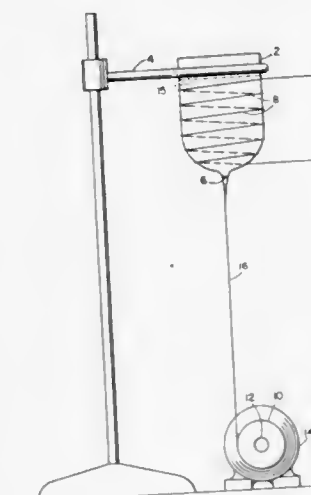
James Economy, Eggertsville, N.Y., and Rodger A. Clark, Indianapolis, Ind., assignors to The Carborundum Company, Niagara Falls, N.Y.

Division of Ser. No. 710,292, March 4, 1968, Pat. No. 3,650,102. This application Nov. 4, 1970, Ser. No. 87,002

Int. Cl. B29c 25/00; D01f 5/12

U.S. Cl. 264—83

16 Claims



A novolac melt is fiberized to produce a thermoplastic, uncured novolac fiber, and the novolac is cured by heating the fiber in a formaldehyde environment in the presence of an acid catalyst to obtain an infusible, cured novolac fiber.

3,723,589

**SOLID ELECTROLYTE ELECTROLYTIC CELL**

John H. Kennedy, Santa Barbara, Calif., assignor to The Bissett-Berman Corporation, Santa Monica, Calif.

Division of Ser. No. 852,572, Aug. 25, 1969, Pat. No. 3,594,617. This application Feb. 25, 1971, Ser. No. 118,898

Int. Cl. B28 ; B29

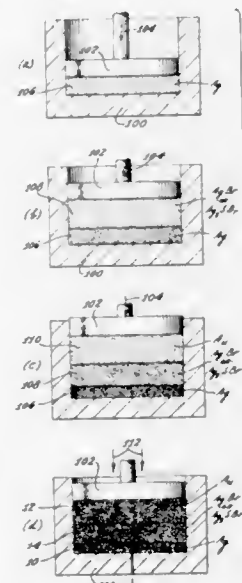
U.S. Cl. 264—101

6 Claims

An electrolytic cell using a solid electrolyte such as polycrystalline silver bromide or silver sulfide bromide. Also included within the present invention is a method of preparation of the electrolytic cell wherein a first electrode is formed from a powdered active metal such as powdered silver and wherein the powdered silver is lightly compacted to a desired shape. The solid electrolyte is also formed from a powdered substance such as silver bromide or silver sulfide bromide and wherein the solid electrolyte is lightly compacted against the first electrode. A second electrode is formed from a powdered inert metal such as powdered gold and wherein the second



electrode is lightly compacted against the solid electrolyte. The entire structure including the two electrodes sandwiching



the solid electrolyte is then pressed together at a very high pressure to form the solid electrolyte electrolytic cell.

3,723,590

# METHOD FOR TERMINATING AN ELECTRICAL COMPONENT

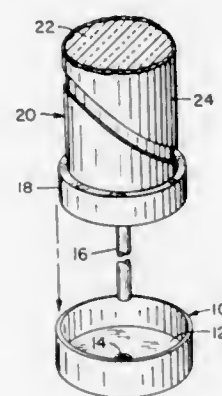
Robert P. Anderson, Rixford, Pa., assignor to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 736,172, June 11, 1968. This application March 31, 1971, Ser. No. 129,765

Int. Cl. H01r 43/00; H01e 1/14

U.S. Cl. 264—104

1 Claim



A method utilizing a cylindrically shaped cup having an apertured bottom through which a lead wire end portion is inserted into the interior thereof. An electrically conductive epoxy, solder, or other bonding material is deposited in the interior of the cup. The end of an electrical component to be terminated is inserted into the bonding material within the cup and held in a fixed position until the material solidifies thereby forming a low resistance bond between the component and the lead wire. After the bonding material has cured the cup is removed from the component by slipping it from the free end of the lead wire.

## PROCESS FOR MAKING ARTICLES FROM SULFUR DIOXIDE-CONJUGATED DIOLEFIN-CYCLOPENTADIENE POLYMER

Ronald S. Bauer, Orinda, and Howard V. Holler, Oakland, both of Calif., assignors to Shell Oil Company, New York, N.Y.

Continuation of Ser. No. 742,499, July 5, 1968, abandoned. This application Nov. 6, 1970, Ser. No. 87,585

Int. Cl. C08f 13/06, 27/24, 47/14

U.S. Cl. 264—237

2 Claims

Hydrogenated terpolymers of a linear diolefin such as butadiene,  $SO_2$ , and cyclopentadiene are converted by quenching from the melt to non-crystalline articles exhibiting unusually high impact resistance and superior tensile yield strength, heat distortion temperature and processing stability, compared to other hydrogenated terpolymeric polysulfones. The articles tend to retain the impact resistance even if later converted by annealing to a partly crystalline structure.

3,723,592

# HOT STEPWISE DRAWING OF POLYBENZIMIDAZOLE STRAND MATERIAL WITH INDEPENDENT FREE-WHEELING IDLER ROLLS

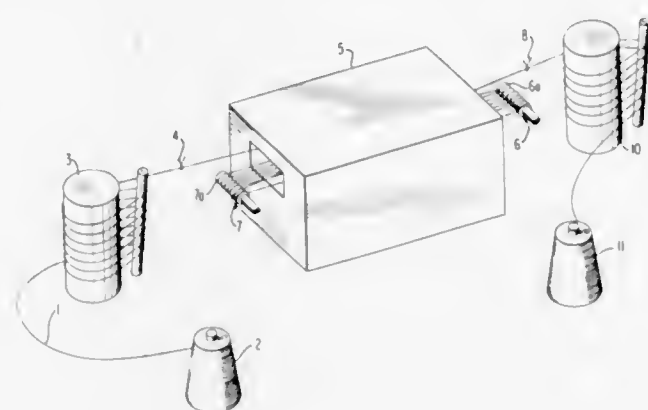
Thomas Carl Bohrer, Charlotte, N.C.; George Franklin Ecker, Toms River, N.J., and David Hsiao Tsung Chen, Wilmington, Del., assignors to Celanese Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 769,893, Oct. 23, 1968, abandoned. This application Nov. 10, 1970, Ser. No. 88,462

Int. Cl. B29c 17/02; D02j 1/22

U.S. Cl. 264—290 R

3 Claims



By using at least three independent, free-wheeling idler rolls, high speed hot drawing of orientable synthetic strand material such as polybenzimidazole yarn is accomplished in a more favorable and improved manner as stepwise drawing is permitted in each of the passes through the heating zone; the strand material being drawn wherever the yield point occurs, rather than at a predetermined location for a fixed amount which might not be optimum.

3,723,593

# PROCESS FOR CONTINUOUSLY ANNEALING A FUSED CAST REFRACTORY BODY

Isao Ono, Tokyo, Japan, assignor to Asahi Glass Company Ltd., Tokyo, Japan

Continuation of Ser. No. 67,939, Aug. 28, 1970, abandoned. This application March 31, 1972, Ser. No. 240,304

Claims priority, application Japan, Nov. 18, 1969, 44/91792

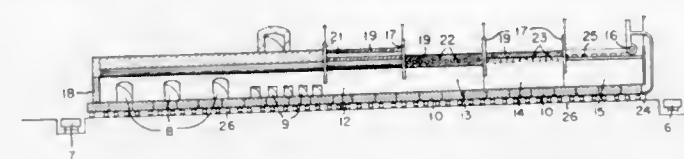
Int. Cl. C04b 35/60

U.S. Cl. 264—332

9 Claims

A process for continuously annealing a fused cast refractory body, in order to obtain a crack-free product, in which the

fused cast refractory body is placed on a suitable preheated carrier which has been previously heated to a temperature of



greater than 500° C in a preheat chamber, and is charged into an annealing tunnel which is divided into a hot zone and a cooling zone having at least one cooling section.

## ERRATA

For Classes 423—307 and 423—495 see: Patents Nos. 3,723,074 and 3,723,075

3,723,594

# RARE EARTH REMOVAL FROM AMERICIUM OXIDE

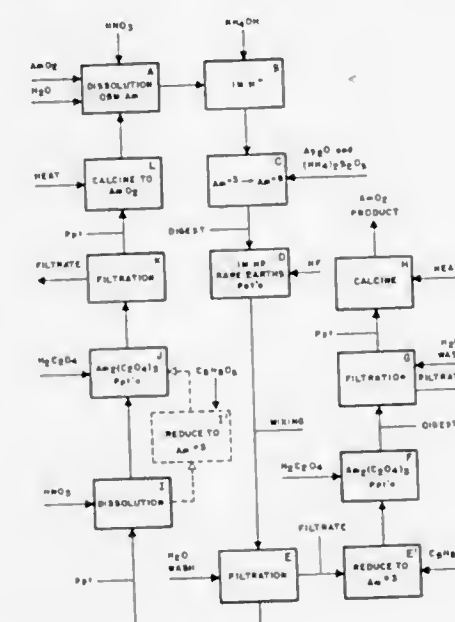
Stephen G. Proctor, Denver, Colo., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed May 18, 1972, Ser. No. 254,687

Int. Cl. C01g 56/00

U.S. Cl. 423—11

3 Claims



Americium oxide materials having rare earths as impurities may have these removed by oxidizing the americium to the hexavalent state, precipitating and removing rare earth values using hydrofluoric acid, reducing the americium to the trivalent state, thereafter precipitating and removing americium oxalate using oxalic acid, and calcining the americium oxalate to americium oxide.

3,723,595

# PROCESS FOR RECOVERING VOLATILIZED RHENIUM OXIDES AND SULFUR OXIDES FROM GAS STREAMS

Henry Rush Spedden, Salt Lake City, Utah, assignor to Kennecott Copper Corporation, New York, N.Y.

Filed July 12, 1971, Ser. No. 161,498

Int. Cl. C01g 47/00

U.S. Cl. 423—50

13 Claims

A gas stream containing a sulfur oxide and a volatilized rhenium oxide is scrubbed with an aqueous alkaline solution containing ions capable of forming sulfites and bisulfites, e.g., an ammonium or an alkali metal solution, to remove practically all of the sulfur oxide from the gas stream as a soluble sulfite and to dissolve the rhenium oxide in the resulting sulfite

solution, which is maintained alkaline for the purpose. The rhenium-bearing sulfite solution is treated by known means, such as ion exchange or solvent extraction, to recover the rhenium oxide contained therein, and the effluent sulfite solution is then employed as the scrubbing solution in a second gas scrubbing stage in which a different sulfur-oxide-containing gas stream, such as the exit gas from a sulfuric acid plant, having substantially no rhenium content, is scrubbed to extract sulfur oxide, making such effluent sulfite solution acid and converting the sulfites into soluble bisulfites. Sulfur values are preferably recovered from the resulting bisulfite solution.

3,723,596

# HYDROMAGNESITE HAVING A MODIFIED MORPHOLOGY AND METHOD FOR THE PREPARATION THEREOF

Paul Lecuit, Strombeck-Bever, and Paul Demilie, Brussels, both of Belgium, assignors to Solvay & Cie, Brussels, Belgium

Filed Aug. 27, 1970, Ser. No. 67,518

Claims priority, application France, Aug. 28, 1969, 6929553

Int. Cl. C01f 5/24

U.S. Cl. 423—430

8 Claims

Light hydromagnesite in spherical aggregates of small crystals having a pore volume superior to 4,000 mm.<sup>3</sup>/g. is provided by precipitating hydromagnesite from an aqueous solution containing a soluble salt of magnesium and an alkali metal carbonate by a double decomposition reaction in the presence of a crystallization-habit modifying agent selected from the alkali metal polyphosphates. The new form of hydromagnesite is useful for the manufacture of thermal insulation products, absorbent and adsorbent agents and especially catalyst supports.

3,723,597

# CALCINING PHOSPHATE MINERALS

Francis Dambrine, 59-Marq en Baroeel, and Gilles Gross, 59-Lille, both of France, assignors to Fives Lille-Gail, Paris, France

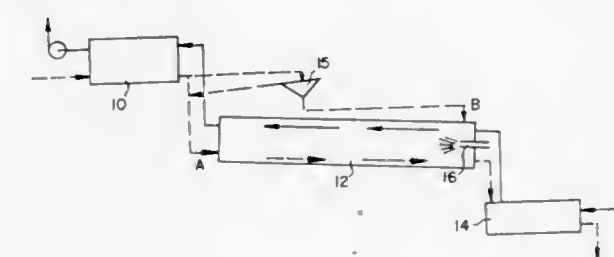
Filed Jan. 29, 1971, Ser. No. 110,811

Claims priority, application France, Jan. 23, 1970, 7002404

Int. Cl. F27b 7/02

U.S. Cl. 423—200

8 Claims



In calcining phosphate-containing minerals, the temperature of at least a fraction of the mineral delivered to the calcining kiln is rapidly raised from a temperature lower than the normal exothermic reaction temperature of the mineral material to one in excess thereof.

3,723,598

# DRY CYCLIC PROCESS UTILIZING A MANGANOUS OXIDE ABSORBENT FOR REMOVAL OF DILUTE SULFUR VALUES FROM GAS STREAMS

Henry Rush Spedden; Kenneth J. Richards, and William J. Schlitt, III, all of Salt Lake City, Utah, assignors to Kennecott Copper Corporation, New York, N.Y.

Filed Nov. 5, 1970, Ser. No. 87,089

Int. Cl. C01b 17/56, 17/60

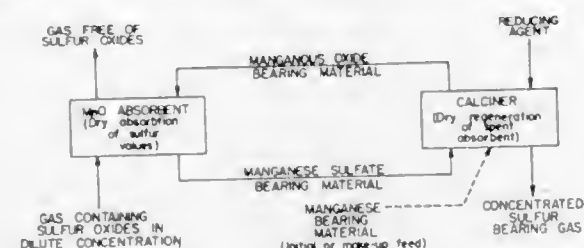
U.S. Cl. 423—244

8 Claims

Manganous oxide is utilized as a dry absorbent for dilute sulfur values, such as  $SO_2$  and  $SO_3$ , in a gas stream of the na-



ture of waste effluent from industrial stacks of smelters, power plants, etc. The resulting manganese sulfate is regenerated to



provide dry manganous oxide for recycling to the gas stream. Regeneration is effected by dry calcination of the manganese sulfate under reducing conditions.

3,723,599

### TECHNIQUE FOR GROWTH OF SINGLE CRYSTAL GALLIUM GARNET

Charles David Brandie, Jr., Somerville, and David Christopher Miller, Millington, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Aug. 18, 1971, Ser. No. 172,751  
Int. Cl. C01H 17/00

U.S. Cl. 423—263

9 Claims

Rare earth gallium garnet crystals evidencing low dislocation densities are obtained by the crystal pulling techniques utilizing an oxygen containing ambient wherein the partial pressure of oxygen ranges from about 3.8–19 millimeters of mercury.

3,723,600

### RARE EARTH TELLURITES AND METHOD OF PRODUCING SAME

Michael J. Redman, Belmont, Mass., assignor to Kennecott Copper Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 878,915, Nov. 21, 1969, abandoned. This application Oct. 18, 1971, Ser. No. 190,267  
Int. Cl. C22B 59/00

U.S. Cl. 423—263

10 Claims

Tellurium compounds having the general formula  $(A_xB_y)Te_{2O_{11}}$  where A and B is a rare earth metal or yttrium, x is from 0 to 2, y is from 0 to 2, and x plus y is 2. Where A and B are the same metal the formula is  $M_2Te_{2O_{11}}$ . The compounds are prepared by reactions between  $TeO_2$  and the rare earth oxides.

3,723,601

### METHOD OF PRODUCING REFRACTORY METALS AND REFRACTORY METAL COMPOUNDS IN POWDER FORM

Elis Kjell Ake Svanstrom, Nynashamn, Sweden, assignor to Rederiaktiebolaget Nordstjornan, Nynashamn, Sweden  
Filed May 21, 1971, Ser. No. 145,922

Claims priority, application Sweden, May 27, 1970, 7275/70  
Int. Cl. C01B 31/30; C22C 29/00; C01B 21/06

U.S. Cl. 423—297

13 Claims

Refractory metals and refractory metal compounds are produced using a gaseous halide process in which the process is accelerated by employing crystallization seeds in the reaction.

3,723,602

### PHOSPHATE COMPOSITIONS AND METHODS OF MANUFACTURE

Norman Earl Stahlheber, Columbia, Ill., assignor to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 729,384, May 15, 1968, abandoned. This application March 8, 1971, Ser. No. 122,115  
Int. Cl. C01B 15/16, 25/26

U.S. Cl. 423—305

7 Claims

A novel crystalline potassium polyphosphate hydrate and a method for its manufacture are disclosed. The new

polyphosphate is useful in compounding slowly soluble fertilizer compositions.

3,723,603

### PREPARATION OF FLUOROPHOSPHATES

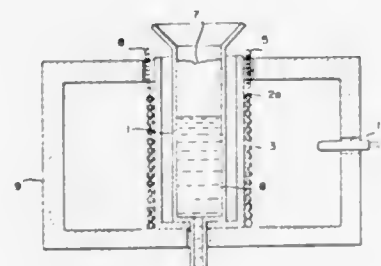
Uwe Skurnia, Wiesbaden-Blebrich, and Hans Rohlf, Heidelberg, both of Germany, assignors to Chemische Werke Albert, Wiesbaden-Blebrich, Germany

Filed Sept. 29, 1969, Ser. No. 861,732  
Claims priority, application Germany, Sept. 28, 1968, P 17 92 648.6

Int. Cl. C01b 25/00; C01d 11/00

U.S. Cl. 423—307

8 Claims



A process for the continuous production of an alkali metal fluorophosphate from a mixture containing an anhydrous alkali metal fluoride and at least one phosphate and feeding it to a heated reactor vessel provided with means for continuous discharge of a molten product, and in the reactor vessel being a molten bed overlaid with starting materials, wherein the reactor vessel is provided with a) a melting tube surrounded by a protection tube, and b) an electrical heating element for heating said protection tube, and the distance between the protection tube and the melting tube is at least 5 and at most 300 mm and not more than 60 percent of the radius of the melting tube and an apparatus for carrying out this process.

3,723,604

### PROCESS FOR REMOVING THIOUREA AS AN IMPURITY FROM ALKALI-AND ALKALINE EARTH-METAL RHODANIDES

Hans-Dieter Rupp, Erlenbach/Main, and Helmut Magerlein, Obernburg/Main, both of Germany, assignors to Glanzstoff A.G., Wuppertal, Germany

Filed March 3, 1971, Ser. No. 120,702  
Claims priority, application Germany, March 5, 1970, P 20 10 278.7

Int. Cl. C01c 3/20; C07c 127/00

U.S. Cl. 423—366

10 Claims

Process for removing thiourea as an impurity from a crude alkali- or alkaline earth- metal rhodanide wherein an aqueous solution of the impure or crude rhodanide containing the thiourea is heated at certain elevated temperatures and in the presence of copper (II) oxide, preferably with an excess of the oxide with reference to a stoichiometric molar amount of the thiourea. Very pure rhodanides substantially free of thiourea are known to be useful in the manufacture of thiocyanates, especially organic thiocyanates, among other uses.

3,723,605

### PROCESS FOR THE PRODUCTION OF A CONTINUOUS LENGTH OF GRAPHITIC FIBROUS MATERIAL

Michael J. Ram, West Orange, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed June 10, 1970, Ser. No. 45,161  
Int. Cl. C01b 31/04, 31/07

U.S. Cl. 423—447

22 Claims

An improved process is provided for the production of a continuous length of a graphitic fibrous material through the

3,723,608

### PRODUCTION OF PHOSPHORUS

Peter Lorenz Meurer, Herdecke-Ende; Friedrich Wilhelm Dorn, Hermulheim, and Heinz Harnisch, Lovenich, all of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack near Cologne, Germany

Filed Feb. 17, 1971, Ser. No. 116,167

Claims priority, application Germany, March 24, 1970, P 20 14 014.1

Int. Cl. C01b 25/02

U.S. Cl. 423—322

5 Claims

catalysis of the graphitization reaction. A continuous length of fibrous material capable of undergoing graphitization which is essentially free of boron at the time of its introduction is continuously passed through a heating zone containing an inert gaseous atmosphere having a maximum temperature of at least about 2,000°C. bounded by walls of graphitic carbon in intimate association with a boron compound capable of undergoing volatilization at a temperature below about 2,000°C. thereby enabling the volatilization of a catalytic quality of boron capable of catalyzing the graphitization of the fibrous material within the heating zone.

3,723,606

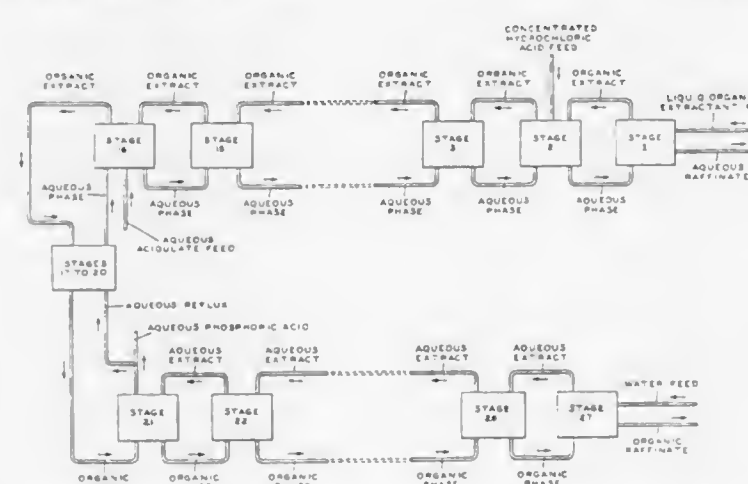
### PRODUCTION OF PHOSPHORIC ACID

William Christian Klingelhofer, Hopewell, and James Earl Sansing, Jr., Chester, both of Ill., assignors to Allied Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 716,788, March 28, 1968, abandoned. This application Dec. 21, 1970, Ser. No. 100,367  
Int. Cl. C01b 25/16

U.S. Cl. 423—321

1 Claim



Phosphate rock is reacted with hydrochloric acid in the presence of a water-soluble sodium compound to produce an aqueous acidulate containing phosphoric acid. The aqueous acidulate is extracted with a homogeneous organic liquid extractant comprising a liquid hydrocarbon and a low molecular weight, acidulate-immiscible alcohol to produce an organic solution of phosphoric acid. The organic solution of phosphoric acid is extracted with water and the resulting extract is concentrated to produce phosphoric acid which is low in calcium chloride content. Preferably, the organic solution of phosphoric acid is purified by extraction with aqueous phosphoric acid to remove calcium prior to extraction with water. The product phosphoric acid contains only 0.05–0.5 part by weight of calcium per 100 parts by weight of phosphoric acid, measured as  $P_2O_5$ , and is particularly useful in production of stable fertilizer solutions.

3,723,607

### SURFACE MODIFICATION OF CARBON FIBERS

Ilmar L. Kalnin, Millington, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed July 16, 1970, Ser. No. 55,562

Int. Cl. C01b 31/07

U.S. Cl. 423—447

17 Claims

A process is provided for modifying the surface characteristics of a carbonaceous fibrous material (either amorphous carbon or graphitic carbon) and to thereby facilitate enhanced adhesion between the fibrous material and a resinous matrix material. The fibrous material is initially heat treated in an inert gaseous atmosphere, and is subsequently heated in a gaseous atmosphere which includes a substantial quantity of ozone under conditions found capable of producing the desired surface modification. Composite articles of enhanced interlaminar shear strength are formed by incorporating the fibers modified in accordance with the present process in a resinous matrix material.

3,723,609

### PROCESS FOR THE PRODUCTION OF CARBON FIBERS

Manfred Mansmann; Gerhard Winter, Krefeld; Gottfried Pampus; Hildegard Schnoring, both of Leverkusen, and Nikolaus Schon, Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 7, 1970, Ser. No. 78,943

Claims priority, application Germany, Oct. 17, 1969, P 19 52 388.7

Int. Cl. C01b 31/07

U.S. Cl. 423—447

16 Claims

In the production of carbon fibers wherein a carbon-containing fiber-forming material is spun as a solution, the spun filaments are converted to solid fibrous material, and the fibrous material is carbonized, the improvement which comprises including in said solution at least one fiber-forming high polymer at a concentration of about 0.001 to 10 percent by weight and a greater amount of a carbon source comprising at least one carbon-containing organic material having a softening or melting point in excess of about 80° C., whereby the solution of said carbon containing material is rendered spinnable by addition of said fiber-forming high polymer, said carbon containing organic material serving as the source of carbon for the carbon fiber; the fiber may thereafter be graphitized. The spinning solution used for fiber production is preferably a solution in a volatile solvent so that it may be dry spun. The carbon source in said solvent by itself would not be spinnable and may be a monomer or low polymer.



3,723,610

## PROCESS FOR MAKING CARBON ARTICLES

Walter Fischer, and Joseph Heckmaier, both of Burghausen-Upper Bavaria, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Germany

Continuation of Ser. No. 747,443, July 25, 1968, abandoned.

This application Feb. 19, 1971, Ser. No. 117,047

Claims priority, application Germany, July 26, 1967, W 44 447

Int. Cl. C01b 31/02, 31/07

U.S. Cl. 423—447

4 Claims

Process for making carbon filaments, foils, threads, fibers, fabrics and similar formed bodies which comprises treating such a body composed of a copolymerizate of vinyl chloride and at least one substance selected from the group consisting of polyvinyl alcohol and derivatives of polyvinyl alcohol with an acid condensation agent, such as concentrated sulfuric acid, until it becomes unmeltable at pyrolysis temperatures and then subjecting the treated body to pyrolysis. A formed body of a copolymerizate of vinyl chloride and vinyl acetate which contains 40 to 95 percent of vinyl chloride is particularly suitable in the process.

3,723,611

## PRODUCTION OF CHROMIUM (III) OXIDE OF LOW SULFUR CONTENT

Volker Hahnkamm; German Broja; Karl Brandle, and Claus-Heinrich Elstermann, all of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

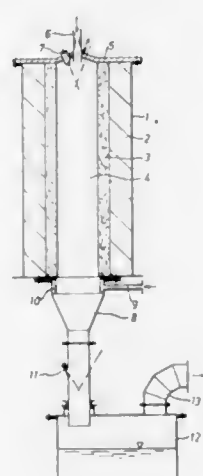
Filed June 14, 1971, Ser. No. 152,768

Claims priority, application Germany, June 20, 1970, P 20 30 510.6

Int. Cl. C01g 37/02; B01j 1/00

U.S. Cl. 423—607

11 Claims



Chromium (III) oxide is prepared by contacting a finely divided alkali metal chromate with hydrogen at a temperature of about 900° to 1,600° C. The reaction product is cooled with liquid to produce a dispersion of Cr<sub>2</sub>O<sub>3</sub> in water. If the dispersion is kept alkaline the Cr<sub>2</sub>O<sub>3</sub> when separated contains less than 0.005 percent of sulfur. The initial chromate should be finely divided, e.g., less than 500μ or dissolved, and an acid-forming gas such as chlorine or hydrogen chloride can also be included to form a salt with the by-product alkali metal oxide.

## ERRATUM

For Class 423—175 see:  
Patent No. 3,722,867

3,723,612

## STABILIZER FOR RADIOACTIVE COLLOIDAL SOLUTIONS

Nikolai Borisovich Mikheev; Maia Arkadievna Gracheva, both of Moscow; Ljubov Grigorievna Bogomolova, Leningrad, and Valentin Ilich Levin, Moscow, all of U.S.S.R., assignors to Institut Biofiziki, Moscow, U.S.S.R.

Filed Aug. 8, 1969, Ser. No. 848,714

Int. Cl. A61k 27/04

U.S. Cl. 424—1

7 Claims

A stabilizer for radioactive colloidal solutions prepared from three gelatin fractions of varying molecular weights. It is prepared by heating the fractions with water, sodium chloride and succinic anhydride followed by neutralization and bacterial filtration.

3,723,613

## DENTAL PLAQUE DISCLOSING AGENT

Philip L. Block, 416 Deerfield Dr., Moraga, Calif., and John P. Derdivanis, 6284 Crown Ave., Oakland, Calif.

Filed Jan. 22, 1971, Ser. No. 109,054

Int. Cl. G01n 31/00, 33/16

U.S. Cl. 424—7

10 Claims

Disclosing agent for use in control of dental plaque. The agents are compositions comprises of FDC Red No. 3 and FDC Blue No. 1; FDC Red No. 3 and FDC Green No. 3 and FDC Red No. 3 and Hercules Green Shade 3.

3,723,614

## MALTESE-CROSS SCORED TABLET

Theodor Langauer, Baselland, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

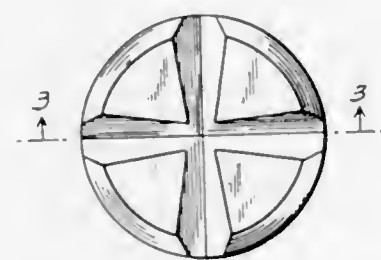
Continuation of Ser. No. 777,091, Nov. 19, 1968, abandoned.

This application Jan. 6, 1971, Ser. No. 104,494

Int. Cl. A61k 9/00; A61j 3/10

U.S. Cl. 424—15

1 Claim



A tablet having a breaker-score assuring accurate and easy breakage into predetermined portions.

3,723,615

## FUMIGANT INSECTICIDAL MIXTURES OF D-CHRYSANTHEMATES

Yositosi Okuno, Toyonaka, Japan, assignor to Sumitomi Chemical Company, Limited, Osaka, Japan

Filed Dec. 15, 1970, Ser. No. 98,357

Claims priority, application Japan, Dec. 24, 1969, 45/1007

Int. Cl. A01n 9/28, 17/00, 17/04

U.S. Cl. 424—18

4 Claims

dl-2-allyl-3-methyl-cyclopent-2-ene-1-one-4-yl novel insecticidal composition in the form of a fumigant which contains as 44/1007 active ingredient a mixture of di-2-allyl-3-methyl-cyclopent-2-ene-1-one-4-yl dl-cis,trans-chrysanthemate and 5-benzyl-3-furylmethyl-dl-cis,trans-chrysanthemate, or 5-benzyl-3-furylmethyl-d-trans-chrysanthemate, which has a rapid knock down effect on injurious insects such as mosquitoes and an effect to delay the recovery of knocked-down injurious insects, and is useful for sanitary, agricultural and horticultural purposes.

3,723,616

## HAIR SPRAY CONTAINING VINYL ESTER-ESTER OF α,β-UNSATURATED MONO-OR DICARBOXYLIC ACID COPOLYMER

Gustav Erlenmann, Basel, Switzerland; Manfred Sander, and Gerhard Zimmer, both of Kelkheim, Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 652,408, July 11, 1967, abandoned. This application Feb. 27, 1970, Ser. No. 15,258

Claims priority, application Switzerland, July 29, 1966, 11014/66

Int. Cl. A61k 7/10

U.S. Cl. 424—47

1 Claim

Hair sprays containing film forming copolymers of (a) vinyl esters; (b) monoesters of aliphatic olefinically unsaturated mono- or dicarboxylic acids with lower alkanediols, and where required; and (c) α,β-unsaturated carboxylic acids are disclosed.

3,723,617

## ANTI-INFLAMMATORY COMPOSITIONS CONTAINING ACYLATED-β-D-GLUCOPYRANOSIDES AND METHODS OF USING THEM

Blaine M. Sutton, Hatboro, Pa., assignor to Smith Kline & French Laboratories, Philadelphia, Pa.

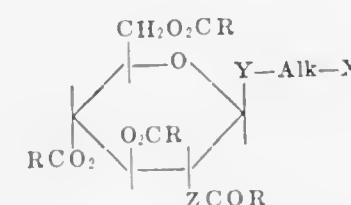
Filed Dec. 31, 1968, Ser. No. 789,000

Int. Cl. A61k 27/00

U.S. Cl. 424—180

11 Claims

Pharmaceutical compositions containing dosage units of compounds of the structural formula:



wherein X is halo, carbalkoxy to five carbons, acyloxy to five carbons, acylamido to five carbons, acylmercapto to five carbons, or aromatic hydrocarbons oxy to 10 carbons; Y is sulfur or oxygen; Z is —NH— or oxygen; R's are one of aryl to eight carbons; alkyl to five carbons; and Alk is straight or branched chain alkyl up to five carbons, which may be substituted by alkyl, acyloxy or acylamido, as limited in defining X above.

3,723,618

## SYNERGISTIC FUNGICIDAL COMPOSITION FOR THE CONTROL OF DISEASES OF RICE PLANTS

Yasuo Yamada, Tokyo, Japan, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 17, 1970, Ser. No. 90,466

Claims priority, application Japan, Nov. 24, 1969, 44/93773

Int. Cl. A01n 9/02, 9/28, 9/36

U.S. Cl. 424—225

10 Claims

Fungicidal compositions in the form of synergistic combinations of 4,5,6,7-tetrachlorophthalide and O-(ethyl, n-propyl or isopropyl)-S,S-diphenylphosphorodithiolate which are individually known compounds, which combinations possess synergistic fungicidal properties especially for the control of diseases of rice plants.

3,723,619

## DIURETIC AND SALURETIC COMPOSITIONS AND METHOD WITH 3-TERTIARY AMINO PROPIONYL-BENZOFURAN-2-CARBOXYLIC ACIDS

Janos Zergenyi, Riehen, and Ernst Habicht, Oberwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 746,268, July 22, 1968, Pat. No.

3,574,208. This application Nov. 18, 1970, Ser. No. 90,818

Claims priority, application Switzerland, July 28, 1967, 10765/67; Sept. 29, 1967, 13638/67

Int. Cl. A61k 27/00

U.S. Cl. 424—248

10 Claims

5-(2-Di(lower)alkylaminomethyl-(lower)alkanoyl)-benzofuran-2-carboxylic acids and their pharmaceutically acceptable salts with acids and bases are prepared by Mannich condensation of 5-lower-alkanoyl-substituted benzofuran-2-carboxylic acids with paraformaldehyde and secondary amines. A typical embodiment is 5-(2-dimethylaminomethyl-butyl)-6-methyl-benzofuran-2-carboxylic acid hydrochloride. A method of producing a diuretic and a saluretic effect comprising administration of said compounds to warm-blooded animals as well as pharmaceutical compositions containing said compounds are provided.

3,723,620

## 3-SUBSTITUTED AMINO-6-HYDRAZINO PYRIDAZINES AS HYPOTENSIVES

Paul L. Anderson, Dover; William J. Houlihan, and Robert E. Manning, both of Mountain Lakes, all of N.J., assignors to Sandoz Wander, Inc., Hanover, N.J.

Continuation-in-part of Ser. No. 792,764, Jan. 21, 1969, Pat.

No. 3,598,822. This application Feb. 22, 1971, Ser. No.

117,752

Int. Cl. A61k 27/00

U.S. Cl. 424—250

15 Claims

Certain 3-alkenyl substituted amino-6-hydrazino pyridazines have been found to be useful as hypotensive/anti-hypertensive agents and as anorexics.

3,723,621

## N,N'-BIS-(ETHYLENE)-4,4'-BIPERIDYL DICHLORIDE GROWTH PROMOTING COMPOUND AND METHOD OF USING SAME

Robert J. Rutman, Philadelphia, Pa., assignor to The Trustees of the University of Pennsylvania, Philadelphia, Pa.

Division of Ser. No. 838,641, July 2, 1969, Pat. No. 3,575,987,

which is a continuation-in-part of Ser. No. 540,498, April 6,

1966, abandoned. This application March 2, 1970, Ser. No.

20,264

Int. Cl. A61k 27/00

U.S. Cl. 424—267

5 Claims

The novel compound N,N'-bis-(ethylene)-4,4'-bipiperidyl dichloride is provided which is represented by the formula



The compound of this invention is especially useful for promoting the growth of vertebrate animals.



3,723,622

**FUNGICIDAL COMPOSITION AND METHODS OF KILLING FUNGI USING 1-TRITYL-1,2,4-TRIAZOLES**  
Karl Heinz Buchel, Wuppertal-Elberfeld; Ferdinand Grewe, and Helmut Kospers, both of Leverkusen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany  
Division of Ser. No. 848,738, Aug. 8, 1969, Pat. No. 3,682,950.  
This application April 19, 1972, Ser. No. 245,603  
Claims priority, application Germany, Aug. 28, 1968, P 17 95 249.7

Int. Cl. A01n 9/00, 9/22

U.S. Cl. 424—269

12 Claims

1-Trityl-1,2,4-triazoles, i.e. 1-[(optionally mono and di chloro-, fluoro-, cyano- and trifluoromethyl- substituted)-(optionally mono and di chloro-, fluoro-, cyano- and trifluoromethyl- substituted)-(optionally mono and di chloro-, fluoro-, cyano- and trifluoromethyl- substituted)-trityl]-3-(optionally chloro substituted)-5-(optionally chloro substituted)-1,2,4-triazoles, or 1-[(optionally mono and di chloro-, fluoro-, cyano- and trifluoromethyl- substituted phenyl)-(optionally mono and di chloro-, fluoro-, cyano- and trifluoromethyl- substituted phenyl)-(optionally mono and di chloro-, fluoro-, cyano- and trifluoromethyl- substituted phenyl)-methyl]-3-(optionally chloro-substituted)-5-(optionally chloro substituted)-1,2,4-triazoles, possess fungicidal properties.

3,723,623

**METHOD FOR CONTROLLING OBESITY**

Oscar Neal Miller, Montclair, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.  
Continuation-in-part of Ser. No. 92,294, Nov. 23, 1970, abandoned. This application June 5, 1972, Ser. No. 259,709  
Int. Cl. A61k 27/00

U.S. Cl. 424—266

3 Claims

A method of utilizing 2,6-dihydroxynicotinic acid as an agent for inhibiting the synthesis of lipids and, consequently, reducing the weight of accumulated fat in warm-blooded animals, is described.

3,723,624

**2-HYDROXY AND 2-CARBAMYLOXY DERIVATIVES OF 1,1,1-TRICHLORO-3-CARBAMYLOXYALKANES IN A COMPOSITION AND METHOD FOR EFFECTING MUSCLE RELAXATION**

Laszlo L. Darko, Yorktown Heights, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.  
Division of Ser. No. 25,282, April 2, 1970, Pat. No. 3,639,453, which is a continuation-in-part of Ser. No. 786,750, Dec. 24, 1968, abandoned. This application June 29, 1970, Ser. No. 158,112  
Int. Cl. A61k 27/00

U.S. Cl. 424—300

2 Claims

1,1,1-Trichloro-2-HYDROXY-3-carbamyloxyalkanes and their 2-carbamyloxy derivatives such as 1,1,1-trichloro-2-hydroxy-3-carbamyloxypropane, 1,1,1-trichloro-2-hydroxy-3-carbamyloxybutane and 1,1,1-trichloro-2,3-dicarbamyloxybutane are depressants of the central nervous system and useful as muscle relaxants.

3,723,625

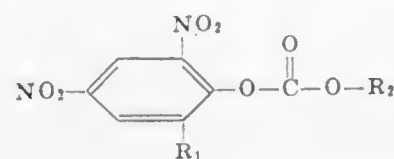
**PROCESS FOR KILLING PLANT PESTS USING CYANOALKYL-NITROPHENYL CARBONATES**

Krijn Van den Boogaart, and Meelis Nicolaus Louis, both of Vlaardingen, Netherlands, assignors to N. V. Fabriek Van Chemische Producten Vondelingenplaat, Rotterdam, Netherlands  
Division of Ser. No. 710,630, March 5, 1968, Pat. No. 3,594,400. This application March 26, 1971, Ser. No. 128,525  
Int. Cl. A01n 9/12

U.S. Cl. 424—301

3 Claims

Compounds of structure



where R<sub>1</sub> is alkyl of one to 10 carbon atoms, and R<sub>2</sub> is cyanoalkyl containing from one to four carbon atoms in the alkyl group. These compounds are extremely effective as acaricides and also have fungicidal and herbicidal activity.

3,723,626

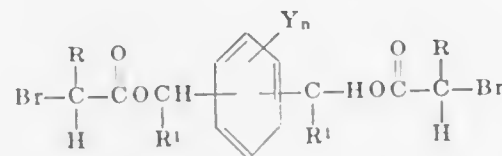
**FUNGICIDAL AND BACTERICIDAL COMPOSITIONS AND METHOD OF KILLING BACTERIA AND FUNGI USING SUBSTITUTED BIS (BROMOACETOXY) XYLENES**  
Don R. Baker, Orinda, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Division of Ser. No. 853,973, Aug., 1969, Pat. No. 3,681,439.  
This application May 15, 1972, Ser. No. 253,097  
Int. Cl. A01n 9/24

U.S. Cl. 424—311

9 Claims

Compounds having the formula



in which R is hydrogen or cyano and R<sup>1</sup> is hydrogen or methyl, Y is H, lower alkyl or halo, n is a whole integer of from 1 to 4, and the use of these compounds as biocides such as in controlling fungi and bacteria.

3,723,627

**SULFAMOYL AZIDE COMPOSITION AND PROCESS FOR LOWERING BLOOD PRESSURE**

William L. Matier, and William T. Comer, both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Filed March 5, 1970, Ser. No. 16,933

Int. Cl. A61k 27/00

U.S. Cl. 424—321

28 Claims

This invention is concerned with a pharmaceutical process and pharmaceutical compositions for lowering blood pressure in mammals by the administration thereto sulfamoyl azides of the Formula R<sup>1</sup>R<sup>2</sup>NSO<sub>2</sub>N<sub>3</sub> and pharmaceutical compositions thereof. R<sup>1</sup> is alkyl, cycloalkyl, aryl, aralkyl and so on; R<sup>2</sup> is hydrogen, alkyl, cycloalkyl, phenyl, phenylalkyl, and so on; R<sup>1</sup> and R<sup>2</sup> can be taken together with nitrogen to form a heterocyclic radical.

3,723,628

**(N-TRIHALOMETHYLTHIO-N-TRIFLUOROMETHYL-AMINO)-BENZAMIDES AS FUNGICIDAL AGENTS**

Hans Scheinpflug, Leverkusen; Engelbert Kuhle, Berg. Gladbach; Erich Klauke, Cologne-Flittard; Paul-Ernst Froberger, Leverkusen, and Ferdinand Grewe, Burscheid, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany  
Division of Ser. No. 10,299, Feb. 10, 1970, Pat. No. 3,597,480, which is a continuation-in-part of Ser. No. 666,918, Sept. 11, 1967, abandoned. This application Feb. 18, 1971, Ser. No. 116,591

Claims priority, application Germany, Sept. 15, 1966. F 50206  
Int. Cl. A01n 9/20

U.S. Cl. 424—324

17 Claims

(N-trihalomethylthio-N-trifluoromethyl-amino)-benzamides which possess fungicidal properties and which may be

produced by reacting the corresponding fluorocarbonyl-N-trihalomethylthio-N-trifluoromethyl-anilines, in the presence of an acid-binding agent, with amines.

3,723,629

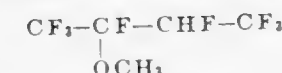
**1-METHOXY-3-H-PERFLUOROBUTANE AS AN INHALATION ANESTHETIC AGENT**

George L. Moore, South Plainfield, N.J., assignor to Air Reduction Company, Incorporated, New York, N.Y.  
Filed Aug. 2, 1971, Ser. No. 168,380  
Int. Cl. A61k 27/00

U.S. Cl. 424—342

2 Claims

2-Methoxy-3-hydroperfluorobutane of the formula



is useful as an inhalation analgesic and anesthetic.



## ELECTRICAL

### 3,723,630 METHOD FOR THE PLASMA-ARC REMELTING OF A CONSUMABLE METAL BAR IN A CONTROLLED ATMOSPHERE

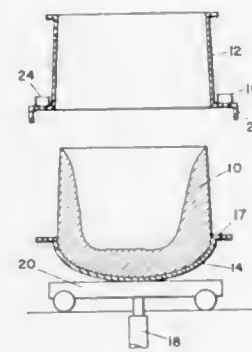
Boris Evgenievich Paton, ulitsa Kotsjubinskogo, 9, kv. 21, Kiev; Alexandr Ivanovich Tselikov, ulitsa Chernyakhovskogo, 40, kv. 54, Moscow; Viktor Iosifovich Lakomsky, ulitsa Bastionnaya, 10, kv. 30, Kiev; Georgy Mikhailovich Grigorenko, ulitsa Frolovskaya, 1, kv. 5, Kiev; Oleg Semenovitch Zabari, ulitsa Chapayeva, 2/16, kv. 3, Kiev; Gary Alexandrovich Melnik, ulitsa Prazhskaya, 3, kv. 169, Kiev; Nikolai Alexeevich Ponomarev, ulitsa Truda, 34, kv. 18, Izhevsk; Emily Vladimirovich Verkhovtsev, ulitsa Orzhonikidze, 28, kv. 9, Izhevsk, and Sergel Panteleevich Bakumenko, ulitsa Sovetskaya, 21, kv. 17, Izhevsk, all of U.S.S.R.

Filed June 28, 1971, Ser. No. 157,262

Int. Cl. H05b 7/00, 7/18

U.S. Cl. 13-1

metal shell having upper and lower sections. The lower section may be removed to permit the easy removal of one refractory



2 Claims

skull and insertion of another without a prolonged furnace shutdown period.

### 3,723,632 WATER COOLING SYSTEM FOR VACUUM ARC FURNACE

Semen Moiseevich Beizerov, ulitsa Bolshaya Akademicheskaya, 73, Korpus 2, kv. 72, Moscow, U.S.S.R.

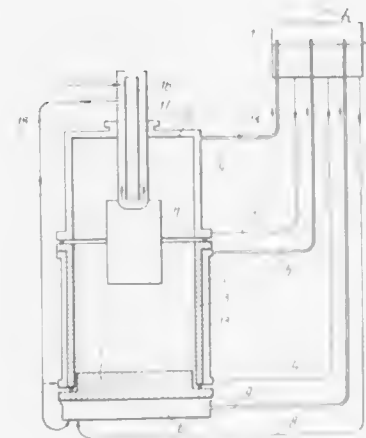
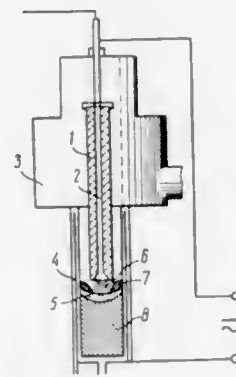
Filed March 9, 1972, Ser. No. 233,145

Claims priority, application U.S.S.R., March 17, 1971, 1628322

Int. Cl. H05b 7/02; F27d 9/00

U.S. Cl. 13-32

2 Claims



A method for plasma-arc remelting of a material under a controlled atmosphere consists in making the material to be remelted in the form of a consumable hollow electrode-bar and electrically melting down the hollow electrode-bar so formed, in a cooled mold before finally stripping the remelted ingot off the mold. The method also includes generating a low temperature plasma at a tip of the consumable electrode which is connected to a power source, by supplying plasma-generating gas into an arc-region, through the hollow of the consumable electrode bar. Stabilizing the plasma-arc during operation without giving rise to transient arc plasma is expediently achieved by feeding preselected amounts of flux into the arc-region, thereby producing an ingot free from flaws and impurities.

The cooling system is connected with a main for continuous cooling water supply coupled to an electrode holder cooling pipeline.

After cooling the electrode holder, water is fed into the cooling spaces of a mould and of a bottom plate.

The cooling system is provided with a reserve vessel which is connected by pipelines with the cooling spaces of the electrode chamber, mould and bottom plate of the furnace.

### 3,723,633 BASS TONE PRODUCING DEVICE FOR AN ELECTRONIC MUSICAL INSTRUMENT

Takeshi Adachi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed June 13, 1972, Ser. No. 262,229

Claims priority, application Japan, June 16, 1971, 46/43111; June 16, 1971, 46/43112

Int. Cl. G10h 1/06, 5/12

U.S. Cl. 84-1.01

11 Claims

In a keyboard electronic musical instrument having pedal keys, a bass tone producing device comprises a fundamental bass tone signal source for generating 16' bass tone signals

### 3,723,631 SKULL MELTING FURNACE WITH REMOVABLE BOTTOM AND PROCESS FOR FURNACE OPERATION

Paul Cichy, Buffalo, and Robert O. Anderson, Akron, both of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Dec. 6, 1971, Ser. No. 205,221

Int. Cl. F27d 1/00

U.S. Cl. 13-9

7 Claims

For an improved method of operation, an arc furnace for skull melting refractory materials is constructed with an outer

MARCH 27, 1973

ELECTRICAL

1169

### 3,723,635 DOUBLE-SIDED FLEXIBLE CIRCUIT ASSEMBLY AND METHOD OF MANUFACTURE THEREFOR

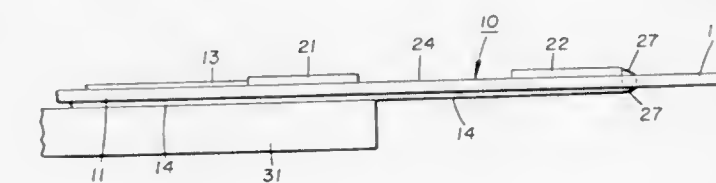
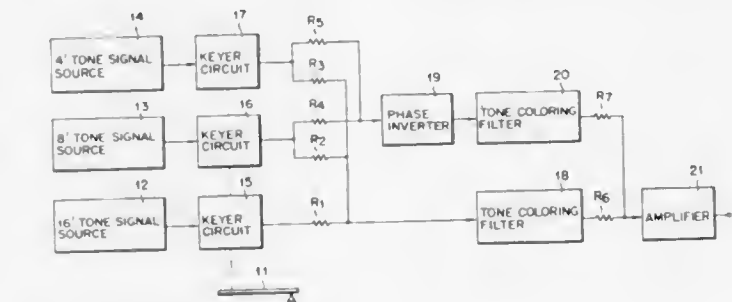
George T. Smith, Reynoldsburg, Ohio, assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Aug. 16, 1971, Ser. No. 172,000

Int. Cl. H05k 1/00

U.S. Cl. 174-68.5

12 Claims



plied to a tone coloring filter having a peak frequency of about 100 to 300 Hz to establish a first composite signal. On the other hand, the two harmonic bass tone signals are mixed in a predetermined ratio, passed through a phase inverter, and applied to another tone coloring filter having a peak frequency of about 1,000 Hz to establish a second composite signal.

Both of the composite signals are finally mixed to form desired bass tones having clear harmonic components.

Double-sided flexible printed circuits are formed with two sets of precious metal-plated terminals, each set being associated with a different circuit side of the flexible substrate and both sets initially being formed on the same side thereof. The two sets of terminals are initially positioned in two laterally disposed arrays along one edge region of the substrate, with each set being separated by a distance sufficient to allow the resulting substrate region therebetween without terminals to be bent around and secured to a rigid terminal support member. As thus fabricated, the two sets of terminals are positioned to overlie each other on opposite sides of the support member so as to allow access thereto by conventional female connectors, such as the double-row card type.

### 3,723,634 CRYOGENIC CABLE AND PROCESS FOR MAKING THE SAME

Marcel Aupoix, Paris, and Francois Moisson-Franckhauser, Bretigny-sur-Orge, both of France, assignors to Compagnie Generale D'Electricite and L'Air Liquide, Societe Anonyme Pour L'Etude Et L'Exploitation Des Procedes Georges Claude, Paris, France

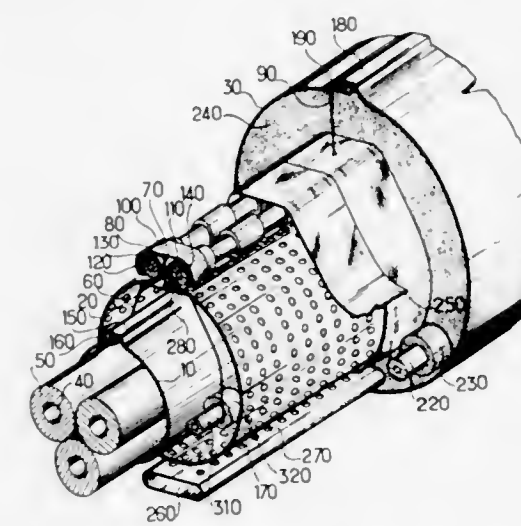
Filed March 6, 1972, Ser. No. 232,163

Claims priority, application France, March 4, 1971, 7107527

Int. Cl. H01v 11/00

U.S. Cl. 174-15 C

13 Claims



A cryogenic cable including an internal cylindrical fluid-tight enclosure containing electrical conductors and carrying a cryogenic fluid. A thermal screen surrounds this enclosure, which is equipped with cooling conduits or ducts enveloped in the turned-out edges of the screen. An external enclosure surrounds the internal enclosure and the screen. The enclosures are formed by longitudinally folding a continuous metal strip and securing the edges which are then sealed by a welding joint. The construction thereof as well as that of the screen is performed at the place or location where the cable is to be laid.

### 3,723,636 APPLIANCE FOR LINEAR BODIES

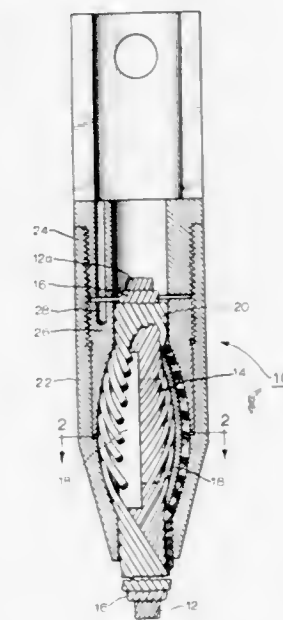
Robert A. Eucker, Brooklyn, Ohio, assignor to Preformed Line Products Co., Cleveland, Ohio

Filed July 14, 1972, Ser. No. 271,707

Int. Cl. F16g 11/04

U.S. Cl. 174-70 R

12 Claims



The disclosed termination appliance for a load bearing cable or the like is particularly suited to extraordinarily high load applications. The appliance comprises a first egg-shaped protuberance defining member secured to the cable by helically preformed elements wrapped in tightly encircling relation about the member and extending in gripping relation along the cable in opposite directions therefrom. A second member of a conforming contour is applied in overlying relation to the first member and a second set of helically preformed elements are applied in encircling overlying and gripping relation to the second member and the first set of helical elements to further enlarge the protuberance. The described sub-assembly is situated within a housing having contoured sidewalls for conformably seating the enlarged



protuberance and a narrowed aperture for passing the cable. The concentric protuberance structures cooperate to share the load on the cable. Other features are disclosed.

# ERRATUM

For Class 176—1 see:  
Patent No. 3,723,703

3,723,637

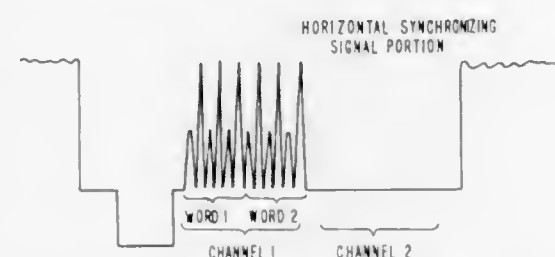
## COLOR TELEVISION SYSTEM INCLUDING ADDITIONAL INFORMATION SIGNALS IN PULSE CODE ON A SPECIAL COLOR BURST

Takashi Fujito, and Taro Komoto, both of Tokyo, Japan, assignors to Nippon Hoso Kyokai, Tokyo, Japan  
Filed May 21, 1970, Ser. No. 39,312

Claims priority, application Japan, May 22, 1969, 44/39449  
Int. Cl. H04n 9/02

U.S. Cl. 178—5.2 R

6 Claims



A multiple transmission system of one or more information signals on a color television signal, wherein at least one information signal, such as a voice signal, is sampled and coded to form a coded digital signal representing the information signal. The coded digital signal consists of pulses having a bit frequency and a phase identical with the frequency and the phase of the color burst signal of the color television signal. Successive sample values of said coded digital signal are transmitted during the period of the horizontal blanking signal of the color television signal with the phase of the color burst signal so that the superposed coded digital signal represents also the information of the color burst signal.

3,723,638

## COLOR VIDEO SIGNAL RECORDING AND REPRODUCING SYSTEM

Mitsuo Fujita, Tokyo, Japan, assignor to Victor Company of Japan, Limited, Yokohama City, Japan

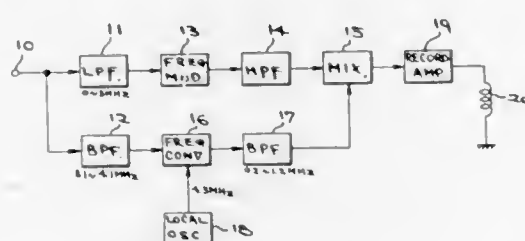
Filed Feb. 18, 1970, Ser. No. 12,301

Claims priority, application Japan, Feb. 21, 1970, 45/12554

Int. Cl. H04n 9/02, 5/78

U.S. Cl. 178—5.4 CD

5 Claims



The invention provides a color video signal recording and reproducing system in which a luminance signal of a color video signal is frequency modulated. A carrier chroma signal is frequency converted, its frequency band is reduced to a low level. The frequency modulated luminance signal and frequency converted carrier chroma signal are then superimposed one on the other and applied to rotary magnetic heads of the video tape recorder. The frequency converted carrier chroma signal and frequency modulated luminance signal are

separated from the signal reproduced from the magnetic medium. The frequency modulated luminance signal is then frequency demodulated to provide a luminance signal. The carrier chroma signal is frequency converted to provide a carrier chroma signal from which a timing axis variation is removed. The information on the timing axis variation is obtained from the color burst signal or horizontal synchronizing signal.

3,723,639

## COLOR TELEVISION CAMERA

Yasuharu Kubota, and Ryuji Shiono, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

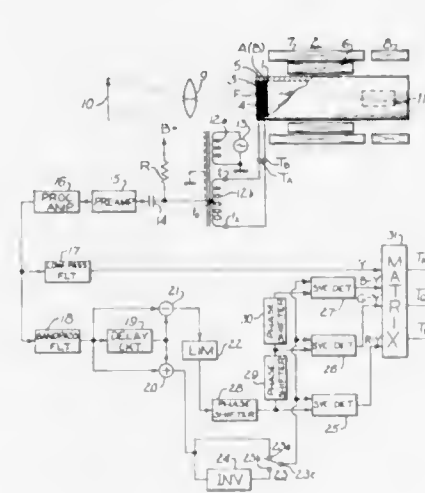
Filed Aug. 31, 1971, Ser. No. 176,554

Claims priority, application Japan, March 31, 1970, 45/27614; March 31, 1970, 45/27615; March 31, 1970, 45/27616; Sept. 1, 1970, 45/76518

Int. Cl. H04n 9/06

U.S. Cl. 178—5.4 ST

7 Claims



A color television camera utilizing a vidicon tube that has a filter in the form of alternate stripes for the primary colors red, green, and blue, electrodes for each set of three stripes and a photoconductive layer. An alternating voltage is applied to the electrodes to provide a predetermined pattern on the surface of the photoconductive layer in the form of an index signal which overlaps on the photoconductive layer with the image to be reproduced. The composite signal on the photoconductive layer of an index signal and a color video signal including luminance and chrominance components is derived from the same terminals that applied the reference alternating voltage to the electrodes, and the signals thus derived are connected to a circuit which separates the color video signal from the index signal. The index signal is then applied to three demodulators to obtain the color video signals. Means are provided to reverse the phase of the chrominance components on alternate lines or in another suitable order to avoid bright and dark vertical stripes in the reproduced image.

3,723,640

## METHOD AND APPARATUS FOR RAPIDLY SCANNING A DOCUMENT

Donald A. Perreault, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed June 19, 1970, Ser. No. 47,853

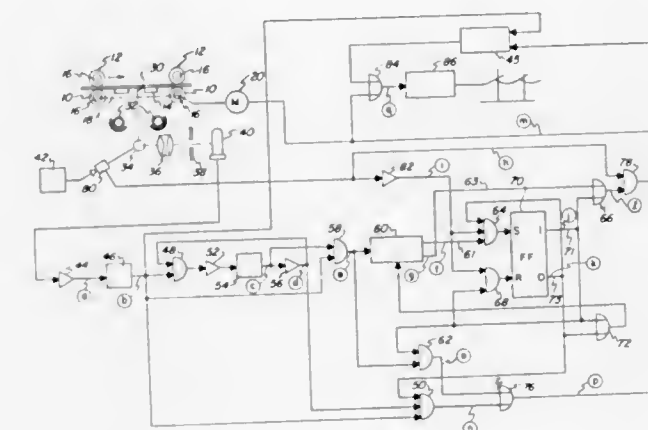
Int. Cl. H04n 7/12

U.S. Cl. 178—6

13 Claims

A facsimile system wherein each elemental line of an object is scanned rapidly. Lines bearing low resolution information are scanned rapidly once, video and step command signals being transmitted at the end of the scan. Lines containing high

resolution information are scanned rapidly twice. A first video signal is transmitted during the first scan and the remainder of



## 3,723,641 FACSIMILE TRANSMISSION METHOD AND APPARATUS

Frank-Armin Heinrich, Korb; Dieter Prause, Esslingen/Neckar, and Rolf Sost, Stuttgart, all of Germany, assignors to Robert Bosch Elektronik GmbH, Berlin, Germany

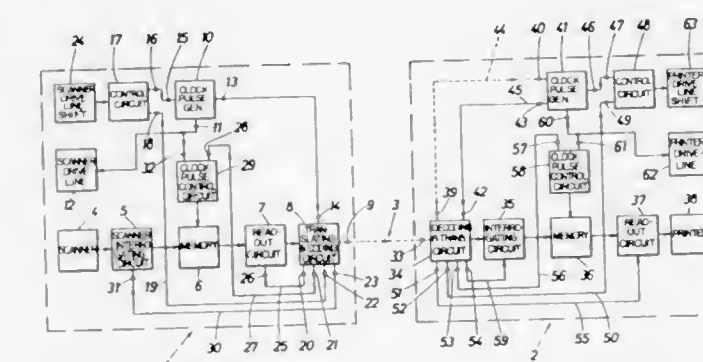
Filed March 31, 1971, Ser. No. 129,815

Claims priority, application Germany, April 2, 1970, P 20 15 695.0

Int. Cl. H04n 1/40, 7/12

U.S. Cl. 178—6

10 Claims



An improved facsimile transmission method and apparatus whereby the data to be transmitted may be transmitted in a shorter time than with conventional facsimile systems. The picture to be transmitted is scanned line-by-line with a conventional photoelectric scanner, but preferably at a speed such that the scanning frequency is greater than the maximum transmission frequency of the transmission channel, and the scanning voltage, which represents at least two different brightness values, preferably black and white, for a single line stored in a memory. The memory is then read out and the number of consecutive identical brightness value signals counted. Each time that the brightness value signal changes its value, e.g., from white to black or vice versa, the readout of the memory is interrupted, or temporarily delayed, until a pulse sequence representing the counted identical consecutive brightness signals and the brightness value has been formed and transmitted. This sequence of steps is repeated for each picture line to be transmitted.

3,723,642

## THERMAL IMAGING SYSTEM

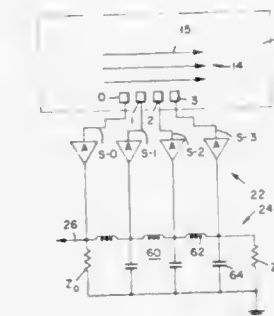
Peter Laakmann, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed May 28, 1971, Ser. No. 147,924

Int. Cl. H04n 3/08, 5/30

U.S. Cl. 178—6

10 Claims



A thermal imaging system wherein a field of view is optically scanned in a two-dimensional pattern by each element of a linear detector array. Output signals from each detector element are delayed as a function of the scan rate and the relative position of the element in the array, to allow the summation of signals from the same image segments, provided by the various elements of the array.

3,723,643

## SYSTEM FOR RECORDING AND REPRODUCING A WIDE-BAND SIGNAL

Takahiro Suzuki, and Yoshihiko Ota, both of Tokyo, Japan, assignors to Victor Company of Japan, Ltd., Mariya-cho, Kanagawa-Ku, Yokohama-City, Kanagawa-Ken, Japan

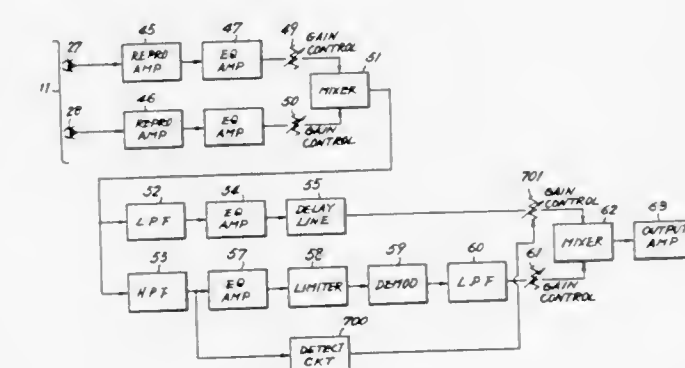
Continuation-in-part of Ser. No. 773,848, Nov. 6, 1968, abandoned. This application June 3, 1970, Ser. No. 42,958

Claims priority, application Japan, Nov. 8, 1967, 42/71386; June 5, 1969, 44/4413

Int. Cl. G11b 5/04, 5/44; H04n 5/78

U.S. Cl. 178—6.6 A

11 Claims



A tape recorder has the capability of recording a predetermined band width of signals which is not as wide as a TV band width. To record a TV band, the signals are divided into high and low component band. The high frequency band component is recorded directly on the recording medium, and the low frequency band component is frequency modulated on a carrier wave with an index of modulation which is over unity. The lower frequency limit of the deviated carrier wave is substantially equal to or higher than the highest frequency component of the wide-band signal. The frequency modulated carrier wave is recorded on the recording medium at a level at which it acts as a bias signal with respect to the high frequency band component. The original wide-band signal is reproduced from the recording medium during playback when the component bands are separated, demodulated, and recombined. The high frequency band component played back from the recording medium is controlled by other frequency component played back at the same time so that the level variations of the high frequency band component is corrected.



### 3,723,644 VARIABLE FRAME RATE RECORDING SYSTEM USING SPEED MEASUREMENT

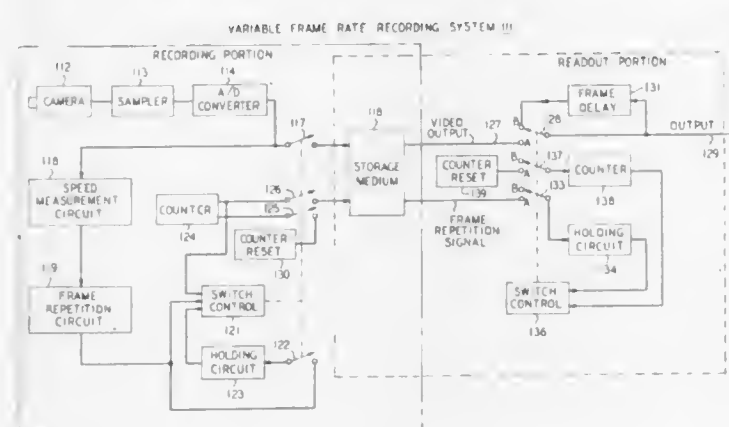
Barin Geoffry Haskell, and John Ormond Limb, both of New Shrewsbury, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed April 24, 1972, Ser. No. 247,021

Int. Cl. H04n 5/78

U.S. Cl. 178—6.6 P

7 Claims



A variable frame rate video recording system utilizes the speed of movement in the video scene to vary the frame recording rate. The speed measurement signal is converted into a frame repetition signal. The frame repetition signal is applied to a switch control which prevents frames containing little movement or highly redundant information from entering a storage medium. With each recorded frame is stored the output signal of a counter which indicates the number of times each recorded frame is to be used for display. A switch control circuit in a readout circuit, in response to the stored output signal of the counter, causes each recorded frame to be repeated at the output terminal to maintain a constant frame rate.

3,723,645

### FACSIMILE RECORDING SYSTEM FOR RECORDING PATTERNS ON BOTH SIDES OF A RECORDING MEDIUM

Hirohiko Takami, Yokohama; Toshihide Kawashima, Kawasaki; Ryomei Kubota, Tokyo, and Chosei Sukegawa, Yokohama, all of Japan, assignors to Asahi Shimbun Publishing Company, Osaka-shi and Tokyo Shibauro Electric Co., Ltd., Kawasaki-shi, Japan

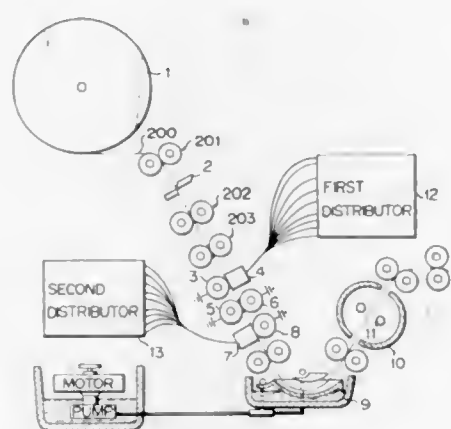
Filed March 3, 1971, Ser. No. 120,671

Claims priority, application Japan, March 5, 1970, 45/18535

Int. Cl. H04n 1/30; G11b 9/08

U.S. Cl. 178—6.6 A

22 Claims



A facsimile system wherein two recording means are spaced from each other in the direction of movement of a recording medium, such as a recording paper, and wherein each of the recording means cooperates with one side of the recording medium. The recording means are each respectively supplied with video signals from respective video signal distributors.

The spacing of the recording means avoids mutual interference therebetween when they are simultaneously operated to record patterns on both sides of the recording medium at the same time.

3,723,646

### APPARATUS FOR RECONSTRUCTION OF IMAGES

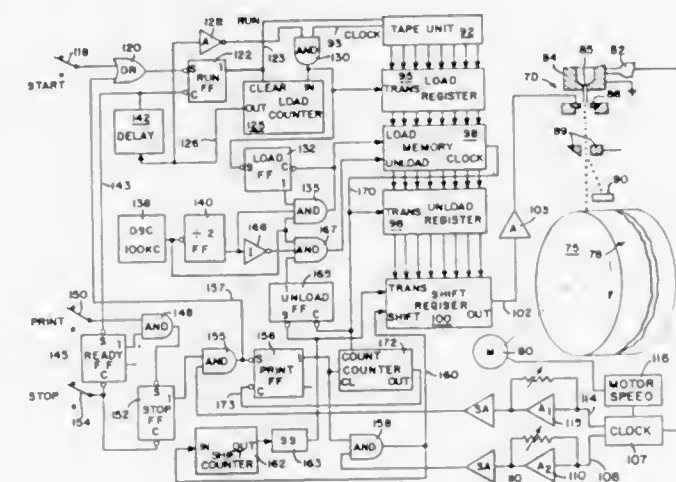
David Behane, Yellow Springs; Lewis Harold Spradley, Centerville; Lysle D. Cahill, and William W. Marshall, both of Dayton, all of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Division of Ser. No. 803,910, March 3, 1969, Pat. No. 3,604,846. This application April 5, 1971, Ser. No. 131,266

Int. Cl. H04n 1/24, 1/28

U.S. Cl. 178—6.6 R

5 Claims



Code signals for reproduction of original graphic representations are stored in a memory, unloaded, and synchronously processed to control the charging of individual liquid drops which form dots in the proper matrix locations. The print-out is made through control of individual marking drops which are selectively charged and deposited on or diverted from the receiving member according to the code signals. A clock generates synchronizing signals which control the rate and regularity of drop generation, the rate of relative movement between the receiving member and the stream of drops, and the unloading of information signals from the memory and their application to the drop charging apparatus.

3,723,647

### APPARATUS FOR RECORDING TELEVISION IMAGES ON FILM

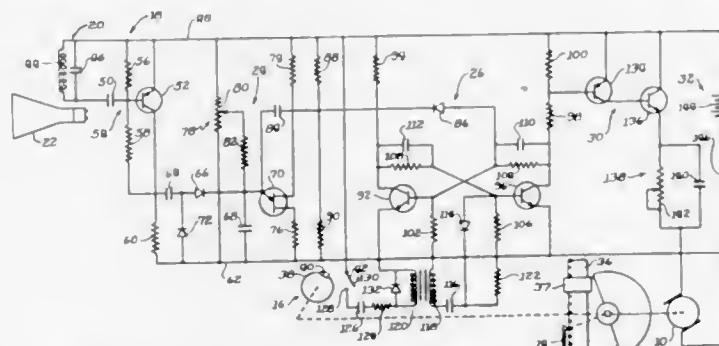
Robert S. John, Jr., Deerfield, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed April 20, 1972, Ser. No. 246,051

Int. Cl. G11b 7/00

U.S. Cl. 178—6.7 R

10 Claims



An apparatus for synchronizing the operation of a motion picture camera to a television receiver to prevent "shutter bars" in the projected film image. The vertical retrace pulses from the television receiver are sensed, amplified and fed to an energy storage counter. The storage counter provides one

output pulse for every fourth retrace pulse. The output of the storage counter is fed to one input of a bistable multivibrator. The camera includes a 180° rotary shutter coupled to a pulse generator. The output of the pulse generator is fed to the second input of the multivibrator and the output of the multivibrator controls the camera motor. In this manner, the speed of the camera shutter is synchronized to the television retrace signal and the shutter phase angle with respect to the retrace signal remains constant.

3,723,648

### METHOD AND APPARATUS FOR DISCRIMINATING AGAINST MASKING REFLECTIONS

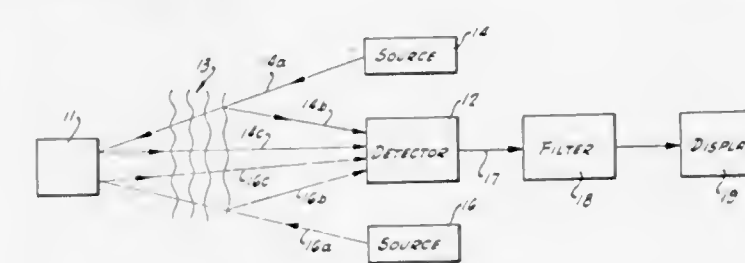
Tom N. Cornsweet, Atherton, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.

Filed Feb. 1, 1971, Ser. No. 111,280

Int. Cl. H04n 7/18

U.S. Cl. 178—6.8

6 Claims



A method and means for discriminating against masking reflections reflected by an object or medium separating an observer from an object which it is desired to view. The desired object and medium are both illuminated by two alternating light sources emitting light of two different wave lengths. The light sources are adjusted so that a detector detects equal amounts of light reflected by the masking medium due to each light source. Assuming, however, that the object which it is desired to view has different spectral characteristics than the masking medium, it will reflect varying amounts of light from the two light sources as the light sources alternate. The reflected light from both the medium and the desired object is incident on a sensing means such as an image dissector and means are provided to separate the AC signal which will be due to reflections from the desired object from the DC signal which will be due to reflections from the masking medium.

3,723,649

### ADAPTIVE BINARY STATE DECISION SYSTEM

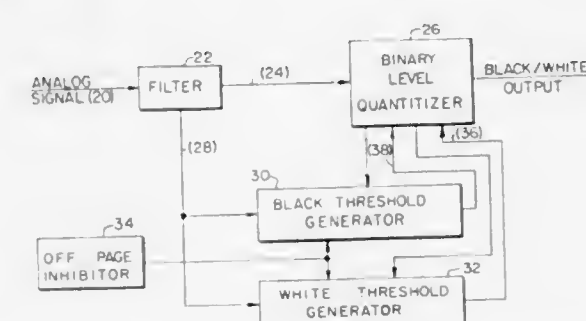
Alexander D. Pitegoff, Brookline; Robert E. Wernikoff, Cambridge, and James E. Cunningham, Brookline, all of Mass., assignors to Electronic Image Systems Corporation, Cleveland, Ohio

Filed April 27, 1971, Ser. No. 137,763

Int. Cl. H04n 1/40

U.S. Cl. 178—7.1

18 Claims



Means for quantizing the continuously varying analog signal output of a facsimile photodetector into a two level binary signal respectively characteristic of detailed black and white areas of a sheet being scanned. The quantizing means provides for later compression of the binary signal by limiting the level

shifts in the binary signal to occur only when the analog signal clearly represents a change to the opposite characteristic as determined when the analog signal crosses two separated threshold levels that continuously or discretely adjust in response to the levels of the analog signal representing black and white.

3,723,650

### METHOD AND APPARATUS FOR DERIVING THE VELOCITY AND RELATIVE POSITION OF CONTINUOUSLY MOVING INFORMATION BEARING MEDIA

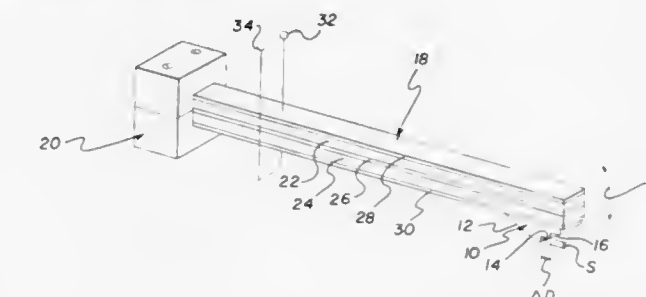
John J. Bradley; Carl N. Schaufele, and John Q. St. Clair, II, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 22, 1971, Ser. No. 191,673

Int. Cl. G06k 7/04; H04l 17/06, 17/12

U.S. Cl. 178—7.2

14 Claims



Both the position and its time derivatives, such as velocity, of a continuously moving information bearing medium, such as perforated motion picture film, with respect to a predetermined position of apparatus for handling the information bearing medium are derived by a transducer with a specially shaped sensor element adapted to sense indicia, such as sprocket holes of motion picture film, carried by the information bearing medium. The sensor element includes at least first and second members located a predetermined distance apart, and the transducer is fixedly located with respect to the indicia carried by the moving information bearing medium so that the indicia successively engage the first and second members of the sensor element. The transducer derives a first signal indicative of the position of the moving information bearing medium when the indicia engages the first member. The transducer derives a second signal when the indicia engages the second member, and the velocity of the moving information bearing medium is derived from the predetermined distance and the time period between the first and second signals. The sensor may be provided with further members from which may be derived the instantaneous acceleration of the moving information bearing medium and further derivatives of the position, velocity and acceleration of the moving information bearing medium. The transducer may comprise a single piezoelectric element which is deflected by the engagement of the sprocket holes of the movie film by the first and second members of the sensor.

3,723,651

### OPTICALLY-SCANNED LIQUID-CRYSTAL PROJECTION DISPLAY

Istvan Gorog, Princeton, N.J., assignor to RCA Corporation

Filed Dec. 27, 1971, Ser. No. 212,506

Int. Cl. H04n 5/74

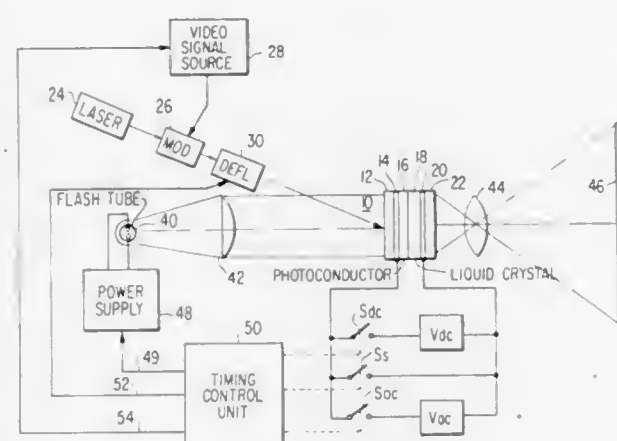
U.S. Cl. 178—7.5 D

4 Claims

A display system is disclosed which includes a multi-layer light control panel having a first transparent electrode, a photoconductor, a normally-transparent liquid crystal, and a second transparent electrode. A laser light beam is modulated with video information and raster scanned to the photoconductor. A direct-current potential is applied across the electrodes during the scanning of a frame, so that spatial variations are created in the light transmissivity of the liquid crystal. Dur-



ing a first portion of a vertical retrace period, a short circuit is placed across the electrodes, and a flash lamp is projected through the light control panel to a display screen. During a



second portion of the vertical retrace period, an alternating current potential is applied to the electrodes to restore the liquid crystal to its transparent condition.

3,723,652

# ELECTRICAL CIRCUIT FOR ENABLING THE VISUAL DISPLAY OF AN AUDIO SIGNAL BY A CONVENTIONAL TELEVISION RECEIVER

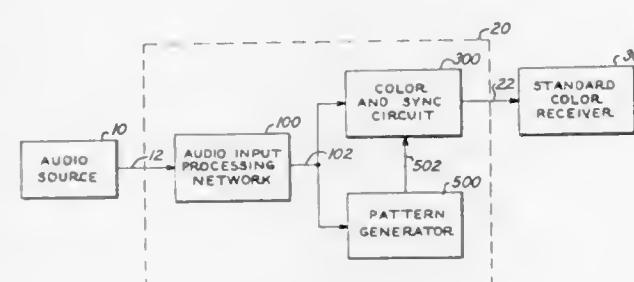
Harold G. Alles, 1860 Riverview St., and John C. Nosler, 2587 Floral Hill Dr., both of Eugene, Oreg.

Filed Oct. 12, 1970, Ser. No. 79,804

Int. Cl. H04n 9/00; A53j 17/00

U.S. Cl. 179—1 VS

35 Claims



An audio-video interface network for transforming audio signals from an audio source into a form suitable for reception and visual display by an unaltered black-and-white or color television receiver whereby multifarious kaleidoscopic visual interpretations of the audio input signals may be entertainingly displayed upon the face of the television receiver. The interface network includes an audio signal separator for separating the audio input signals into a plurality of different frequency bands, an internal pattern generator responsive to the separated audio signals for generating a plurality of electrical signals each uniquely representative of the content of the audio input signals, and a video signal generator responsive to the separated audio input signals and the plurality of electrical signals for generating a modulated radio frequency television signal representative of the separated audio input signals as well as the internally generated electrical signals.

## TELEVISION TELEPHONE SYSTEM

Yoshinobu Tatsuzawa, Kyoto, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

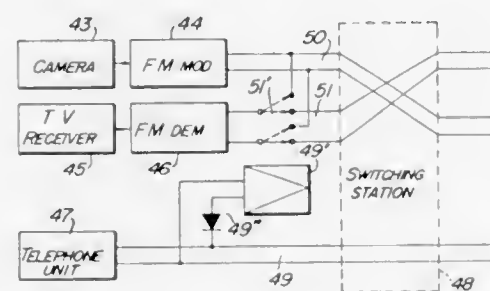
Filed Oct. 21, 1968, Ser. No. 769,051

Claims priority, application Japan, Oct. 24, 1967, 42/69116; Dec. 28, 1967, 42/79; Dec. 28, 1967, 42/81; Jan. 26, 1968, 43/4728; May 30, 1968, 43/37420; Aug. 8, 1968, 43/56894

Int. Cl. H04m 11/08

U.S. Cl. 179—2 TV

3 Claims



A television telephone system, wherein frequency-modulation with a low modulation index is effected by using a carrier wave of a slightly higher frequency than the maximum frequency of a video signal, and the video signal thus modulated is transmitted through a transmission line. With such system, a wide band video signal and audio signal can be transmitted without cross talk and distortion by using an ordinary telephone cable which is intended to be used only for the transmission of voice frequency signals, and communication can be achieved, with the image of the opposite party or drawing, document or the like being viewed.

3,723,654

# GROUP SWITCHING ARRANGEMENT FOR KEY TELEPHONE SYSTEMS

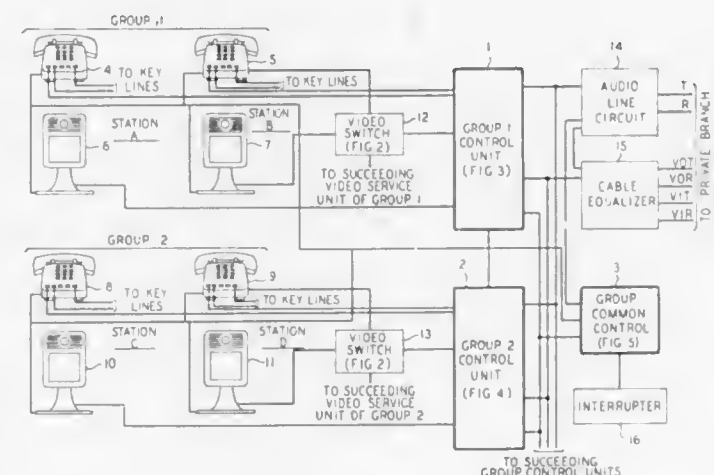
Michael Kelly Bunce, Denver; Stanley Edward Bush, Boulder; George Arthur Fargo, Jr., Denver, and George Edwin Sallus, Boulder, all of Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 22, 1970, Ser. No. 100,582

Int. Cl. H04m 11/00

U.S. Cl. 179—2 TV

12 Claims



Equipment is disclosed for selectively establishing exclusive group connections between a number of key stations and a common wideband-audio communication facility in response to a key depression at one of the stations. The equipment can also automatically route incoming calls on the facility to a prescribed group of key stations. In addition, apparatus controllable by stations within each key group is disclosed for transferring calls to stations in other groups.

3,723,655

# CREDIT AUTHORIZATION SYSTEM TERMINAL

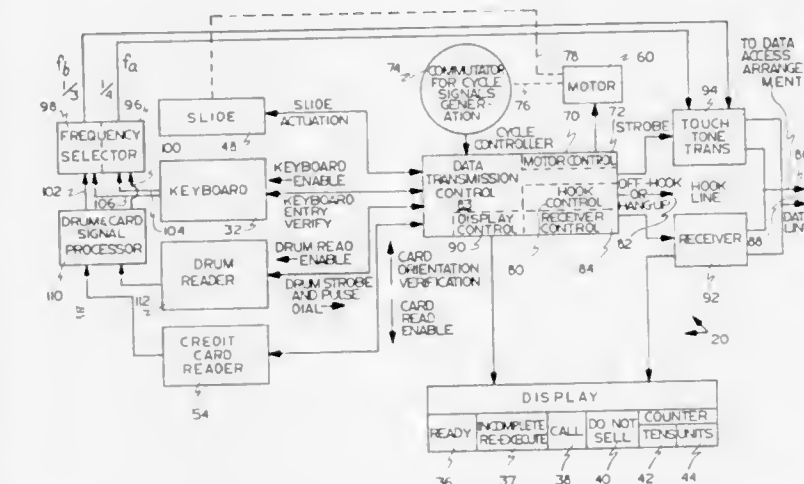
Fredric E. Zucker; James P. Murphy; Lawrence J. Smith, and Joseph Kaswer, Jr., all of Stamford, Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Feb. 16, 1971, Ser. No. 115,655

Int. Cl. H04m 11/06

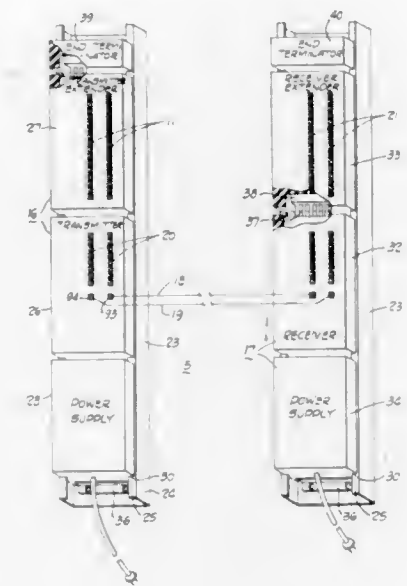
U.S. Cl. 179—2 DP

7 Claims





foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation



or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

3,723,659

## GROUP HUNTING CIRCUIT

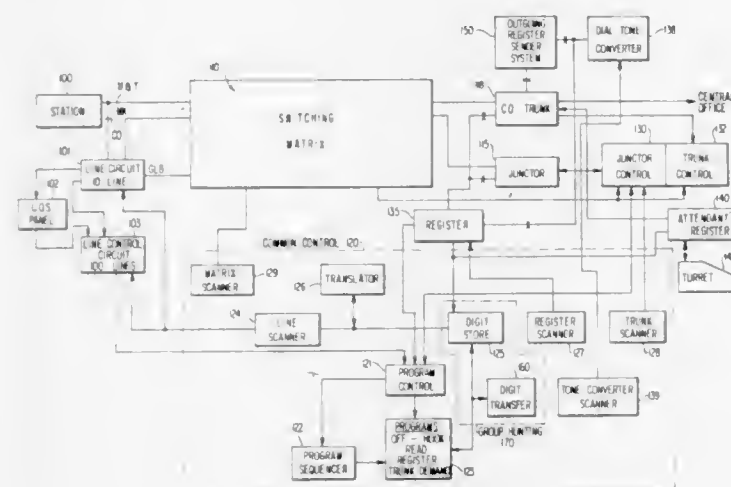
Ignas Budrys, and Ernest O. Lee, Jr., both of Fairport, N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Oct. 26, 1970, Ser. No. 83,938

Int. Cl. H04q 3/62

U.S. Cl. 179-18 HA

37 Claims



A group hunting circuit for a telephone system employs both consecutive and non-consecutive number hunting. During the consecutive hunting, when a pilot number of a hunting group is dialed and is found busy, the equipment automatically hunts in numerical sequence through the other lines of the group until an idle line is detected. The non-consecutive hunting arrangement permits a departure from one sequence of lines and continues sequential hunting beginning with another line. Skips may be strapped to specific numbers, whereby the equipment skips to a designated number and continues the sequential hunt. In this manner, the total number of lines consecutively tested may be maximized by inserting a skip at the last number of one sequence of lines and at the first number of another sequence of lines, so that the equipment hunts through the first sequence, skips to the first number in another sequence, and consecutively hunts through it.

3,723,660

## SWITCHING CIRCUIT ARRANGEMENT FOR CROSS-WIRE CONTROL APPARATUS FOR COMMUNICATION SYSTEM

Peter Gerke, Grafelfing; Helmuth-Joachim Bock, Munich, and Anton Sennfelder, Gilching, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

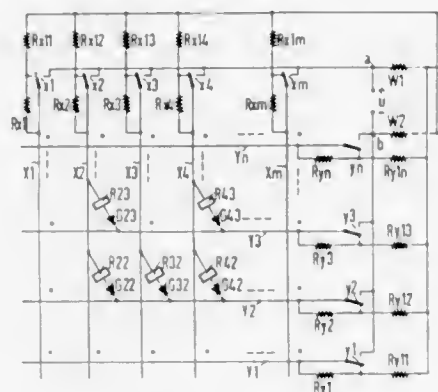
Filed Dec. 21, 1970, Ser. No. 99,838

Claims priority, application Germany, Dec. 19, 1969, P 19 63 755.3

Int. Cl. H04m 3/00

U.S. Cl. 179-18 GF

7 Claims



Control and auxiliary voltage sources are selectively connected to matrix row and column control inputs establishing a potential difference therebetween and across a selected receiving switching relay and its associated diode. The potential difference is fixed so that in the case of a diode breakdown, relays connected to that selected row and column are not affected. The biasing resistances assigned to each row and column are assigned values relative to the established potential difference resulting in minimum power dissipation. Make and break contacts serve to provide the necessary connections, and auxiliary biasing resistances associated therewith provide uninterrupted function of the device.

3,723,661

## MULTIFUNCTIONAL SCANNER-COUNTER CIRCUIT

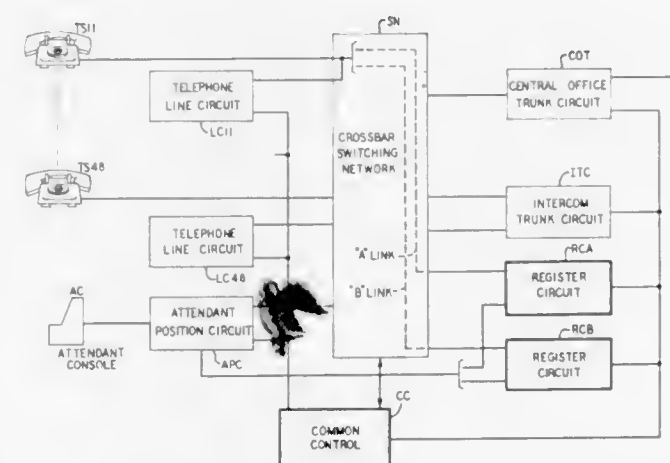
Raymond Whyte Dellecker, Denver; William Wallace Greason, III, Longmont, both of Colo.; Paul Ross Hayden, Marina Del Ray, Calif., and David William Welner, Boulder, Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed April 26, 1971, Ser. No. 137,150

Int. Cl. H04q 3/42

U.S. Cl. 179-18 FG

6 Claims



This specification discloses a telephone system suitable for use as a private branch exchange and includes a switching network for establishing call connections between station line circuits, trunks and registers under electronic common control. Each register comprises control circuitry for switching a multifunctional counter circuit into a plurality of configurations

on a single call for initially scanning stations to detect call service requests, then counting dialed pulses transmitted from a calling station, and subsequently scanning stations on a call-back operation to identify the calling station.

3,723,662

## D.C. COMPENSATED SUBSCRIBER INTERFACE TRANSFORMER CIRCUIT FOR TELEPHONE SYSTEM

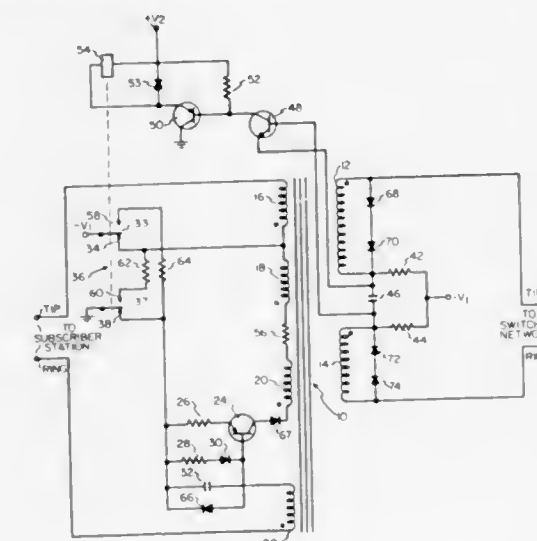
Max S. Macrander, Warrenville, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Dec. 9, 1971, Ser. No. 206,273

Int. Cl. H04m 3/04

U.S. Cl. 179-18 HB

10 Claims



A miniature subscriber interface transformer circuit having a d.c. compensation circuit incorporated on one or both sides is provided with means for applying a high voltage, low frequency ringing signal to the subscriber line.

3,723,663

## BATTERY FEED AND RING TRIP RELAY CIRCUIT

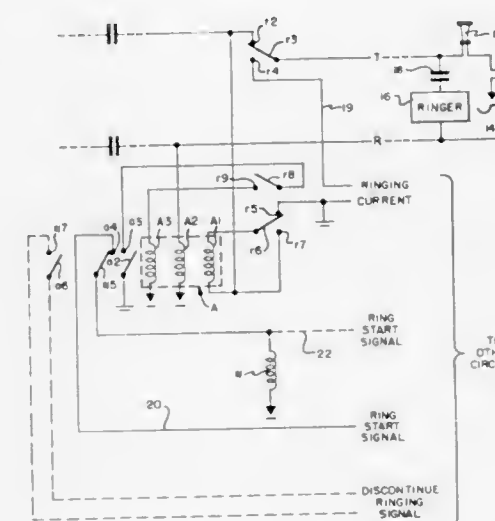
Joel J. Ewen, 35-51 87th Street, New York, N.Y.

Filed Sept. 24, 1971, Ser. No. 183,533

Int. Cl. H04m 1/00

U.S. Cl. 179-84 R

3 Claims



A battery feed and ring trip relay circuit for a telephone system is disclosed in which "tripping" of the ringing signal is accomplished using only the battery feed and relay. The battery feed relay includes a holding coil, normally open relay contacts in the energizing circuit for the holding coil, and contacts for de-energizing the ringing relay. The ringing relay includes normally open contacts in the energizing circuit for the holding coil of the battery feed relay. These ringing relay contacts open when the ringing relay is de-energized by the battery feed relay after the battery feed relay contacts in the energizing circuit for the holding coil are closed.

3,723,664  
AUTOMATIC CARD READING PUSH BUTTON TELEPHONE SYSTEM UTILIZING FLUID PRESSURE TECHNIQUES

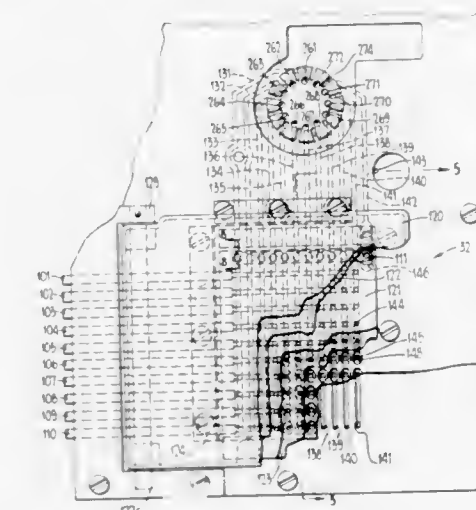
Ingemar H. Lundquist, 11300 Sun Valley Dr., Oakland, Calif.

Filed July 2, 1971, Ser. No. 159,359

Int. Cl. H04m 1/48

U.S. Cl. 179-90 CS

12 Claims



An ordinary pushbutton type automatic telephone is coupled with an apparatus for automatically and rapidly operating the keys in the desired sequence to fully operate the telephone to complete any desired number, local or long distance. The operating apparatus is controlled by a removable, prepunched paper or card upon which other information may be written; and operation is effected by means of fluidics, preferably under slight pressure.

3,723,665

## INTEGRATED MAGNETIC HEAD HAVING ALTERNATE CONDUCTING AND INSULATING LAYERS WITHIN AN OPEN LOOP OF TWO MAGNETIC FILMS

Jean-Pierre Lazzari, Seyssinet; Igar Melnick, Grenoble, and Jean-Yves Vallet, Seyssinet, all of France, assignors to Commissariat AL' Energie Atomique and Co-paigne Internationale Pour L' Informatique Louveciennes, France

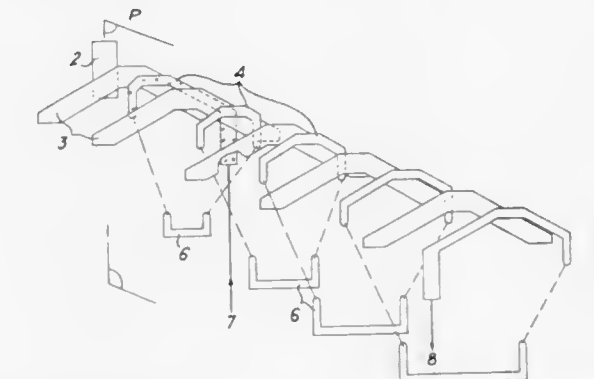
Filed Oct. 19, 1970, Ser. No. 81,881

Claims priority, application France, Oct. 28, 1969, 6936863

Int. Cl. G11b 5/20, 5/42

U.S. Cl. 179-100.2 C

7 Claims



The open-loop magnetic circuit of an integrated magnetic head for reading and/or writing is made up of two magnetic films which are joined together at one end, the other end being placed in proximity to the writing and/or reading surface and substantially at right angles thereto. In order to form the electric winding for writing and/or reading, the magnetic head comprises within said loop and in an alternate arrangement a succession of electrically conducting and electrically insulating film layers which are at least partially superposed in a direction substantially at right angles to the plane of the two magnetic films.



3,723,666

**METHOD FOR DISTINGUISHING PAUSES IN RECORDED FEATURES DURING REPLAY THEREOF**

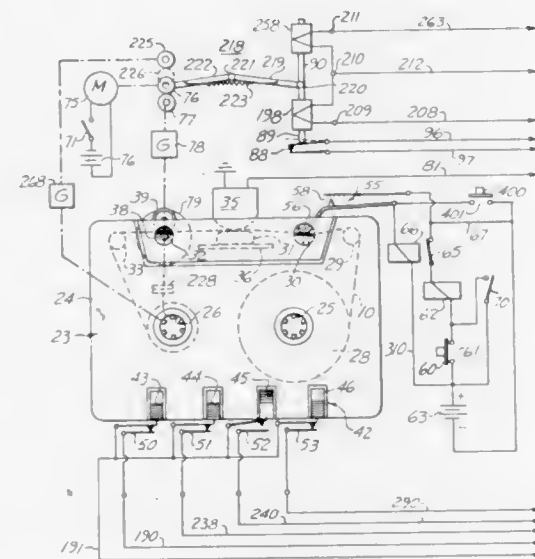
Leonard A. Ferrari, San Dimas, Calif., assignor to Bell &amp; Howell Company, Chicago, Ill.

Filed March 23, 1971, Ser. No. 127,263

Int. Cl. G11b 15/06

U.S. Cl. 179—100.2 S

12 Claims



Recorded features having pauses between features and pauses during features are selectively replayed from a recording medium. The recording medium is selectively advanced at a first speed and pauses between features as well as pauses during features are picked up. Alternatively, the recording medium is advanced at a second speed and pauses between features as well as pauses during features are picked up. The pauses between features picked up during advancement of the recording medium at the first speed or at the second speed are distinguished from pauses during features picked up during advancement of the recording medium at the first speed or at the second speed, and a predetermined signal is provided only in response to each pause between features picked up during advancement of the recording medium at the first speed or at the second speed. The selective replay of recorded features is controlled with the aid of that predetermined signal.

3,723,667

**APPARATUS FOR SPEECH COMPRESSION**

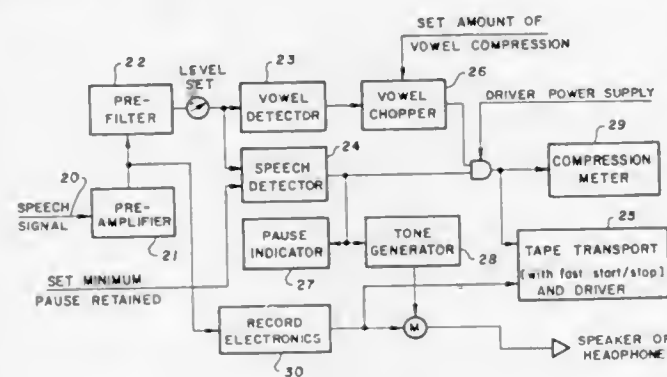
John H. Park, Jr., St. Paul, and William C. Mortimore, Minneapolis, both of Minn., assignors to PKM Corporation, St. Paul, Minn.

Filed Jan. 3, 1972, Ser. No. 214,615

Int. Cl. G11b 19/20; H04b 1/66

U.S. Cl. 179—100.1 VC

11 Claims



REALIZATION OF SPEECH COMPRESSOR

Means for recording and selectively deleting portions of normal speech sound which includes a recorder for receiving and recording speech signals from an input, with a drive means being provided for the recorder, and with a power supply being provided for the drive means. A speech detector is coupled to the power supply for the drive means and is arranged to energize the drive means only in response to the presence of a speech signal in the input. A vowel detector is provided and is coupled to the drive means power supply for detecting the initiation and continuing presence of vowel sounds in speech signals. The vowel detector is adapted to regularly and periodically interrupt the drive means power supply for certain predetermined time intervals in response to the initiation and continued presence of vowel sounds in the input.

range to energize the drive means only in response to the presence of a speech signal in the input. A vowel detector is provided and is coupled to the drive means power supply for detecting the initiation and continuing presence of vowel sounds in speech signals. The vowel detector is adapted to regularly and periodically interrupt the drive means power supply for certain predetermined time intervals in response to the initiation and continued presence of vowel sounds in the input.

3,723,668

**METHOD OF ERASING SIGNALS FROM MAGNETIC DISCS USING DC PULSES WHICH PERSIST FOR ONE DISC REVOLUTION**

Thomas W. Ritchey, Jr., Palo Alto, Calif., assignor to Ampex Corporation, Redwood City, Calif.

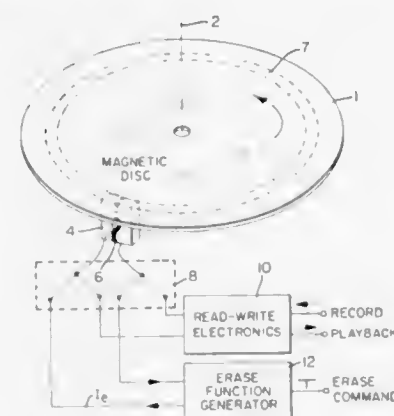
Continuation of Ser. No. 722,318, April 18, 1968, abandoned.

This application March 27, 1970, Ser. No. 23,322

Int. Cl. G11b 5/02, 25/04

U.S. Cl. 179—100.2 D

11 Claims



A method for selectively erasing single tracks of recorded signals from a magnetic disc and reconditioning the medium for re-recording. Erasure is effected by energizing a head with successive pulses of direct current alternating in the direction of current flow at decreasing levels of absolute magnitude, each pulse persisting for the duration of one disc revolution. The method further lends itself to track erasure using a read/write head.

3,723,669

**HAND HELD MAGNETIC READER**

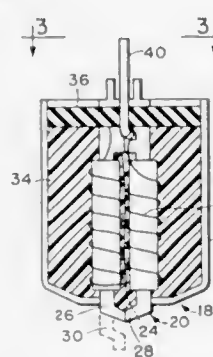
Norman J. Bose, North Hollywood, and Alexander S. Brown, Covina, both of Calif., assignors to The Singer Company

Filed Dec. 16, 1971, Ser. No. 208,812

Int. Cl. G11b 5/22

U.S. Cl. 179—100.2 C

5 Claims



A compact magnetic tape reader for binary coded magnetic tapes or merchandise labels. The reader includes an electrostatically and magnetically shielded transducer wound with a symmetrical center tapped coils coupled directly to an integrated circuit buffer amplifier having a low impedance output for reducing the transmission of noise through the cable that couples the reader to the circuitry in stationary computing equipment.

3,723,670

**HEAD CONTACT MICROPHONE SYSTEM**

George J. Sebesta, Huntington Bay, and Arthur J. Mellen, Jr., Huntington, both of N.Y., assignors to Dyna Magnetic Devices, Inc., Hicksville, N.Y.

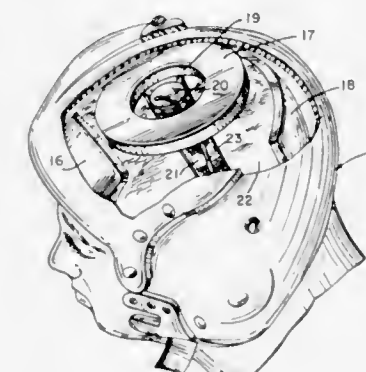
Continuation of Ser. No. 678,974, Oct. 30, 1967, abandoned.

This application Oct. 20, 1970, Ser. No. 82,520

Int. Cl. H04m 1/05

U.S. Cl. 179—156

20 Claims



An inertial microphone is suspended within a helmet, for contact with the head. It is surrounded and shielded from external air turbulence. The microphone is uniquely mounted to inhibit the physical transmission of ambient noise and vibration to it through its mounting. One's face and hands remain unencumbered. Voice vibrations pass through the skull and head tissue, on to the microphone. Satisfactory speech communication is obtained even while in 100 knot winds and/or in noise levels up to 120 decibels. Useful in military, helicopter, fire and police operations.

3,723,671

**TELEPHONE LOCK**

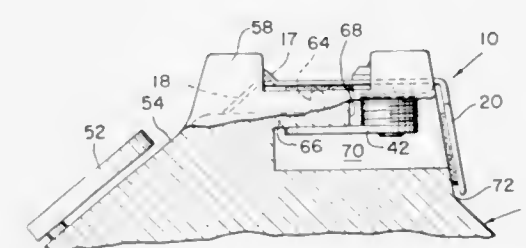
Gilbert Edelcreek, 98 Fieldstone Dr., Springfield, N.J.

Filed March 23, 1972, Ser. No. 237,270

Int. Cl. H04m 1/66

U.S. Cl. 179—189 R

11 Claims



A telephone lock for a French-style telephone, made of a single piece of flat metal stock having a main portion overlying the shelf of the telephone base which is between the lugs which cradle the handset, the main portion having ears extending between the lugs to hold down the telephone switch buttons, the main portion extending rearwardly of the shelf and having a cylinder lock mounted in it rearwardly of the shelf, the cylinder lock having a locking tongue which is in a plane closely beneath the shelf in its locking position. A front tab portion extends downwardly from the front of the main portion, close to or engaging the telephone base, and a rear tab portion extends downwardly from the main portion, substantially covering the recess below the shelf, and having laterally extending ears which engage the telephone base rear face. All of the ears are provided on their bottom surfaces with resilient pads.

3,723,672

**ELECTRICAL DISTRIBUTION AND CURRENT COLLECTING SYSTEM FOR A HIGH SPEED VEHICLE**

Jean-Pol Payen, Grenoble, France, assignor to Merlin Gerin, Societe Anonyme, Grenoble, France

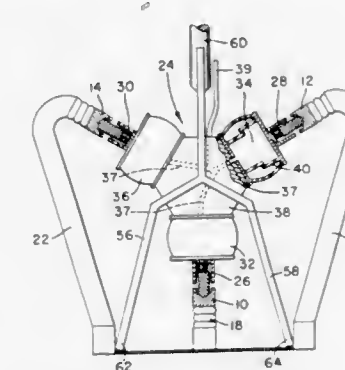
Filed Oct. 6, 1970, Ser. No. 78,414

Claims priority, application France, Sept. 18, 1970, 7034718; Sept. 18, 1970, 7034719; Sept. 18, 1970, 7034717

Int. Cl. B601 5/00

U.S. Cl. 191—50

22 Claims



Current collecting system for a high speed vehicle movable along a track. A multi-phase conductor system extends along the track and defines a passageway for a movable collector head. The collector head comprises retractable contact shoe means capable of resilient engagement with the conductors. Linkage means connecting the collector head to the vehicle permit to withdraw the collector head from the passageway and to stock it in a housing in a non-operative position. Movable contact means connect the collector head electrically to the vehicle and allow relative movement of the collector head with respect to the vehicle.

3,723,673

**KEYBOARD SWITCH ASSEMBLY WITH WIRE CONDUCTOR MATRIX CONTACT ARRAY**

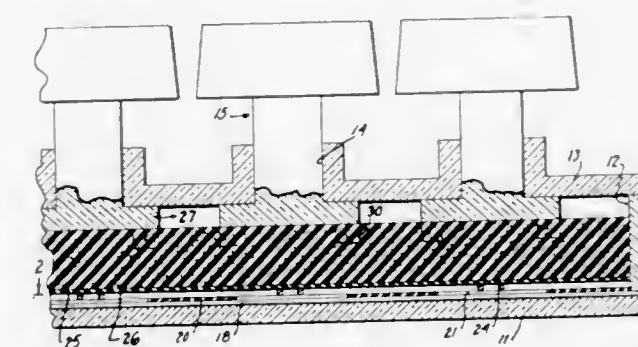
John G. Clary, Pasadena, and Larry K. Wirtz, La Habra, both of Calif., assignors to Addmaster Corporation, San Gabriel, Calif.

Filed Oct. 13, 1971, Ser. No. 188,956

Int. Cl. H01h 13/52

U.S. Cl. 200—1 R

3 Claims



A keyboard switch device comprising rows and columns of intersecting wires conductors held taut and normally spaced slightly from each other by a separator sheet of non-conducting material having openings therein aligned with the intersections of at least certain of the conductors. The conductors are engaged by depressing different keys aligned with the conductor intersections and a relatively thick layer of soft elastomeric material is interposed between the keys and conductors to normally hold the keys in raised position and to transmit pressure from the keys to engage the conductors. By merely changing the sizes, shapes and positions of the openings, the switching device can be made to produce different output coded signals. Also, by changing the configuration of the various rows and columns of conductors different switch matrix patterns can be produced.



3,723,674

# THUMBWHEEL SWITCH WITH IMPROVED THUMBWHEEL CAMMING STRUCTURE FOR RESILIENT CONTACTS

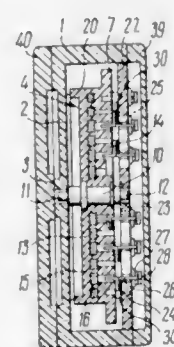
Emmanuil Lipovich Khitro, Nikitinskaya ulitsa, 1911, kv. 62,  
and Nikolai Nikolaevich Zhekhov, ulitsa Demyana Bednogo,  
20, korpus 2, kv. 48, both of Moscow, U.S.S.R.

Filed Jan. 28, 1972, Ser. No. 221,741

Int. Cl. H01h 19/58, 21/78

U.S. Cl. 200—11 TW

1 Claim



The essence of the invention consists in a switch which comprises a digit wheel and spring contacts, arranged in a housing together with a means for presetting a program of direct and inverse commutation of circuits by said spring contacts. Said means is made in the form of rings of dielectric material disposed concentrically on a contact member secured on said wheel. The rings have shaped projections. The spring contacts are made in the form of U-shaped contacts and a comb-shaped contact having blades the number of which is equal to the number of the U-shaped contacts. The comb-shaped contact and the U-shaped contacts are placed on a plate mounted in the housing.

3,723,675

# STOPWATCH-TIMER ASSEMBLY WITH IMPROVED STOPWATCH CONTACT MECHANISM

Charles F. Richey, Springfield, Oreg., assignor to Data Time, Inc., Beaverton, Oreg.

Filed June 23, 1971, Ser. No. 156,005

Int. Cl. H01h 19/10; G04f 9/06

U.S. Cl. 200—38 R

7 Claims



A combination of a hand-held timer, including an actuator for initiating operation of the timer, and a switch which is closed on operation of the actuator. The switch is connected by means of a metallic pawl through a flexible conductor, to a remote electrically operated device and acts to control operation of the remote device upon operation of the timer. In a modified form of the invention, an annular insulative element with a conductive layer electrically connected to the timing device is rigidly fixed to the exterior of the stopwatch casing. Upon depression of a metallic plunger, an electrical circuit is completed and consequently a time interval is measured.

3,723,676

# LATCH-TRIP CAM OPERATED PERCENTAGE TIMER

John L. Harris, Delafield, Wis., assignor to Deltrol Corp., Bellwood, Ill.

Filed Oct. 12, 1971, Ser. No. 188,347

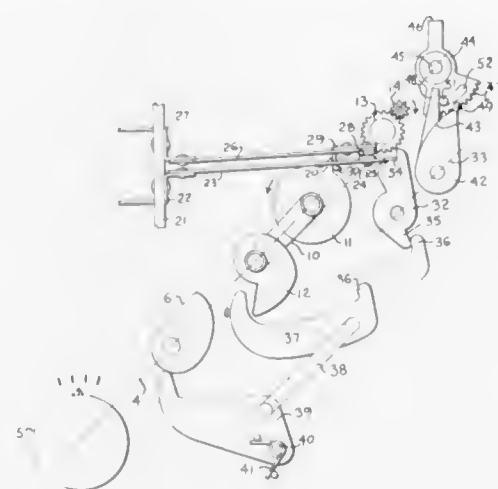
Int. Cl. H01h 43/10, 7/08

U.S. Cl. 200—39 R

10 Claims

A percentage timer includes two cam operated switch blades which are periodically raised and dropped. A latch en-

gages one of the switch blades after it has dropped, causing contact closure until the latch is released by a follower riding a cam rotating with the switch cam. Adjustment of the release point to determine the percentage of on time is achieved by



3,723,677

# IGNITION KEY ALARM

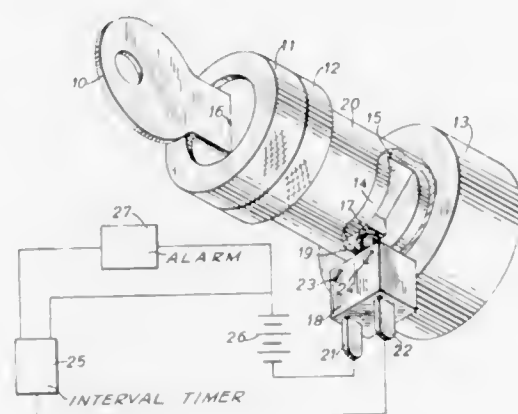
Alan Arias, 3827 Dover Center Rd., North Olmstead, Ohio

Filed Jan. 5, 1970, Ser. No. 759

Int. Cl. H01h 27/00

U.S. Cl. 200—44

5 Claims



An auxiliary, momentary contact, electrical switch with normally open contacts is combined with a rotary ignition or motor starting switch of the type conventionally used in automobiles and other vehicles. The contacts of the auxiliary switch are closed by the ignition key either by inserting this key in the ignition switch or by turning the ignition switch from one of its on positions to its off position. The auxiliary switch forms part of an electrical circuit comprising an electrical storage battery, an interval timer, and a buzzer. The combination of the above elements works so that if the ignition key is left for more than a few seconds in the ignition switch while this ignition switch is in its off position the buzzer is turned on by the interval timer. This alarm reminds the operator of the vehicle to remove the key from the ignition switch. If the buzzer sounds and the key is not removed from the ignition switch within a predetermined time interval the interval timer shuts the buzzer off.

3,723,678

# IGNITION SWITCHES

Alec John Heap, 18 Brunshaw Avenue, Burnley, England

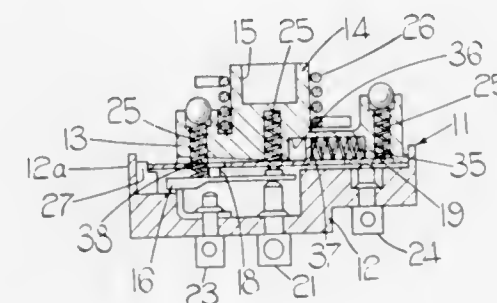
Filed Nov. 18, 1971, Ser. No. 199,874

Claims priority, application Great Britain, Nov. 21, 1970, 55,499/70

Int. Cl. H01h 27/06

U.S. Cl. 200—42 A

4 Claims



An ignition switch comprises a casing and a rotor mounted in the casing for rotation within the casing from a stable first position to a stable second position and from the stable second position to an unstable third position, from which the rotor is resiliently urged back to said second position. First and second fixed contacts are supported in the casing and a first bridging member is rotatable with the rotor and operable to complete an electrical circuit between the first and second fixed contacts in the third position of the rotor. An arcuate cam track is provided on the inner surface of the casing and said first bridging member is resiliently urged into engagement with the cam track. The arrangement of the cam track is such that during movement of the rotor from the second position to the third position unless the preceding movement of the rotor was from the first position to the second position, the first bridging member is moved by the cam track in a direction such that in the third position the circuit between the first and second fixed contacts is not completed.

3,723,679

# SWITCHING APPARATUS

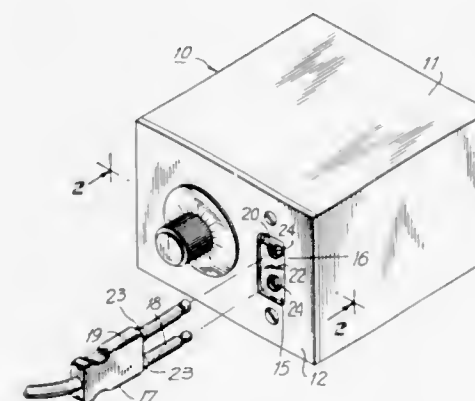
William V. Carney, Valley Stream, N.Y., assignor to Porta Systems Corp., Roslyn, N.Y.

Filed Feb. 28, 1972, Ser. No. 229,821

Int. Cl. H01h 9/20, 33/46

U.S. Cl. 200—50 B

17 Claims



A rotary switch arrangement for selectively connecting a desired one of a number of input terminals to a dual phone jack. A mechanical linkage arrangement is provided to prevent rotation of the switch when a dual phone plug is inserted into the jack. This arrangement eliminates line transients caused by rotation of the switch while currents are flowing through the phone jack.

3,723,680

# ACCELERATION RESPONSIVE SWITCHING DEVICE

Masaru Suzuki, Chiryu; Masayoshi Iwata, Hajima, and Takeo Matsui, Gifu, all of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishi-Kasugai-gun, Aichi-Pref., Japan

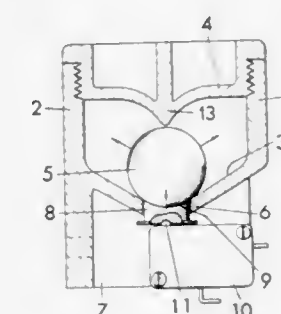
Filed Aug. 18, 1971, Ser. No. 173,711

Claims priority, application Japan, Aug. 21, 1970, 45/83711; Feb. 20, 1971, 46/9779

Int. Cl. H01h 35/14

U.S. Cl. 200—61.45 R

5 Claims



An acceleration responsive switching device which comprises a casing having, at its bottom portion, a reverse cone-shaped inner wall, a weight ball movably put in the casing and normally positioned on said reverse cone-shaped inner wall at its central portion, a switch means provided in the casing at the center of the bottom portion and being normally in contact with said weight ball and adapted to be disengaged from the contact with said ball when the ball is upwardly moved along an inclined face of said reverse cone-shaped inner wall due to an acceleration given. The present switching device is exactly and instantaneously responsive to an excessive acceleration, thereby enabling the traffic accident to be effectively avoided. The device is simple in construction and easy to manufacture at a reasonable cost.

3,723,681

# COMBINATION IMPACT DETECTOR AND SWITCH DEVICE

Takashi Haruna, Yokosuka, and Akira Shimano, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

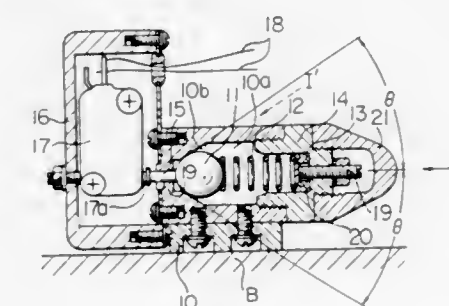
Filed March 19, 1971, Ser. No. 125,951

Claims priority, application Japan, June 25, 1970, 45/63361

Int. Cl. H01h 35/14

U.S. Cl. 200—61.53

3 Claims

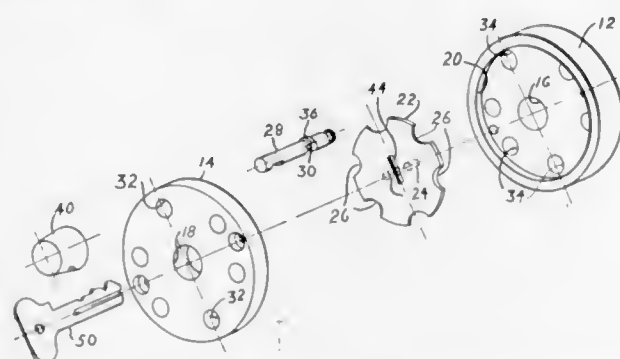


Herein disclosed in a combination impact detector and switch device which is responsive to an impact exerted thereon in a direction falling within a predetermined angular range and which includes a normally open switch and a spring-loaded spherical weight normally pressed upon a tapered inner peripheral wall to keep the switch open and caused to leave the peripheral wall to close the switch when an impact greater than a predetermined magnitude is transferred thereto in a direction contained in the angular range limited by the tapered inner peripheral wall. The device may be utilized in various vehicular safety apparatus for protecting a vehicle occupant from injury by a collision, wherein the switch may be



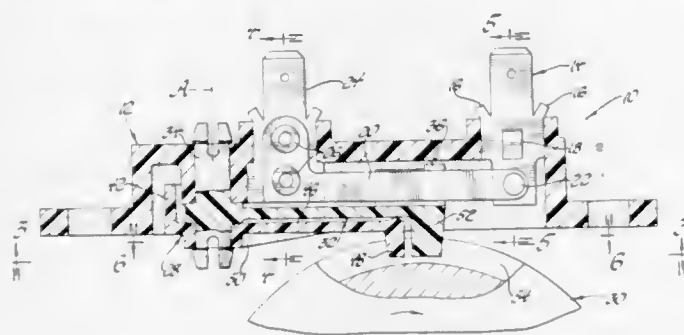
connected to an actuator of the safety device to cause the safety device to assume a protective position when an impact is encountered by the motor vehicle.

**3,723,682**  
**COMBINATION CONTROLLED ACTUATING DEVICE**  
 Clyde E. Pecott, Wethersfield, Conn., assignor to Safe Key Lock Company, Rocky Hill, Conn.  
 Filed March 23, 1971, Ser. No. 127,143  
 Int. Cl. E05b 45/08  
 U.S. Cl. 200—61.64 1 Claim



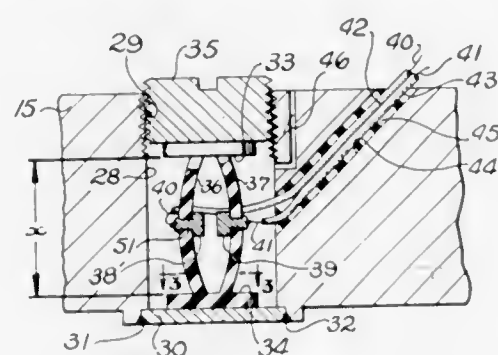
A combination control device for rotative members such as ignition locks, home locks and the like wherein rotation of the actuating member (key) is prohibited until the various elements of the control device are in preselected positions. Unauthorized manipulation of the device will result in the sounding of an alarm if the device is wired to do so.

**3,723,683**  
**SNAP ACTION SWITCH ASSEMBLY**  
 Thomas M. Tucker, Royal Oak, and Edwin F. Clemett, Jr., Detroit, both of Mich., assignors to McCord Corporation, Detroit, Mich.  
 Filed July 1, 1971, Ser. No. 158,917  
 Int. Cl. H01h 15/18  
 U.S. Cl. 200—148 15 Claims



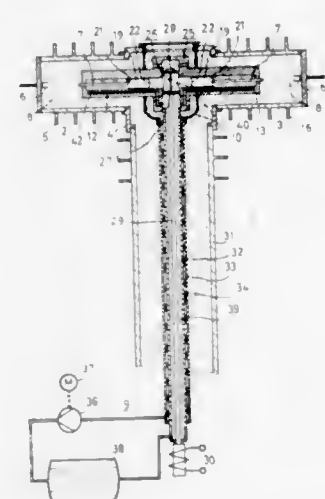
A snap action electrical switch assembly including a support housing. The support housing includes a movable contact means comprising a metal cantilevered resilient lever with a contact element disposed on the distal end thereof and movable between two spaced fixed contacts. A control member is snapped into rotary engagement with the support housing and extends along and engages opposite sides of the resilient lever intermediate the ends thereof. A projection extends downwardly from the control member and engages a groove in a rotary cam. A biasing member is snapped onto and is rotatably supported on the control member and includes a forwardly extending portion having a projection engaging the groove in the rotary cam. The biasing member also includes parallel arms on each side of the control member for biasing the resilient lever in opposite directions so that as the cam rotates the biasing member moves between opposite positions biasing the resilient lever in one of two opposite directions before the cam allows the control member to rotate at which time the resilient lever will be allowed to move the contact element into or out of engagement with one or the other of the fixed contacts.

**3,723,684**  
**PRESSURE RESPONSIVE SWITCH WITH PARALLEL CONTACT BLADES BENT APART BY AXIAL FORCE APPLIED BY DIAPHRAGM**  
 Roger Greenwood, Valencia, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.  
 Filed April 9, 1971, Ser. No. 132,795  
 Int. Cl. H01h 35/34  
 U.S. Cl. 200—83 R 1 Claim



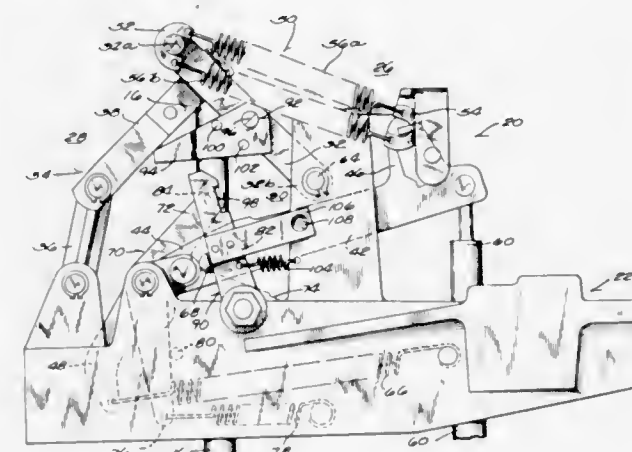
A pressure switch for use in, for example, an automobile air bag safety buffer system in the event of a collision. The switch contacts are carried by, for example, plastic leaf springs that are column loaded. A flexible spring diaphragm loads the springs when fluid pressure is applied to the diaphragm. The switch contacts may be snap fit onto the springs. A loading adjustment screw may be provided, if desired. The switch cavity may also be vented to the atmosphere, if desired, to ensure the correct pressure differential across the diaphragm.

**3,723,685**  
**HIGH VOLTAGE CIRCUIT BREAKER**  
 Gerhard Thürk, and Helmut Beier, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Munich, Erlangen, Germany  
 Filed Jan. 12, 1972, Ser. No. 217,193  
 Claims priority, application Germany, Dec. 11, 1970, P 20 63 093.7  
 Int. Cl. H01h 33/54  
 U.S. Cl. 200—148 E 2 Claims



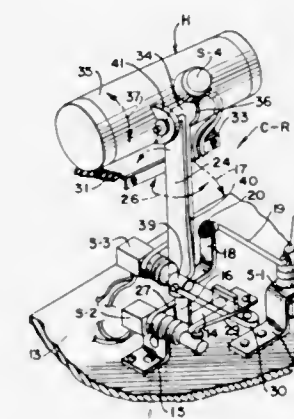
In high voltage circuit breakers with a hydraulic actuator, the lines of which consist of insulating material and lead through sulfur hexafluoride, the problem exists that the lines can be attacked by the decomposition products of the sulfur hexafluoride SF<sub>6</sub>. This has been prevented by surrounding a high pressure hydraulic line by a low pressure hydraulic line. The low pressure line consists of insulating material which is insensitive to decomposition products of the sulfur hexafluoride, while the high pressure line consists of glass fiber reinforced insulating material. The invention is particularly suitable for high power circuit breakers.

**3,723,686**  
**QUICK CLOSING MECHANISM FOR CIRCUIT INTERRUPTER**  
 Max Rigert, West Allis, Wis., assignor to McGraw-Edison Company, Elgin, Ill.  
 Filed June 28, 1971, Ser. No. 157,325  
 Int. Cl. H01h 3/30  
 U.S. Cl. 200—153 SC 8 Claims



A circuit interrupter having an operating mechanism including means for providing and controlling a quick closing operation is disclosed. The mechanism includes a pivotable lever connected to a contact operating rod which is biased toward closing by a first spring means and a second spring means. When the pivotable lever is in a contact open position and a closing operation is occurring, a latch means holds the pivotable lever in an open position until the first spring means reaches its optimum closing force position. At the same time, the latch means and the pivotable arm hold the second spring means in a static, charged condition. When the first spring means reaches its optimum closing force position, an arm moved by the first spring means releases the latch means so that the pivotable lever is free to be snapped to a closed position by the simultaneous force of both the first and second spring means to thereby rapidly close the contacts.

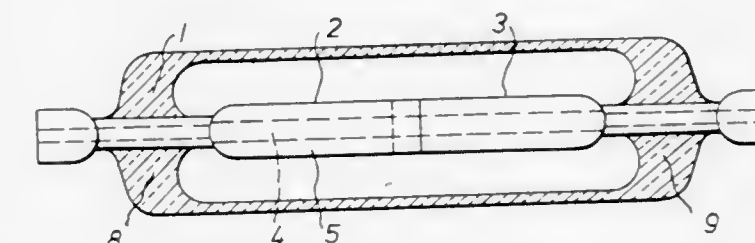
**3,723,687**  
**HANDGRIP MULTIPLE SWITCH ASSEMBLY INCLUDING ROTATABLE HANDLE AND UNIVERSAL JOY STICK TYPE CONTROL**  
 Fred H. Adkinson, P.O. Box 158, Minneola, Fla.  
 Filed Jan. 20, 1972, Ser. No. 219,387  
 Int. Cl. H01h 21/10  
 U.S. Cl. 200—157 10 Claims



A post swingable on a support is connected to a first switch on the support for actuating the same by swinging movement of the post. A sleeve rotatable on the post is connected to a second switch for actuating the same by rotation of the sleeve. The sleeve has a cross bar with a tubular hand grip rotatable thereon, and the hand grip is connected to a third switch for actuating the same by rotation of the hand grip. A fourth switch such as a push button switch may be provided on the

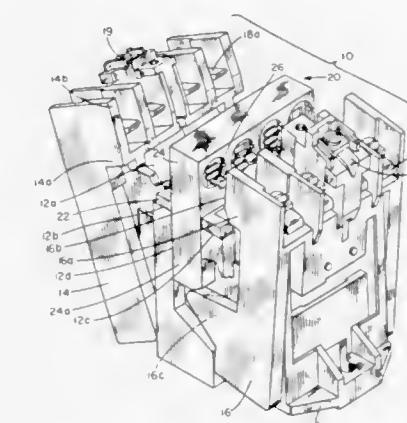
hand grip. The arrangement permits selective actuation of the several switches by one hand.

**3,723,688**  
**SWITCH SPRING FOR A RELAY**  
 Ingo Eichhorst, Ulm Wiblingen, Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Germany  
 Filed Aug. 13, 1971, Ser. No. 171,521  
 Claims priority, application Germany, Aug. 20, 1970, P 20 41 318.7  
 Int. Cl. H01h 1/02  
 U.S. Cl. 200—166 C 4 Claims



A relay switch spring composed of an elongated flat strip which has a core made of an electrically conductive material surrounded by a sheath of material of a lower conductivity than the core material. The strip has a free end to which a contact is connected so that the contact engages both the core and sheath material.

**3,723,689**  
**LOCATING ARRANGEMENT FOR THE MOVING CONTACT CARRIER OF A RELAY**  
 Lyle John Wenzel, Freeport, Ill., assignor to Honeywell Inc., Minneapolis, Minn.  
 Filed Aug. 30, 1971, Ser. No. 175,942  
 Int. Cl. H01h 1/20, 1/32  
 U.S. Cl. 200—166 BC 6 Claims



A relay of the type having split housings, which support fixed contacts, associated with and divergently movable with respect to a base and to each other so as to allow introduction and servicing of a reciprocally movable contact carrier including a locating arrangement which is operative with the housings in the divergent open condition to limit the position of the movable contact carrier with respect to the housings so that upon the convergent closed condition of the housings being attained the moving contacts of the movable contact carrier are properly oriented with respect to the fixed contacts of the housing.



3,723,690

## SPARK EROSION OF MATERIALS

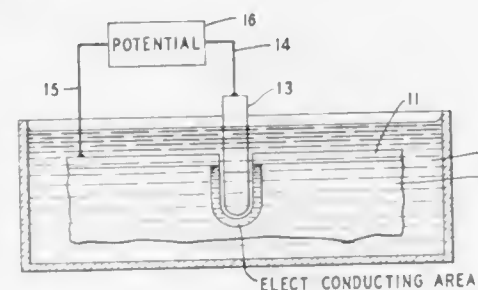
Yoshinao Nakada, Emmaus, Pa., and David Gilbert Thomas, Summit, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 9, 1971, Ser. No. 169,970

Int. Cl. B23p 1/08; H05b 7/18

U.S. Cl. 219-69 M

6 Claims



A method is described for the spark erosion of certain insulators and semiconductors such as  $Al_2O_3$  and SiC involving forming a metal layer on the surface of the material to be eroded, positioning a movable electrode above the surface, initiating electrical sparking across the gap between the electrode and the metal layer, and then advancing the electrode toward the surface so as to maintain sparking, resulting in spark erosion of the surface. The method enables the implantation of holes of a variety of shapes and sizes at erosion rates of about 3 to 10 micrometers per second.

3,723,691

## AN IGNITION DISTRIBUTOR BASE PLATE HAVING INTEGRAL RESILIENT SECURING MEANS

Alfred Rees, Perry Barr, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

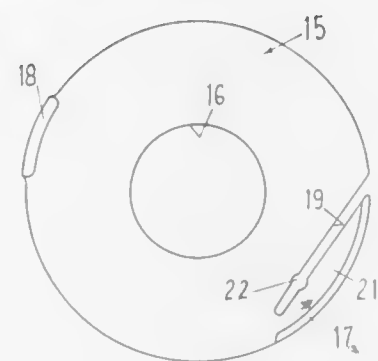
Filed July 22, 1971, Ser. No. 165,183

Claims priority, application Great Britain, July 28, 1970, 36,415/70

Int. Cl. H01h 9/02

U.S. Cl. 200-168 R

10 Claims



An ignition distributor including a hollow substantially cylindrical casing formed internally with a peripheral shoulder. A groove extends into the wall of the casing from the shoulder, and a contact breaker assembly base plate is seated on the shoulder. The base plate is formed with a slot which extends along a chord of the plate to define a resilient ear integral with the plate. A tapered screw, or other alternative expansion means is engaged in the slot, and urges the resilient ear in a direction away from the remainder of the base plate so as to urge the ear into the groove, and so clamp the base plate in position in the casing.

3,723,692

## DUST COVER FOR SWITCHES

Lester L. Wilbrecht, 45 Mid Oak Ln., St. Paul, Minn.

Filed June 7, 1972, Ser. No. 260,486

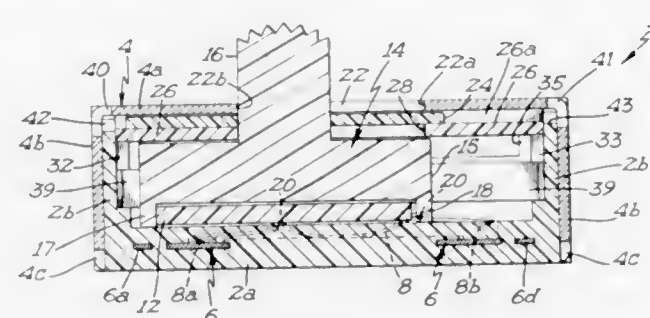
Int. Cl. H01h 9/04

U.S. Cl. 200-168 H

8 Claims

An electrical switch having contact elements housed within an enclosure and including a shiftable actuator for the con-

tacts extending outwardly from the enclosure through a slot in one wall thereof is protected against the entry of foreign particles by a double cover structure behind the slotted enclosure wall, including a slide cover on the actuator movable therewith and a stationary cover behind the slide cover with



which the slide cover is in sliding contact. The slide cover is large enough to cover the actuator slot in all positions of the actuator; and as the slide cover shifts with the actuator it serves to expell from the enclosure through a pair of openings in opposite ends thereof dust and foreign particles which collect on the stationary cover.

3,723,693

## FINTUBE WELDING APPARATUS

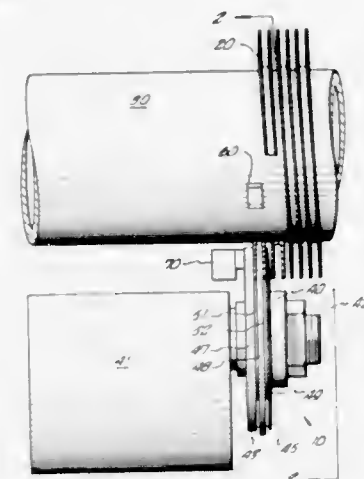
Robert Carl Boose; Henry Weaver, both of Pryor, and Harry Moore, Claremore, all of Okla., assignors to Escoa Fintube Corporation, Pryor, Okla.

Filed Sept. 13, 1971, Ser. No. 179,798

Int. Cl. B23k 11/08

U.S. Cl. 219-62

11 Claims



An apparatus for mounting and welding fin stock to a tube is disclosed. The apparatus comprises a weld wheel rotatably mounted adjacent to a length of tubing at the point where a length of fin stock is fed onto the peripheral surface of the tubing. The weld wheel comprises a plurality of discs having annular portions spaced therebetween, the space between the discs forming annular pockets for receiving one or more of the fin portions as they are being fed onto the tubing. The sides of the discs extend substantially to the base of the fin stock to engage and adequately support the sides of the fin portions during such feeding. A first electrode is provided to contact the tubing surface, and a second electrode is provided to contact a portion of the weld wheel. The tubing, fin stock, and weld wheel are in continuous metal-to-metal engagement to establish an electrical current path between the two electrodes. A high frequency current is applied through the current path to melt the root of the fin stock and the surface of the tubing immediately prior to their mutual engagement point. As the fin stock and the tubing are drawn together, the annular portions function to apply a forging force to the fin stock to create a fused bond between the fin stock root and the tubing. Because of the lateral support provided by the weld wheel pockets, the wiggling at the base of the fin stock is minimized, thereby creating a stronger weld connection with the tubing.

3,723,694

## MACHINE FOR CHECKING AND CORRECTING ELEMENTS OF HYBRID INTEGRATED CIRCUITS BY MEMORIZING DATA

Renato Conta, and Giuseppe Mariani, both of Ivrea, Italy, assignors to Ing. C. Olivetti & C., S.P.A. (Turin), Italy

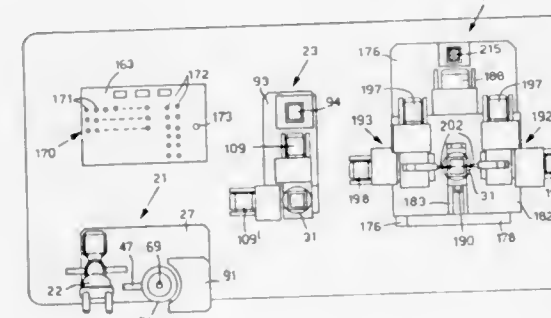
Filed March 22, 1971, Ser. No. 126,604

Claims priority, application Italy, March 20, 1970, 67941 A/70; April 30, 1970, 68495 A/70

Int. Cl. B23p 1/08, 1/12

U.S. Cl. 219-69 V

24 Claims



A machine for checking and trimming circuit elements, for example resistive elements of hybrid integrated circuits produced by depositing thin film on a plate, is formed of separate stations. In a first station a checking device measures sequentially all elements and records the measurement on a memory. The records are evaluated to establish whether the integrated circuit is to be trimmed or not. If it is to be trimmed, in a second station a trimming tool is automatically brought in correspondence with the specific element to be trimmed and operates alternately with a device for comparing the element with a specimen, until the element falls within a certain range of tolerance.

3,723,695

## EDM ELECTRODE

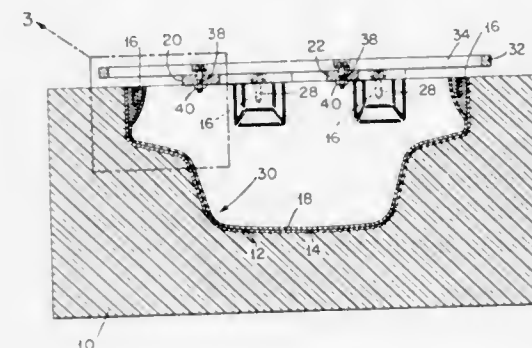
Ludwik Gutnajer, Carversville, Pa., assignor to The Budd Company, Philadelphia, Pa.

Filed Dec. 17, 1971, Ser. No. 209,059

Int. Cl. B23p 1/04, 1/08

U.S. Cl. 219-69 E

3 Claims



An all metal EDM electrode comprises a hollow shell with attachment means. The electrode is formed by depositing a layer of metal on a mandrel having a surface contoured to a desired configuration. A plurality of metal inserts are attached to the layer of metal. A second layer of metal is then deposited over the first coating and the metal inserts. The metal inserts serve as elements to permit the electrode to be mounted to a movable ram in an electric discharge machining unit.

3,723,696

## HINGED WELDING SHOE

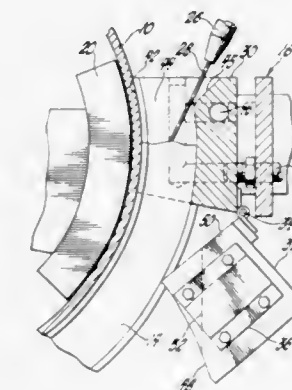
Donald F. McCall, Dorchester, Ontario, Canada, assignor to General Motors Corporation

Filed Feb. 14, 1972, Ser. No. 226,027

Int. Cl. B23k 9/18

U.S. Cl. 219-73

3 Claims



A welding shoe used in building a flange on a circular workpiece has a weld forming cavity shaped to the desired cross-section of the flange. A bottom closure member hinged to the shoe body retains the initial weld puddle until congealed and then pivots out of the way to permit relative movement of the shoe and the workpiece.

3,723,697

## INFRA-RED SOLDERING APPARATUS INCORPORATING PRESSURE APPLYING STRUCTURE-THERETO

Frank Kennedy King, Broadstone, England, assignor to Plessey Handel Und Investments A.G., Zug, Switzerland

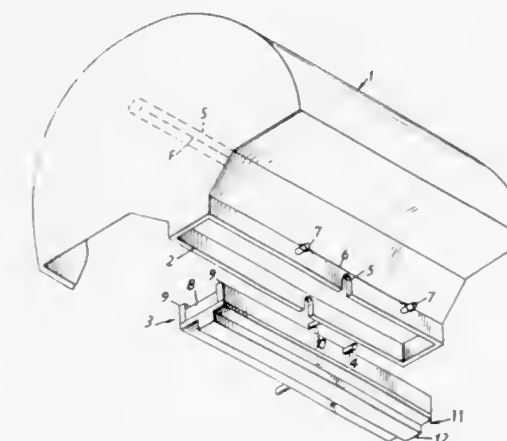
Filed Nov. 18, 1971, Ser. No. 199,877

Claims priority, application Great Britain, Dec. 22, 1970, 60,933/70

Int. Cl. B23k 1/02

U.S. Cl. 219-85

2 Claims



To ensure good pressure distribution to the individual conductor pairs to be soldered when effecting infrared-light soldering of a set of conductors on a flexible infrared-pervious substrate to a second set of conductors on a second substrate, a strip-type focussed infra-red source is equipped with a pressure pad which is pivotally supported by trunnions resting on pressure application spring bars, and which consist of a quartz bar fitted at its pressure-transmission face with a pressure-distribution pad made of SYLGARD 182 silicone resin, a material which has a high infra-red transmission combined with good resilience and temperature resistance.



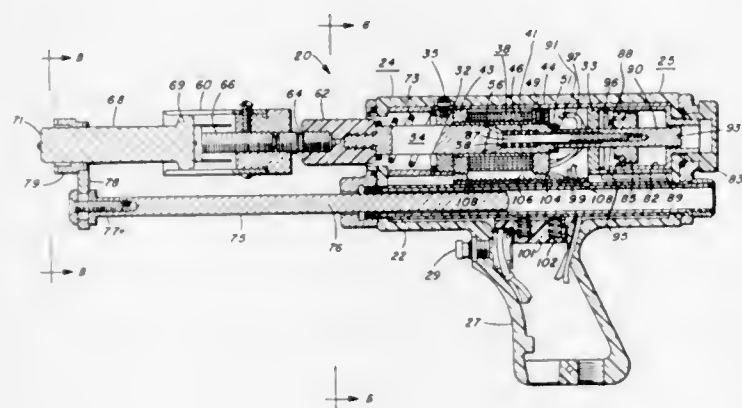
3,723,698

## STUD WELDING APPARATUS

Lewis J. Logan, Lakewood, and Dante J. Sandoval, Cleveland, both of Ohio, assignors to Tree-Fit Products Corporation  
Filed Dec. 29, 1971, Ser. No. 213,294  
Int. Cl. B23k 9/20

U.S. Cl. 219—98

11 Claims



The present invention relates to stud welding apparatus and involves such an apparatus with means which will accommodate inaccuracies in the manufactured length of studs which are to be welded to provide the accurate lift required to appropriately melt the end of the studs and the portion of the beam to which the studs are to be subsequently attached. The present apparatus also provides means whereby the plunge distance of the stud can be varied and adjusted as desired in the event, for example, the stud is to be joined to a beam where thin metal decking is provided over the beam. The apparatus includes a housing which has first and second end portions and a coil is carried in the housing and is movable axially relative to the housing between first and second positions. An armature is positioned within the coil and is movable with the coil between the aforementioned first and second positions and is also movable axially relative to the coil what is commonly referred to as a lift distance. A first spring acts between the coil and the armature and normally keeps these two mentioned parts axially spaced from each other the aforementioned lift distance. A stud chuck adapted to carry the stud to be welded, is connected to the armature and is movable therewith. Wall means are provided which act between the coil and the armature and prevent the two from becoming axially spaced from each other more than the aforementioned lift distance. A second spring is provided which acts upon the armature urging the same toward the first mentioned position. First electro magnetic means which include the coil are provided for fixedly securing the coil to the housing and prevent axial movement of the same relative to the housing after the coil has been moved from its first position to its second position. Second electro magnetic means are provided which also include the coil for attracting the armature and moving the same axially toward the coil the aforementioned lift distance. Means are also provided for energizing the coil to cause the aforementioned functions. The inertia of the first electro magnetic means is less than the inertia of the second electro magnetic means so that upon energization of the coil, the coil is first fixedly secured to the housing by means of the first electro magnetic means prior to the armature moving axially toward the coil the lift distance by the action of the second electro magnetic means. Movement of the armature toward the coil causes the stud to be lifted from the surface with which it is engaged and then of course during this operation the conventional arc is established between the tip of the stud and the member to which it is engaged and thereafter heavy welding current is passed between the tip of the stud and the beam which causes melting of the end of the stud and also melting of that portion of the beam which is adjacent the end of the stud and to which the stud is to be attached.

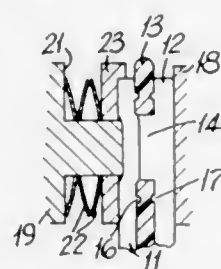
3,723,699

## INTERCELL CONNECTION MAKING IN ELECTRIC STORAGE BATTERIES

Brian Robert Allen, Birmingham, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England  
Continuation of Ser. No. 712,798, March 13, 1968, abandoned. This application April 30, 1970, Ser. No. 31,846  
Claims priority, application Great Britain, April 11, 1967, 16,544/67  
Int. Cl. H01r 43/00; H05k 43/00

U.S. Cl. 219—78

2 Claims



In forming an intercell connector in a storage battery, plate groups in adjacent cells are provided with upstanding lugs, one of which has integral therewith a bar extending into a hole in the partition wall. The connection is made by applying pressure to the lugs with electrodes and then passing a current, and the invention consists essentially in shaping the electrode acting on the lug which does not have a bar so that a coining operation is performed and the hole in the cell wall is sealed before electric current is passed.

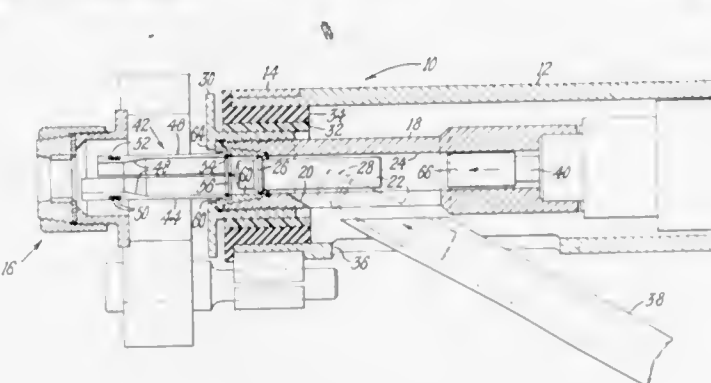
3,723,700

## WELDING GUN MEANS FOR FEEDING AND HOLDING HEAD-BEARING STUDS OR THE LIKE

Donald H. Ettinger, Royal Oak, Mich., assignor to Warren Fastener Corporation, Mount Clemens, Mich.  
Filed Feb. 28, 1972, Ser. No. 230,015  
Int. Cl. B23k 9/20

U.S. Cl. 219—98

7 Claims



A stud retaining collet enables a welding gun successively to receive and hold in welding position studs or the like having circumferentially enlarged head portions. The improved collet, especially useful in arc welding, has a base which, with an associated mechanism of the gun, effects non-spurring stud retention against forces feeding the studs and also is able to conduct the welding current to the stud.

3,723,701

## METHOD OF FLASH BUTT WELDING OF ARTICLES

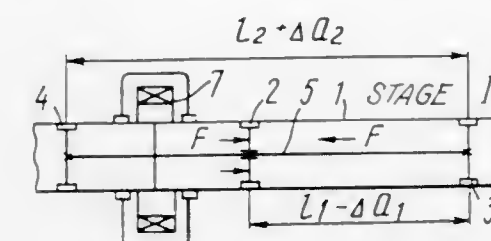
Viktor Senderovich Lifshits, Kavkazsky bulvar, 21, korpus 2, kv. 41, Moscow; Viktor Ivanovich Grigoriev, poselok Lvovskiy, Sadovy proezd. 4, kv. 47, Moskovskaya; Georgy Nikolaevich Petrov, Izmailovskiy bulvar. 34/32, kv. 8, Moscow, and Oleg Sergeevich Papkov, Samarkandsky bulvar, 24, korpus 3, kv. 3, Moscow, all of U.S.S.R.  
Filed March 23, 1971, Ser. No. 127,122  
Int. Cl. B23k 9/00

U.S. Cl. 219—100

1 Claim

A method of flash welding of two elongated parts secured in clamps which consists in essence in that elastic energy is

stored in one of the parts to be welded and in a welding machine element connecting two clamps in which said part is



secured, and the energy thus stored is employed to bring together the parts to be welded during the welding procedure.

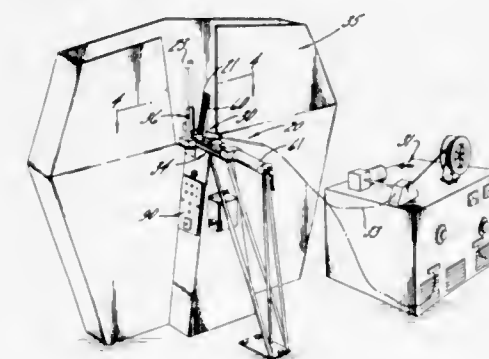
3,723,702

## AUTOMATIC ASSEMBLING AND WELDING MACHINE

Howard W. Clay, Rockford, Ill., assignor to Sterling Radiator Company, Inc., Rockford, Ill.  
Filed Feb. 24, 1972, Ser. No. 228,908  
Int. Cl. B23k 9/12

U.S. Cl. 219—124

7 Claims



The machine automatically inserts tubes one-by-one into holes spaced along a manifold pipe and, after insertion of each tube, welds the tube at right angles to the pipe.

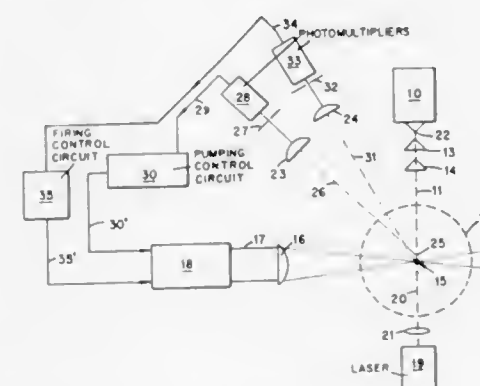
3,723,703

## LASER ENERGIZED PLASMA SOURCE

Kenneth W. Ehlers, Alamo, Calif.; Ian G. Brown, Munich, Germany, and Alan F. Lietzke, Oakland, Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission  
Filed Feb. 8, 1971, Ser. No. 113,522  
Int. Cl. B23k 27/00

U.S. Cl. 176—1

7 Claims



An apparatus for creating and heating a plasma within a magnetic field. A solid pellet of material from which the plasma is to be made, such as a frozen pellet of hydrogen, is dropped into a magnetic containment field. A high power laser directed through the field is activated to highly energize the hydrogen. The laser beam is concentrated at a focal point so that maximum energy is transferred to the pellet. The pellet

falls within a steady-state laser beam directed vertically through the focal point. The laser is pumped and fired when the pellet is in the focal point by signals from photomultipliers which detect the presence of a pellet just above the focal point.

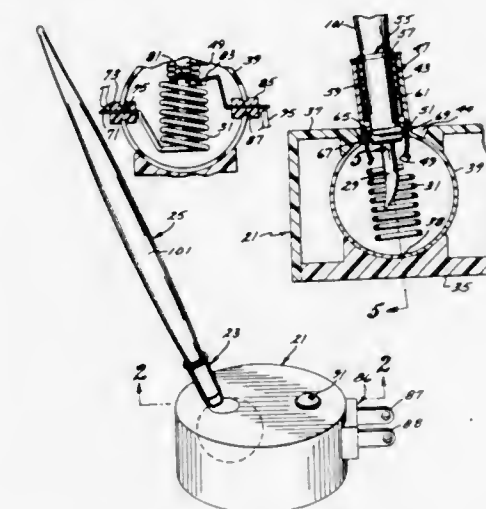
3,723,704

## CAUTERY APPARATUS

John D. Silverthorne, 3330 Marna, Long Beach, Calif.  
Filed Dec. 11, 1970, Ser. No. 97,161  
Int. Cl. A61b 17/38; H05b 1/02, 3/02

U.S. Cl. 219—242

7 Claims



Cautery apparatus including a base for mounting an elongated pen-shaped cautery tool formed on one end with a long, narrow tip constructed of metal having good heat retention characteristics. The base includes an electrical heater and has a retractor mounted thereon for receipt of the cautery tool and shiftable from a heating position to carry the tool from a position holding the tip adjacent the heater to a retracted position moving the tip away from the heater. The retractor is biased to its retracted position and a thermally responsive retainer is engageable with such retractor to hold it in the cautery heating position and is responsive to a predetermined temperature to release the retractor to be returned to its retracted position.

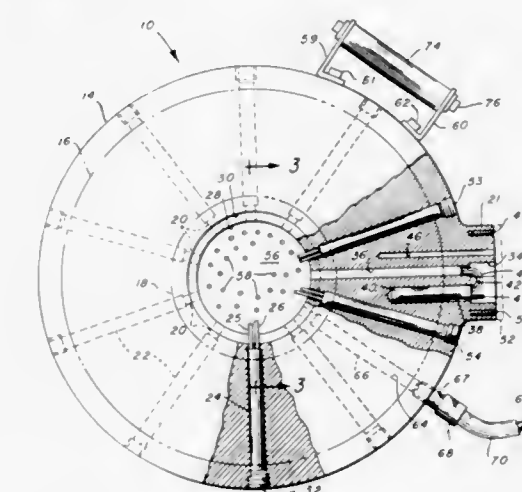
3,723,705

## FUSION HEATER

William F. Province, Bartlesville, Okla., assignor to The Ridge Tool Company, Bartlesville, Okla.  
Filed Jan. 17, 1972, Ser. No. 218,272  
Int. Cl. H05b 1/00

U.S. Cl. 219—243

7 Claims



An electrical fusion heater for heating the abutting ends of two plastic pipes to be joined in a plastic pipe fusion apparatus. The heater comprises a thick circular slab of good heat conductivity metal with an outer diameter greater than



the diameter of the largest pipe size to be heated, and with a central opening smaller than the smallest pipe size to be heated. A plurality of heater elements are inserted into a corresponding plurality of radial openings along the central plane of the heater plate. A thermostatic switch is inserted into another opening in the central plane and connections between the power cable, the heater elements and the switch are made up in the central opening.

3,723,706

## WICK TYPE EVAPORATOR

Johannes Jacobus Asuerus Ploos Van Amstel, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 765,826, Oct. 8, 1968, Pat. No. 3,607,368. This application April 6, 1971, Ser. No. 131,793

Claims priority, application Netherlands, Oct. 10, 1967, 6713713

Int. Cl. C23c 13/12; H05b 1/00

U.S. Cl. 219—274

2 Claims

A device for vapor deposition containing as a vaporizer element, a wick formed of a lace-like body of graphite or carbides.

3,723,707

## HUMIDIFIER

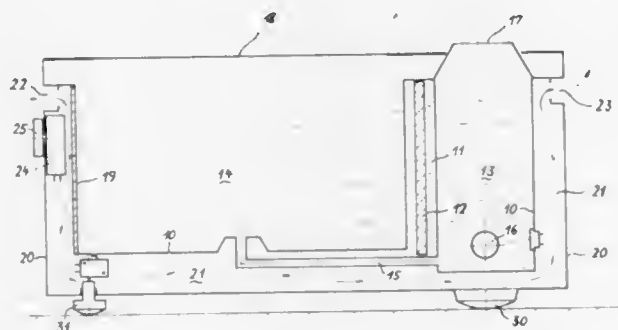
Max Wunderlin, Mannedorf, Switzerland, assignor to Turmix AG, Kunsnacht, Switzerland

Filed Aug. 20, 1971, Ser. No. 173,461

Int. Cl. F22b 1/28

U.S. Cl. 219—276

5 Claims



A humidifier having automatic control means responsive to the degree of moisture in the air of the space to be humidified is provided with a hygrostatic switch located directly on the humidifier, thus dispensing with wiring connections between the humidifier and a hygrostatic switch located at a distance therefrom. A current of air from the space to be humidified is drawn past the hygrostatic switch as a convection current caused by disposing the air inlet, into an outer casing surrounding a cold water container and a heated water container, at a point adjacent the cold water container and disposing the air outlet at a point distant from the air inlet and adjacent the heated water container.

3,723,708

## APPARATUS FOR HEAT SHRINKING MATERIAL ABOUT LOADED PALLET

Martin J. Tulkoff, 1010-1042 E. Lombard St., Baltimore, Md.

Filed May 18, 1972, Ser. No. 254,548

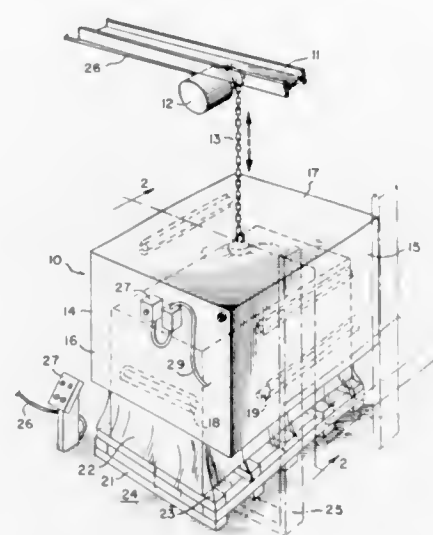
Int. Cl. F27d 11/02

U.S. Cl. 219—385

6 Claims

A device for heat shrinking a loaded pallet having a bag of heat shrinkable plastic film. The device includes a housing which is closed at its sides and top but is open at the bottom. Along the internal walls are positioned heating elements which consume only a moderate amount of electric energy. The housing is suitably insulated to conserve heat and thereby

reduce electric energy requirements. The housing has means associated therewith to permit its being raised and lowered; so



that in non-use the housing is raised into an out-of-the-way position.

3,723,709

## STRAND HEATING DEVICE

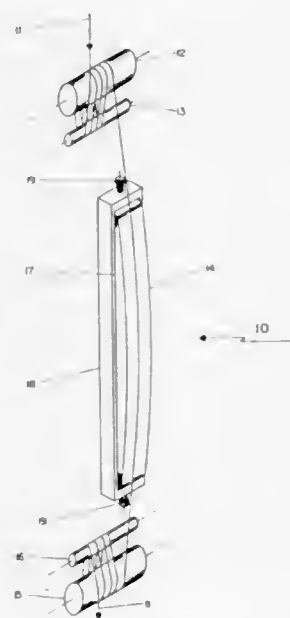
J. Harold Forshee, Anderson, S.C., assignor to Dow Badische Company, Williamsburg, Va.

Filed Oct. 21, 1971, Ser. No. 191,293

Int. Cl. F27b 9/06

U.S. Cl. 219—388

1 Claim



Disclosed is a device for the contact heating of a traveling textile strand, the contact surface of which device is readily removable for renovation.

## ERRATUM

For Class 219—69 M see:  
Patent No. 3,723,690

3,723,710

## METHOD AND DEVICE FOR READING AND DECODING A HIGH DENSITY SELF-CLOCKING BAR CODE

William G. Crouse, and John E. Jones, both of Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 28, 1971, Ser. No. 157,158

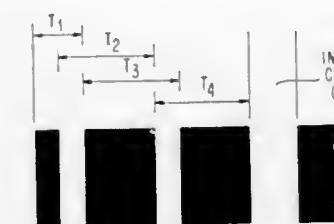
Int. Cl. G06k 7/10; E04g 17/00

U.S. Cl. 235—61.11 E

19 Claims

A high density self-clocking multiple bar code is scanned to determine the displacement of adjacent leading edges of the

bars and of the adjacent trailing edges of the bars. The detected leading and trailing edge displacements are compared



with a standard identifiable displacement included in all of the valid codes and are categorized with respect thereto and the sequential categories thus derived define the encoded data.

3,723,711

## METER PARTICULARLY MEASURED QUANTITY READ-OUT DEVICE THEREFOR

Takeshi Kamata, Kahaku-ku, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

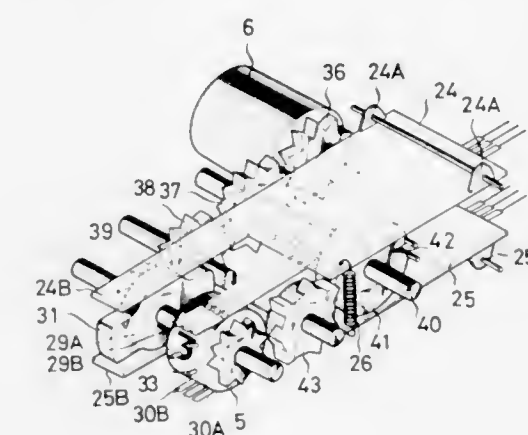
Filed May 20, 1971, Ser. No. 145,252

Claims priority, application Japan, May 25, 1970, 45/44010

Int. Cl. G06m 1/276

U.S. Cl. 235—92 EA

10 Claims



A measured quantity readout device for use with flowmeters and the like comprising means for producing electrical signals indicative of the measurement of a predetermined quantity of flow; a motor adapted to be actuated by the electrical signals and driving a digit wheel which is provided with coded elements on its periphery for indicating the quantity of flow; two sets of contacts mounted on respective support plates and urged toward each other by a spring such that each engages the digit wheel in diametrically opposed positions on its outer periphery to sense the presence or absence of the coded elements; output lines for reading out signals indicating whether either or both of the sets of contacts are closed by the sensing of a coded element; and means operated by the motor for urging the sets of contacts out of engagement with the digit wheel to render the wheel free to be driven by the motor during its actuation by the electrical signals. Alternate embodiments of the latter means are disclosed and the details of one form of signal-producing means.

3,723,712

## METHOD FOR AGGLOMERATION MEASURING AND CONTROL

Thomas R. Komline, Sr., Gladstone, and Walter R. Wills, Cedar Knolls, both of N.J., assignors to Komline-Sanderson Engineering Corporation, Peapack, N.J.

Filed Oct. 12, 1971, Ser. No. 188,516

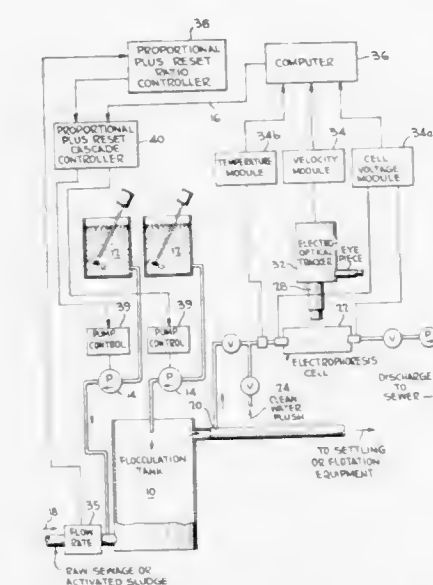
Int. Cl. G06f 15/46; G01n 21/28, 33/16

U.S. Cl. 235—151.31

6 Claims

The apparatus extracts samples of a fluid stream containing colloidal suspended solids at a detection station wherein the

electrophoretic mobility (EM) of the colloidal suspended solids is determined. The detection station automatically measures the EM and provides such data to a computer, which computes the Zeta Potential. The computer also receives other information relating to the characteristics of the colloidal suspended solids, such as temperature, the percent of



3,723,713

## MASS MEASUREMENT SYSTEM FOR MASS SPECTROMETERS

Aubrey E. Banner, Sale, and Thomas O. Merren, Hale, both of England, assignors to Associated Electrical Industries Limited, London, England

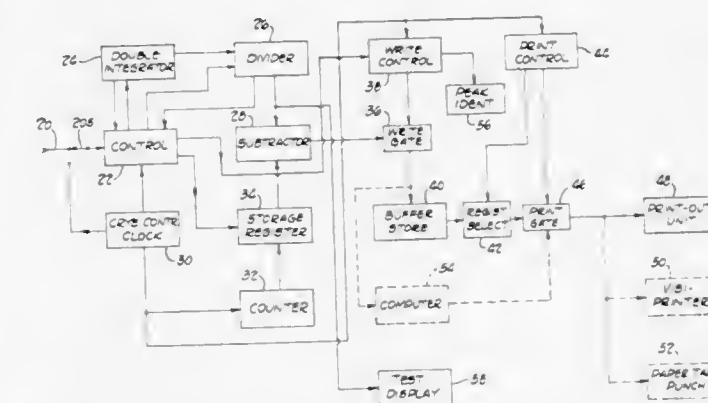
Filed April 14, 1970, Ser. No. 28,468

Claims priority, application Great Britain, April 15, 1969, 19,199/69

Int. Cl. G06g 7/74; B01d 59/48

U.S. Cl. 235—151.35

36 Claims



In a scanning mass spectrometer, electrical output signals including a series of time-related peaks representing an ion mass spectrum of an unknown sample material are produced along with a series of reference peaks derived from a reference material. The time at which a spectrum peak occurs is taken to be the time of occurrence of the centroid (or center of gravity) of the peak. The time of occurrence of the peak centroid in relation to the time of occurrence of the end of the peak is determined and that information is presented in digital form. The occurrence time of the peak centroid is then subtracted from the occurrence time of the peak to provide the peak centroid occurrence on the scan. Thus, the time posi-



tions of the peak centroids due to an unknown sample may be readily identified with respect to the time positions of the centroids of peaks due to the reference material.

3,723,714

## DIGITAL PHASE TRACKER

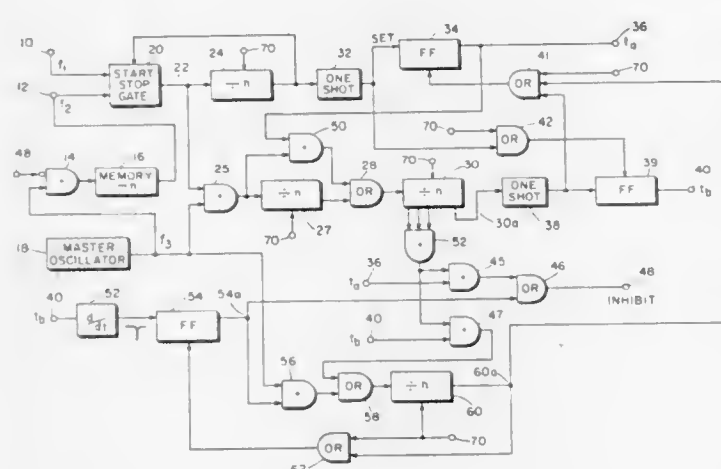
Harold W. Jackson, Baltimore; Merlin E. Olmstead, Manchester, and William E. Fickenscher, Baltimore, all of Md., assignors to The Bendix Corporation

Filed March 31, 1971, Ser. No. 129,720

Int. Cl. H03k 5/13, 19/00; H04j 3/06

U.S. Cl. 235—152

13 Claims



A digital phase tracker includes a memory for storing a signal locked in phase with an external signal and means for maintaining the signal stored within the memory phase synchronized with the external signal as the phase of the external signal varies. The time relationship between positive excursions of the external signal and positive excursions of the stored signal is timed by high-speed clock pulses with clock pulses being added to or subtracted from the memory signal to maintain phase-lock.

3,723,715

## FAST MODULO THRESHOLD OPERATOR BINARY ADDER FOR MULTI-NUMBER ADDITIONS

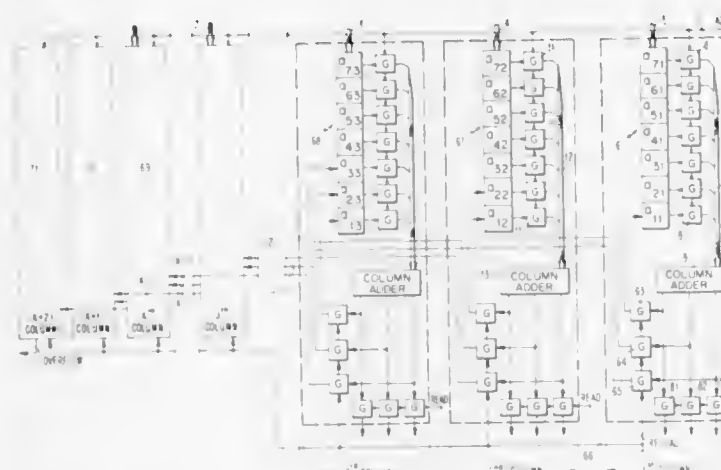
Tien Chi Chen, San Jose, Calif., and Irving T. Ho, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 25, 1971, Ser. No. 174,753

Int. Cl. G06f 7/50

U.S. Cl. 235—175

8 Claims



A fast adder for adding more than three words, the correspondingly weighted bits of which are applied to respective bit column adders. The column adders simultaneously produce respective sum and carry result bits of overlapping positional significance or weight. The maximum number of result bits having the same weight is determined by the quanti-

ty of words to be added at the same time (which establishes the number of bits in each bit column). In the disclosed embodiment, seven words are added at a given time and no more than three of the generated result bits have the same weight. In effect, the seven operand words are reduced to a subtotal of three result operand words in one computational cycle irrespective of the bit length of the words being added. The subtotal operands are reduced to a final sum by application of conventional carry save and carry look-ahead adders. Equal weighted wire-ORing and matrix memory techniques are employed in the respective column adders to conserve required computational hardware and to facilitate large scale circuit integration.

3,723,716

## SINGLE WALL DOMAIN ARRANGEMENT INCLUDING FINE-GRAINED, FIELD ACCESS PATTERN

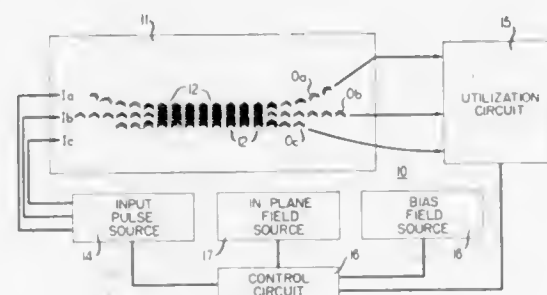
Andrew Henry Bobeck, Chatham, and Henry Evelyn Derrick Seovil, Gladstone, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 8, 1971, Ser. No. 160,841

Int. Cl. G06f 7/50; F11c 11/14; G11c 19/00

U.S. Cl. 235—176

20 Claims



A single wall domain propagation arrangement is provided by a pattern of closely spaced magnetically soft elements which define a "fine-grained" propagation path between a plurality of inputs and outputs. The pattern permits movement of domains laterally across the path, an option exercised by the design of the pattern itself or by domain interaction. When lateral movement is employed, the output at which a domain occurs is a logical function of the input and a full adder operation may be realized.

3,723,717

## METHOD AND APPARATUS TO EFFECT NORMALIZED CORRELATION

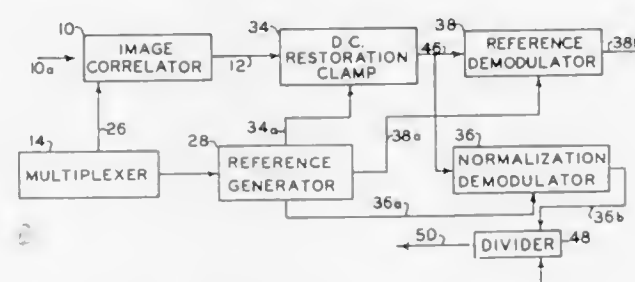
James J. Hogan, Akron, and Theodore W. Iler, Tallmadge, both of Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Filed July 26, 1971, Ser. No. 166,153

Int. Cl. G06g 7/19; H01n 5/30

U.S. Cl. 235—181

10 Claims



An electronic area correlator is pulsed into cut-off and uniform transmission modes to provide a sequentially time-shared signal containing reference, correlation, and integral information. This time-shared signal is separated, demodulated, and electronically combined to provide a normalized output signal that readily identifies the correlation match-point.

3,723,718

## SIMULATION THROUGH ROTATING COORDINATE TRANSFORMATION

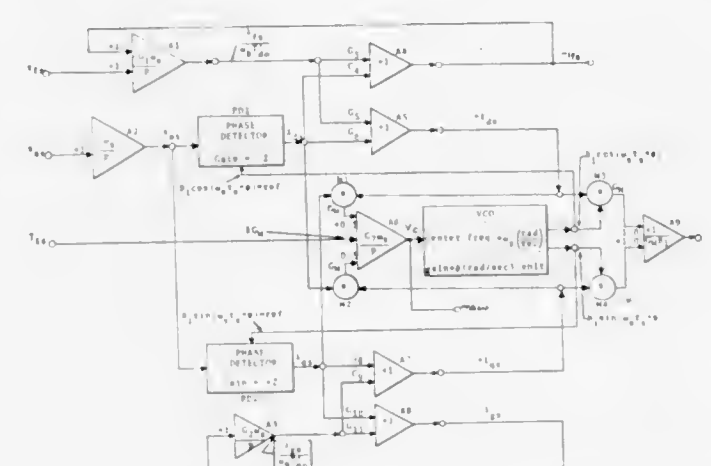
Richard M. Jaffe, and Robert B. Parente, both of Los Angeles, Calif., assignors to System Development Corporation, Santa Monica, Calif.

Filed Nov. 9, 1970, Ser. No. 87,931

Int. Cl. G06g 7/62

U.S. Cl. 235—185

36 Claims



There is disclosed herein novel simulation of power system components, and particularly the simulation of a rotating electrical machine, such as a synchronous alternator, through utilization of a rotating coordinate transformation. A new form of rotating coordinate transformer is disclosed for calculating the transformation of coordinates between a primary and a secondary reference frame which rotate relative to each other and at least one of which rotates with respect to a fixed reference frame. A new method for simulating the dynamic electromechanical behavioral characteristics of a rotating electrical machine, such as an alternator, a synchronous motor, induction machine, and the like, is disclosed, as well as a new use of a phase-locked-loop in simulating such characteristics of a rotating machine. The behavioral characteristics are the electromechanical response of the machine as a function of electrical and mechanical inputs thereto and the parameters of the machine. An exemplary simulation is disclosed employing a coordinate transformer in the form of a modulated oscillator circuit, such as a voltage controlled oscillator, and a demodulator circuit, such as a phase detector. Feedback may be employed with these circuits to form one or more phase-locked-loops. A new simulation system is disclosed, as well as a method for simulating the rotation of the rotor of an electrical machine. Also a method for simulating the reference of a stator electrical variable of the machine to the rotor thereof or visa versa is disclosed. Additionally, an extensive analysis of alternators and the characteristics thereof from a mathematical standpoint are disclosed.

3,723,719

## GROUND RANGE COMPUTER

Wei L. Chen, Sunnyvale, and John R. Carter, San Jose, both of Calif., assignors to The Singer Company, Binghamton, N.Y.

Filed Feb. 3, 1972, Ser. No. 223,070

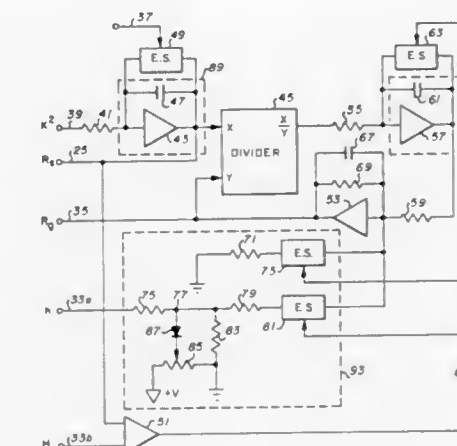
Int. Cl. G06g 7/22, 7/36

U.S. Cl. 235—190

17 Claims

The disclosed embodiment of the present invention is a device for use in aircraft flight simulators which computes, as a function of time, ground range from the aircraft's nadir to an object in front of the aircraft, when given the aircraft's altitude and the slant range to the object. The relationship between ground range, altitude and slant range is essentially a right triangular and can be expressed mathematically by the Pythagorean Theorem. The mathematical expression for the right triangle is differentiated with respect to time and rearranged into an integral equation for solution of the ground

range variable. Integrating and dividing circuitry is provided for implementation of the integral equation. Also, compensa-



tion and switching circuitry is provided for initialization of the integrators.

3,723,720

## ILLUMINATING DEVICE FOR DISPLAY FRAME

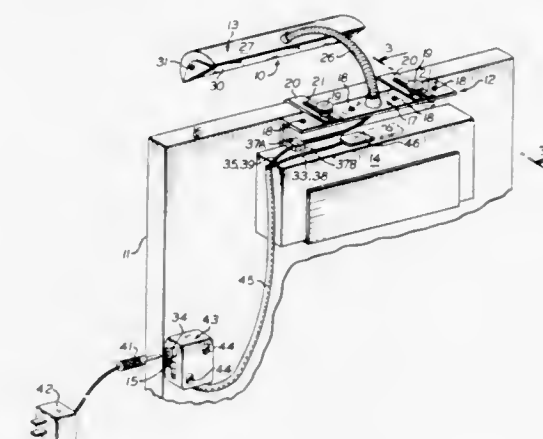
Joseph Schmidt, New York, N.Y., and Aladar Heppes, Ridgefield, Conn., assignors to Magna Battery Reflector Corp., New York, N.Y.

Filed July 23, 1971, Ser. No. 165,664

Int. Cl. F21v 33/00

U.S. Cl. 240—2 R

4 Claims



An illuminating device for a display frame having a bracket that is adjustable to grip different sizes of frames, a lamp adjustably supported from the bracket by a flexible conduit, and a rechargeable battery pack supported by the bracket and electrically connected to the lamp through a remote operating switch.

3,723,721

## LIGHTING SYSTEM FOR MOTOR VEHICLES

Martin Weber, Grossingersheim, Germany, assignor to S.W.F. Spezialfabrik For Autzubeeor Gustav Rau GmbH, Bietigheim, Germany

Filed Feb. 11, 1971, Ser. No. 114,560

Claims priority, application Germany, Feb. 21, 1970, P 20 08 300.2

Int. Cl. B60q 1/20, 1/24

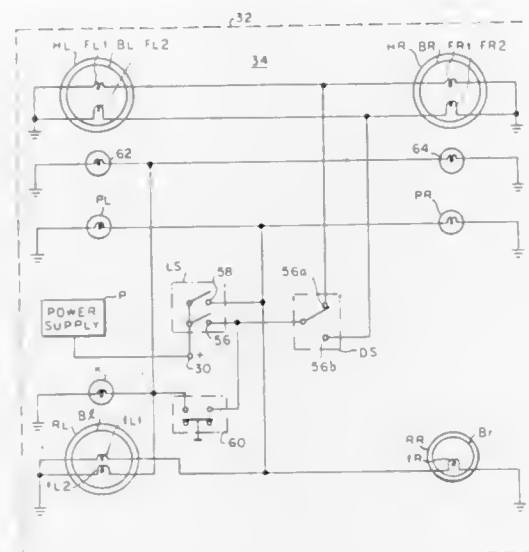
U.S. Cl. 240—7.1 A

10 Claims

In the automobile lighting system disclosed, a rear lamp in-



cludes two filaments. One of the filaments is turned on along with the parking lights and headlamps. A fog lamp switch



completes a circuit to energize the second filament. The latter produces a more powerful light than the first filament.

3,723,722

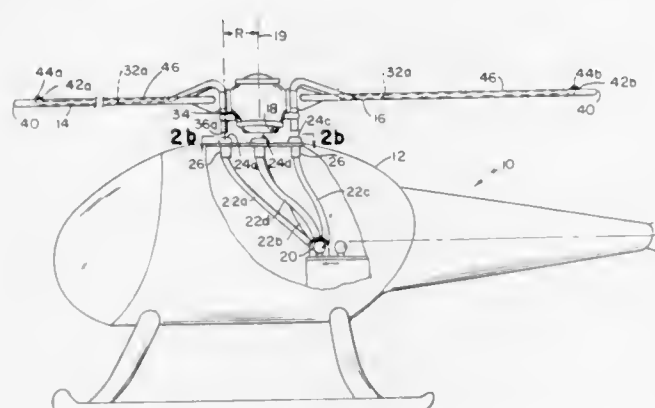
## HELICOPTER LIGHTING

Theodore J. Van Iderstine, Peabody, and Leonard J. Bonnell, Medford, both of Mass., assignors to Dyonics, Incorporated, Woburn, Mass.

Filed Sept. 14, 1970, Ser. No. 72,010  
Int. Cl. B64d 47/02

U.S. Cl. 240—7.7

27 Claims



Relatively rotatable elements coupled for light transmission by fiber optic devices analogous to electrical commutators.

A rotary wing aircraft embodiment employing fiber optics in the rotor blade for navigational lights has a flexible light pipe extension from the blade with an end fixed to move with the driving assembly in a set circular path, to sweep by and pick up light from a light source on the body. Other portions of the extension flex to follow cyclic pivoting of the blade relative to its driving assembly. Fibers in the blade are arranged to bend with the blade during operation by use of a flexible light pipe within which the fibers adjust relative to one another during blade bending. Heat-curing of plastic about a heat resistant flexible light pipe and bonding the fibers directly into the blade matrix as bendable strength element using a thin, wide and long ribbon of optical fibers are shown. Light sources on the body of the aircraft are shown as fiber light pipes with ends fixed to be swept by the pickup pipes. Four source light pipes provide light in accordance with navigational rules, a rotor blade receiving alternately white, green, white, red light as it rotates through various sectors. A Maxwellian lens at the end of a source light pipe defines an extended lighted arc along the pickup path, to provide extended duration of light transmission in each sector, the lens also enabling variation in the physical position of the blade assembly as occurs in the field.

### 3,723,723 CHRISTMAS TREE ELECTRIC LIGHT DECORATION SET

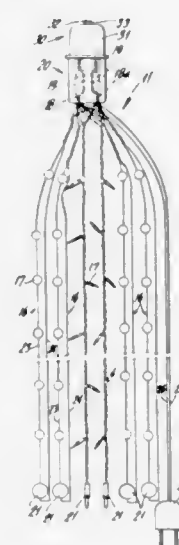
Charlotte F. Lerner, Brooklyn, N.Y., assignor to Small World Importing Corp., New York, N.Y.

Filed Jan. 4, 1971, Ser. No. 103,674

Int. Cl. A47g 33/16

U.S. Cl. 240—10 T

15 Claims



The light set comprises a plurality of strings of miniature lamps permanently joined in parallel circuit, each with respect to the others, at a pair of junctions which can be mounted at an upper portion of a Christmas tree. The string of lamps drape downwardly in free fall fashion at different radiant angles relative to the axis of the tree. The strings of lamps may comprise series connected or parallel converted lamps. The junctions of the strings of lamps are housed in an insulated casing which can be a socket connector to which a tree top lamp extension cord is disconnectably connected; or the tree top extension cord may be permanently connected to the parallel connected strings of lamps, at said junctions. A flasher lamp may be added in series with the series connected lamps of each string. The parallel connected lamps (of the strings of parallel connected lamps) may all be flasher lamps. Lead wires are permanently joined at said pair of junctions, and connect to a plug for insertion in a wall outlet. In light sets in which the strings of lamps comprise parallel connected lamps, the lead wires may also carry parallel connected lamps.

3,723,724

## SAFETY MOUNTED EXPLOSION PROOF LIGHT FIXTURE

Arthur I. Appleton, 1 Bridlewood Road, Northbrook, Ill.

Filed June 27, 1969, Ser. No. 837,099

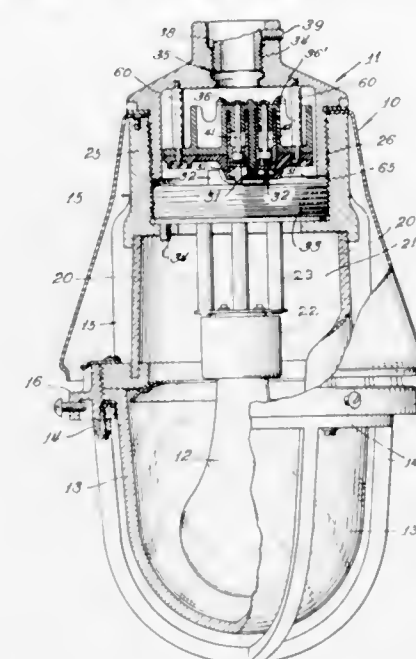
Int. Cl. H01h 19/06

U.S. Cl. 240—11.2 E

3 Claims

Light bulbs in a safety-fixture which includes an enclosure of glass or other translucent material, are replaced after removing the fixture from its mounting. As the fixture is mated with the mounting, it moves through a sufficient distance to pass the fixture through three distinct zones; a first zone in which the fixture and mounting form a first explosion-proof enclosure therebetween; a second zone in which non-energized electrical connectors of the mounting and fixture engage; and a third zone in which the non-energized electrical connectors become energized by switch means on the housing, within the first enclosure. Withdrawal of the fixture from the third to the second zone automatically causes the connectors to be de-energized by the switch means. Making and breaking of electrical connection with live contacts only takes

place within a second explosion-proof enclosure in the switch means. The danger of arcing during replacement of bulb or



fixture is thus virtually eliminated, even though the lighting circuit energizing fixture is, itself, energized.

3,723,725

## BEACON SIGNALING DEVICES

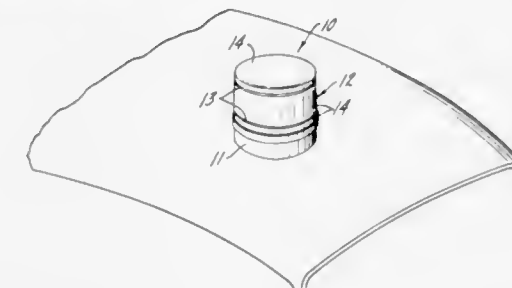
Robert O. Jaeger, Palatine, Ill., assignor to Unity Manufacturing Co., Chicago, Ill.

Filed Dec. 9, 1969, Ser. No. 883,430

Int. Cl. F21v 9/08

U.S. Cl. 245—46.59

7 Claims



An improved beacon signaling device having an effective balance between signal brightness and color identification is provided by placing transparent apertures on the colored housing enclosing the light producing assembly of such beacons so that light passing through the transparent apertures retains its original brightness while light passing through the colored areas of the housing have reduced brightness but retained color identity.

## ERRATUM

For Class 246—468 see:  
Patent No. 3,723,728

3,723,726

## DEVICE WITH DIAMOND DETECTOR WITH NEUTRON DETECTION

Stanislav Fedorovich Kozlov, Moscow, U.S.S.R., assignor to Fizichesky Institut Imeni P.N. Lebedeva Akademii Nauk SSSR, Moscow, U.S.S.R.

Filed Oct. 3, 1969, Ser. No. 863,614

Claims priority, application U.S.S.R., Oct. 3, 1969, 1274217

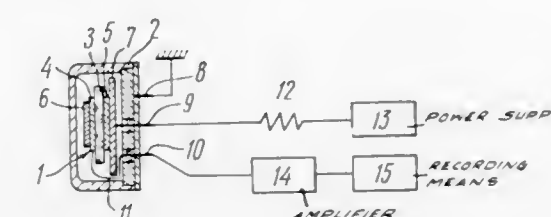
Int. Cl. G01t 3/00

U.S. Cl. 250—83.1

3 Claims

A device for neutron detection, comprising in combination with a radiator a nuclear radiation detector on the basis of a

diamond crystal plate with contacts formed at the opposite sides thereof, one of which contacts is made blocking in relation to charge carriers and is provided with said radiator, while



the opposite contact is made of a material capable, in conjunction with a diamond, of injecting charge carriers under the influence of an applied electric field.

3,723,727

## IN-SITU NEUTRON ACTIVATION

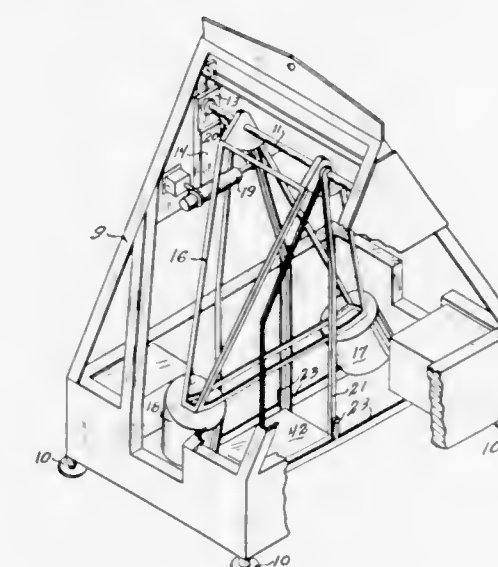
Ned A. Wogman; Richard W. Perkins; Henry G. Rieck, and John A. Cooper, all of Richland, Wash., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed June 30, 1971, Ser. No. 158,309

Int. Cl. G01t 1/16

U.S. Cl. 250—83.3

1 Claim



A probe for in-situ neutron activation analysis has a neutron source and a detector positioned in a fixed relationship. The material being analyzed is irradiated by the neutron source and then the detector is moved over the material for analysis. At all times the fixed spaced-apart relationship of the detector and the neutron source is maintained. The probe is particularly adapted for analysis of materials in inaccessible places such as the sea floor and includes a pressure plate for maintaining the material being analyzed in a fixed location during the analysis.

3,723,728

## CROSSING FROG WITH A MOVABLE FROG POINT

Ernst von Hayn, Butzbach/Oberhessen, Germany, assignor to Butzbacher Weichenbau Gesellschaft mbH, Butzbach/Oberhessen, Germany

Filed Dec. 30, 1970, Ser. No. 102,602

Claims priority, application Germany, Jan. 17, 1970, P 20 02 025.1

Int. Cl. E01b 7/10

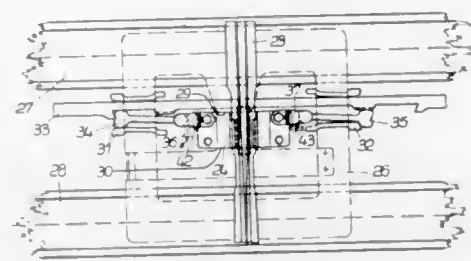
U.S. Cl. 246—468

6 Claims

A frog point of a crossing frog supports a freely suspended support plate such that relative longitudinal movement between the frog point and the support plate is provided. The support plate carries clamp members which are engageable



with a drive rod and with locking boxes so as to transport the frog point transversely between stationary longitudinal wing rails and lock the frog point in abutment positions with the wing rails.



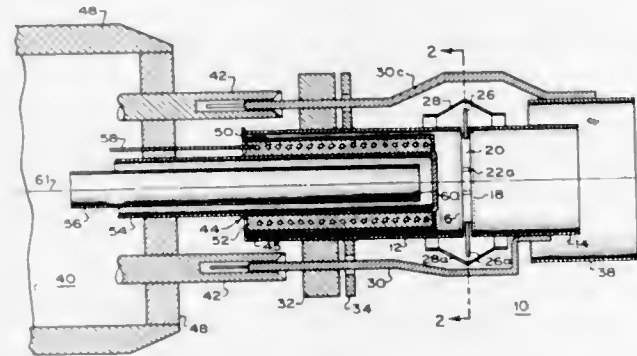
### 3,723,729 IONIZATION CHAMBER FOR USE WITH A MASS SPECTROMETER

William P. Kruger, Los Altos Hills, and Wilson R. Turner, Los Gatos, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 2, 1971, Ser. No. 111,910  
Int. Cl. H01j 39/34

U.S. Cl. 250—41.9 SB

8 Claims



A replaceable ionization chamber for a mass spectrometer comprises an ionization region defined by two parallel perforated membranes attached to concentric tubular electrodes which are separated by the ionization region. Two filaments and two electron focusing electrodes are symmetrically disposed about the periphery of the ionization region, and sample input ports are similarly disposed about the periphery. An ion focusing electrode is mounted at the output end of the chamber. The components of the ionization chamber are supported by a plurality of conductive rods which are, in turn, supported by an insulating ring. The ionization chamber mates with a socket having a plurality of receptacles for selected ones of the conductive rods and a tubular section containing heating and cooling elements.

### 3,723,730 MULTIPLE ION SOURCE ARRAY

Frank J. Gordon, Livermore, and Charles C. Damm, Alamo, both of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Nov. 30, 1971, Ser. No. 203,352

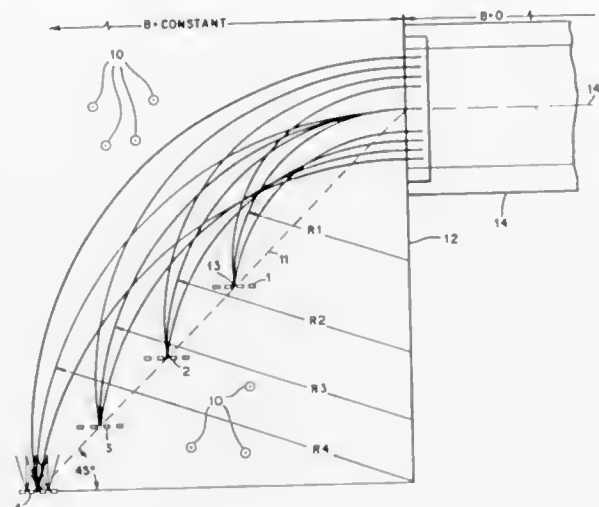
Int. Cl. H01j 37/08

U.S. Cl. 250—41.9 C

5 Claims

A plurality of Calutron ion sources spaced in a linear array at a 45° angle to a 90° the plane i.e., the plane parallel to the field lines of a uniform magnetic field into which the source beams are directed, and normal to the injection axis of the ion receiving device such as an accelerator column, at the entry thereto. The sources are contained in a common vacuum and respectively operated at a proper potential with respect to the strength of the magnetic field for each beam to enter a single beam accelerator presented at the plane, at a suitable relatively small acceptance angle, e.g., of the order of  $\pm 3^\circ$ . Not only

may the array be employed to introduce a very high current beam to the accelerator column, but a composite beam of



various elements and/or their isotope ions in admixture may be supplied by the array as desired.

### 3,723,731 ABSORPTION SPECTROSCOPY

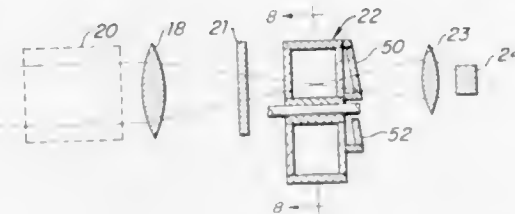
Henry H. Blau, Jr., Wayland, Mass., assignor to Environmental Research & Technology, Inc., Lexington, Mass.

Filed March 18, 1971, Ser. No. 125,615

Int. Cl. G01n 21/24, 21/34

U.S. Cl. 250—43.5 R

20 Claims



Gas in a sample region is analyzed in a nondispersive system for the presence of a particular gas of interest by cross-correlating the absorption spectra of the sample and a specimen of the gas of interest. Radiation is directed through the sample region and a filter for isolating a narrow band of frequencies within the absorption band of the gas of interest, to a radiation detector. The radiation is passed through cells that provide the total energy transmitted at the line or lines of interest and a reference energy transmitted by a region adjacent to the lines of interest and unaffected by changes in absorption in the sample region. In one embodiment this is accomplished by passing the radiation from the filter in rapid succession through three cells typically containing, respectively, an inert gas, the gas of interest at a pressure of about one atmosphere and the gas of interest at approximately two atmospheres pressure, to produce three signals which are combined by a conventional electronic system to give the fractional absorption of the gas of interest in the sample region. An interferometer containing in one leg, a cell containing the gas of interest at a pressure of about two atmospheres, may be located in the radiation path between the cells and the detector.

### 3,723,732 ON-STREAM ANALYSIS

John G. Larson, Pittsburgh, and John M. Orange, Jeannette, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed May 24, 1971, Ser. No. 146,122

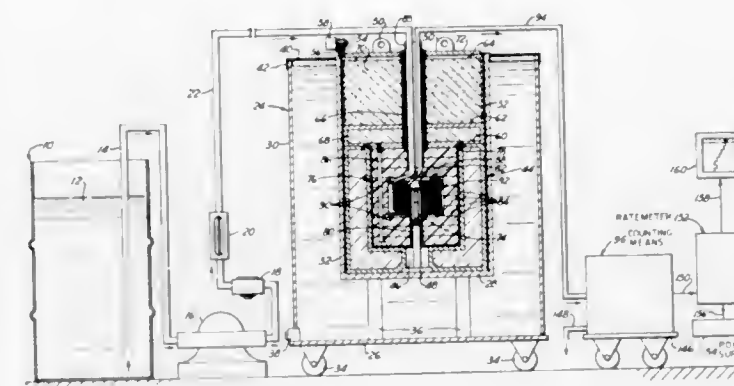
Int. Cl. G01n 23/12

U.S. Cl. 250—43.5 MR

17 Claims

The preferred form of the invention comprises a relatively small Cf-252 radioactive source positioned within a coil ir-

radiator, specifically for the detection of vanadium in hydrocarbon streams. The sample flow is from the outside



towards the inside in the irradiator, and in the opposite direction in the detection means coil, so that decay counting efficiency is enhanced.

### 3,723,733

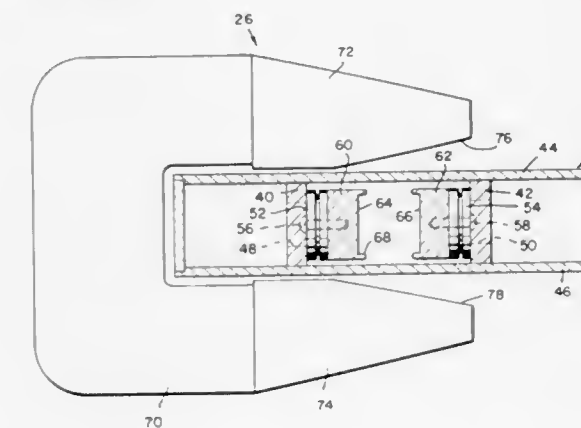
STIGMATIC, CROSSED-FIELD VELOCITY FILTER  
Robert L. Seliger, Agoura, and Robert G. Wilson, Canoga Park, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed May 12, 1971, Ser. No. 142,716

Int. Cl. H01j 37/26, 29/76

U.S. Cl. 250—49.5 T

13 Claims



A stigmatic, crossed-field velocity filter for nondeflection purification of an ion beam employs shaped electrodes to increase the uniformity of the electric field and employs shaped magnetic pole pieces to produce a nonuniform magnetic field for stigmatic passage of the selected ion species through the filter.

### 3,723,734

INDICATING OR DETECTING APPARATUS FOR NUCLEAR RADIATION SUCH AS GAMMA RAYS  
George Christopher Loveday, Leigh-on-Sea, England, assignor to Pye Limited, Cambridge, England

Filed Dec. 1, 1970, Ser. No. 93,946

Claims priority, application Great Britain, Dec. 3, 1969, 59,102/69

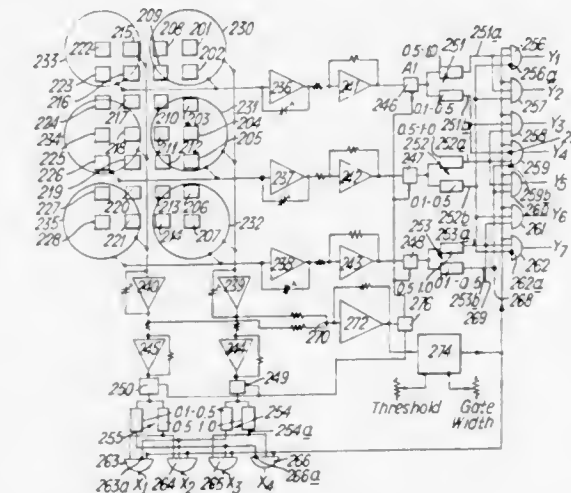
Int. Cl. G01t 1/20

U.S. Cl. 250—71.5 R

15 Claims

A nuclear radiation detecting or indicating apparatus comprises a mosaic of optically separate scintillator elements which are arranged in a series of first and second elements rows respectively parallel to first and second intersecting axes, each element being in a first and in a second row; a plurality of scintillation detectors arranged to view the scintillation elements, the detectors being more widely spaced from each other than are the elements, and being arranged in first and second detector rows, parallel to the first and second element rows, each detector being in a first and a second detector row, each detecting being adapted to produce a detector pulse in

response to a scintillation detected thereby, the amplitude of the pulse being dependent on the position of the scintillation relative to the detector; a respective first output channel for each first element row, and a respective second output channel for each second element row; means for summing simultaneous detector pulses from the detectors in each detector row; an analyzer for each row of detectors for analyzing the simultaneous summed detector pulses thereof into one of a plurality of amplitude ranges, each analyzer having a respective analyzer output for each amplitude range; gating means arranged to receive the outputs of the analysers and to



produce simultaneous pulses in a said first and a said second output channel in response to a scintillation of brightness within a predetermined range, thereby in operation defining the element in which said scintillation occurs; the gating means comprising a plurality of logic gates, at least one pair of which is connected in common to at least two analyzer outputs, the logic gates of said at least one pair being adapted to respond differently from each other to a pulse or pulses from the analyzer outputs to which they are connected in common, so that they do not permit simultaneous pulses to occur in their respective output channels.

### 3,723,735

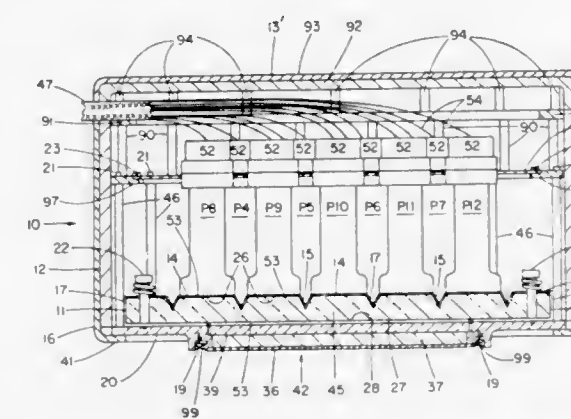
RADIATION DETECTING APPARATUS  
David J. Spelha, Franklin Park, and Marvin J. Kreuser, North Lake, both of Ill., assignors to Nuclear-Chicago Corporation, Des Plaines, Ill.

Filed Feb. 1, 1971, Ser. No. 111,409

Int. Cl. G01t 1/20

U.S. Cl. 250—71.5 R

10 Claims



An improved light guide for use in a radiation detecting apparatus. The areas of the surfaces of the light guide not in contact with the photomultiplier tubes or the scintillating crystal assembly are covered with a highly light absorbent coating, such as black paint. In the preferred form, V-shaped indentations extend into the surface of the light guide and encircle the light sensitive faces of the photomultiplier tubes about the periphery thereof. These V-shaped indentations are also



coated with a light absorbent coating. This improvement in the construction of the light guide reduces greatly the occurrence of "hot spots", which are recordings in a two-dimensional co-ordinate system of inordinately large concentrations of light that are not actually present at certain spots in the radiation source.

3,723,736

## MULTIPLE SAMPLE COINCIDENCE COUNTER

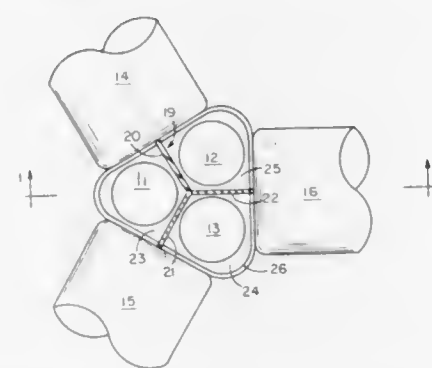
Barton H. Laney, Deerfield, Ill., assignor to Nuclear-Chicago Corporation, Des Plaines, Ill.

Filed May 11, 1971, Ser. No. 142,292

Int. Cl. G01t 1/20

U.S. Cl. 250-71.5 R

16 Claims U.S. Cl. 250-83.3 H



In a liquid scintillation coincidence counting apparatus, the improvement wherein multiple radioactive samples are analyzed simultaneously using a counting chamber divided into sections by partition means. Each section of the chamber accommodates a sample and is in visual communication with at least two and less than all of the photomultiplier tubes. The coincidence detection system passes electrical pulses only when coincident electrical pulses are received from all of the photomultiplier tubes in visual communication with a single section of the chamber.

3,723,737

## INFRARED DETECTION AND CONTROL DEVICE

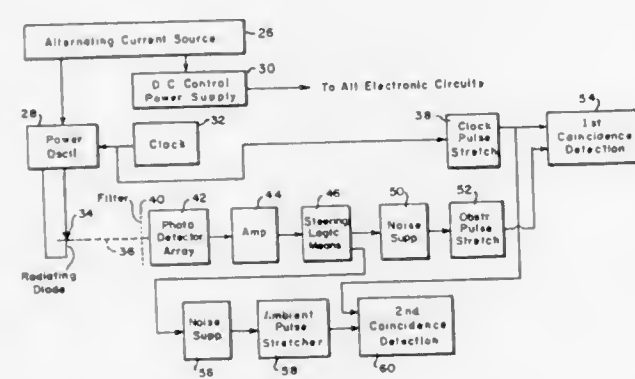
Maurice I. Zeldman, Edward J. Walker, and Suresh K. Gupta, all of Pittsburgh, Pa., assignors to North America Rockwell Corporation, Pittsburgh, Pa.

Filed May 18, 1971, Ser. No. 144,518

Int. Cl. G01j 1/00

U.S. Cl. 250-83.3 H

6 Claims



An electronic detection and control device comprising a first electronic circuit means having its input connected to an electrical source, the output of said first electronic circuit means connected to at least one radiation-emitting semiconductor device, said first electronic circuit means adapted to provide electrical energy to said semiconductor device to excite said semiconductor device to produce a radiated signal, said radiated signal defining a radiation screen, a radiation-sensing semiconductor device whose input is adapted to receive said radiated signal, the output of said radiation-sensing semiconductor device connected to a second circuit

means, said second circuit means adapted to provide an output signal responsive to the presence or absence of any obstruction in said electronic screen, or responsive to the presence or absence of any ambient radiated energy received by said radiation-sensing semiconductor device.

3,723,738

## INTRUSION DETECTION FALSE ALARM REDUCTION SYSTEM

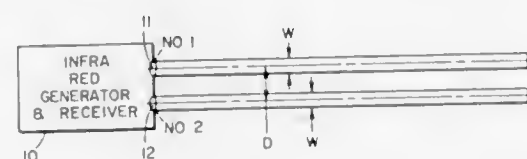
Charles H. Brenner, and Ronald W. Kassik, Scottsdale, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed May 20, 1971, Ser. No. 145,168

Int. Cl. H01j 39/00

16 Claims U.S. Cl. 250-83.3 H

6 Claims



False alarm reduction means for an intrusion detection system are disclosed wherein two optical transmitting systems with highly directive beams alternately illuminate adjacent but non-overlapping cross-sections. A signal processor indicates true target detection only when the target return from two or more successive pulses exceed a predetermined threshold which implies that the target is sufficiently large that it intersects both beams.

3,723,739

## WATER-COOLED CHOLESTERIC LIQUID CRYSTAL INFRARED IMAGING DEVICE

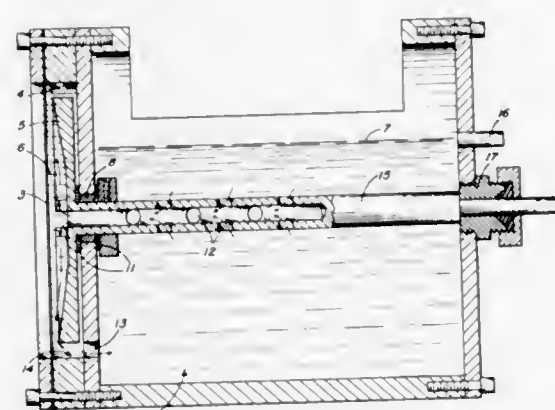
Richard F. Horton, Fredericksburg, Va., assignor to The United States of America as represented by the Secretary of the Navy

Filed June 11, 1971, Ser. No. 152,306

Int. Cl. G01t 1/16

U.S. Cl. 250-83.3 H

9 Claims



An infrared imaging device for the detection and measurement of hazardous irradiances in a laser beam caused by atmospheric scintillation. The 10.6 micrometer field is displayed visibly through the use of cholesteric liquid crystals on a water-cooled mylar film.

3,723,740

## DIRECTIONALLY SENSITIVE RADIATION DETECTOR SYSTEM USING IONIZATION CHAMBERS

James A. Wall, Pinehurst, and Edward A. Burke, Woburn, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force

Filed April 29, 1971, Ser. No. 138,427

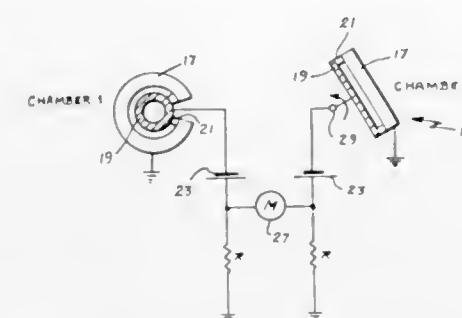
Int. Cl. G01t 1/18

U.S. Cl. 250-83.6 R

3 Claims

An X- and gamma radiation detector having two parallel spaced walls composed of materials of significantly different

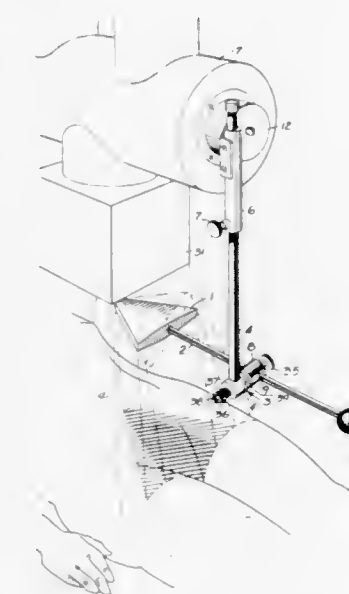
atomic numbers. Any suitable sensitive medium between the walls may be utilized so as to produce a larger signal when the



3,723,743  
ADJUSTABLE SHIELD DEVICE FOR SHIELDING X-RAYS  
Dennis D. Brackenbrough, P.O. Box 266, Cutten, Calif.;  
Harold E. Godfrey, Jr., 1487 Allen Dr., Eureka, Calif., and  
Richard G. Mills, Rt. 1, Box 1, Bay Side, Calif.  
Filed Nov. 26, 1971, Ser. No. 202,328  
Int. Cl. G21f 3/00

U.S. Cl. 250-108 R

10 Claims



lower atomic wall faces the source of radiation than when the high atomic number material faces the source.

3,723,741

## METHOD FOR EFFECTING NUCLEAR POLARIZATION OF A BEAM OF ATOMS

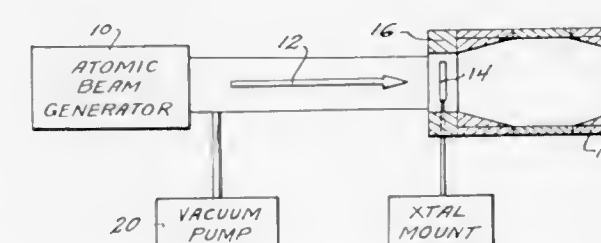
Dieter von Ehrenstein, Naperville, Ill., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Sept. 1, 1971, Ser. No. 177,058

Int. Cl. H01j 37/00

U.S. Cl. 250-84

3 Claims



A beam of atoms is passed through a magnetically saturated mono-crystalline material to effect a charge-transfer reaction between the material and the atomic beam. The atomic beam is then sequentially passed through a first strong magnetic field region shaped decreasing from maximum field to zero field, a zero magnetic field region, and a second strong magnetic field region opposite in polarity to the first strong magnetic field region and shaped from zero field to maximum field to effect nuclear polarization of said atomic beam.

A generally triangular lead shield has a handle bar extended from its base slideably and rotatably through an adjustable head on the free end of a telescopic element, which latter is slideable and rotatable in a tube on a rotatable mounting bracket adapted to be secured to the housing of an X-ray tube, whereby the position of the shield can be adjusted vertically or horizontally or into an out of the way position, and the shadow area can be varied by turning the handle bar and the shield about a horizontal axis relatively to said X-rays.

3,723,744

## OPTICAL TRACKER WITH VARIABLE DENSITY SPATIAL FILTER

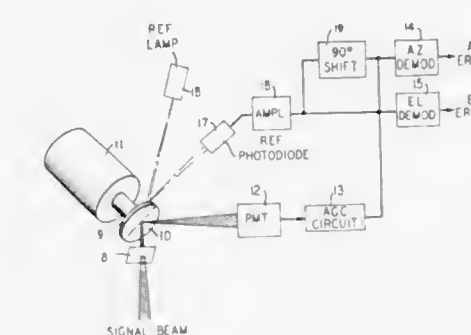
Yen San Lim, Convent Station, and Mahadevan Subramanian, Whippany, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 21, 1970, Ser. No. 99,818

Int. Cl. G01c 1/00; G01b 11/26

U.S. Cl. 250-203 R

7 Claims



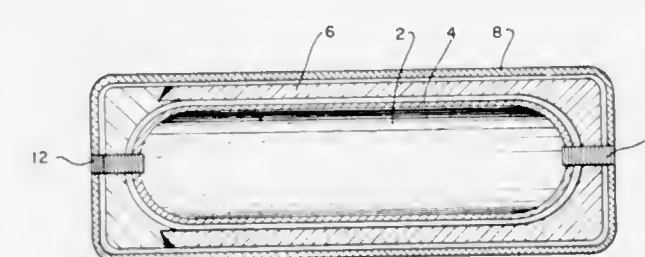
3,723,742  
RADIOISOTOPE CAPSULE PROTECTION STRUCTURE  
Jorge Aranguren, Playa Del Rey, Tex., and John C. Stansel, Palos Verdes, Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed April 11, 1968, Ser. No. 721,140

Int. Cl. G21h 1/00

U.S. Cl. 250-106

7 Claims



For safety reasons and to prolong the life of a radioisotope capsule and to increase the operating temperature, a radioisotope fuel is enclosed by an inner inert member and a high strength second member and an inert outer member. A vent is provided for release of the helium generated by isotope decay to avoid high pressure within the capsule.

An optical filter whose transmission coefficient increases monotonically with distance from the center of the filter is placed in front of the Image Position Sensor of an optical tracker. The optical tracker is of the type using a single photocell and a single chopper for both azimuthal and elevational channels. The center of the filter lies substantially on the optical axis of the system. Accordingly, the beam returning from a target being tracked by the optical tracker is attenuated according to its displacement from the axis of the system. The effect of this variable attenuation is to reduce the cross-coupling between azimuthal and elevational channels



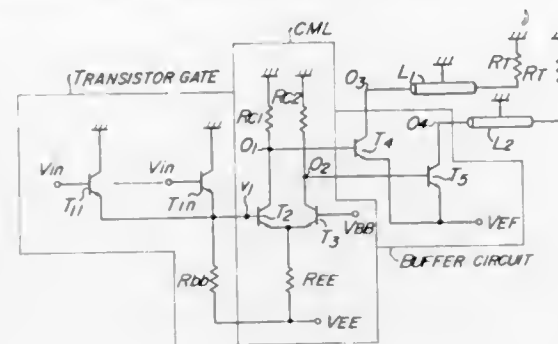








terminals of the conventional E<sup>2</sup>CL. The loads are connected to the collectors of the transistors of the buffer circuit. Each of



the transistors may be provided with a saturation-proof diode connected between its base and collector.

3,723,762

## SAW-TOOTH WAVE GENERATORS

Naohisa Nakaya, Tokyo, Japan, assignor to Iwatsu Electric Company, Ltd., Tokyo, Japan

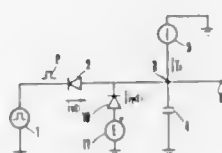
Filed July 30, 1971, Ser. No. 167,658

Claims priority, application Japan, July 28, 1970, 45/65557; July 28, 1970, 45/65558

Int. Cl. H03k 4/08

U.S. Cl. 307—228

8 Claims



In a saw-tooth wave generator of the type comprising a capacitor, a source of switching signals and a switching diode connected between the capacitor and the source of switching signals so as to alternately charge and discharge the capacitor, there is provided a series circuit including a second diode having a polarity opposite to that of the switching diode with reference to the capacitor, the series circuit being connected in parallel with the capacitor whereby the storage current of the switching diode is substantially compensated for by the storage current of the second diode.

3,723,763

## QUASI-RMS MEASUREMENT CIRCUIT UTILIZING FIELD EFFECT TRANSISTOR AS A SWITCH

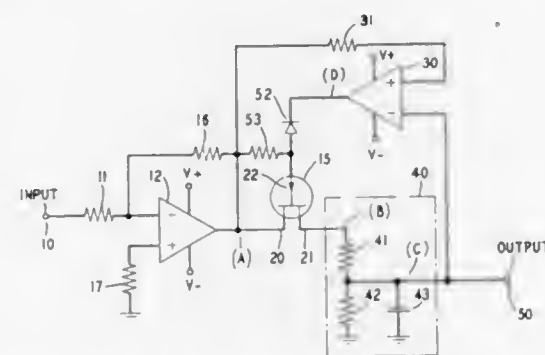
Daniel John Udovic, Hazlet, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 2, 1971, Ser. No. 168,311

Int. Cl. H03k 17/00

U.S. Cl. 307—229

5 Claims



The quasi-rms value of a signal is measured by employing a passive network which includes a first resistor connected in series with a parallel connection of a second resistor and a capacitor. A signal to be measured is selectively applied to the

first resistor of the passive network via a field effect transistor (FET) which is operated as a switch. The FET is controlled by a comparator which, in turn, is responsive to the signal being measured and the desired quasi-rms signal.

3,723,764

## ELECTRICAL CIRCUIT ARRANGEMENTS FOR CONVERTING A VARIABLE RATE OF PULSE TRANSMISSION INTO A RELATED ELECTRICAL OUTPUT QUANTITY

Denis Sharp, East Grinstead, England, assignor to U.S. Philips Corporation, New York, N.Y.

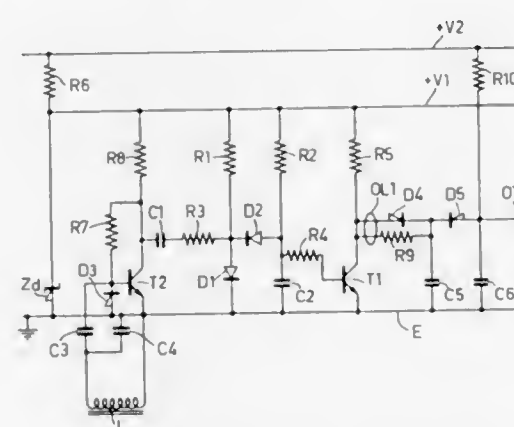
Filed July 27, 1970, Ser. No. 58,347

Claims priority, application Great Britain, July 25, 1969, 37,576/69

Int. Cl. H03k 9/06

U.S. Cl. 307—233

5 Claims



An input circuit for use with a Frequency-to-DC converter circuit to provide the latter circuit with reset pulses of constant width irrespective of the input pulse frequency. The input circuit includes first and second time constant means, the first of which controls the setting of the second in response to each input pulse. The second provides, when set, a restoration period which defines the duration of a reset pulse to be applied to the Frequency-to-DC converter circuit.

3,723,765

## LINEAR FREQUENCY DETECTOR FOR ANALOG TO DIGITAL CONVERTER

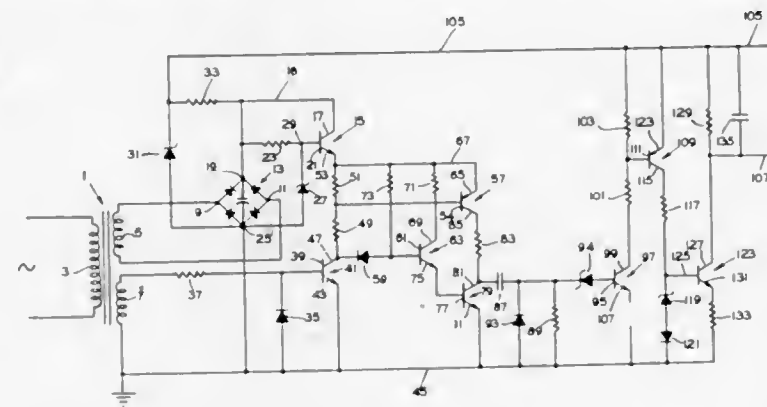
Robert F. Kautz, Spring Lake, and Leo B. Bourgeault, New Bedford Rd., Wall Township, both of N.J., assignors to The Bendix Corporation

Filed May 25, 1971, Ser. No. 146,762

Int. Cl. G01r 25/00

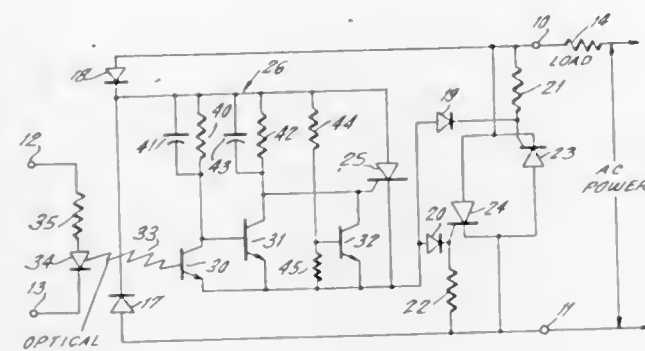
U.S. Cl. 307—233

5 Claims





delivery of a firing signal to a thyristor or triac when the input voltage is near or at zero. Thus, the thyristor or triac in the



relay output circuit begins to conduct under zero voltage conditions.

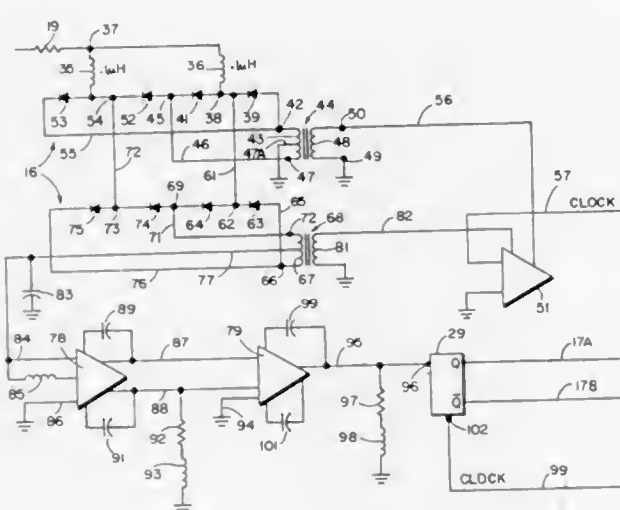
3,723,770

### CURRENT MODE MATCHED FILTER FOR DIGITAL DATA

Carl R. Ryan, 632 E. 7th Place, Mesa, Ariz.  
Filed Oct. 14, 1971, Ser. No. 189,238  
Int. Cl. H03k 17/74

U.S. Cl. 307—256

5 Claims

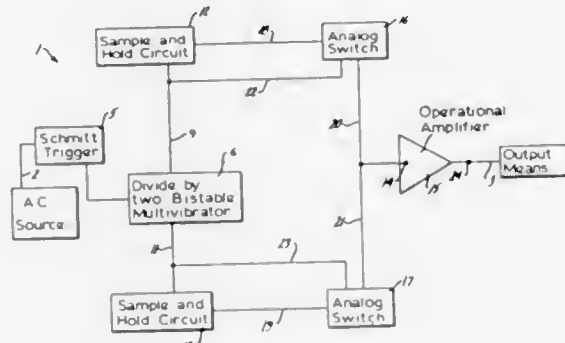


A matched filter for use in a bit-by-bit digital detection circuit is shown including a pair of inductors through one of which current including signal and noise flows during a particular bit period. At the end of that bit period the circuit is interrupted by a hot carrier diode and the resulting voltage pulse having a particular polarity and magnitude is passed through a second hot carrier diode which is turned on when the first hot carrier diode is turned off. The second hot carrier diode is immediately turned off after the pulse transient has been threshold detected. At the time of turning off the first hot carrier diode and the current charge therein dumped, signal current flows in the second inductor by the turning on of a hot carrier diode. At the end of the second bit period, the integrated current in the second inductor is interrupted by a further diode switch is momentarily turned on and then off. The polarity and magnitude of the second transient pulse is converted into the proper data pulse and while the current charge in this inductor is being dumped, the first inductor is again on and is receiving the current for the third pulse. That is, there is no need for a zero interval between data pulses because the current of one inductor is being processed and dumped while the other inductor is being charged with the new data current and so on.

3,723,771  
**FREQUENCY TO VOLTAGE CONVERTER**  
Michael B. McLean, Franksville, Wis., assignor to Johnson Service Company, Milwaukee, Wis.  
Division of Ser. No. 88,849, Nov. 12, 1970. This application  
Feb. 28, 1972, Ser. No. 229,807  
Int. Cl. H03k 5/00

U.S. Cl. 307—261

8 Claims

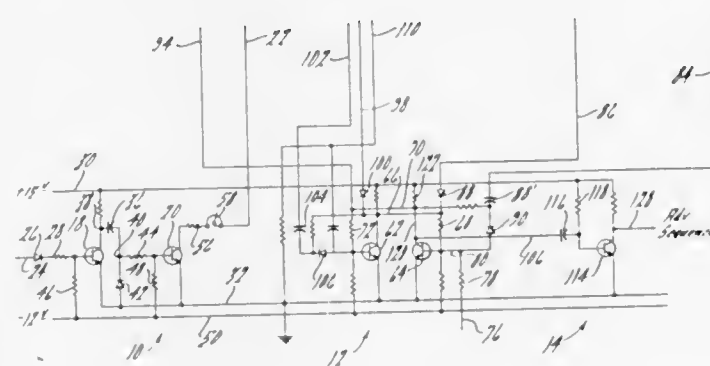


A sample-and-hold circuit samples an incoming alternating signal to provide a voltage proportional to input frequency of a sinusoidal signal. A Schmitt trigger circuit and a divide-by-two multivibrator convert the sinusoidal input signal into two square wave signals separated in phase by 180° and each corresponding to the previous full cycle of the input to provide sampling signals to a pair of sample-and-hold circuits. Each sample-and-hold circuit samples the opposite half cycle or period of a corresponding square wave. Transistor means are connected to the corresponding timing circuit to discharge a voltage storage means prior to sampling in response to the start of the sampling half period. Each sample-and-hold circuit includes a transistor selectively charging the voltage storage means from a constant voltage source during the sampling half period to produce a voltage level related to the input frequency which voltage level is held during the non-sampling half period. Analog switches are connected to the circuits and alternately connect each circuit to an output amplifier to apply the hold voltage during the non-sampling half period.

3,723,772  
**TENS AND UNITS TIMER FOR A WELDING SYSTEM**  
Cletus J. Kollom, Birmingham, Mich., assignor to Weltronic Company, Southfield, Mich.  
Filed Oct. 1, 1970, Ser. No. 77,232  
Int. Cl. H03k 17/26

U.S. Cl. 307—293

15 Claims

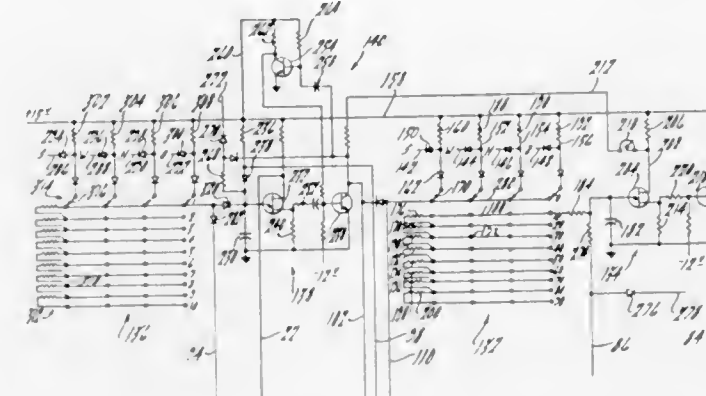


A timing system for use in conjunction with a welding system, wherein the timing system consisting of separate tens and units counters, the counters being electronically controlled to select the tens counter prior to the selection of the units counter. A system is provided for generating synchronizing pulses and a bistable circuit, in the form of a flip flop, is utilized to switch from the tens counter to the units counter upon completion of the tens count.

The purpose of the foregoing abstract is to enable the Patent Office and the public generally, and especially the scientists, engineers or practitioners in the art who are not familiar with patent or legal terms of phraseology to determine

transistor selectively connects the pass transistor base and power supply output terminals for reducing pass transistor drive responsive to overload conditions.

A temperature responsive load current sensing network is

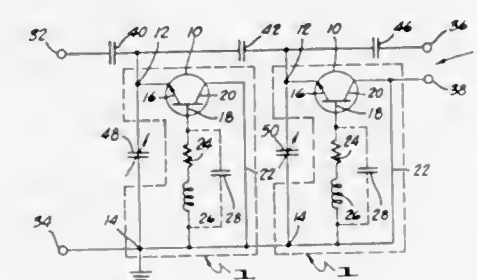


quickly from a cursory inspection the nature and essence of the technical disclosure of the application. The abstract is neither intended to define the invention of the application, which is measured by claims, nor is it intended to be limiting as to the scope of the invention in any way.

3,723,773  
**MULTIPLE RESONATOR ACTIVE FILTER**  
David K. Adams, Portola Valley, and Raymond Y. C. Ho, Sunnyvale, both of Calif., assignors to Stanford Research Institute, Menlo Park, Calif.  
Continuation-in-part of Ser. No. 821,317, May 2, 1969, abandoned. This application May 27, 1971, Ser. No. 147,407  
Int. Cl. H03k 1/16; H03h 7/02, 11/00

U.S. Cl. 307—295

2 Claims



An active inductance of essentially infinite Q for use at microwave frequencies is used as a general circuit element, particularly in single and multiple resonator filters and in channel separators for multiplexing applications. The basic circuit element is configured (constructed) utilizing the emitter electrode of a transistor as the input port, the collector electrode is grounded, and the base electrode circuit is adjusted so inductance and useful negative resistance are translated to the emitter from the base circuit at substantially the center of the desired frequency band of operation. The transistor current is adjusted so that the internal emitter resistance of the transistor essentially cancels the negative translated resistance to yield a synthesized microwave inductance with very high Q.

3,723,774  
**POWER SUPPLY WITH TEMPERATURE COMPENSATED CURRENT FOLDBACK**  
Donald H. Rogers, Ivyland, Pa., assignor to Jerrold Electronics Corporation, Philadelphia, Pa.  
Filed Aug. 6, 1971, Ser. No. 169,686  
Int. Cl. H03k 1/00

U.S. Cl. 307—296

2 Claims

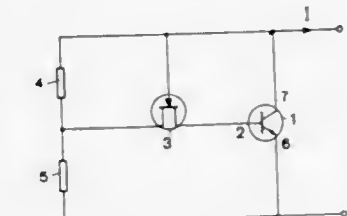
A power supply with overload current foldback employs series regulating feedback circuitry for normally controlling the base potential of a series pass transistor. A current limiting

employed to maintain the peak available power supply output current constant, and a constant potential source is utilized for the foldback circuitry to render the foldback characteristic independent of line voltage variations.

3,723,775  
**TWO TERMINAL NETWORK WITH NEGATIVE IMPEDANCE**  
Alois Marek, Nussbaumen, Switzerland, assignor to Brown, Boveri & Company Limited, Baden, Switzerland  
Filed March 8, 1971, Ser. No. 122,058  
Claims priority, application Switzerland, March 23, 1970, 4329/70  
Int. Cl. H03k 3/26

U.S. Cl. 307—304

8 Claims



The present negative impedance two terminal network is embodied by two three terminal amplifiers, for example, one of which is a field effect transistor and the other is a bi-polar transistor, wherein the emitter-collector circuit of the bi-polar transistor and the source-drain circuit of the field effect transistor are connected in series with each other. The two terminals of the network are formed by the base and by the collector of the bi-polar transistor. Said collector is also connected to the gate terminal of the field effect transistor. A control voltage source is preferably connected between said base of the bi-polar transistor and the drain terminal of the field effect transistor, whereby said negative impedance is differentially adjustable by varying the control voltage.

3,723,776  
**TEMPERATURE COMPENSATED ZENER DIODE CIRCUIT**  
Raymond A. Schulz, Owego, N.Y., assignor to The United States of America as represented by the Secretary of the Navy  
Filed Dec. 27, 1971, Ser. No. 212,268  
Int. Cl. H03k 1/04

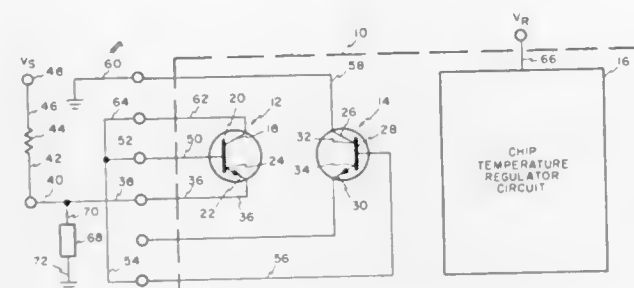
U.S. Cl. 307—318

7 Claims

A temperature compensated zener diode circuit including a heating circuit and a pair of transistors mounted on a single monolithic integrated circuit chip with the heating circuit being electrically insulated from and thermally coupled to the



transistors, base junctions of said transistors being connected in series with one reverse biased to provide a zener effect and the other forward biased to provide thermal compensation whereby the combination of heating circuit and transistor



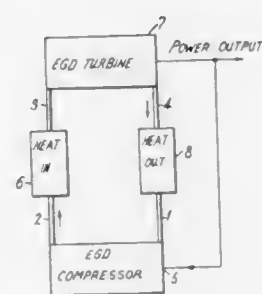
junction thermal compensation provide a zener diode circuit of improved stability and accuracy as well as adaptability to employment of present commercially available mono-lithic integrated circuits.

3,723,777

**ELECTROGASDYNAMIC GENERATORS**  
Peter James Musgrove, Barley, England, assignor to National Research Corporation, London, England  
Filed March 1, 1971, Ser. No. 119,804  
Int. Cl. H02n 1/00

U.S. Cl. 310—5

3 Claims



An electrogasdynamic generator uses a gas containing small particles as the working fluid. The gas is circulated in a thermodynamic cycle round a closed loop and in an expansion stage the particles are electrically charged to expand against an electric field and in a compression stage are electrically charged to be compressed with the assistance of an electric field. The thermodynamic cycle used is the Ericsson cycle in which the gas is heated during its passage through the expansion stage and is cooled during its passage through the compression stage. A heat exchanger is incorporated between the two stages.

3,723,778

**THICKNESS SENSOR FOR SPUTTERING SYSTEMS UTILIZING MAGNETIC DEFLECTION OF ELECTRONS FOR THERMAL PROTECTION**  
Chih-Shun Lu, Jamesville, N.Y., assignor to Inficon Inc., East Syracuse, N.Y.

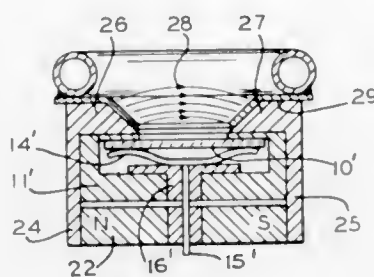
Filed Feb. 7, 1972, Ser. No. 224,028  
Int. Cl. H01v 7/00

U.S. Cl. 310—8.9

7 Claims

An improved sensor for monitoring the thickness of thin films deposited by sputtering. The sensor employs a conventional quartz crystal and heating of the crystal is prevented by providing a localized magnetic field which substantially

eliminates electron bombardment of the exposed area of the crystal. The magnet that produces the field is provided with a



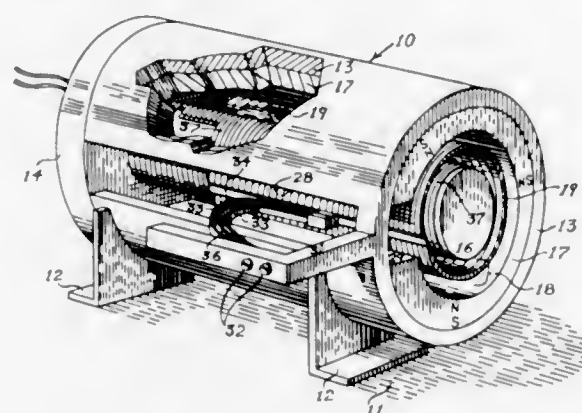
water cooled shield. The sensor can be used in either RF or DC sputtering systems.

3,723,779

**COMPENSATED LINEAR MOTOR**  
Donald E. Gillum, Goleta, Calif., assignor to Information Magnetics Corporation, Goleta, Calif.  
Filed June 22, 1970, Ser. No. 47,977  
Int. Cl. H02k 41/02

U.S. Cl. 310—13

5 Claims



A linear motor having a tubular shell and a center core of magnetic material, has a tubular working air gap formed between a magnet and the core or between the shell and the magnet. A tubular armature is disposed within the tubular air space. Compensation windings are provided that do not occupy the working air gap. Instead, these windings are placed in grooves in one surface of the working air gap and thereby do not increase the air gap dimension, nor decrease the flux density, resulting in an air gap of maximum flux density. With presently available magnets the grooves are preferably formed in the magnetic material of the shell or core. The compensation windings may be shorted, connected with the armature, as in parallel, or any combination.

3,723,780

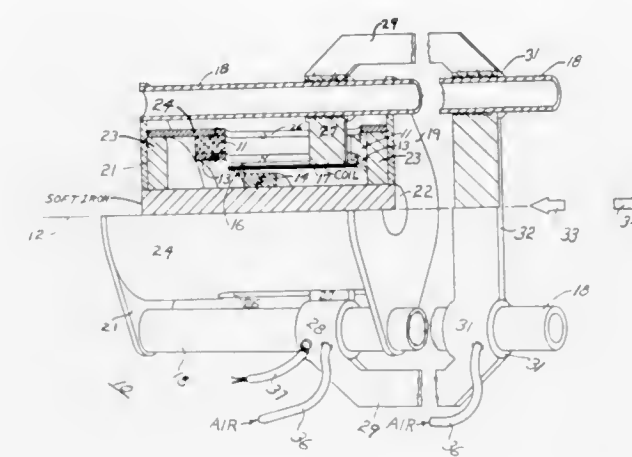
**SELF SHIELDING LINEAR MOTOR**  
Donald E. Gillum, Goleta, Calif., assignor to Information Magnetics Corporation, Goleta, Calif.  
Continuation-in-part of Ser. No. 883,179, Dec. 8, 1969, abandoned, and a continuation-in-part of Ser. No. 47,977, June 23, 1970. This application July 6, 1971, Ser. No. 159,934  
Int. Cl. H02k 41/02

U.S. Cl. 310—13

23 Claims

The invention provides a linear motor having tubular magnets that are radially polarized. An external shell of magnetic material conducts magnet flux through a low reluctance path to a center core inside the tubular magnet. A tubular armature coil, preferably helically wound, is placed over the center core

and occupies the air gap between the magnet and the low reluctance path. The motor can be closed at both ends or open



at one end, or both ends, and in any case there is a very low stray magnetic field.

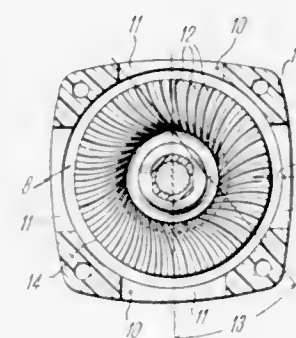
3,723,781

**ELECTROMOTOR**  
Albrecht Schnitzler, Jr., Nurtlingen/Wurttemberg, Germany, assignor to Metabowerke KG Closs, Rauch & Schnitzler, Nurtlingen/Wurttemberg, Germany  
Filed Aug. 26, 1970, Ser. No. 67,151  
Claims priority, application Germany, Aug. 27, 1969, P 19 43 478.7

Int. Cl. H02k 5/24

U.S. Cl. 310—51

5 Claims



A stator is mounted in a housing of an electromotor, and a rotor is journaled for rotation in the housing relative to the stator. Impeller means rotates with the rotor and inherently tends to create audible sound frequencies in response to rotation in the ambient atmosphere. A requisite number of commutating or spoiler portions are provided on the impeller means such that upon rotation of the latter, substantially 15000 such spoiler portions pass per second any fixed point of the housing with reference to which the impeller turns. This commutes the audible sound frequencies to inaudible sound frequencies, that is sound frequencies which are normally inaudible to the human ear so that the electromotor is quieter to a listener.

ERRATA

For Classes 310—68 D thru 310—196 see:  
Patents Nos. 3,723,794 through 3,723,797

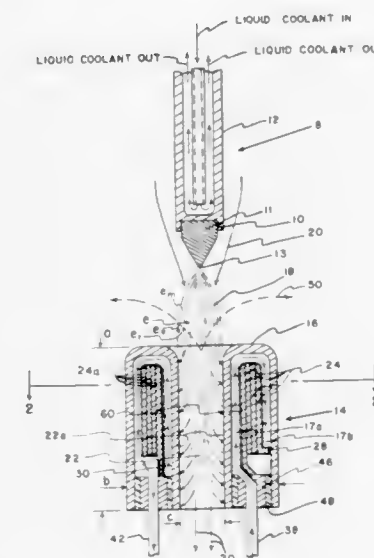
3,723,782

**ARC LAMP WITH MAGNETIC VORTEX ANODE**  
Milton P. Rebne Thomsen, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Army

Filed Sept. 30, 1971, Ser. No. 185,008  
Int. Cl. H01j 61/52, 1/50

U.S. Cl. 313—30

5 Claims



An elongated hollow section cylindrical anode for use in a high pressure xenon short arc lamp. The cylindrical anode has an enlarged open axial passage extending therethrough. A strap of conductive material is wound within the hollow section to produce a high intensity magnetic field about the anode when the arc lamp is operating. The surface contour of the anode and the diameter of the axial passage therethrough are such that the high intensity magnetic field interacts with electrons in the arc column creating a vortical motion of the arc. The vortical motion of the arc disperses the footprint of the arc along the anode walls of the axial passage, providing for greater heat dissipation and power handling capability.

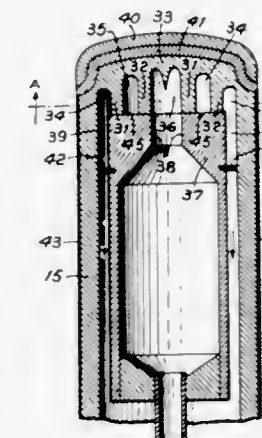
3,723,783

**GASEOUS DISCHARGE HIGH INTENSITY LAMP WITH FLUID COOLED ELECTRODE**  
Norman C. Beese, Verona, N.J., and James J. Malloy, Jr., Easton, Pa., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed April 22, 1970, Ser. No. 30,716  
Int. Cl. H01j 61/06, 61/52

U.S. Cl. 313—32

8 Claims



A high intensity light source is provided by an arc discharge xenon lamp which includes an anode and a cathode electrode enclosed within a sealed, gas-filled, light transparent envelope. The electrodes are disposed in spaced relation such that an arc may be energized across the adjacent ends when a voltage is applied thereacross. The anode electrode is hollow and closed at the arc end. The internal surface at the hollow end has at



least one protrusion to increase the exposure surface and a fluid coolant provides greater heat dissipation therefrom. Preferably the anode electrode includes a tubular member of one metal having an enclosed end, a layer of tungsten capping the external arc end to form the arcing surface, and a further metallic layer joining the tubular member and the tungsten layer. In one embodiment, the metallic layer has a thermal expansion coefficient of an intermediate value between that of the tungsten layer and tubular member.

3,723,784

# ALUMINA CERAMIC LAMP HAVING HEAT-REFLECTING SHIELDS SURROUNDING ITS ELECTRODES

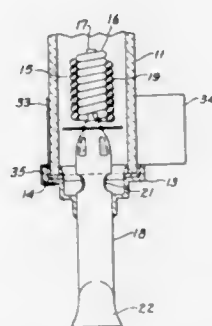
Juris Sulcs, Fairview Park, and Robert W. McKimm, Euclid, both of Ohio, assignors to General Electric Company

Filed April 15, 1971, Ser. No. 134,207

Int. Cl. H01j 61/52

U.S. Cl. 313—47

6 Claims



A high intensity sodium vapor lamp utilizing a tubular envelope of alumina ceramic closed at the ends by niobium end caps which support activated tungsten electrodes and which contains mercury and an excess of sodium not all of which is vaporized during operation. It is desirable that the excess of sodium and mercury condense in the exhaust tube or appendage and not about the interface between the end cap and the sealing glass binding it to the alumina envelope. This result is achieved by providing a heat shield of polished refractory metal about the ends of the arc tube next to the end caps.

3,723,785

# DEFORMABLE BEAM TRANSPORT SYSTEM WITH EXTRACTION PORT

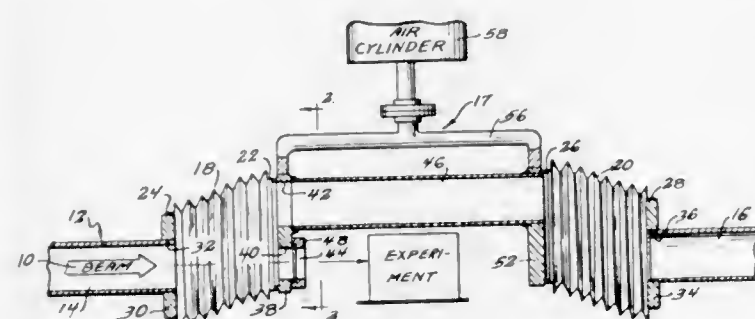
Jack M. Nixon, Wheaton, and Warren J. Ramler, Elmhurst, both of Ill., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed May 23, 1972, Ser. No. 256,051

Int. Cl. H05h 9/00

U.S. Cl. 313—63

6 Claims



A beam transport device for a particle beam traversing first and second sections of a beam tube includes a pair of bellows each having an end mounted to an associated one of the sections of the beam tube. Interposed of the bellows and sealed to associated ends thereof are a particle-beam-extraction window and a rigid hollow member juxtaposed of the extraction window. Motive means are coupled to provide motion to the

extraction window and rigid hollow member whereby they may be respectively aligned with the particle beam upon deformation of the bellows.

3,723,786

# FLAT CATHODE-RAY TUBE FOR DIRECT VIEWING SPOT DISPLAY

Daniel R. Charles, Paris, France, assignor to Thomson-CSF, Paris, France

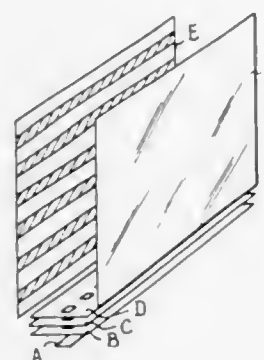
Filed March 4, 1971, Ser. No. 121,076

Claims priority, application France, March 10, 1970, 7008540

Int. Cl. H01j 29/50, 31/12, 29/74

U.S. Cl. 313—70 R

4 Claims



The present invention relates to a cathode-ray tube designed for point display. them;F cathodoluminescent

The tube comprises an electron-gun embodying a series of cathodes 2 arranged on a conductive band A, an electrode C for the individual control of each of said cathodes in said series, and two additional parallel electrodes running along the band A over the whole of its length, one of them, F carrying a cathodoluminescent coating and the other, E, metal strips 11. By combining the control voltages applied to C, on the one hand, and the potential exhibited by the strips 11 in relation to that of the cathodoluminescent coating, on the other hand, spot display on the cathodoluminescent layer is achieved.

3,723,787

# RED LUMINESCENT EUROPIUM ACTIVATED YTTRIUM OXYCHLORIDE PHOSPHOR AND COLOR TELEVISION DISPLAY TUBES CONTAINING SAID PHOSPHOR

George Blasse, and Jaap De Vries, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 654,652, July 19, 1967, abandoned.

This application March 6, 1970, Ser. No. 17,013

Int. Cl. C09k 1/08; H01j 29/20

U.S. Cl. 313—92 PH

3 Claims

Europium activated red luminescing phosphor for color television, said phosphor being a trivalent europium activated oxychloride of an element such as a rare earth metal such as yttrium, lanthanum and gadolinium.

3,723,788

# SPARK CHAMBER APPARATUS FOR DETECTING RADIATIONS

Eizo Goto, Chigasaki, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Sept. 15, 1970, Ser. No. 72,435

Int. Cl. H01j 39/26

U.S. Cl. 313—93

6 Claims

A spark chamber apparatus for detecting radiations which essentially comprises a directly sealed spark chamber enclosing an electric sparking gas at normal pressure and thin elec-

trode layers covered over the boundary zone thereof with non-conductive glaze.



The sealing of spark chamber by the use of glazy substance and the covering of the perimetric portions of electrodes are simultaneously performed by a dipping process.

3,723,789

# FLAT COMPOSITE FLUORESCENT DISPLAY TUBE

Mikiharu Tanji, Ise, Japan, assignor to ISE Electronics Corporation, Ise City, Japan

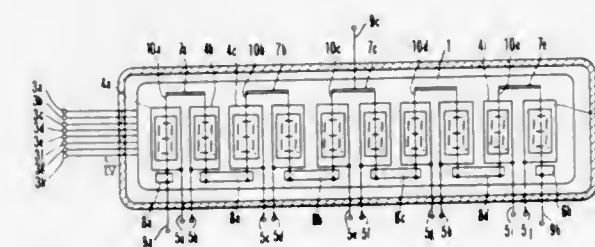
Filed Dec. 8, 1970, Ser. No. 96,025

Claims priority, application Japan, Dec. 13, 1969, 44/99882

Int. Cl. H01j 1/72, 1/88, 63/00

U.S. Cl. 313—108 R

6 Claims



In a composite fluorescent display tube of the type comprising an insulator substrate, a plurality of display members mounted on one surface of the substrate, each of the display members including a plurality of fluorescent segments which are selectively energized to display a selected letter, a filament confronting these plurality of display members, and a evacuated envelope containing the above described component parts, there are provided a plurality of independent electrode structures, one for each one of the display members, each electrode structure including a letter forming electrode having a plurality of perforations corresponding to the fluorescent segments, a mesh control grid electrode and a frame shaped electrode interposed between the letter forming electrode and the control grid electrode for connecting them into a unitary structure; and conductors common to corresponding ones of the fluorescent segments of the display members, said conductors extending along the opposite surface of the substrate.

3,723,790

# ELECTRICAL LAMP OR TUBE COMPRISING COPPER COATED NICKEL-IRON ALLOY ELECTRICAL CURRENT CONDUCTORS AND A GLASS ENCLOSURE

William H. Dumbaugh, Jr., and Joseph W. Malmendier, both of Painted Post, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Feb. 1, 1971, Ser. No. 111,524

Int. Cl. H01j 17/16; C03c 3/04

U.S. Cl. 313—221

5 Claims

Electrical articles, including electrical lamps and tubes, have dumet electrical current conductors and a glass enclosure sealed to the conductors. The glass enclosure may be composed entirely of a Na<sub>2</sub>O—Li<sub>2</sub>O—K<sub>2</sub>O—BaO—Al<sub>2</sub>O<sub>3</sub>—SiO<sub>2</sub> electrical sealing glass, or may be composed of a soda-lime glass envelope joined to the conductors with an intermediate component of the sealing glass.

# 3,723,791 ELECTRICAL HIGH VOLTAGE APPARATUS EQUIPPED WITH A MOVABLE AIR LOCK DEVICE FOR EXCHANGING THE FILAMENT OF AN ELECTRON GUN

Franz Stocklein, 1 Berlin, Germany, assignor to Max-Planck Gesellschaft Zur Forderung der Wissenschaften e. V., Gottingen, Germany

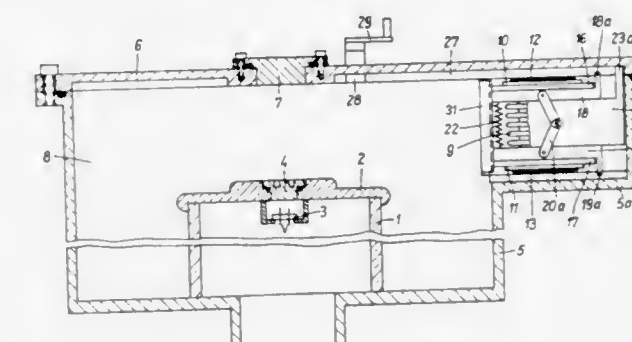
Filed Feb. 9, 1972, Ser. No. 224,789

Claims priority, application Germany, Feb. 26, 1971, P 21 10 130.4

Int. Cl. H01j 1/00, 1/92

U.S. Cl. 313—237

14 Claims



An electric high-voltage apparatus such as an electron accelerator or the like includes a tank having a wall and a tank access located in the wall for making the interior of the tank accessible. An electrical discharge vessel is disposed in the tank and contains replaceable parts. The vessel has a wall and is insulatingly spaced from the tank wall. A vessel access is located in the vessel wall for making the replaceable parts accessible. A tube-like air lock device having a longitudinal axis is movable in the tank transversely to this axis from a given rest position to an operative position located between the tank access and said vessel access. The device includes expansion structure for defining a gas-tight passage between the vessel access and the tank access when the device is in the operative position thereof.

3,723,792

# ELECTRIC INCANDESCENT LAMPS HAVING REFRACTORY METAL PHOSPHATE AND PHOSPHIDE COATINGS FOR REFRACTORY METAL LEADS

Vincent Chiola, 329 York Avenue, James S. Smith, R.D. No. 2, and Clarence D. Vanderpool, R.D. No. 2, all of Towanda, Pa.

Division of Ser. No. 3,937, Jan. 19, 1970, which is a

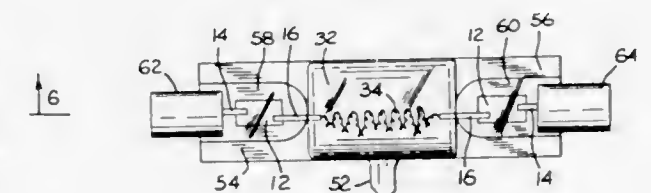
continuation-in-part of Ser. No. 647,106, June 19, 1967,

abandoned. This application Jan. 13, 1972, Ser. No. 217,594

Int. Cl. H01j 5/50

U.S. Cl. 313—318

11 Claims



Lamps operating at high temperatures, and more particularly incandescent or arc lamps having sealed-in lead-in electrical conductors with improved service characteristics and longer service life are fabricated with a "coating" on the aforesaid leads comprising at least one of the following: a phosphate or phosphide of tungsten, or a phosphate or phosphide of molybdenum.



3,723,793

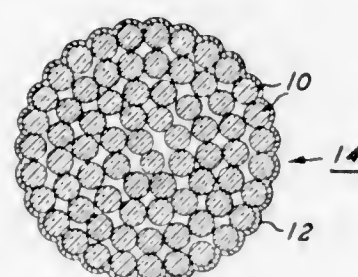
## COATED CORONA GENERATING ELECTRODE

Richard J. Komp, Bowling Green, Ky., and John W. Weigl, West Webster, N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 612,124, Jan. 27, 1967, Pat. No. 3,566,108. This application Oct. 8, 1970, Ser. No. 79,230  
Int. Cl. H01j 1/53

U.S. Cl. 313—355

7 Claims



A corona generating article is provided by overcoating a strand or bundle of strands with a material which is at least partially conductive.

3,723,794

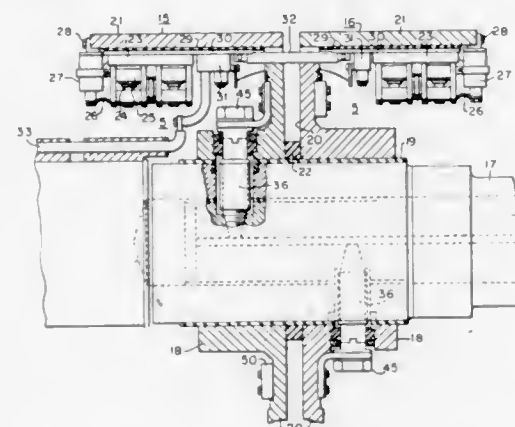
## RECTIFIER ASSEMBLY FOR BRUSHLESS EXCITATION SYSTEMS

Andrew J. Spisak, Bethel Park, and Louis E. Nagoda, Irwin, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed March 6, 1972, Ser. No. 232,084  
Int. Cl. H02k 11/00

U.S. Cl. 310—68 D

4 Claims



A rectifier assembly for brushless excitation systems in which rectifier diodes are mounted on support wheels on a shaft, and in which the wheels form part of the rectifier circuit and are connected to axial output leads in a shaft bore by radial connecting members extending through the hub of each wheel and through the shaft to the axial leads.

3,723,795

## EDDY-CURRENT AND HYSTERESIS BRAKE FOR TRACK-BOUND VEHICLES

Max Baermann, 506 Bensberg Wulfshof, Bezirk, Cologne, Germany

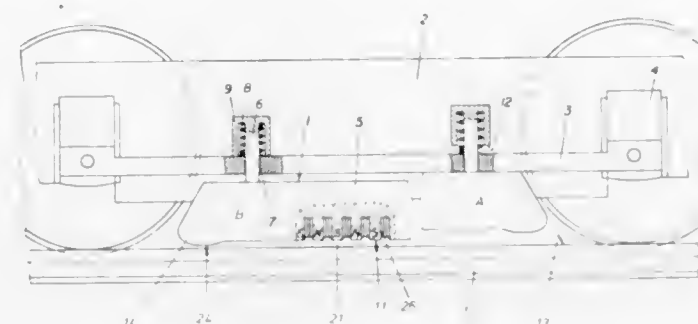
Filed July 12, 1971, Ser. No. 161,609  
Int. Cl. H02k 49/00

U.S. Cl. 310—93

12 Claims

A novel eddy-current and hysteresis brake for track-bound vehicles is provided which incorporates resisting skids or rollers to eliminate wear problems associated with prior art brakes of this type. The particular magnetic construction of the pole surface is critical to obtain maximum hysteresis and eddy-current forces with a uniform air gap and the minimum energization. The pole surface is also formed to prevent un-

desirable air currents or the accumulation of dirt or other disturbing external build-up, while providing maximum pole



surface and winding relationships. An alternating pole configuration is provided along the direction of movement of the vehicle.

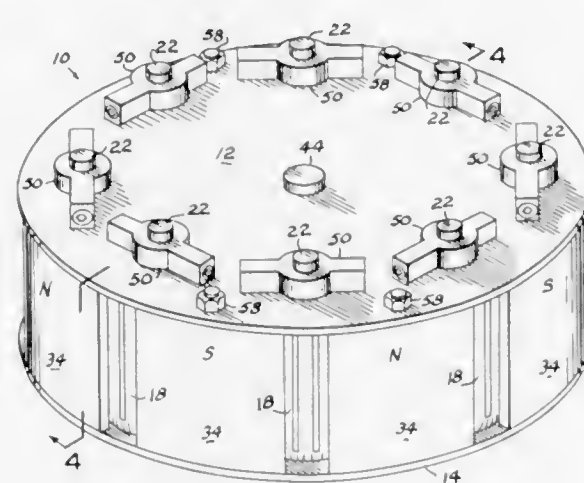
3,723,796

## MULTI-ARMATURE MOTOR

Elmer B. Mason, 901 Vickie Drive, Del City, Okla.  
Continuation-in-part of Ser. No. 35,685, May 8, 1970, Pat. No. 3,651,355. This application March 20, 1972, Ser. No. 236,114  
Int. Cl. H02k 23/00

U.S. Cl. 310—126

7 Claims



A plurality of armatures are supported in parallel spaced relation in a circular array between interdigitated magnetic pole pieces energized by a central coil.

3,723,797

## INSULATED COIL FOR ARRANGEMENT IN A SLOT IN THE STATOR OR ROTOR OF AN ELECTRICAL MACHINE

Anders R. Andersson, and Anders Bjorklund, both of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Oct. 22, 1970, Ser. No. 82,953  
Claims priority, application Sweden, June 5, 1970, 7803/70; June 5, 1970, 7804/70

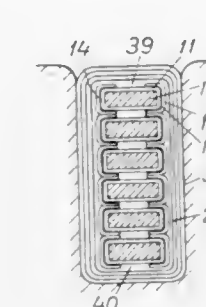
Int. Cl. H02k 1/00

U.S. Cl. 310—196

15 Claims

A coil positioned in the slot of a stator or rotor in an electric machine is formed of a bundle of conductors arranged close together and insulated from each other and from the slot. The conductor insulation consists of a layer of enamel and a tape of corona resistant insulating material running longitudinally of the conductor is adhered to the enamel layer. The tape surrounds the parts of the conductor facing the main insulation

which surrounds the bundle of conductors and furthermore overlies at least those parts of the sides of the conductor which



face the adjacent conductors which parts are situated nearest the sides facing the main insulation.

3,723,798

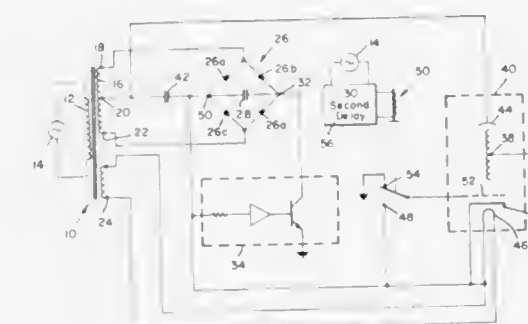
## TRAVELING WAVE TUBE POWER SUPPLY

Lawrence H. O'Brien, Fountain Valley, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed May 1, 1972, Ser. No. 248,903  
Int. Cl. H01j 25/34

U.S. Cl. 315—3.5

4 Claims



A traveling-wave tube power supply utilizes a single high voltage power transformer. A full-wave bridge rectifier arrangement is connected to the high voltage secondary winding which together with a filtering capacitor provides the requisite potential between the TWT cathode and the slow wave structure. A "depressed" cathode/collector potential is obtained across one output side of the bridge rectifier and a center tap of the high voltage secondary. This arrangement provides a high voltage, low current cathode/slow wave structure potential, and a lower voltage (by approximately 50 percent) high current cathode/collector potential.

In a preferred embodiment, the filament power supply may share the same transformer primary winding as the high voltage power supply since the filament and cathode are connected to the tube's modulation anode during tube warm-up.

3,723,799

## IMAGE CORRELATOR WITH IMAGE SHIFT DETECTION CAPABILITY

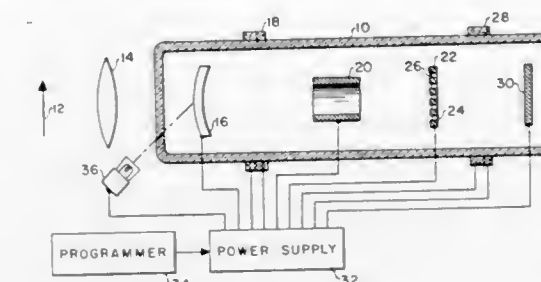
Klaus J. Hecker, Riverside, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Aug. 28, 1964, Ser. No. 394,380  
Int. Cl. H01j 31/48

U.S. Cl. 315—11

3 Claims

This invention relates to an electro-optical system capable of determining the translational shift of one image of a given



electrons impinging on phosphor screen 30 from a particular direction.

3,723,800

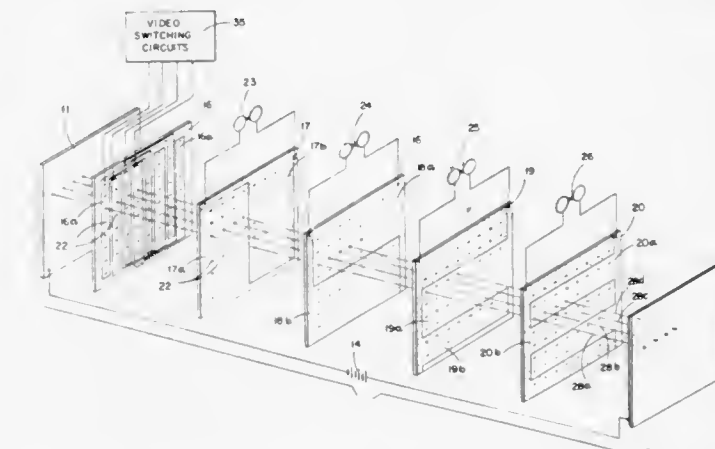
## CHARGED PARTICLE BEAM SCANNING APPARATUS WITH VIDEO SWITCHING NETWORK

Farrell A. McCann, Hawthorne, Calif., assignor to Northrop Corporation, Los Angeles, Calif.

Filed Feb. 8, 1971, Ser. No. 113,567  
Int. Cl. H01j 29/41

U.S. Cl. 315—12

11 Claims



Sequentially appearing video signals as may be generated by means of a single scanning beam are processed for display in a plurality of simultaneously appearing beams of a charged particle beam scanner. Video signals corresponding to each of the scanning beams are successively fed to corresponding hold circuits, the number of such hold circuits corresponding to the number of scanning beams. The scanner has a plurality of beam channels defined between an area charged particle source and target with control plate means simultaneously controlling the scanning of each of the beams in these channels. A modulator control plate also is included for simultaneously controlling the intensity of each of the beams. Video signals are simultaneously fed from the hold circuits to corresponding beam control electrodes of the modulator control plate to provide simultaneous modulation of all of the beams. In this manner successive groups of consecutively arriving video signals, are memorized in hold circuits and then simultaneously used to modulate corresponding beams which are controlled to scan the target.

3,723,801

## MEASURING THE BEAM LANDING CHARACTERISTIC OF A SHADOW-MASK CATHODE-RAY TUBE

John Kenneth Oxenham, Blackburn, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 16, 1970, Ser. No. 55,441

Claims priority, application Great Britain, Aug. 5, 1969, 39,156/69

Int. Cl. H01j 29/54

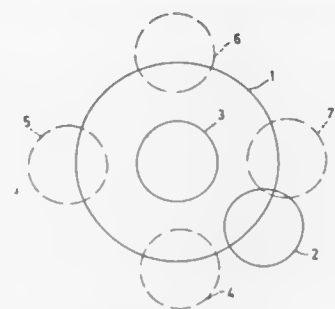
U.S. Cl. 315—13 C

11 Claims

A method of adjusting the electron beam landing in a color display tube on the screen of which phosphor dots are pro-



vided which are impinged upon by the electron beams so that they luminesce with different colors. One electron beam is activated while the picture to be displayed is a white raster. Alternating current and direct current fields are adjusted in such a manner that the spots of the electron beams are arranged



symmetrically relative to the phosphor dots, which may be found with the aid of a detector arrangement, for example, a photomultiplier which is exclusively sensitive to the color corresponding to the active electron beam. The landing characteristic may be measured and the color purity may be adjusted.

### 3,723,802 DIGITAL VECTOR GENERATOR UTILIZING INTENSITY CONTROL AS A FUNCTION OF VECTOR ANGLE AND VELOCITY

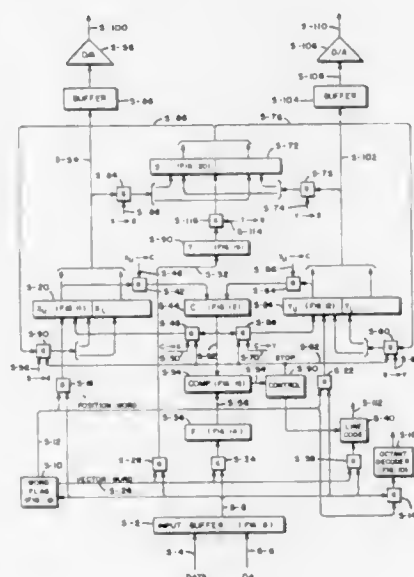
Mauritz Granberg, Minneapolis, and Hubert W. Mueller, Jr., Hamburg, both of Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Division of Ser. No. 569,481, Aug. 1, 1966, Pat. No. 3,510,634. This application July 17, 1969, Ser. No. 871,160

Int. Cl. H01j 29/70

U.S. Cl. 315—18

1 Claim



An intensity control circuit for use in a high-precision vector generator in which the intensity of the trace on a cathode ray tube is controlled as a function of the angle and speed at which a vector is to be drawn.

### 3,723,803 GENERATION, DISPLAY AND ANIMATION OF TWO-DIMENSIONAL FIGURES

Lee Harrison, III, Englewood; Frank David Wells, and Francis J. Honey, both of Denver, all of Colo., assignors to Computer Image Corporation, Denver, Colo.

Filed July 6, 1970, Ser. No. 52,389

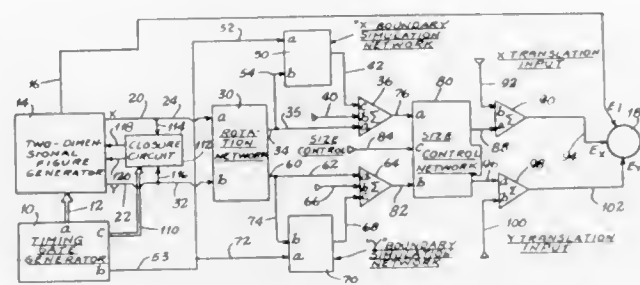
Int. Cl. H01j 29/70

U.S. Cl. 315—22

23 Claims

A system for automatically generating, displaying and animating two-dimensional figures comprising straight line segments, animations of the figures including gross size, gross

position, shape and rotational animation sequences. Means are also provided for maintaining the figure closed through



any animation sequence and establishing boundary conditions for the figure.

### 3,723,804 VERTICAL DEFLECTION DEVICE UTILIZING RECTIFYING MEANS FOR DEFLECTION CONTROL

Noboru Yasumatsuya, Kadoma-shi, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

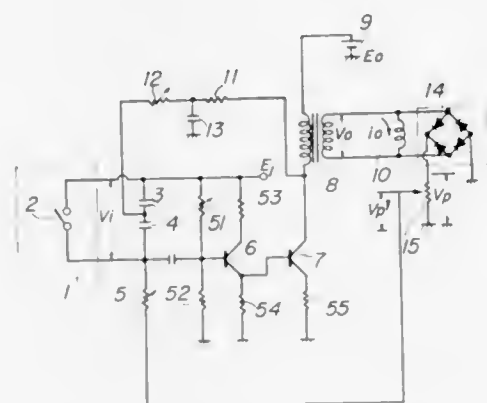
Filed Dec. 7, 1970, Ser. No. 95,677

Claims priority, application Japan, Dec. 12, 1969, 44/100399

Int. Cl. H01j 29/70

U.S. Cl. 315—276 D

6 Claims



A vertical deflection device which comprises deflection-signal generating means for producing deflection signals to be applied to a cathode-ray tube, rectifying means to rectify the deflection signals, and controlling means to control the deflection-signal generating means by the rectified voltages of the deflection signals, whereby an operation for correcting the deflection signal to a substantially S-shaped signal in order to prevent tangent distortions from appearing for the reason that a projecting screen of the cathode-ray tube is not spherical, may be easily effected.

### 3,723,805 DISTORTION CORRECTION SYSTEM

Theodore J. Scarpino, and Douglas W. Holbrook, both of Endwell, N.Y., assignors to The United States of America as represented by the Secretary of the Navy

Filed May 12, 1971, Ser. No. 142,706

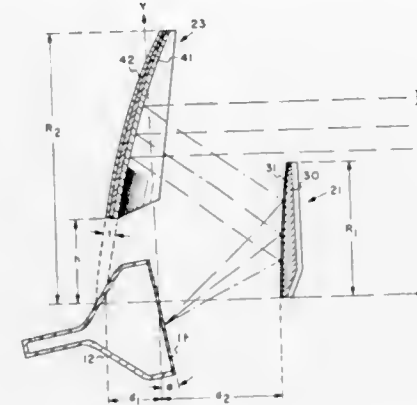
Int. Cl. H01j 29/80

U.S. Cl. 315—27 GD

4 Claims

Combinational distortion correction in a cathode ray tube (CRT) head-up display is accomplished for both optical distortion and CRT distortion by electronically predistorting the displays that appear on the face of the CRT. The corrections are performed in one step by the implementation of a complete mathematical model describing the combinational distortion patterns. The corrections to the vertical and horizontal CRT deflection voltages are represented as com-

binations of a plurality of transformation functions which are electronically mechanized by a straight line segment approxi-



mation technique where the slope and segment lengths are controlled by diode segment generators.

### 3,723,806 ADJUSTABLE STABLE POWER SUPPLY FOR CONTINUOUS WAVE MAGNETRON

Maurice Francois Poussereau, Conflans Saint Honorine, and Marcel Denis, Paris, both of France, assignors to International Standard Electric Corporation, New York, N.Y.

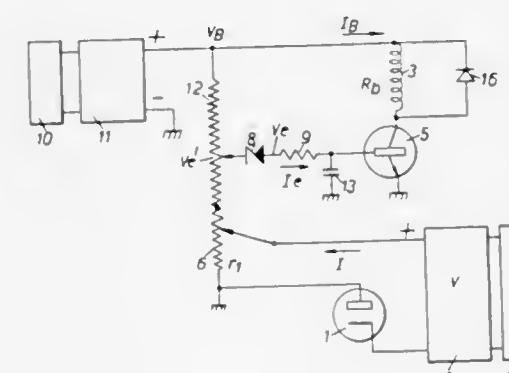
Filed March 30, 1972, Ser. No. 239,529

Claims priority, application France, April 7, 1971, 7112281

Int. Cl. H01j 25/50

U.S. Cl. 315—39.51

6 Claims



A power supply circuit for a continuous wave magnetron provides adjustable stable power levels. A first direct voltage source is connected across the magnetron and a second direct voltage source from a common alternating voltage source is connected across the magnetron coil in series with a direct current amplifier. Current feedback to the input of the amplifier is derived from the magnetron by an adjustable voltage divider connection to the first voltage source. Another portion of the voltage divider provides a third direct voltage connection between the second source and amplifier input, the amplifier input current being the sum of current from the third source and adjustable current from the magnetron.

### 3,723,807 AUTOMOTIVE HEADLAMP DELAYED OFF DEVICE

Joseph Tozzi, Lafayette Hills, Pa., assignor to Philco-Ford Corporation, Philadelphia, Pa.

Filed Nov. 26, 1971, Ser. No. 202,436

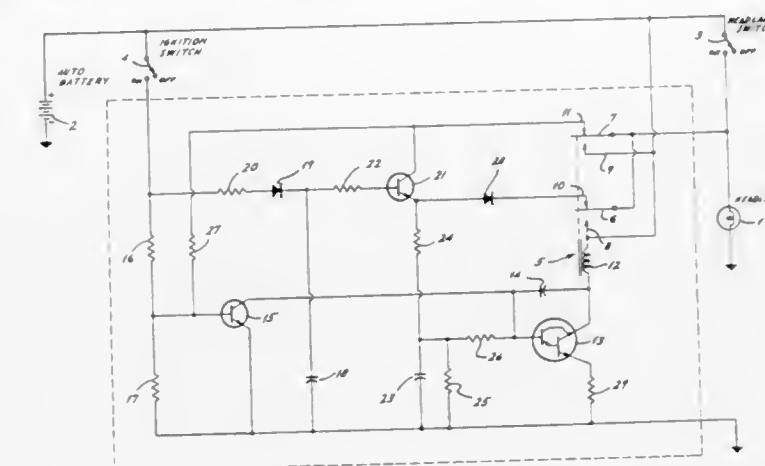
Int. Cl. B60q 1/04

U.S. Cl. 315—83

5 Claims

A delayed-off headlamp circuit in which the delay feature is invoked only within a predetermined time interval after the ig-

nitiation is turned off. Otherwise headlamp operation is normal.



This permits the user to invoke a delay when he desires it but is not bothered by an undesired delay otherwise.

### 3,723,808 LIGHTING SYSTEM UTILIZING HIGH INTENSITY DISCHARGE LAMPS

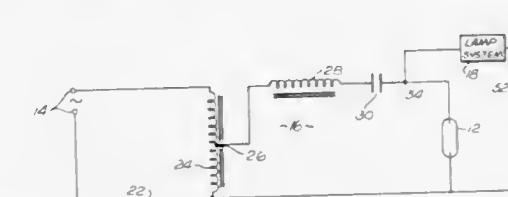
Bill F. Jones, Los Angeles, Calif., assignor to Smoot-Holman Company, Inglewood, Calif.

Filed June 1, 1971, Ser. No. 148,375

Int. Cl. H05b 39/00

U.S. Cl. 315—95

10 Claims



A lighting system is disclosed in which high intensity discharge lamps (e.g. mercury vapor lamps) are operated in combination with other lamps (e.g. incandescent lamps) to afford consistent and improved lighting. Somewhat-conventional ballast circuits are disclosed for energizing a high intensity discharge lamp in any of three states including warm-up, illumination and recovery. Another lamp is then included in the system, to be energized under the control of the potential developed across the high intensity discharge lamp, referenced to a base potential that is somewhat intermediate to the extreme levels developed across the discharge lamp during its various phases of operation, as provided by the ballast circuit. Embodiments with both autotransformer and dual winding transformer ballast circuits are disclosed, along with various sources of the intermediate base potential.

### 3,723,809 MAGNETO-DYNAMO-OPERATED IGNITION DEVICE FOR MULTI-CYLINDER ENGINES

Minoru Fujii, Kariya, Japan, assignor to Nippondenso Co., Ltd., Kariya-shi, Aichi-ken, Japan

Filed March 30, 1971, Ser. No. 129,342

Claims priority, application Japan, April 4, 1970, 45/32714

Int. Cl. H05b 37/02; F02p 1/00

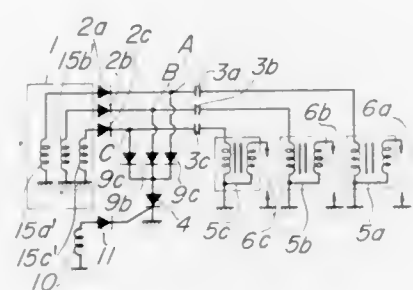
U.S. Cl. 315—211

7 Claims

A magneto-dynamic-operated ignition device for a multi-cylinder engine comprising a magneto dynamo, a plurality of discharge capacitors and a plurality of ignition coils; said magneto dynamo having a 2-pole rotor, an even-pole stator and an armature coil wound on every other pole of said stator poles, the number of which is determined depending on the number of cylinders; said discharge capacitors and ignition coils being



equal in number to or half as many as the cylinders. Discharging circuits of the discharge capacitors are interrupted by a common rectifier which is controlled by ignition timing signals from ignition timing magneto dynamos.



common rectifier which is controlled by ignition timing signals from ignition timing magneto dynamos.

3,723,810

## ELECTRONIC FLASH DEVICE

Yukio Mashimo, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

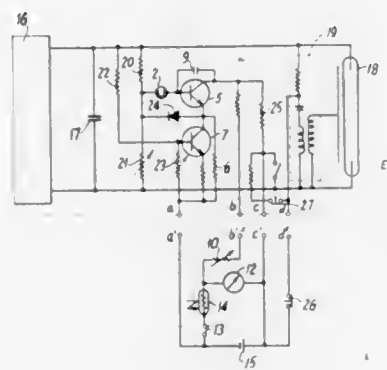
Filed Dec. 8, 1971, Ser. No. 206,071

Claims priority, application Japan, Dec. 8, 1970, 45/108769; April 15, 1971, 46/29205

Int. Cl. H05b 41/40

U.S. Cl. 315—241 P

9 Claims



An electronic flash device comprising a circuit having a first semi-conductor which functions switching action in correspondence to the charging condition of a main capacitor storing flash energy, a load connected to an emitter of said semi-conductor, and a second semi-conductor which varies output resistance in correspondence to the charging condition of said main capacitor and is connected in parallel with said load, said circuit being provided between the main capacitor and an exposure meter circuit of a camera.

3,723,811

## DISSIPATION OF STATIC ELECTRICITY

Frans P. Koeleveld; Reginald Mak Ngo, both of Newport News, and Russell G. Duby, Williamsburg, all of Va., assignors to Dow Badische Company, Williamsburg, Va.

Filed Feb. 9, 1971, Ser. No. 113,865

Int. Cl. H05f 3/00

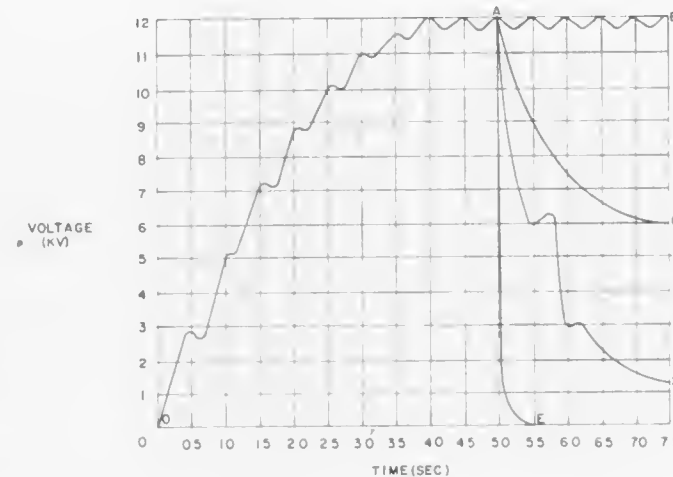
U.S. Cl. 317—2 R

1 Claim

Disclosed is a method of imparting static dissipation efficacy to flooring otherwise incapable of dissipating static electricity to any practical extent.

The flooring is covered at one or more chosen positions with a fabric, conveniently in the form of a "throw rug" or other similar structure, which fabric contains yarns compris-

ing electrically conductive material. An efficient dissipation of high concentrations of static electricity accumulated by hu-



mans is effected by a simple stepping or walking upon the throw rug.

3,723,812

## AUXILIARY MEANS FOR COMPLETING CURRENT TRANSFORMER SECONDARY WINDING CIRCUIT

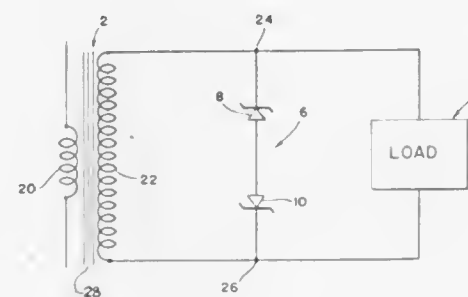
John C. Lynch, Canonsburg, Pa., assignor to McGraw-Edison Company, Elgin, Ill.

Filed March 18, 1971, Ser. No. 125,486

Int. Cl. H02h 7/04

U.S. Cl. 317—14 A

8 Claims



A semi-conductor switch means is provided which is connected to a current transformer secondary winding and is responsive in conduction to the voltage across the secondary winding rising to a predetermined level upon the removal of the load on the secondary winding and its open circuiting. The secondary winding itself is part of the circuit and the impedance of the winding limits the current flow through the switch means.

3,723,813

## ALARM CIRCUIT FOR MONITORING THE PRIMARY WINDING OF A NEUTRALIZING TRANSFORMER AND ITS GROUNDING CONNECTION

Gordon Y. R. Allen, 4 Ireland Court, Islington, Ontario, Canada

Filed Jan. 17, 1972, Ser. No. 218,108

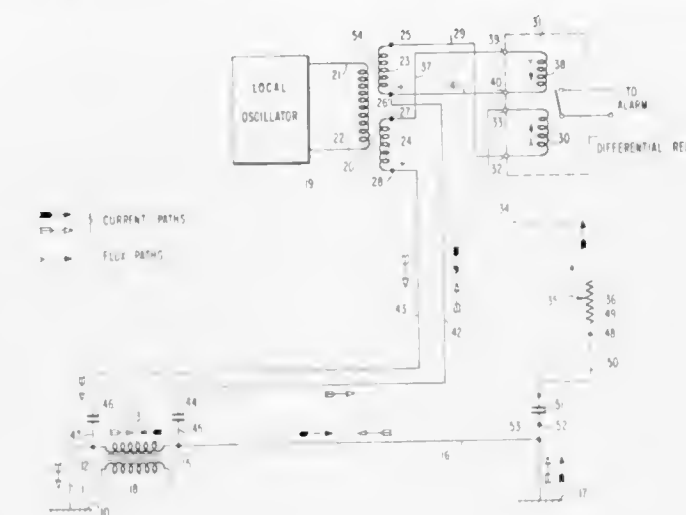
Int. Cl. H02h 3/28

U.S. Cl. 317—18 B

6 Claims

A remote alarm and indicating circuit for the primary of a neutralizing transformer utilizing an oscillator to produce balanced opposing signals in the primary and grounding circuits. These signals also flow through the coils of a differential

relay in such a manner that if the ground circuit opens or if there is an appreciable change in its impedance or resistance,



on the order of 5 percent or more, the differential relay will operate denoting such an occurrence.

3,723,814

## PHASE-SENSITIVE GROUND FAULT PROTECTIVE SYSTEMS

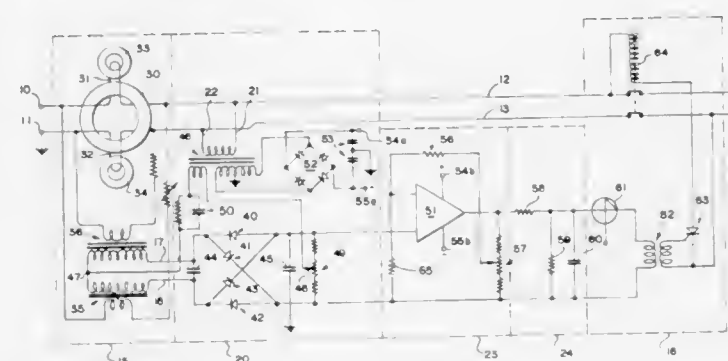
Thomas A. O. Gross, Concord Road RFD, Lincoln, Mass.

Filed May 1, 1972, Ser. No. 249,156

Int. Cl. H02h 3/28

U.S. Cl. 317—18 D

12 Claims



To prevent possible electrocutions and to minimize the risk of fires caused by insulation faults in alternating current power distribution systems, a protective system responsive to ground fault currents in phase with the line potentials interrupts the electrical power. Ground fault currents are detected by a sensor responsive to differential or unbalanced currents in the supply conductors of the distribution system. The unbalanced currents are compared with the phase of the line potentials by a demodulator to detect only in-phase components and produce an output signal representing a true fault, the magnitude of which depends on the degree of current imbalance. Output signals exceeding a threshold value trip a circuit breaker to remove power from the load conductors. The combination is sensitive to ground faults of either high or low resistances, and is substantially insensitive to spurious signals which do not represent true faults.

3,723,815

## ELECTRONIC CIRCUIT PROTECTIVE DEVICE

E. Curtis Ambler, Newington; Andrew E. Scoville, Ellington, and Walter R. Bush, West Simsbury, all of Conn., assignors to The Stanley Works, New Britain, Conn.

Continuation-in-part of Ser. No. 101,748, Dec. 28, 1970, Pat. No. 3,668,471. This application June 5, 1972, Ser. No. 259,765

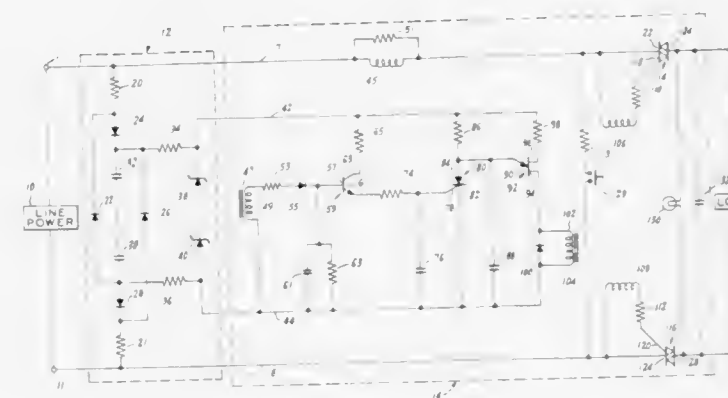
Int. Cl. H02h 3/28

U.S. Cl. 317—18 D

20 Claims

A protective circuit device for connection between an associated electrical power supply and an associated electrical

load which detects faults in the current drawn by the load. A solid state switch in the protective device is rendered conductive or non-conductive in response to an input signal produced by a signal generating means. The amplified signal from a current fault sensing means is applied to the gate of a silicon controlled rectifier which terminates the signal of the signal generating means maintaining one of the states of the solid



state switch to open the circuit controlled thereby.

In the several embodiments, the protection device detects excessive current drawn by the load, or electrical leakage from the load by means of a differential transformer which produces an error signal when there is current imbalance between conductors from the line supply, or both. The preferred solid state switch is a triac, and desirably solid state switches couple both sides of the output and input terminals.

3,723,816

## CURRENT LIMITING STATIC SWITCH

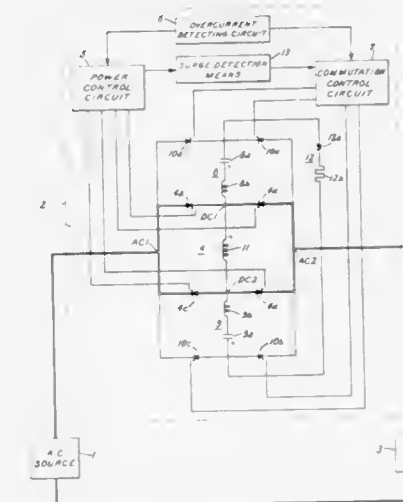
Ernest M. Pollard, Cherry Hill, N.J., assignor to General Electric Company

Filed Jan. 21, 1972, Ser. No. 219,621

Int. Cl. H02h 3/08

U.S. Cl. 317—20

9 Claims



Disclosed is a bidirectional current limiting static circuit breaker including four power thyristors arranged to form two conducting paths. Each path includes two of the thyristors and a common current limiting inductor. Commutation means are provided to render any fault current carrying power thyristors non-conductive upon command. The current limiting inductor acts to insure that commutation proceeds to a successful conclusion once begun. The breaker also includes means for suppressing commutation induced transients and for protecting nonconducting power thyristors from externally originated voltage surges.



3,723,817

## VEHICLE BATTERY CHARGING SYSTEMS

Gordon Harris Leonard, Chalfont, St. Peters, Bucks; Zymunt Sobiecki, North Greenford, Middlesex, and Peter Robert Lomas, London, all of England, assignors to C. A. V. Limited, Birmingham, England

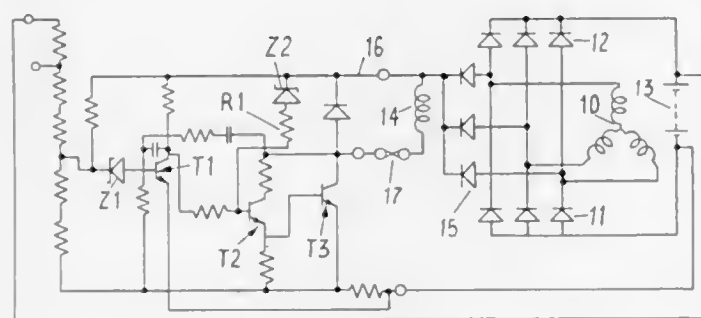
Filed Sept. 1, 1971, Ser. No. 177,014

Claims priority, application Great Britain, Sept. 4, 1970, 42,428/70

Int. Cl. H02h 3/20

U.S. Cl. 317—31

4 Claims



A vehicle battery charging system includes an alternator having an exciting winding and a voltage regulator which includes a transistor connected in series with the exciting winding to control the current flow therein. In the event of a voltage surge a Zener diode breaks down and causes the transistor to conduct thereby placing the transistor in a better state to withstand the voltage surge.

3,723,818

## DIRECT ACTING OVERCURRENT SYSTEM FOR HIGH VOLTAGE CIRCUIT BREAKERS

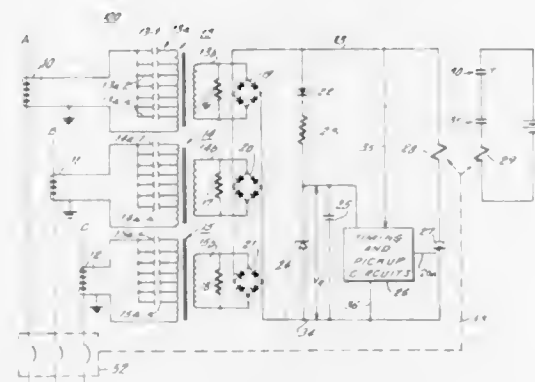
Stanley E. Zocholl, Holland, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed Oct. 5, 1971, Ser. No. 186,672

Int. Cl. H01h 47/18

U.S. Cl. 317—36 TD

3 Claims



A solid state system for high voltage circuit breaker applications utilizing a solid state sensor and time delay circuit adapted to simulate din induction disk type time-current characteristics utilizing standardized components otherwise employed in low voltage breaker applications with adjustable features for tailoring the trip current generated by the solid state circuitry to be compatible with the particular magnetic latch being employed in the high voltage circuit breaker. The magnetic latch is provided with an independent isolated winding controlled by an isolated power source for performing a tripping operation under the control of external and remote control means. Isolation of the sensor and timing circuitry from the control transformers prevents disruptive or damaging transients from being coupled to the solid state sensing circuitry.

3,723,819  
LOW VOLTAGE SECONDARY LIGHTNING ARRESTER  
SPARKGAP ASSEMBLY

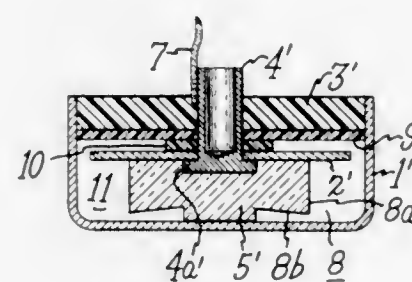
Francis J. Charewicz, Lanesboro, Mass., assignor to General Electric Company

Filed Nov. 9, 1970, Ser. No. 87,929

Int. Cl. H02h 3/22, 9/06

U.S. Cl. 317—61

13 Claims



A sparkgap assembly for a low voltage lightning arrester is formed by mounting a disc-shaped electrode in spaced-apart relation with a cup-shaped electrode with a block of insulating material between the two electrodes. The block of insulating material serves as a preionizer to ionize the sparkgap between the electrodes when a surge voltage is applied to the arrester. The block of material is also characterized by incorporating a baffle means that operate to prevent arc-generated contaminants, such as particles of electrode metal, from being deposited on preselected, shielded portions of it. By thus maintaining portions of the resistance path disposed between the two electrodes free of electrically conducting contaminants, the sparkover level of the arrester is preserved during and after successive arc discharge operations and the noise generating capability of the assembly is reduced.

3,723,820

## DEVICE FOR PROTECTING AGAINST A.C. TRANSIENT OVERLOADS WITH MEANS FOR AUTOMATICALLY RESETTING SAME

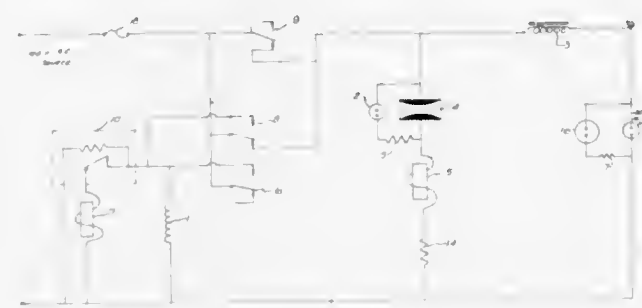
Dwight L. Brown, c/o Brown Radio & TV, Liberty Street, Barboursville, Ky.

Filed Jan. 3, 1972, Ser. No. 215,060

Int. Cl. H02h 3/22

U.S. Cl. 317—16

8 Claims



An arrangement for protecting transistorized equipment from transient A.C. overloads including a circuit having a Siemens tube, or other non-polarized gas filled tube, therein to fire and shunt the overload to ground. Also included is a current delay device or choke to allow the shunting circuitry to become actuated before the transient can reach the protected load. The circuitry includes a time delay-thermal relay to momentarily break the A.C. input to the protected load and to the Siemens tube causing it to discontinue arcing so that it may reset. A counting device may also be included for recording the number of times the Siemens tube fires.

3,723,821

## QUENCH-GAP ASSEMBLY FOR LIGHTNING ARRESTERS

Eugen Meier, Wettingen, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

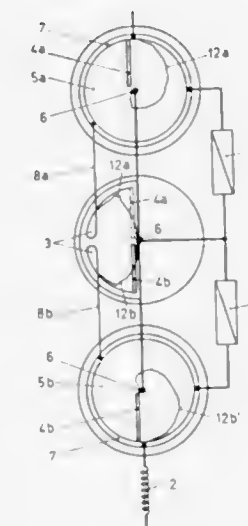
Filed May 19, 1972, Ser. No. 254,962

Claims priority, application Switzerland, June 7, 1971, 8304/71

Int. Cl. H02h 9/06

U.S. Cl. 317—69

4 Claims



A quench-gap assembly of a lightning arrester includes a cylindrical spark-over chamber and a pair of cylindrical spark blow-out chambers located respectively to each side of the spark-over chamber and connected thereto by slits. A central electrode extends into the three chambers and each spark blow-out chamber is provided with a concentric ring electrode connected respectively to one of the members in the spark-over chamber between which the arc is initially struck. The arc expanding under the action of the force produced by a magnetic field reaches the central electrode in the form of two partial arcs each which is then directed through one of the slits into the corresponding spark blow-out chamber and there further given a combined rotational and expanding movement with one root of the arc terminating on the central electrode and the other root on the ring electrode.

3,723,822

## CIRCUIT BOARD PANEL FRAME CONSTRUCTION

Takashi Kosugi, Hiroyuki Abe, and Hisao Sudo, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

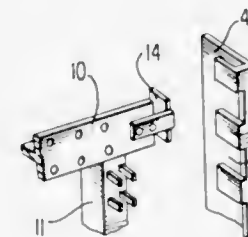
Filed Sept. 20, 1971, Ser. No. 181,902

Claims priority, application Japan, Sept. 21, 1970, 45/83127

Int. Cl. H02b 1/02

U.S. Cl. 317—101 DH

1 Claim



A frame assembly for mounting a plurality of plug-in circuit board panels includes a frame with a top and base member having engagement edges. Front and rear supporting bars are held in position by the engagement edges at any desired point in the frame, thereby permitting expansion of the panels in accordance with demand.

Guide plates having grooves and central cooling apertures support the panels, and in turn, are supported by the front and rear supporting bars.

3,723,823

## PRINTED CIRCUIT BOARD GUIDE

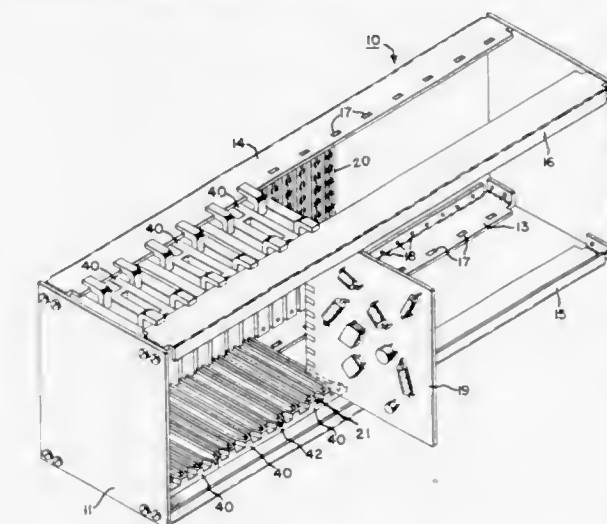
Harry B. Lit, Peabody, Mass., and Mark S. Mazzetti, Los Gatos, Calif., assignors to General Electric Company, Lynn, Mass.

Filed Nov. 30, 1971, Ser. No. 203,224

Int. Cl. H02b 1/02

U.S. Cl. 317—101 DH

6 Claims



A board guide for providing alignment of a printed circuit board with the connector during and after insertion into the connector. The board guide comprises a base having track channels therein slightly wider than the thickness of a printed circuit board. Extending from the base are a pair of L-shaped restraining members and a pair of L-shaped latching members. Each L-shaped latching member terminates in a beveled tooth which cooperates with part of the base and which engages a slotted frame under of a chassis thereby securing the guide device to the chassis. The L-shaped restraining members also cooperate with the base to resist any force applied to the guide device in a direction perpendicular to the plane of the base which might tend to effect the removal of the guide device or otherwise damage the latching members.

3,723,824

## TELESCOPING OUTDOOR SWITCHBOARD AND AISLE SECTIONS

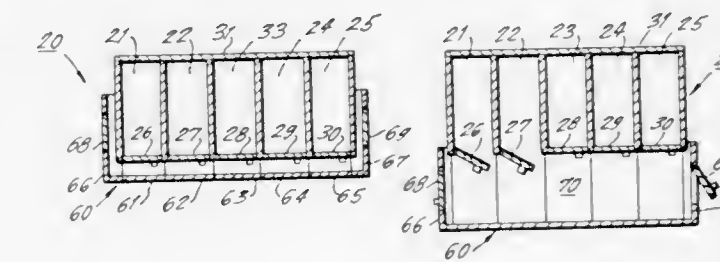
John Cuorato, Springfield, and Charles V. Stull, Ambler, both of Pa., assignors to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed Dec. 13, 1971, Ser. No. 207,428

Int. Cl. H02b 1/06

U.S. Cl. 317—120

8 Claims



The aisle section of outdoor walk-in type switchgear is telescoped over the front of the switchboard during shipment and is telescoped outwardly and is assembled with an aisle floor when delivered to its site of installation. Lifting and shipping members are provided as integral parts of the telescoping assembly.



3,723,825

## MAGNET CONTROLLER

Terrence E. De Viney, Seven Hills, Ohio, assignor to Square D Company, Park Ridge, Ill.

Filed Jan. 19, 1972, Ser. No. 219,020

Int. Cl. H01F 13/00

U.S. Cl. 317-123

12 Claims



A control system for a lifting magnet measures the lift current of the magnet and causes the drop-out current to reach a predetermined percentage of the lift current at interruption so that clean drops are provided, without adjustment, regardless of the condition of the circuit elements, the temperature of the lifting magnet, or the size of the magnet.

3,723,826

## CONTROL APPARATUS FOR FUEL PUMPS

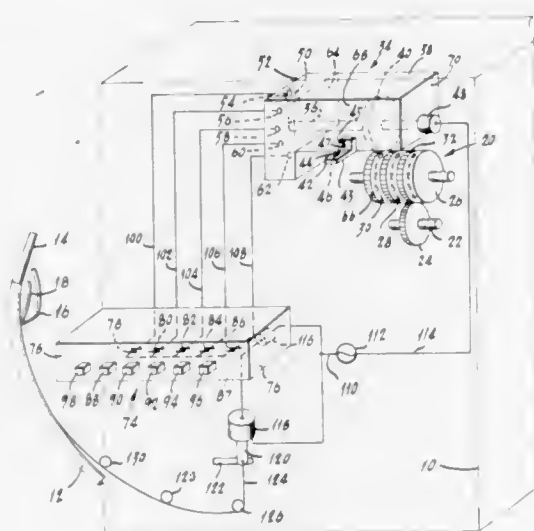
Edward Kelly, 227 Norway Avenue, Trenton, N.J.

Filed Sept. 30, 1970, Ser. No. 76,817

Int. Cl. B67d 5/30

U.S. Cl. 317-135 R

15 Claims



A unique arrangement of elements is integrated into discrete modules for automatically controlling the quantity of fuel dispensed from service station fuel pumps in response to a pre-selected value. The arrangement may include three principal assemblies consisting of two modules and a solenoid. A rotary switching arrangement may be housed within the first module to be directly mechanically driven by a cost-of-purchase totalizer of the service station fuel pump. The rotary switch includes arcuately arranged, fixed electrical contact

buttons which are each electrically connected with one of a plurality of selector switches provided within the second module. A keyboard having a plurality of pushbuttons may be displayed on a face of a second module and each pushbutton is operable to close a corresponding one of the selector switches. The first and second modules may be electrically connected to form a normally opened series circuit, having a plurality of branch circuits. A solenoid may be integrated with the second module and connected in parallel with the circuit for resetting each pushbutton upon the dispensing of the desired dollar amount of fuel. A second solenoid may be connected in parallel with the circuit to be operable, upon actuation, to apply a mechanical pull to an existing fuel pump cutoff mechanism. The electrical circuit is adaptable for connection with a source of electrical power and is momentarily closed by the co-existing conditions of a closed selector switch and the engagement of the rotary switch with the fixed contact button electrically connected with that closed selector switch. The momentary closing of the circuit is operable to actuate both solenoids to cut off further fuel dispensing by the service station fuel pump and to reset the selector switch to an initial position for the next dispensing operation. In this manner of operation, the circuit is energized only for brief periods of time for actuating the solenoids. The arrangement of elements is such as to facilitate the installation of the present control system either in existing pumps or as original equipment.

3,723,827

## SELECTIVE AND SEQUENTIAL CONTROL SYSTEM

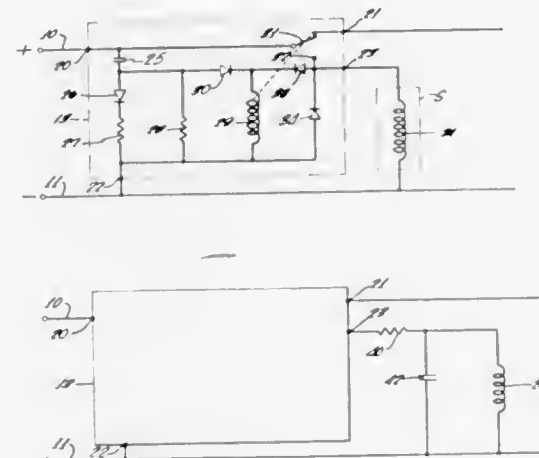
David E. Griswold, Corona Del Mar, and William E. McCarty, Orange, both of Calif., assignors to Griswold Controls, Santa Ana, Calif.

Filed Feb. 11, 1972, Ser. No. 225,460

Int. Cl. H01h 47/14

U.S. Cl. 317-137

23 Claims



A known system for controlling a plurality of stations, such as irrigating sprinkler valves, over a conductor pair for either selective or sequential activation includes a solenoid as the device to be activated at each station and requires short interruptions in the operating voltage at a control point to effect sequential activation of the stations, but for selective activation this same system utilizes two different voltage levels with short interruptions, a lower voltage being required to bypass unwanted stations and higher voltage built up at a controlled rate being required for selective activation of a station. An improvement in the known system includes delay means in association with the solenoids at the stations for delaying the response of the solenoids thereby simplifying the equipment the control point by permitting the use of only one voltage level, while avoiding activation of unselected stations.

3,723,828

## COUPLING MEANS FOR ELECTRIC INCINERATOR LAVATORIES

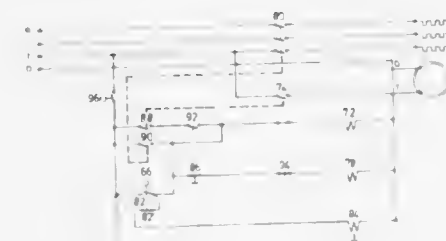
Sven Olof Edholm, Villavagen 27, Vadstena, Sweden

Filed July 23, 1971, Ser. No. 165,036

Int. Cl. H01h 47/18

U.S. Cl. 317-141 R

8 Claims



The present invention relates to coupling means for an incinerator chamber in electric incinerator lavatories, said chamber being heated by an electric element. Said means comprise a first relay, provided with a coil, between the terminals of a current source and a fan motor, and a second relay, with a coil, between the terminals of the current source and the electric element. The invention is chiefly characterized by a parallel circuit containing, in one branch, a closed contact in a repeating time relay in series with the coil of the second relay, and in the other branch, one switch which is in series with the coil of the time relay and is coupled between the terminals of the current source in series with a second switch which is mechanically coupled to the first switch, said second switch breaking when the first switch closes, and vice versa.

3,723,829

## REPETITIVE PULSE GENERATING CIRCUIT

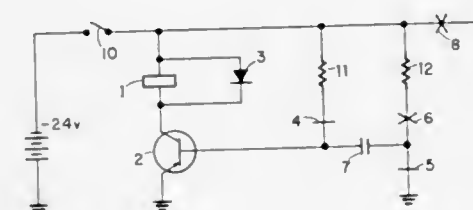
Knut Roger Schartmann, Montreal, Quebec, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Aug. 16, 1971, Ser. No. 171,976

Int. Cl. H01h 47/32

U.S. Cl. 317-141 S

9 Claims



A pulse generator for reversing a d.c. supply at 10 cycles per second for a telephone control circuit uses a relay operated by a transistor either directly or by means of an additional transistor. A timing capacitor is connected to the base of the transistor and the other terminal of the capacitor is switched to ground by the relay after the transistor turns off, and is switched to a charging resistor connected to the power supply after the transistor turns on. When the capacitor is grounded, other contacts of the relay provide a charging path from the power supply through a resistor to the ungrounded side of the capacitor. The first-mentioned charging resistor may be connected to the power supply through R-C filtering. When an ad-

ditional transistor is used which is of the complementary type relative to the timing transistor, the circuit's tolerance of power supply ripple can be improved by the addition of feedback through a diode.

3,723,830

## LOW CURRENT, LOW NOISE AVALANCHE DIODE

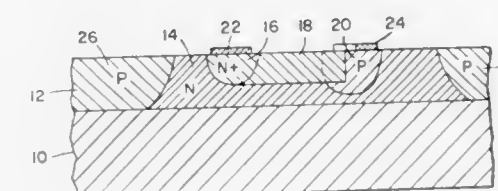
Thomas M. Frederiksen, Scottsdale, and Ernest L. Long, Tempe, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Oct. 14, 1970, Ser. No. 80,619

Int. Cl. H01l 9/00

U.S. Cl. 317-234 R

8 Claims



A low current, low noise avalanche diode is disclosed which can be provided on a semiconductor chip, in which a region of highly doped material of one conductivity type is produced in an epitaxial layer of material which is less highly doped and is of the same conductivity type, and at least one finger of such highly doped material extends from said highly doped region towards and makes a PN junction with a region of oppositely doped material. Contacts are applied to the two regions and act as the electrodes of the resultant diode.

3,723,831

## INDIUM ANTIMONIDE INFRARED RAY DETECTOR

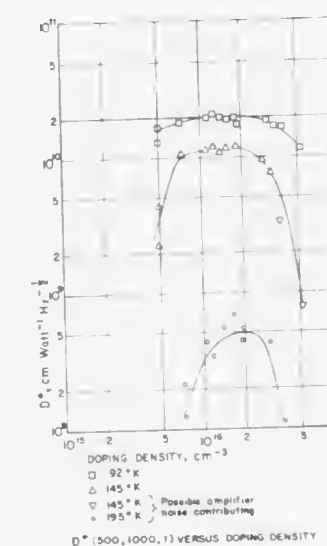
Cedric G. Rogers, Cincinnati, Ohio, assignor to Arco Corporation, Cincinnati, Ohio

Filed Dec. 4, 1970, Ser. No. 95,164

Int. Cl. H01l 15/00

U.S. Cl. 317-234 R

3 Claims



The invention is an indium antimonide infrared ray detector which is operable efficiently (i.e., with a maximum black body detectivity) over a wide range of temperatures and at much higher temperatures than heretofore attainable.



3,723,832

**ZENER DIODE AND METHOD OF PRODUCING SUCH A ZENER DIODE**

Alfred Bachmeier, 8265 Simbach, Germany, assignor to Licentia, Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

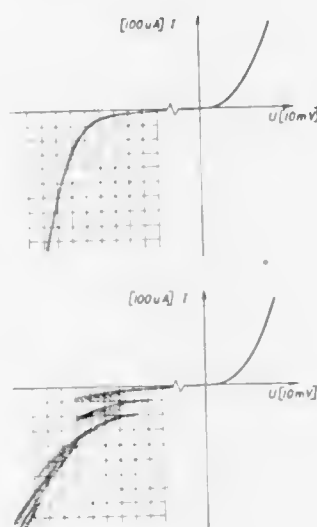
Filed May 27, 1971, Ser. No. 147,537

Claims priority, application Germany, June 1, 1970, P 20 26 683.5; June 1, 1970, P 70 20 323.5

Int. Cl. H011 9/00

U.S. Cl. 317—234 R

3 Claims



A Zener diode having a semiconductor body with recombination centers therein in the region of the P-N junction. The invention also includes a method of producing such a diode.

3,723,833

**HEAT SINKING OF SEMICONDUCTOR INTEGRATED CIRCUIT DEVICES**

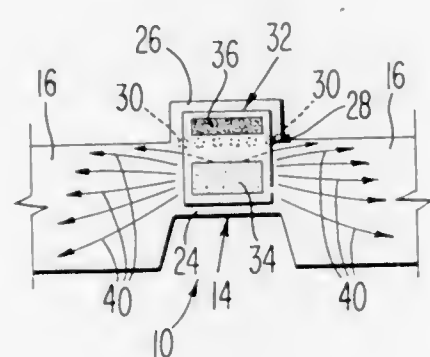
Carl Franklin Wheatley, Jr., Somerset, N.J., assignor to RCA Corporation

Filed July 19, 1971, Ser. No. 163,570

Int. Cl. H011 3/00, 5/00

U.S. Cl. 317—234 R

10 Claims



A semiconductor device of the type in which a semiconductor chip is mounted on a lead assembly having a chip mounting portion, thermal conductors, and electrical conductors. The chip has some elements which generate heat, which are located in one zone of the chip, and others which are sensitive to spatial thermal gradients, which are located in a different zone of the chip. The chip mounting portion of the lead assembly has an area substantially free of spatial thermal gradients and the zone of the chip containing the sensitive elements is mounted adjacent to this area.

**SEMICONDUCTOR DEVICE HAVING A CLOSED CONDUCTIVE RUBBER RING CLAMPED AROUND ALL ELECTRIC CONDUCTORS**

Gerardus Johannes Anthonius Peters, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

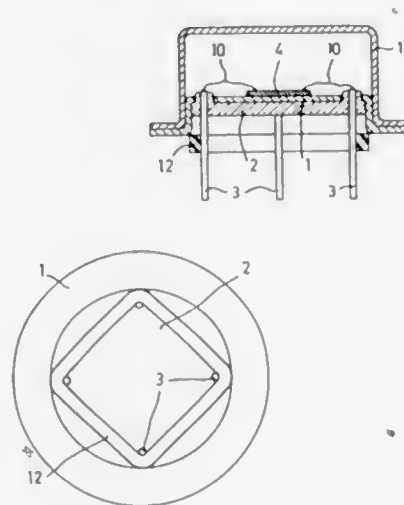
Continuation of Ser. No. 779,474, Nov. 27, 1968, abandoned.

This application July 27, 1971, Ser. No. 166,611

Int. Cl. H011 3/00, 5/00

U.S. Cl. 317—234 R

3 Claims



A semiconductor device including a housing for a semiconductor body of the field-effect type having an insulating gate electrodes and electric conductors which emerge from the housing and are located in a circle. The conductors are surrounded by a closed, flexible ring of an electrically conductive rubber material such as electrically conductive silicon rubber, e.g., a rubber mixed with electrically conductive particles. This ring is so flexible that it contacts all of the conductors without substantially bending them.

3,723,835

**GLASSES FOR ENCAPSULATING SEMICONDUCTOR DEVICES**

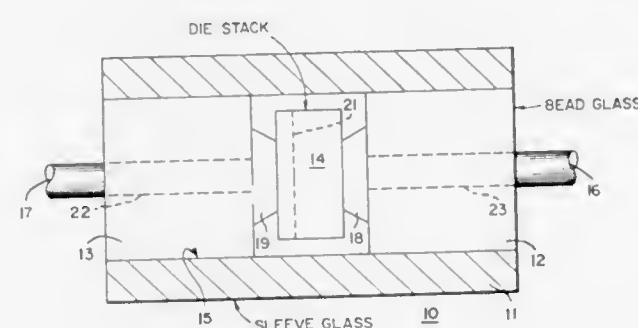
Earl K. Davis, Tempe, and Kent W. Hansen, Scottsdale, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed July 28, 1971, Ser. No. 166,931

Int. Cl. H011 3/00

U.S. Cl. 317—234 R

9 Claims



Alkali-free glasses for encapsulating semiconductor devices, such as zener diodes, wherein preformed (pressing and sintering) glass packages are formed are disclosed. To prevent degradation of the zener diodes, seals compatible with Dumet lead wire are achieved at temperatures below 550°C. The packages consist of a sleeve glass surrounding glass beads which are sealed to the beads and to the sleeve. Preferably the sleeve glass is slightly harder (higher viscosity at a given temperature) than the bead glass.

3,723,836

**HIGH POWER SEMICONDUCTOR DEVICE INCLUDED IN A STANDARD OUTLINE HOUSING**

Hart Shekerjian, Scottsdale, and Stanley R. Oulman, Phoenix, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed March 15, 1972, Ser. No. 234,766

Int. Cl. H011 3/00, 5/00

U.S. Cl. 317—234 R

13 Claims

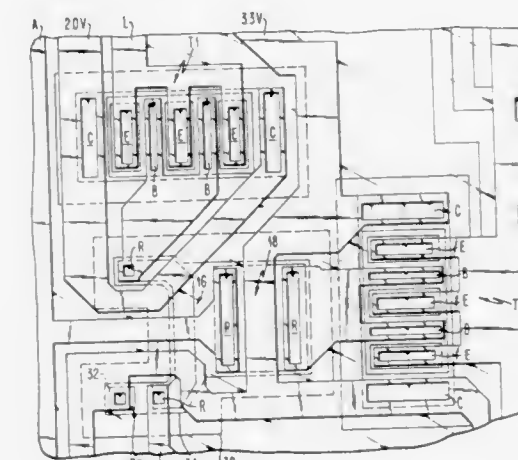
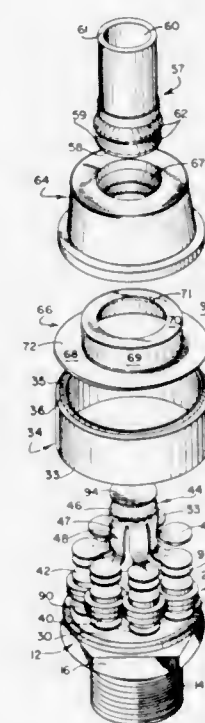
**RESISTOR BED STRUCTURE FOR MONOLITHIC MEMORY**

Paul H. Bardell, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 22, 1970, Ser. No. 74,439

Int. Cl. H011 19/00

10 Claims



A monolithic integrated semiconductor memory structure having both an array of bistable cells and supporting circuits for the array formed in the same semiconductor structure is bisevel powered to reduce the heat dissipation problem. Resistors used in the supporting circuits are located in common resistor beds with a means for making electrical contact, such as a diode, to the resistor bed and to provide bias during the low power standby time to the bed. The means also isolates the bias voltage supply from the bed when the signal to the resistor is increased to the high power level.

3,723,838

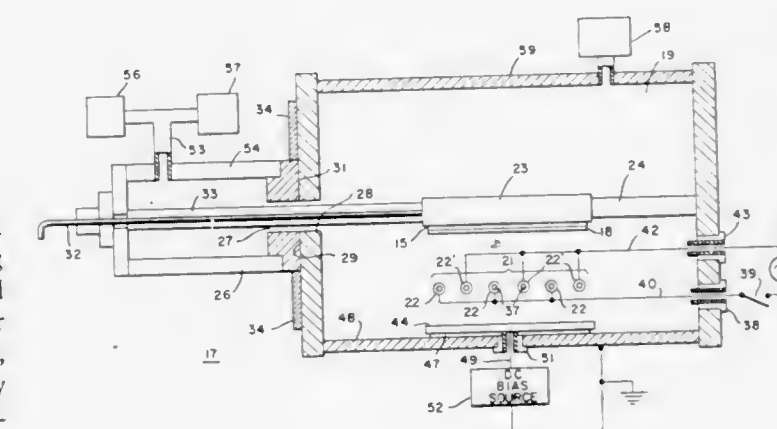
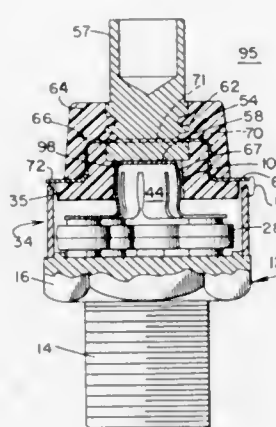
**NITROGEN-DOPED BETA TANTALUM CAPACITOR**  
Henry Yasuo Kumagai, Hopewell Township, Mercer County, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Jan. 14, 1972, Ser. No. 217,876

Int. Cl. H01g 1/01

U.S. Cl. 317—258

4 Claims



The device structure for dissipating large amounts of heat includes a plurality of paralleled semiconductor units having first terminals connected together by a first contact and second terminals connected together by a second contact. Housing members, one of which has an insulating portion, tend to mechanically hold the contacts in a spaced relation while electrically isolating them. The flexible member has a flat surface which abuts against the second contact and a plurality of flexible leg portions which each make electrical connection to one of the semiconductor units. The housing members and the flexible member cooperate to limit the magnitudes of forces applied to the semiconductor devices during fabrication. The flexible member is compressed by the completed housing to assure that electrical contact is sustained between the semiconductor units and the contacts even though parts of the device thermally expand during operation.

A nitrogen-doped beta tantalum thin-film capacitor is disclosed. The thin-film capacitor comprises a thin-film electrode supported on a non-conductive substrate. Covering a selected area of the thin-film electrode is a dielectric film comprising an oxidation product of nitrogen-doped beta tantalum. Opposing the thin-film electrode and separated therefrom by the dielectric film is a counter electrode.



3,723,839

**TROLLING MOTOR WITH STEERING MEANS**

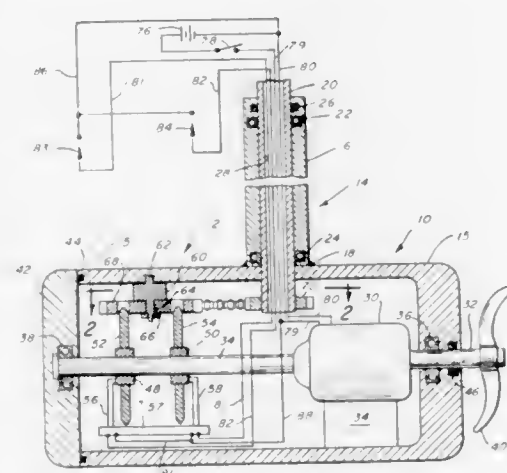
Howard A. Cramer, Tulsa, Okla., assignor to Lowrance Electronics Mfg. Corp., Tulsa, Okla.

Filed March 27, 1972, Ser. No. 238,327

Int. Cl. H02k 7/10

U.S. Cl. 318—15

3 Claims



This invention describes an improved electric trolling motor system for driving small boats. The motor which drives the propeller also drives a gear train through electrical clutches. Gears are designed to separately cooperate with a third gear means to rotate the trolling motor with respect to a support rod fastened to the boat. By connecting one or the other clutch to a battery, the direction of the motor can be rotated to the right or to the left.

3,723,840

**APPARATUS FOR MOTOR CURRENT MINIMIZATION**

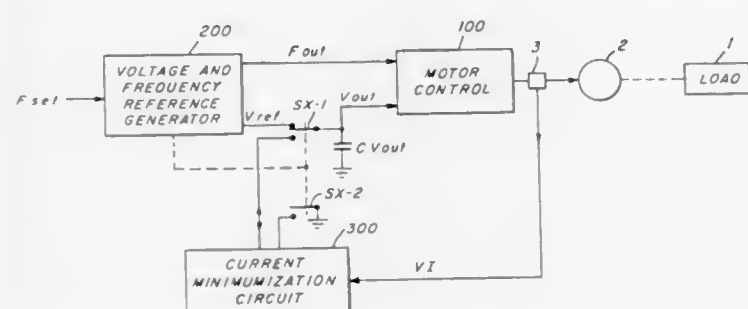
Kenneth E. Opal, Oakmont; Charles R. Kelly, Murrysville, and Charles W. Newcamp, Lower Burrell, all of Pa., assignors to Power Control Corporation, Pittsburgh, Pa.

Filed Jan. 21, 1972, Ser. No. 219,703

Int. Cl. H02p 5/28

U.S. Cl. 318—432

8 Claims



Current minimization in a motor control system is obtained through a voltage control where the amplitude of the applied voltage is increased or decreased each time measured motor current passes through a detected minimum current level.

3,723,841

**MOTOR CONTROL SYSTEM**

Ronald K. Cotton, 967 Levitt Parkway, Rockledge, Fla., and Barney O. Rae, 4201 N. 27th Street, P.O. Box 463, Shorewood, Wis.

Continuation of Ser. No. 7,889, Feb. 2, 1970, abandoned, which is a division of Ser. Nos. 7,756, Feb. 2, 1970, and Ser. No. 670,094, Nov. 25, 1967, Pat. No. 3,537,602, which is a division of Ser. No. 498,326, Oct. 20, 1965, Pat. No. 3,504,245. This application Nov. 12, 1971, Ser. No. 198,210

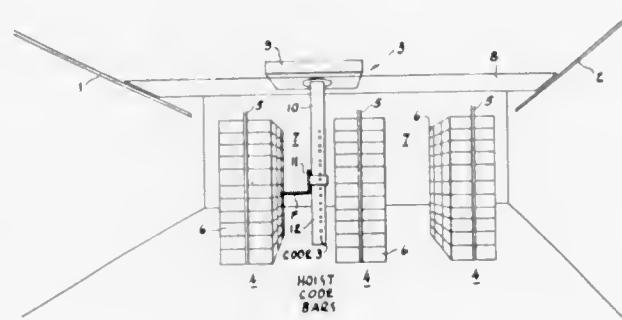
Int. Cl. B65g 1/06; H02p 1/54

U.S. Cl. 318—574

6 Claims

An automatic warehouse system which allows an operator to sit at a fixed station and by placing punched cards into card

readers and pressing a "GO" button can cause a fork to take one article from a pickup station into storage and to retrieve any other article from storage on its return trip and bring it to a selected set-down station and then return to the starting point. Depending upon the information punched on the card, it can skip either the storage or the retrieval operation and



perform the other or it can cause the fork to move an article from any rack in the warehouse to any other rack without returning to the pick-up or set-down stations. In performing these movements in three dimensions, the system is provided with apparatus which recalculates the position of the fork every step of the way so as to eliminate any error that may occur.

3,723,842

**DIGITAL SERVO MOTOR CONTROL WITH AN ERROR RATE DERIVATIVE CIRCUIT**

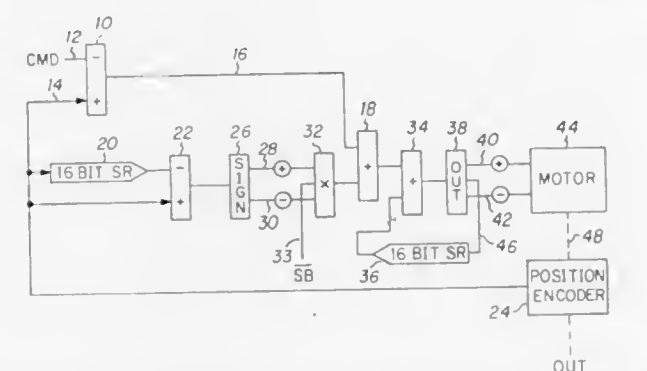
Dalaine C. Sather, Cedar Rapids, Iowa, assignor to Collins Radio Company, Dallas, Tex.

Filed March 9, 1972, Ser. No. 233,197

Int. Cl. G05b 19/28

U.S. Cl. 318—602

6 Claims



A serial digital word circuit utilizing basic summing, multiplying, sign detection and overflow detection circuits for providing an error rate derivative circuit. The error rate derivative is accomplished by comparing a present digital word time serial digital word feedback signal with a previous digital word time serial digital word feedback signal and adding this to a comparison of the feedback signal and a command signal. As the feedback signal indicates a controlled condition is approaching the commanded condition, the sum of the added digital words reduces in magnitude and thus the effect of the control signal is more rapidly reduced as the condition reaches a desired value.

3,723,843

**ELECTRICAL BRAKING FOR A D.C. SERVO MOTOR CONTROL CIRCUIT**

Samuel Reader Pearson, Farmers Branch, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 5, 1971, Ser. No. 103,967

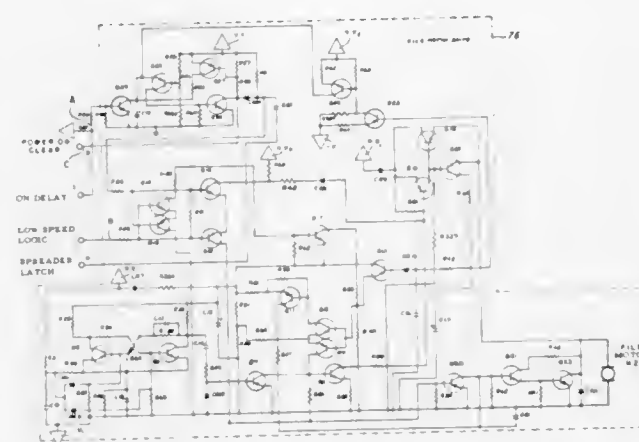
Int. Cl. G05b 5/01

U.S. Cl. 318—612

8 Claims

A circuit is disclosed for controlling operation of a DC shunt field motor that is utilized to drive a variable load, and

stop the motor so that the load is accurately positioned at a preselected location. Logic circuitry controls the motor speed



to a regulated low speed when the load approaches the desired location. An integrator circuit controls application of dynamic braking to stop the motor when the load is correctly located.

3,723,844

**BI-DIRECTIONAL VOLTAGE CONTROL FOR PERMANENT MAGNET ALTERNATOR**

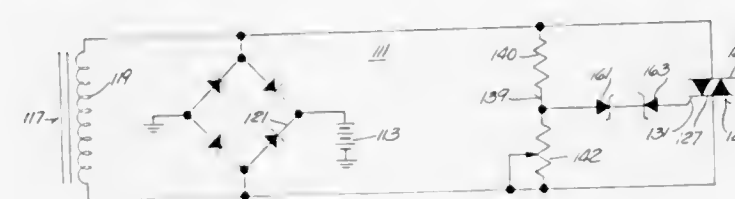
David T. Cavil, Menomonee Falls, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed March 29, 1971, Ser. No. 128,816

Int. Cl. H02j 7/14

U.S. Cl. 320—59

12 Claims



Disclosed herein is a battery charging circuit comprising solid state means electrically connected across an alternating voltage generating means, including a triac and bi-directional breakdown means connected to the gate of the triac, and operable, in the event of generation of voltage above a predetermined level, for limiting voltage output of the voltage generating means.

3,723,845

**TRUE RMS TO DC CONVERTERS**

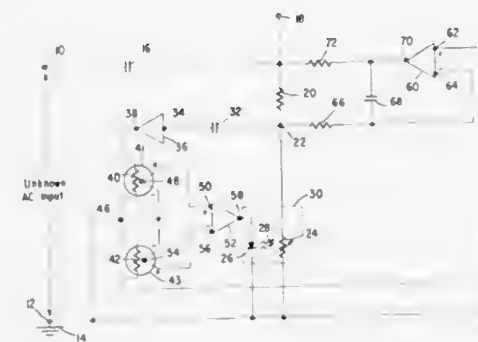
James J. Duckworth, Morris Plains, N.J., assignor to Ballantine Laboratories, Inc., Boonton, N.J.

Filed July 16, 1971, Ser. No. 163,231

Int. Cl. H02m 7/00

U.S. Cl. 321—1.5

20 Claims



An apparatus for converting a complex AC voltage wave to an equivalent DC value which is a measure of its true RMS value and which may then be read on an accurate indicating device such as a digital voltmeter, incorporating thermal converters and operational amplifiers in a temperature-compensated configuration. The apparatus maintains a portion of an unknown AC voltage wave, which is thermally converted into

a DC voltage, substantially equal to a DC reference voltage. A portion of a DC output voltage is also maintained substantially equal to the DC reference voltage. Since the proportioning means for the complex AC voltage wave and the DC output voltage is the same, the true R.M.S. value of the complex AC voltage wave is equal to the DC output voltage.

3,723,846

**HIGH VOLTAGE POWER SUPPLY**

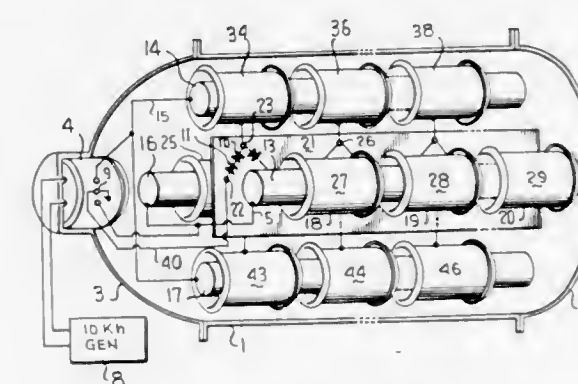
Chester C. Thompson, Jr., Roslyn Heights, N.Y., assignor to Radiation Dynamics, Inc., Westbury, L. I., N.Y.

Filed March 15, 1972, Ser. No. 234,748

Int. Cl. H02m 7/24; H01g

U.S. Cl. 321—15

10 Claims



A power supply for high voltage accelerators employs a plurality of elongated cylindrical capacitors, disposed circumferentially about a plurality of centrally located solid state rectifiers. The plates of each capacitor comprise inner and outer coaxial sleeves located in a gaseous atmosphere with A.C. applied to the inner sleeves to provide large effective spacing between the A.C. driven sleeves of the capacitors, the inner sleeves being shielded from one another by the outer sleeves. Solid state rectifiers require lower driving frequencies than are normal in such supplies. Output voltage loss resulting from use of lower frequencies is compensated by the large capacitance achieved and the use of a lesser number of rectifier stages. Peak inverse voltage limitations of the rectifiers are met by cascading rectifiers per stage, the large central space provided by the capacitor structure providing the space necessary for cascading.

3,723,847

**SEMICONDUCTOR SYSTEM REDUNDANT CONTROL ARRANGEMENT**

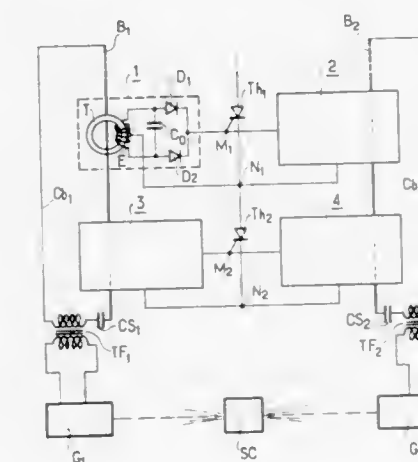
Jean Chaupit, 92 Fontenay-aux-Roses, France, assignor to Compagnie Generale D'Electricite, Paris, France

Filed July 1, 1971, Ser. No. 158,945

Int. Cl. H02m 7/00

U.S. Cl. 321—27 R

9 Claims



An arrangement for controlling the operation of a series, parallel, or series-parallel connected assembly of semiconductor devices comprising at least two generators for providing



control signals at respective predetermined control frequencies and controlled by a common source, and a respective general control circuit supplied with the control signals by each generator and being at least in part tuned to the respective predetermined control frequency, each general control circuit being arranged to supply the control signals simultaneously to all the semiconductor devices.

3,723,848

## ELECTRICAL POWER INVERTER WITH SINUSOIDAL OUTPUT

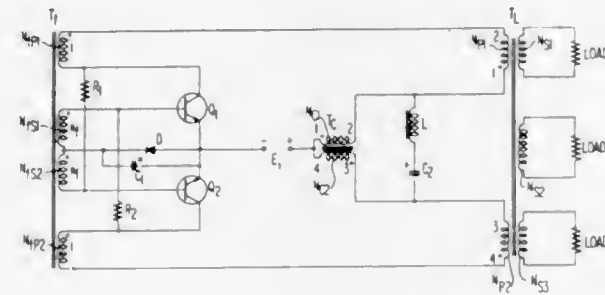
Edward J. Miller, Littleton, Colo., assignor to Martin Marietta Corporation, Washington, D.C.

Filed April 17, 1972, Ser. No. 244,690

Int. Cl. H02m 7/52; H03k 3/281; H03b 5/00

U.S. Cl. 321—45 R

10 Claims



An improved inverter circuit developing sinusoidal output signals in response to dc input signals without the use of filters external to the inverter circuit. The inverter includes a commutator transformer and resonant circuit in the primary side of a load transformer. Periodic inverting of the dc signal is accomplished using switching transistors and a feedback transformer coupled to the commutator transformer and resonant circuit through the primary of the load transformer.

3,723,849

## CIRCUIT ARRANGEMENT FOR CHARGING A STORAGE CAPACITOR

Wolfgang Ludloff, Porz-Westhoven, Germany, assignor to Multibitz Dr. Ing. D. A. Mannesmann GmbH, & Co. KG., Porz-Westhoven, Germany

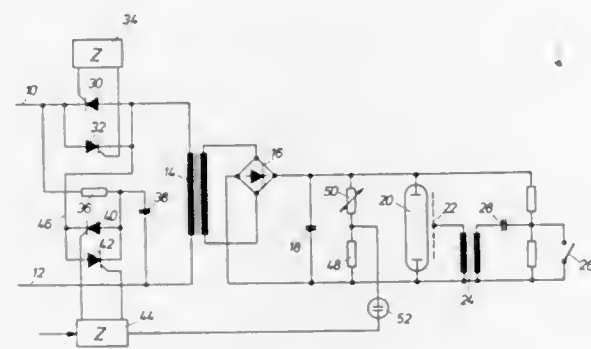
Filed May 4, 1972, Ser. No. 250,379

Claims priority, application Germany, May 14, 1971, P 21 23 912.3

Int. Cl. H02m 7/20

U.S. Cl. 321—18

8 Claims



A first pair of antiparallel connected thyristors are connected in series with the a.c. input and the primary of a transformer. These thyristors are ignited respectively at the start of each half cycle. A rectifier is connected across the transformer secondary and across the storage capacitor to be charged. An auxiliary capacitor in series with a resistor are connected across the a.c. input. A second pair of antiparallel thyristors have an ignition device. The latter ignition device is controlled by a voltage derived from a voltage divider across the storage capacitor and ignite the second pair of thyristors

some time after the start of successive half cycles. When ignited the respective second thyristor applies the voltage of the auxiliary capacitor across the first pair of thyristors in opposition to the a.c. voltage thereacross to turn off the ignited thyristor of the first pair.

3,723,850

## HIGH VOLTAGE POWER SUPPLY FOR COPYING APPARATUS OR THE LIKE

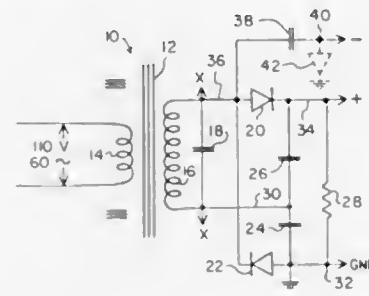
Charles R. Daniels, and Kenneth D. Kinzer, both of Huntington, Ind., assignors to Ferromagnetics, Inc., Columbia City, Ind.

Filed July 23, 1971, Ser. No. 165,653

Int. Cl. H02m 7/42

U.S. Cl. 321—47

18 Claims



An unusually compact and efficient high voltage power supply of the saturable-core and resonant-secondary type is achieved by combining a high voltage secondary winding and a resonant-secondary winding into one relatively efficient yet relatively low voltage secondary winding and by coupling this secondary winding to a voltage doubling rectifier circuit. A high voltage capacitor is used to extract a high voltage alternating current signal from this same secondary winding so that a peak D.C. output voltage whose magnitude is 1½ to 2 times the peak-to-peak A.C. output voltage of the secondary winding may be achieved. By eliminating the need for multiple windings, this power supply can compact all of its elements, including the rectifier circuit, into a space that is substantially smaller than the space occupied by the transformer alone of a conventional power supply.

3,723,851

## BEVERAGE MIXER AND DISPENSER

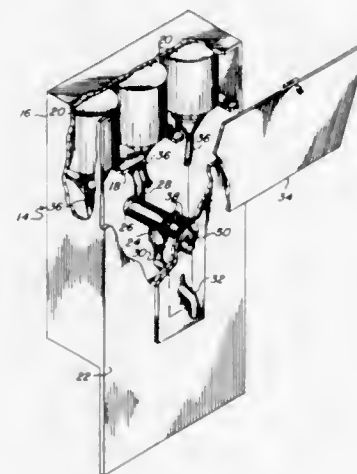
Dale W. Johnson; Robert B. Grounds, and Donald C. Langford, all of Phoenix, Ariz., assignors to D. B. F. D. Enterprises, Phoenix, Ariz.

Filed March 15, 1971, Ser. No. 124,019

Int. Cl. B67d 5/60

U.S. Cl. 272—132

6 Claims



A beverage mixer and dispenser utilizing a bottled water holding cabinet which supports a water container and a plurality of flavor liquid containers; all of said containers being disposed for gravity-responsive delivery of liquids therefrom;

and a dispensing and mixing valve below all of said containers; said valve having a rotatable and reciprocable valve member which may be rotated to any one of several selective positions communicating with any one of said flavor liquid containers; and said valve member may be reciprocally actuated against spring pressure to cause concurrent communication of said water container and one of said flavor liquid containers with a common outlet, of said valve, through which the water and a selected flavor liquid may be mixed and dispensed to a drinking receptacle.

3,723,852

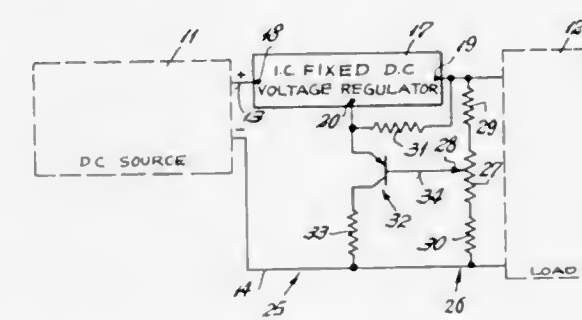
## OUTPUT VOLTAGE ADJUSTING CIRCUIT

Thomas G. Peterson, and Irving J. Giguere, both of Bristol, Conn., assignors to The Superior Electric Company, Bristol, Conn.

Filed May 5, 1972, Ser. No. 250,592

Int. Cl. G05f 1/60

U.S. Cl. 323—8



A circuit connectable to an integrated circuit fixed voltage D.C. regulator for providing an adjustable value of output voltage to a load, especially a load consisting of an incandescent lamp.

3,723,853

## SCR TAP CHANGING VOLTAGE REGULATOR

Sigizmund Semenovitch Okun; Boris Nikolaevich Sergeenkov; Valentin Mikhailovich Kiselev, all of Moscow; Vasily Sergeevich Ivanov, Leningrad, and Vladimir Yakovlevich Vorobiev, Krasnogorsk Moskovskoi oblasti, all of U.S.S.R., assignors to Moskovsky ordent Lenina Energeticheskoy Institut, Moscow, U.S.S.R.

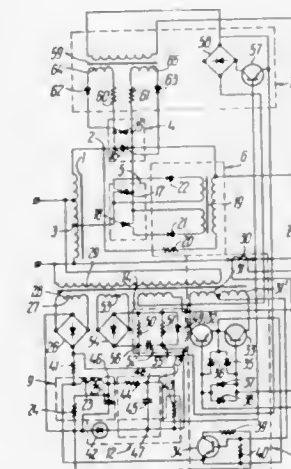
Filed March 22, 1972, Ser. No. 236,814

Claims priority, application U.S.S.R., Jan. 13, 1970, 1393168

Int. Cl. G05f 1/20

U.S. Cl. 323—20

2 Claims



Voltage regulation is effected by means of a transformer with its taps connected to alternately switched silicon controlled rectifiers. One rectifier corresponds to a lower voltage in the load circuit and is driven to a conducting state at the beginning of each half-cycle, while the other operates at a

higher voltage in the load circuit. For regulation the input voltage and output current phases are compared and a signal proportionate to this phase difference is formed which is added to the average input voltage. At the same time, the input voltage is integrated for each time instant. The total voltage is compared with the reference voltage to obtain a difference signal which, in its turn, it compared with the integrated voltage, and the higher voltage rectifier is driven into conduction after the difference resulting from this comparison attains a preset level. The regulator includes an integrator, an adder, a difference voltage detector, and a reference voltage source which are connected to form a control system of the pulse-width modulator rendering the rectifier conductive at a higher voltage in the load circuit.

3,723,854

## CIRCUIT FOR COMPENSATING FOR LINE DROP BETWEEN POWER SOURCE AND LOAD CIRCUIT

Hiroshi Kita, Shiga, Japan, assignor to New Nippon Electric Company Ltd., Osaka, Japan

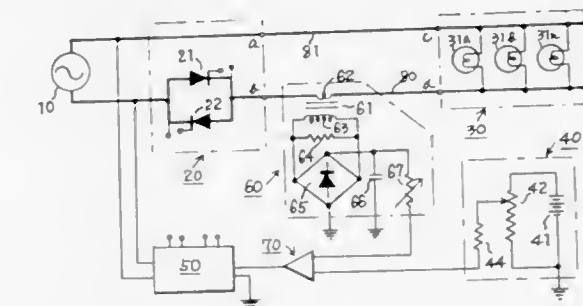
Filed Aug. 9, 1971, Ser. No. 170,057

Claims priority, application Japan, Sept. 2, 1970, 45/77288

Int. Cl. G05f 1/44; H02h 3/08

U.S. Cl. 323—20

12 Claims



A load is energized from an alternating current source by way of a conduction angle control circuit controlled by a phase control circuit. A detected signal proportional to the load current is positively fed back to the conduction angle control circuit to automatically compensate for the voltage drops in the power feed path for the load. A protecting circuit may be connected to generate a negative signal when the supply voltage exceeds a determined value with respect to the normal load current due to the capacity of the load.

3,723,855

## SYSTEM HAVING FAST PLURAL HIGH VOLTAGE SWITCHING

Paul Shuleshko, Rochester, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed Aug. 16, 1971, Ser. No. 171,983

Int. Cl. G05f 1/56

U.S. Cl. 323—21

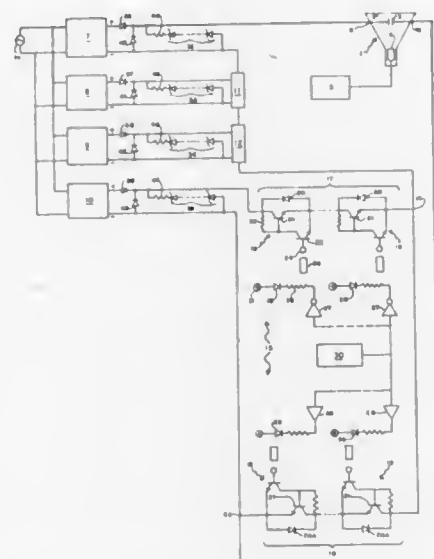
12 Claims

High voltage DC sources each having a switch for connecting and disconnecting its poles and a switch for connecting and disconnecting one of its poles from itself. Each switch of the former sort is connected in series with the rest thereof, and is open or closed depending respectively whether or not the voltage of the corresponding source is to be utilized. Each switch of the latter type is closed or open depending on, respectively, whether or not the voltage of the corresponding switch is to be utilized.

Each source has a zener diode string permanently connected across it. Each switch, likewise, has a diode string con-



nected across it, and is composed of a series of switching transistors, each of which has a diode of the latter diode string connected between its emitter and collector electrodes. The net effect of the diodes is to provide for fast change in voltage level under all conditions.



The switching transistors are opto-electronically controlled for adaptation to use in systems like multi-color graphic display systems using beam penetration tubes wherein voltage level switching at high repetition and slewing rates is required, along with good isolation of the high voltage from other potentials, close to ground, in the system.

3,723,856

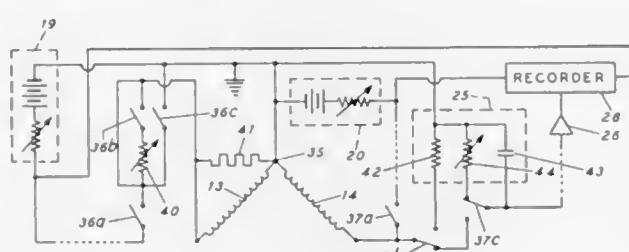
# CROSSED-COIL NUCLEAR MAGNETISM WELL LOGGING APPARATUS AND METHOD UTILIZING A POLARIZING FIELD AND AN ADDITIONAL POLARIZING FIELD TO SHIFT THE DIRECTION OF POLARIZATION

Robert J. S. Brown, Fullerton, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed April 9, 1971, Ser. No. 132,716  
Int. Cl. G01n 33/08

U.S. Cl. 324—0.5 G

12 Claims



A crossed-coil nuclear magnetism well logging apparatus and method is designed to function efficiently at magnetically equatorial regions of the world, as for example in Venezuela, and in slanted boreholes where the earth's magnetic field is substantially perpendicular to the axis of the borehole. When a polarization field  $H_p$  is established in the earth formation, the protons of the formation fluids can acquire nuclear magnetism polarization  $M$ . After the occurrence of a predetermined polarizing period,  $T_p$ , the polarizing field  $H_p$  is removed in the presence of a rather weak polarizing field,  $H_l$ , (generated by passing a polarizing current through the receiving coil) at a select decay rate, i.e., adiabatically, not rapidly, so that the directions of the nuclear magnetic polarization  $M$  can be angularly and adiabatically shifted to new directions prior to precession about the earth's field. In order to provide adiabatic shifting of the polarization  $M$ , the resultant magnetic field  $H_r$  formed between the collapsing polarizing  $H_p$  and  $H_l$  fields must rotate at a rate that is small compared to the Larmor frequency of the protons in the  $H_r$  field.

3,723,857

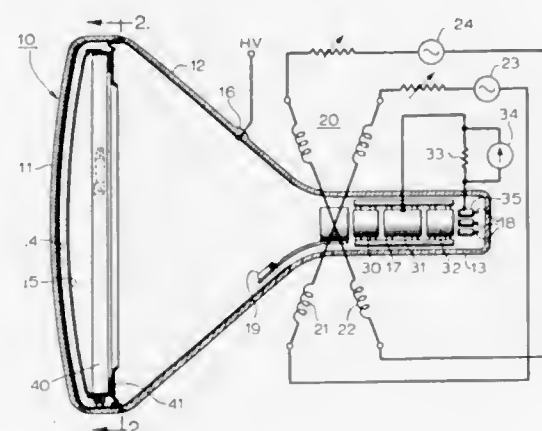
# METHOD OF DETECTING CATHODE POISONING CONTAMINANTS IN A CATHODE RAY TUBE

Anthony Kloba, Bensenville, and Roy Maskell, Oak Park, Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed Feb. 17, 1972, Ser. No. 227,167  
Int. Cl. G01r 31/22

U.S. Cl. 324—20 CR

5 Claims



A method of detecting cathode poisoning contaminants in a cathode-ray tube of a given tube type while allowing the tube to remain intact comprises the steps of first measuring the cathode emission of the cathode-ray tube to establish a first reading. Suspected contaminated areas of the cathode-ray tube are then subjected to electromagnetic radiation for a predetermined time, after which, the cathode emission of the cathode-ray tube is re-measured to establish a second reading. Thereafter, the percentage change of the first and second readings is compared to a predetermined standard. The cathode-ray tube is considered to be contaminated if the comparison represents a percentage decrease in cathode emission which exceeds the predetermined standard.

3,723,858

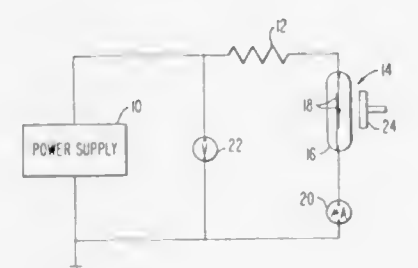
# METHOD FOR TESTING HERMETICALLY ENCLOSED, ELECTRICAL SWITCHING DEVICES FOR LEAKS

Douglas E. Moister, Jr., Plymouth, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 20, 1971, Ser. No. 209,536  
Int. Cl. G01r 31/02; G01n 27/62

U.S. Cl. 324—28 RS

5 Claims



A method is provided for testing hermetically enclosed, electrical switching devices for gas leaks wherein current flowing through a resistor and the contacts of a device under test is measured with the contacts closed and again after the contacts have been opened, the sole potential applied across the series circuit being of sufficient amplitude to ionize the gas between the opening contacts, the ratio of the two current measurements reflecting the gas content of the device under test.

3,723,859

# TESTING APPARATUS HAVING IMPROVED MEANS FOR MEASURING PERMEABILITY AND SPECIFIC LOSS IN A MOVING STRIP OF METAL

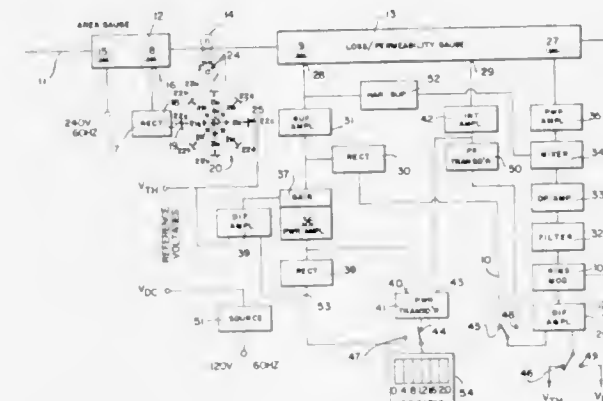
Stephen C. Leonard, Cheshire, Mass., assignor to General Electric Company

Filed July 6, 1971, Ser. No. 159,938

Int. Cl. G01r 33/12

U.S. Cl. 324—34 R

7 Claims



The monitoring and recording of steel characteristics in a continuously moving strip of steel is provided in a continuous strip tester system. The system includes a saturation thickness gauge at a first position and a loss and permeability gauge at a second position. A thickness indication produced by the saturation thickness gauge controls the flux density of the steel at the loss and permeability gauge through an automatic flux density control system.

3,723,860

# MAGNETIC SENSOR FOR DEFECTS UTILIZING SPLIT RING COILS AND HAVING MEANS FOR DRAINING SCALE THEREFROM

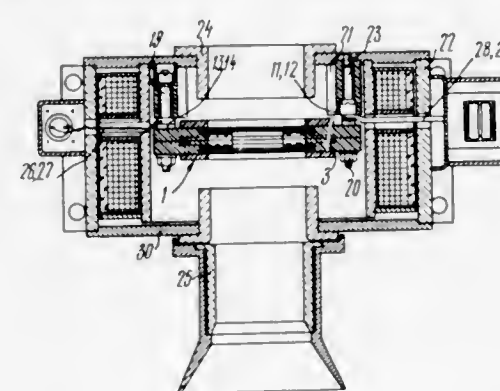
Andrei Dmitrievich Lovlya, ulitsa Stalevarov, 4b, kv. 39; Igor Illarionovich Kazakevich, prospekt Lenina, 28, kv. 44; Nikolai Ivanovich Gribalev, ulitsa Sotsialisticheskaya, 22/II, kv. 6; Vladimir Mikhailovich Lozhkin, ulitsa Pobedy, 20, korpus 4, kv. 37, all of Elektrostal, Moskovskoi oblasti; Boris Ivanovich Sokolov, ulitsa Lunacharskogo, 6; Sergei Fedorovich Safronov, prospekt Lenina, 27, kv. 8, both of Noginsk, Moskovskoi oblasti; Evgeny Vasilievich Morozov, ulitsa Kommunisticheskaya, 24, kv. 18, Polerskoj, poselok Seversky, Sverdlovskoi oblasti; Vladimir Andreevich Sirota, prospekt Lenina, 23, kv. 46, Elektrostal, Moskovskoi oblasti; Vladimir Andreevich Mitkin, prospekt Lenina, 31, kv. 46, Elektrostal, Moskovskoi oblasti; Nikolai Ivanovich Kozhin, ulitsa Gorkogo, 24, kv. 58, Elektrostal, Moskovskoi oblasti, and Anatoly Dmitrievich Bratus, prospekt Lenina, 26, kv. 2, Elektrostal, Moskovskoi oblasti, all of U.S.S.R.

Filed March 29, 1971, Ser. No. 128,859

Int. Cl. G01i 33/12

U.S. Cl. 324—37

1 Claim



The present invention relates to devices for determining defects in rolled products and tubes and, more particularly, the

invention relates to electromagnetic apparatus for detecting defects in rolled products and tubes installed in production lines of rolling mills and tube-welding units.

The invention consists in that the transducer of the apparatus is provided with three individually mounted turns, one of which is used as an inductor, while the other two are disposed at both sides of the inductor coaxially thereto and are connected differentially.

3,723,861

# EDDY CURRENT TEST PROBE USING AN OSCILLATOR MOUNTED IN A DIGITALLY MANIPULATABLE HOUSING

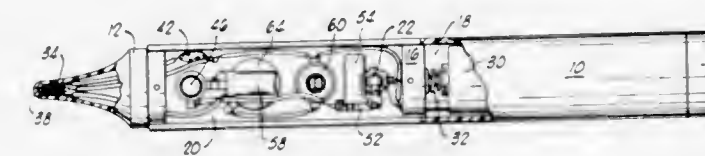
Everett L. Samples, 2916 S. W., 60th St., Oklahoma City, Okla.

Filed Sept. 28, 1970, Ser. No. 75,977

Int. Cl. G01r 33/12

U.S. Cl. 324—40

7 Claims



A device for eddy current testing of metals for cracks and the like including a sensing coil disposed in a contoured contact tip carried at one end of a hollow, cylindrical housing which houses electrical circuitry and a battery for powering the device. The electrical circuit is closed by plugging an earphone into a jack in the side of the housing, and the circuitry includes a blocking oscillator connected by a center tap to the sensing coil so that this single coil forms a portion of the tuned circuit of the oscillator. The blocking frequency developed by the circuit is in the audible range and is adjusted for purposes of metals testing by the use of a potentiometer connected in the control circuit. A change of the developed blocking frequency, as evidenced by a change in the signal heard at the earphone, is indicative of the presence of an anomaly in the metal under test.

3,723,862

# DETECTOR FOR DETECTING OBJECTS MOVING THROUGH A MAGNETIC FIELD ESTABLISHED BETWEEN COILS OF AN L-C OSCILLATOR

Peter Wentzel, and Edwald Schulze, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

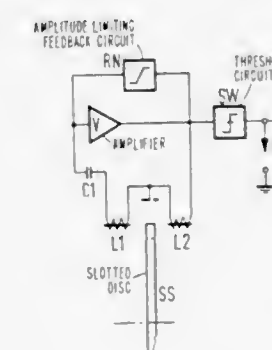
Filed April 5, 1971, Ser. No. 130,881

Claims priority, application Germany, April 29, 1970, P 20 21 102.3

Int. Cl. G01r 33/00

U.S. Cl. 324—41

6 Claims



A detector for detecting objects as they move through a magnetic field established between a transmitter coil connected to an electrical supply and a receiver coil spaced from and magnetically coupled to the transmitter coil. The receiver coil, together with a capacitor, form the oscillatory circuit of



an amplifier to provide an oscillator which oscillates to provide a high amplitude output signal in response to alteration of the magnetic field due to an object passing therethrough. The oscillator is provided with three feedback networks including one feedback network which functions as a source of alternating current which causes the oscillator to provide the low amplitude output signal. The oscillatory circuit includes a resistor for providing a highly damped operation which supports the effect of the first mentioned feedback circuit. A second feedback circuit provides constant amplification and a third feedback circuit includes the transmitter and receiver coils for effecting the regenerative function for oscillation.

3,723,863

## PORTABLE GROUND CONTINUITY TESTER

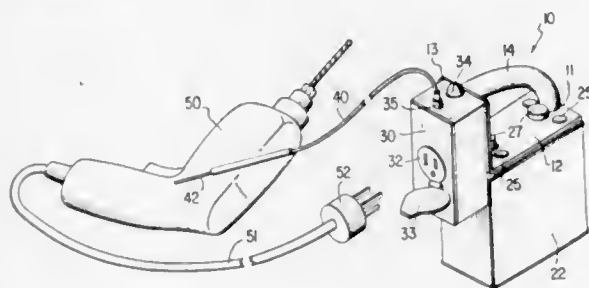
Raymond T. Myers, P.O. Box 2062, Fargo, N. Dak.

Filed Jan. 3, 1972, Ser. No. 214,999

Int. Cl. G01r 31/02

U.S. Cl. 324—51

6 Claims



A portable ground continuity tester having a body formed of electrically conductive material and comprised of a base plate and an upstanding side wall with a handle extending therebetween. A battery is attached by a pair of terminals to the base plate and a box having a receptacle mounted therein is attached to the side wall. A test lead is attached at one end to the box and connected in series with an indicator light and the battery. A test probe on the other end of the test lead is used to contact an electrical device plugged in to the receptacle during testing whereby the light is illuminated when continuity exists.

3,723,864

## METHOD AND APPARATUS FOR DETERMINING THE EXISTENCE OF A DEFECT IN AN ELECTRICAL LINE AND ITS LOCATION

Louis Ricard, Villeurbanne, France, assignor to Compagnie Generale D'Electricite, Paris, France

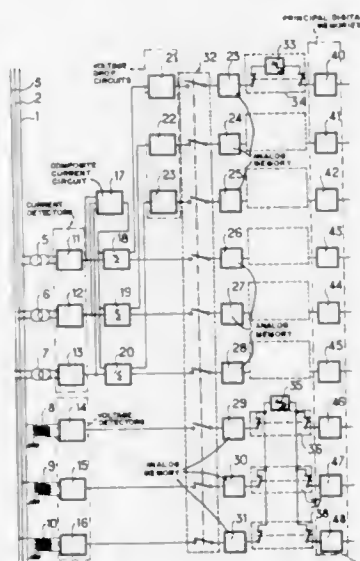
Filed March 15, 1971, Ser. No. 124,151

Claims priority, application France, March 13, 1970, 7009181; March 27, 1970, 7011296

Int. Cl. G01r 31/08

U.S. Cl. 324—52

6 Claims



The surveillance device according to the invention determines a resistance  $R_d$  of a defect and its distance  $x$  from a mea-

surement point and relates them to a pre-established surveillance contour. Analog memories, containing the analog input signals, are — by means of converters — connected to digital memories which themselves are connected, by means of a set of switches, to a calculation means which makes simple calculations and comparisons. The speed of execution permits the surveillance — during an interval of time less than one quarter of a period — of the large number of lines issuing from one station.

3,723,865

## ON-LINE ELECTRONIC MOISTURE ANALYSIS SYSTEM

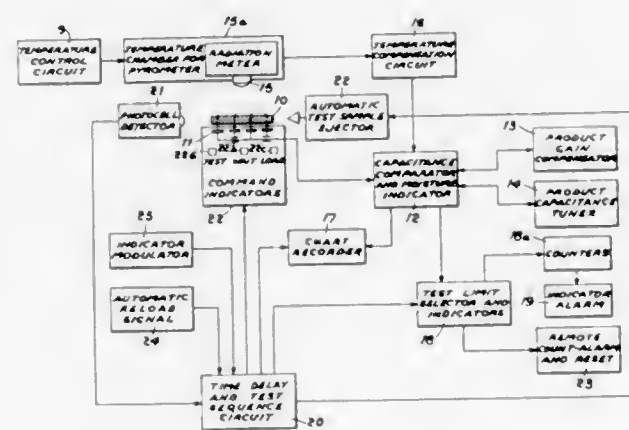
Robert W. Batey, Portchester, N.Y., and Theodore J. R. Wette, Stamford, Conn., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed March 1, 1971, Ser. No. 120,027

Int. Cl. G01r 27/26

U.S. Cl. 324—61 R

7 Claims



A moisture analysis system is provided to analyze and determine the moisture content of uniformly baked goods according to predetermined standards. The dielectric properties of the goods are tested by using a fringe field electrode and a comparator. The temperature of the goods is measured, and a compensation signal provided to the comparator so that a direct moisture determination may be made and recorded.

3,723,866

## CAPACITIVE MOVEMENT MEASURING DEVICE

Jean-Francois Michaud, and Gilles Delapierre, both of 38 Grenoble, France, assignors to Commissariat A L'Energie Atomique, Paris, France

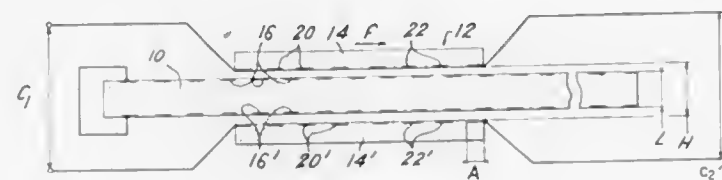
Filed April 7, 1971, Ser. No. 131,865

Claims priority, application France, April 10, 1970, 7013098

Int. Cl. G01r 27/26; H01g 7/00

U.S. Cl. 324—61 R

7 Claims



A movement measuring sensor comprises a rule having parallel surfaces and a slider having parallel surfaces opposite the first parallel surfaces and movable relatively to the rule in a direction parallel to the surfaces. Each surface of the slider is provided with a first set of  $n$  electrically interconnected conductive strips disposed at a pitch  $p$  in such direction and the rule has  $N$  electrically interconnected conductive strips disposed at the same pitch  $p$  and located opposite each of the first sets. The two capacitances each formed by a set of  $n$  strips and a set of  $N$  strips are in series relation.

3,723,867

## APPARATUS HAVING A PLURALITY OF MULTI-POSITION SWITCHES FOR AUTOMATICALLY TESTING ELECTRONIC CIRCUIT BOARDS

Claudio Canarutto, 10099 San Mauro Torinese, Italy, assignor to Ing. C. Olivetti &amp; C., S.p.A., Ivrea (Turin), Italy

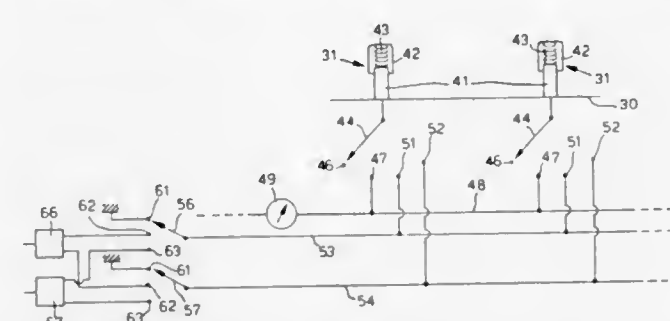
Filed Aug. 7, 1970, Ser. No. 62,079

Claims priority, application Italy, Aug. 7, 1969, 52924 A/69

Int. Cl. G01r 15/12, 31/02

U.S. Cl. 324—73 PC

2 Claims



An apparatus for automatically testing electronic printed circuit boards is provided with a plate having a plurality of resiliently biased contacts disposed in the same configuration as the connecting positions of the board to be tested. Under manual control, the circuit board is moved toward the plate to bring the contacts against the corresponding connecting positions. Each of the contacts is associated with a common terminal of a multi-position switch having a plurality of selectable terminals. One of the selectable terminals of each multi-position switch is connected to a computer for selectively sensing the electrical conditions of the terminal. The other selectable terminals are connected to a plurality of means for generating input conditions, and the computer includes means for selectively connecting the contacts to one of the input condition generating means in a manner to isolate each of the circuits functionally in succession in order to test them individually. The computer further includes memory devices to store the test program and data sets relating to the testing of a number of different types of circuit boards. The data set for a particular type of circuit board is manually selected by means of a keyboard, and the results of the test are automatically printed.

3,723,868

## SYSTEM FOR TESTING ELECTRONIC APPARATUS

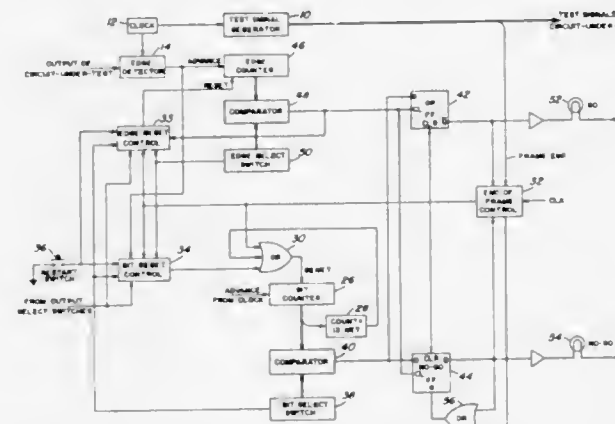
Billy K. Foster, Winter Park, Fla., assignor to General Dynamics Corporation, Rochester, N.Y.

Filed Jan. 21, 1972, Ser. No. 219,730

Int. Cl. G01r 15/12

U.S. Cl. 324—73 AT

13 Claims



A printed circuit card tester for dynamically testing digital logic circuits on a visual GO/NO-GO basis is described. A repetitive set of waveforms is supplied to the circuit under test as stimuli therefor. Digital logic circuitry performs analysis of an output from the circuit under test which involved the counting of predetermined numbers of clock pulses during

preselected timing intervals to determine the precise time interval between distinct edges (transitions) of the output from the circuit under test and to provide GO/NO-GO indications while the circuit under test is being dynamically exercised.

3,723,869

## DEVICES FOR CARRYING OUT SPECTRAL ANALYSIS

Joel Guyot, Paris 8eme, France, assignor to Thomson-CSF, Paris, France

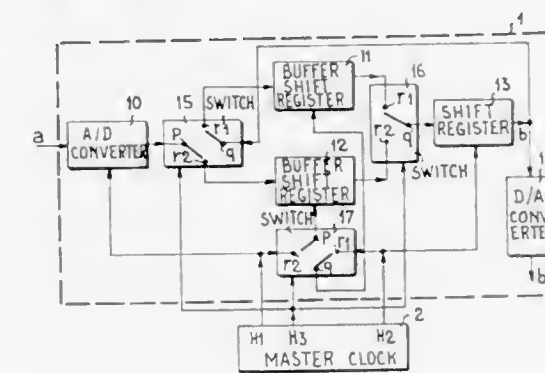
Filed Feb. 4, 1972, Ser. No. 223,613

Claims priority, application France, Feb. 5, 1971, 7103963

Int. Cl. G01r 23/16

U.S. Cl. 324—77 B

10 Claims



The selectivity of a spectral analysis is increased by using a factor of compression of sampled sections of an electrical signal, having a value such that the duration of each section is lengthened, and the corresponding cycle comprises a sequence of the same compressed section, the sequence amplitude-modulates the identical frequency bands distributed synchronously within one and the same cycle of a linearly frequency-modulated reference signal. The modulation product is applied to a matched dispersive delay line.

3,723,870

## DEVICE FOR MEASUREMENT OF PULSE-TO-PULSE CARRIER FREQUENCY SHIFT

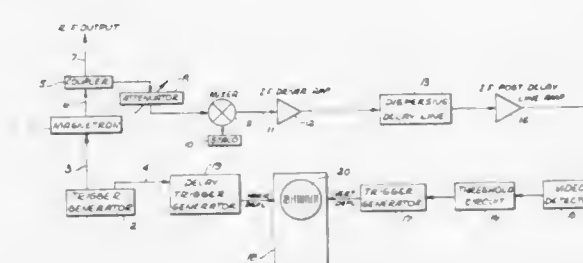
Thomas H. Donahue, Los Angeles, Calif., assignor to International Telephones and Telegraph Corporation, New York, N.Y.

Filed Nov. 18, 1970, Ser. No. 90,577

Int. Cl. G01r 23/02, 23/16

U.S. Cl. 324—82

8 Claims



A system for the instantaneous measurement of the carrier frequency in a pulsed radar system, particularly useful in frequency stability analysis of the output of self-excited microwave frequency generators, such as magnetrons, etc. A dispersive delay line, preferably of the type operative in the intermediate frequency domain is employed with appropriate down-conversion ahead of the delay line input. A cathode ray display device horizontal sweep is generated synchronously with the magnetron PRF and the output of the dispersive delay line is presented in the appearance of spectral lines on the vertical deflection coordinate thereof. The dispersive delay line inherently provides a frequency time delay conversion so that the cathode ray display device may be calibrated in terms of frequency.



3,723,871

## SERVO STABILIZED METER APPARATUS

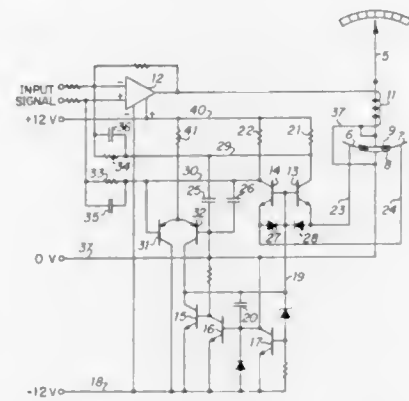
Wesley G. Runyan, Cedar Rapids, and Lewis E. Staley, Marion, both of Iowa, assignors to Collins Radio Company, Dallas, Tex.

Filed Jan. 10, 1972, Ser. No. 216,515

Int. Cl. G01r 17/06; H01g 5/10

U.S. Cl. 324—99 R

7 Claims



Disclosed is a closed loop system for providing precise, stabilized displacement of an indicator in accordance with command signal. A D'Arsonval type meter structure has first and second stationary electrically conductive plates mounted on and insulated from the magnetic core structure. Each plate has a portion thereof disposed between the conductive bobbin on which the armature coil is wound and the magnetic core structure so that when the bobbin moves in either direction the capacitive coupling between the bobbin and one of the plates increases as the capacitive coupling between the bobbin and the other plate decreases. Means are provided for differentially sensing the capacitance between the bobbin and each of the two plates to develop an error signal proportional to armature displacement and for summing the error signal with the input or command signal to the armature coil to drive the indicator to the correct position.

3,723,872

## THREE-WIRE, THREE-PHASE WATT-VARMETER

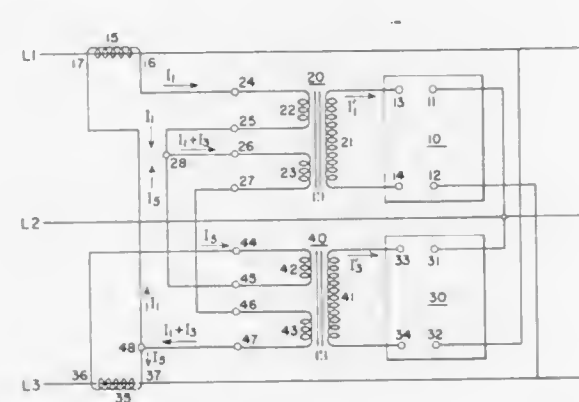
Harold Rich, Lynn, Mass., assignor to General Electric Company, Lynn, Mass.

Filed Nov. 8, 1971, Ser. No. 196,435

Int. Cl. G01r 11/00, 21/00

U.S. Cl. 324—141

15 Claims



A power measuring circuit. A circuit for measuring three-phase real or reactive power utilizing two wattmeter circuits without employing additional phase shifting networks. The current input of each wattmeter circuit is driven from a current transformer having two primary winding sections having an equal number of turns. Watts are measured using the standard two-wattmeter method. When measuring VAR's, the voltage connections are exchanged and the primary windings of the current transformer so interconnected that a first line current flows through both primary windings of a first current transformer and one primary winding of the second current

transformer and a second line current flows through both primary windings of the second transformer and one primary winding of the first current transformer.

3,723,873

## RADIATION METHOD FOR DETERMINING SEMICONDUCTOR STABILITY AND RELIABILITY

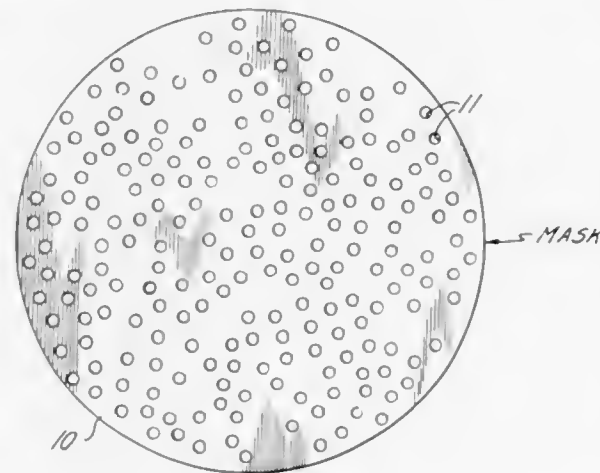
Abraham A. Witteles, Parsippany-Troy Hills, N.J., assignor to The Singer Company, New York, N.Y.

Filed Jan. 21, 1971, Ser. No. 108,536

Int. Cl. G01r 31/22; H01l 7/00

U.S. Cl. 324—158 T

11 Claims



A semiconductor wafer is tested for stability and reliability by subjecting preselected chips on the wafer to a predetermined dose of ionizing radiation and measuring the resulting change in electrical operating parameters of the preselected chips to obtain an indication of the general stability and reliability of the entire wafer being tested.

3,723,874

## NOISE FIGURE METER

Bernard Hamon, Conflans-Sainte-Honorine, and Jean-Pierre Montel, Meulan, both of France, assignors to Lignes Telegraphiques Et Telephoniques, Paris, France

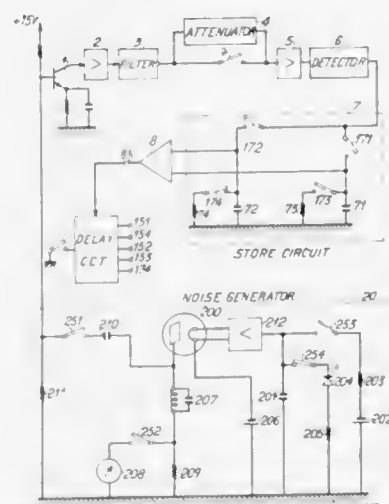
Filed Jan. 31, 1972, Ser. No. 222,250

Claims priority, application France, Feb. 2, 1971, 7103375

Int. Cl. G01r 31/22, 27/00

U.S. Cl. 324—158 T

3 Claims



Improvement to noise figure meters which comprise a broadband noise power source in the form of a temperature limited diode having an output resistor forming the input resistance of an amplifier device to be tested, switching means for selectively connecting the output of said diode to said resistor and for cumulating the noise power created by the diode and the noise power of the amplifier device, a pass-band filter connected to the output of the amplifier device, an attenuator

having an attenuating factor of 2, switching means for selectively inserting the attenuator at the output of the filter, a detector for detecting the noise power of the amplifier device alone and the cumulated noise power of the noise source and amplifier device attenuated by 2 and for deriving therefrom two RMS noise signals, two capacitors for respectively storing said RMS noise signals and a comparator for determining the equality of said signals. The improvement consists of a capacitor-resistor charge circuit and an amplifier of the charging current of the capacitor. The amplified current is applied to the heater of the diode and the charge is stopped when the comparator detects the equality of the RMS noise signals.

3,723,875

## MULTILEVEL DIGITAL SIGNAL TRANSMISSION SYSTEM

Masao Kawashima, Yokohama-shi; Mikio Ohtsuki, Kawasaki-shi; Isao Fudemoto, Machida-shi, and Kiyoshi Tomimori, Kawasaki-shi, all of Japan, assignors to Fujitsu Limited, Kawasaki-shi, Japan

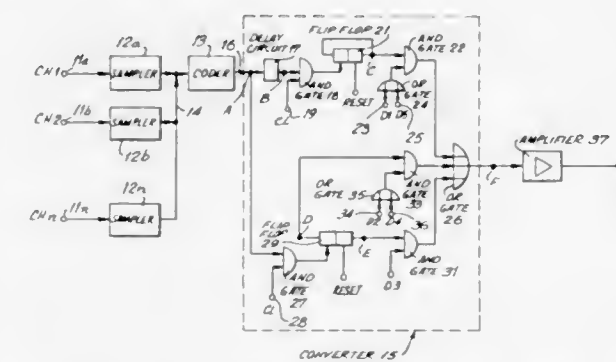
Filed March 3, 1969, Ser. No. 803,680

Claims priority, application Japan, March 9, 1968, 43/15293

Int. Cl. H04b 7/18, 1/00

U.S. Cl. 325—13

6 Claims



Multilevel digital signals are converted to binary signals and are transmitted as such. The binary signals are integrated by the frequency characteristic of a transmission line of narrow bandwidth. The transmission line converts the binary pulses to a multilevel signal. The receiver receives the transmitted multilevel signal and converts it to analog signals.

3,723,876

## EMERGENCY DISTRESS SIGNALING SYSTEM

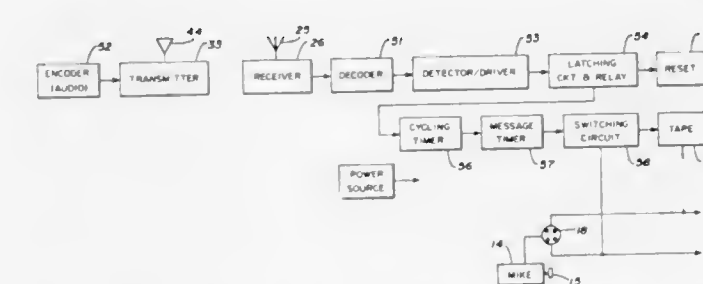
George C. Seaborn, Jr., 926 Warfield, Richardson, Tex.

Filed June 21, 1971, Ser. No. 155,098

Int. Cl. H04b 1/00

U.S. Cl. 325—64

7 Claims



A system for addition to a conventional dispatched vehicle two-way radio communication system to enable an operator to notify a central dispatcher of an emergency condition arising after the operator leaves the vehicle. The system includes a unit which plugs directly into the microphone input of the conventional system and which is responsive to a signal transmitted from a portable transmitter carried by the operator for playing a pre-recorded emergency message through the transmitter of the conventional radio system.

908 O.G.—45

3,723,877

## TRANSMISSION OF SIGNALS CONTAINING HARMONICALLY RELATED SIGNALS TO OVERCOME EFFECTS OF FADING

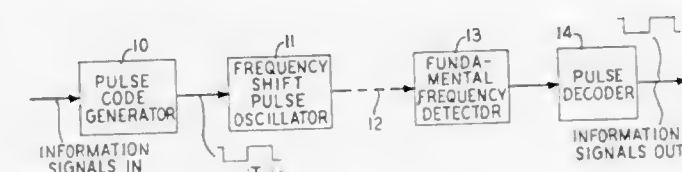
Ralph La Rue Miller, Chatham, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Sept. 3, 1970, Ser. No. 69,373

Int. Cl. H04l 27/10

U.S. Cl. 325—30

4 Claims



To ensure that signals may be recovered after transmission through a fading medium, each pulse of a coded signal is represented by a carefully formulated collection of harmonically related components. For example, if a sequence of regularly spaced pulses in which the repetition rate determines harmonic spacing is used to represent a binary "one," the absence of pulses or a sequence of pulses with a different repetition rate then represents a "zero." A harmonic detector is used to recover the fundamental component of each group. The fundamental frequency identifies the transmitted code signal. Superior signal recovery despite fading, noise, or phase dispersion results.

3,723,878

## VOICE PRIVACY DEVICE

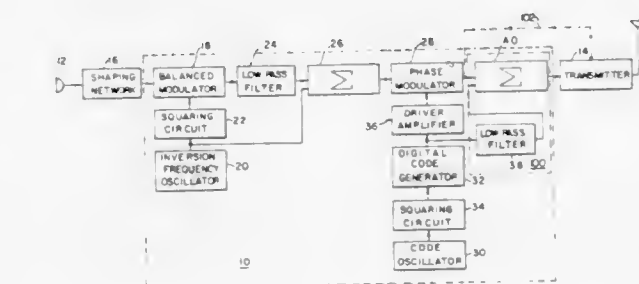
Charles K. Miller, Concord, Mass., assignor to Technical Communications Corporation, Lexington, Mass.

Filed July 30, 1970, Ser. No. 59,659

Int. Cl. H04k 1/04

U.S. Cl. 325—32

26 Claims



A voice privacy coder system enables transmission of voice communication in privacy by first inverting the communication and then scrambling it directly with a complex code word. In one embodiment, a tone at the inversion frequency is also scrambled in with the voice communication and the complex code is added to the scrambled signal prior to transmission to provide synchronizing signals for the receiver; a decoder at the receiver reconstitutes the scrambled communication. In an alternate embodiment, the complex code is omitted from the transmitted signal and the inversion tone and code are reconstituted at the receiver by means of cross-coupled phase-lock and synchronizing loops.

3,723,879

## DIGITAL DIFFERENTIAL PULSE CODE MODEM

Pradman P. Kaul, Washington, D.C., and Leonard S. Golding, Rockville, Md., assignors to Communications Satellite Corporation, Washington, D.C.

Filed Dec. 30, 1971, Ser. No. 214,271

Int. Cl. H04b 1/66

U.S. Cl. 325—38 R

22 Claims

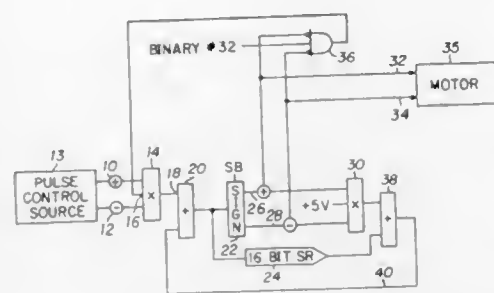
A differential pulse code modem receives digitally quantized samples of an input analog signal and produces digital







by using a unique count down circuit after the reception of an input pulse. An output pulse is obtained for the duration of the



count down period. Other input pulses received during the count down period are ignored.

3,723,887

## DISCHARGE FLASH TUBE HIGH ENERGY SWITCH

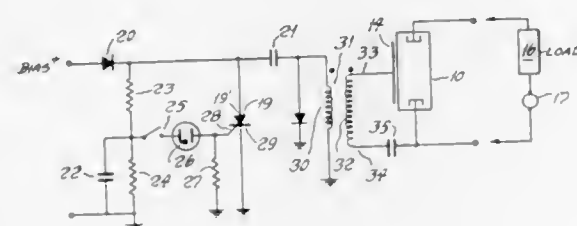
Joseph J. Panico, Arlington, Mass., assignor to Health Systems, Inc., Woburn, Mass.

Filed April 21, 1970, Ser. No. 30,385

Int. Cl. A61n 1/38

U.S. Cl. 328—76

10 Claims



A high speed, high energy capacity switch system wherein a trigger pulse from an appropriate circuit is applied to the primary of a transformer. The secondary of the transformer may be connected across one of the main electrode terminals of a Xenon or Krypton gas tube and the control terminal thereof, or both terminals, may be isolated using a small capacitor. The main electrodes of the Xenon flash tube or Krypton gas tube are disposed in series with the power source and/or load which is to be controlled so that when the stepped-up trigger pulse is applied to the tube, it will fire and provide instant conduction of the power source current and remain in this state until the voltage and current thereacross fall below the value necessary to sustain conduction for a sufficient period of time. Additionally, there are disclosed a computer logic element wherein the switch is interposed in the memory core and the light output thereof is detected by a bank of photo diodes, a random color pattern generator wherein a series of light emitting diodes are connected in series with the switch, an overload protective device in which the current or voltage sensor controls the activation of the switch to short circuit the power source thereacross and other novel combinations.

3,723,888

## PHASE RESPONSIVE CONTROL CIRCUIT

Charles W. Ellis, Lorain, Ohio, assignor to Lorain Products Corporation

Filed June 14, 1971, Ser. No. 152,770

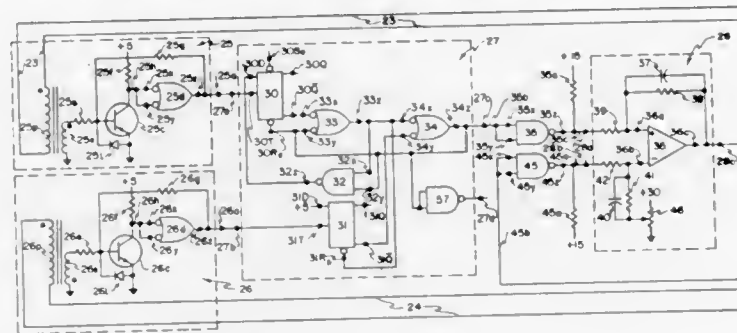
Int. Cl. H03k 5/20

U.S. Cl. 328—134

6 Claims

A circuit for establishing and controlling a synchronous relationship between the voltages of two independently energized a-c sources. Two a-c voltages are applied in switching control relationship to respective inputs of a phase comparator circuit. The comparator circuit generates a pulse train hav-

ing a duty cycle which is a substantially linear function of the phase angle between the voltages of the two a-c sources. A reference pulse train having a fixed duty cycle is subtracted from the variable duty cycle pulse train to establish a signal voltage that varies in accordance with the magnitude and sign of the phase angle between the voltages of the two a-c sources. When the frequency of one a-c source is within acceptable



frequency limits, the above signal voltage is allowed to vary the frequency of the other a-c source, as required, to maintain a synchronous relationship between the voltages of the two a-c sources. When, however, the frequency of one a-c source varies outside of acceptable frequency limits, the above signal voltage is prevented from varying the frequency of the other a-c source which then operates at a fixed, predetermined frequency.

3,723,889

## PHASE AND FREQUENCY COMPARATOR

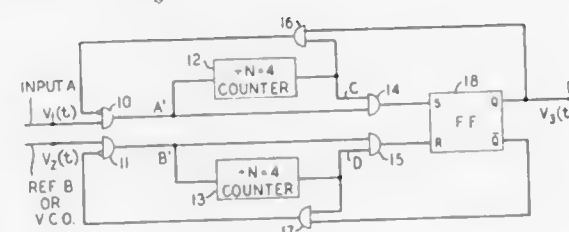
James Francis Oberst, Howell Twp., Monmouth County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 22, 1971, Ser. No. 210,644

Int. Cl. H03d 13/00

U.S. Cl. 328—134

5 Claims



A sawtooth phase comparator is arranged to act as a frequency comparator when the frequencies of the input and reference signals differ by a substantial amount. This is accomplished by using a phase comparator consisting of a flip-flop with first and second frequency counters connected between the input signal and its SET input, and between the reference signal and its RESET input, respectively. Means are provided for inhibiting the input signal whenever it would cause a signal to appear at the set input of the flip-flop when it is already set and for inhibiting the reference signal whenever it would cause a signal to appear at the RESET input when it is already reset. This eliminates the alternating polarity signal which prior art comparators produce when the linear portion of the transfer characteristic is exceeded. Consequently, a frequency correcting signal is produced.

3,723,890

## DIGITAL HARMONIC REJECTING PHASE DETECTOR

Dean P. Hutsinger, Marion, Iowa, assignor to Collins Radio Company, Dallas, Tex.

Filed Oct. 26, 1971, Ser. No. 192,456

Int. Cl. H03d 3/20

U.S. Cl. 329—50

10 Claims

A digital harmonic rejecting phase detector inherently capable of rejecting substantially any even harmonic and with

3,723,892

## CIRCUIT USING DYNAMIC HIGH IMPEDANCE LOAD

Loebe Julie, New York, N.Y., assignor to Julie Research Laboratories, Inc., New York, N.Y.

Filed March 22, 1972, Ser. No. 236,823

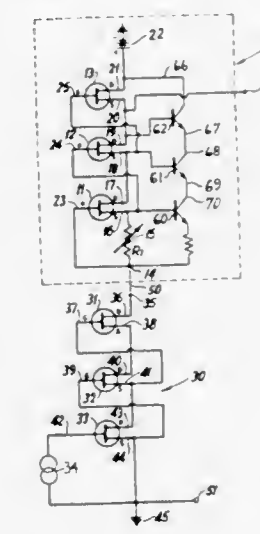
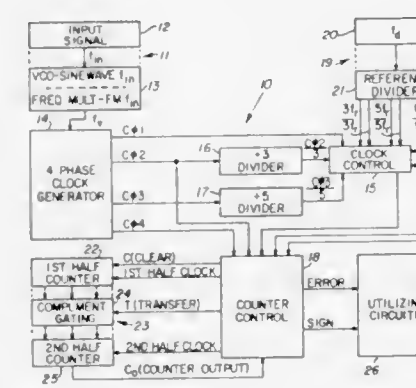
Continuation-in-part of Ser. No. 57,140, July 22, 1970

Int. Cl. H03f 3/16

U.S. Cl. 330—35

9 Claims

provisions for good rejection of at least one odd harmonic present in the input signal. The detector has a bidirectional counter system with a first half unidirectional counter and a second half unidirectional counter with transfer gating periodically transferring content of the first half counter to the second half counter. The bidirectional counter system accomplishes both an invert-noninvert function and the averaging function of a low-pass filter. The input signal is processed through a signal conditioner to a pulse density representation. A reference divider is provided developing the fundamental reference frequency  $f_r$  and developing required odd harmonic reference frequencies (i.e.,  $3f_r$  and  $5f_r$ ) in square wave form.



An amplifier comprising a series of field effect transistors is connected to a dynamic high impedance load. The output of the amplifier preferably is taken from the last stage of that load. The dynamic high impedance load may be a constant current source consisting of at least three field effect transistors.

3,723,893

## PARAMETRIC AMPLIFIER

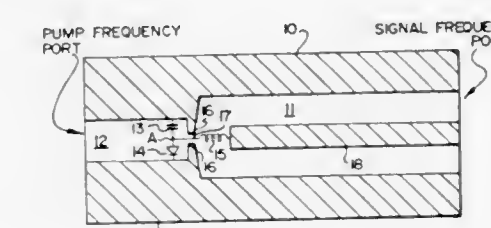
Lorne D. Braun, Knata, Ontario, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Canada

Filed Aug. 6, 1971, Ser. No. 169,700

Int. Cl. H03f 7/04

U.S. Cl. 330—4.9

7 Claims



3,723,891

## FREQUENCY TO VOLTAGE CONVERTER

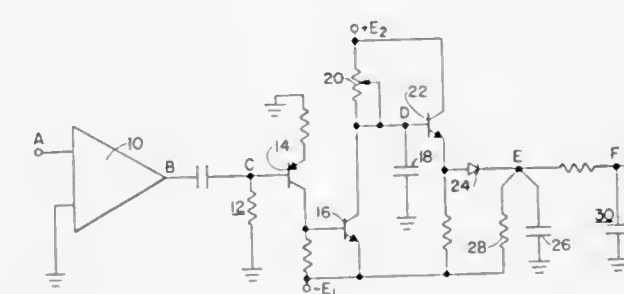
Thomas B. Whiteley, Riverside, Calif., assignor to the United States of America as represented by the Secretary of the Navy

Filed May 12, 1971, Ser. No. 143,678

Int. Cl. H03d 3/04

U.S. Cl. 329—103

8 Claims



A frequency to voltage converter including a switching circuit responsive to an input signal at each zero crossing in the positive direction to charge a capacitor to a peak negative voltage and discharging through a resistor towards a positive voltage until the next zero crossing in the positive direction. The peak voltage charge is coupled to a holding circuit to provide a D.C. voltage proportional to the frequency of the input signal.

3,723,894

## AUTOMATIC GAIN CONTROL CIRCUIT

Robert L. Benenati, Depew, N.Y., assignor to GTE Sylvania Incorporated

Filed Aug. 13, 1971, Ser. No. 171,477

Int. Cl. H03g 3/30

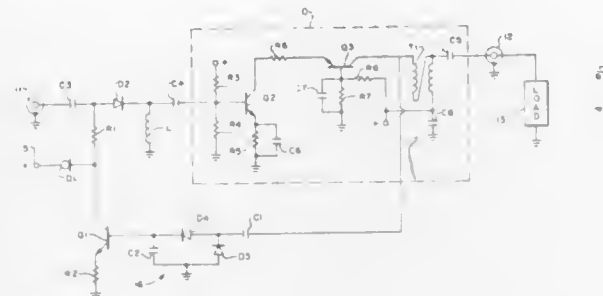
U.S. Cl. 330—29

7 Claims

VHF cascode amplifier having a PIN diode in series with its input. The RF impedance of the PIN diode varies inversely with the DC current through it. A constant DC current source



including a constant current diode supplies DC current to the PIN diode. A bypass transistor has its collector connected to the constant current source and its base coupled to the amplifier output. Variations in the peak amplitude of the amplifier



output cause variations in the current flow through the bypass transistor. The resulting change in DC current flow in the PIN diode changes its RF impedance so as to overcome the change in the amplifier output and maintain the output level constant.

3,723,895

## AMPLIFIER OF CONTROLLABLE GAIN

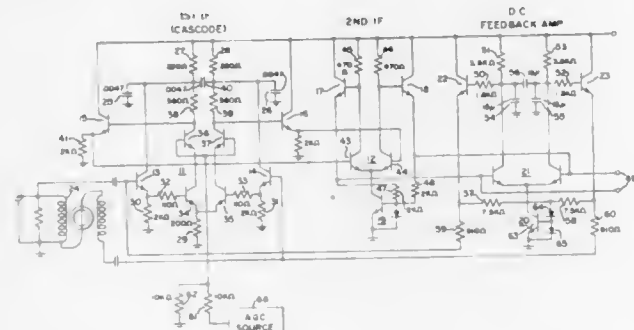
William Peil, North Syracuse, N.Y., assignor to General Electric Company

Filed Nov. 10, 1971, Ser. No. 197,390

Int. Cl. H03g 3/30

U.S. Cl. 330—29

4 Claims



An amplifier of controllable gain which is d.c. coupled throughout and capable of wide band operation is described. It employs a cascode differential amplifier first stage and a differential amplifier second stage for producing the principal voltage gain of the amplifier. Control of the gain of the cascode differential amplifier is achieved by the application of gain control potentials to the bases of the cascoded upper rank transistors. Gain reduction is successively produced by saturation of the lower rank transistors, the degenerative effects of two impedances connected in series with the base leads of the lower rank transistors, and finally by cut-off of the upper rank transistors. The resultant gain control characteristic has a steep initial, gradual central and a steep final slope. The total range of gain control is in excess of the forward gain of the amplifier. The amplifier is of high gain and wide bandwidth and is suitable for amplification at intermediate frequencies (44 megahertz) of a television signal. The circuit is adapted for integrated circuit fabrication.

3,723,896

## AMPLIFIER SYSTEM

Daniel N. Flickinger, 40 South Oviatt Street, P.O. Box 628, Hudson, Ohio

Filed Dec. 28, 1970, Ser. No. 101,494

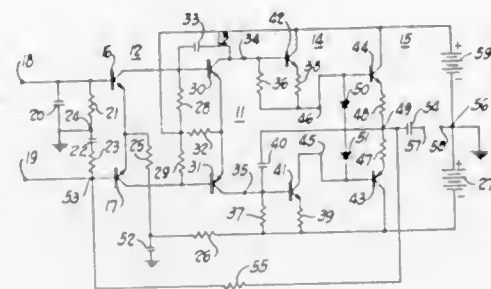
Int. Cl. H03f 3/68

U.S. Cl. 330—30 R

6 Claims

A solid state amplifier system is disclosed consisting of a driver stage having a differential input coupled to a single ended complementary symmetry output stage. The amplifier system is coupled in a manner which results in a wideband amplifier capable of a high power output at low noise and distortion.

The amplifier system is temperature compensated and economical to produce. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.



3,723,897

## AGC CIRCUIT TO MAINTAIN AMPLIFICATION AT A FIXED LEVEL BETWEEN SPEECH BURSTS

George John Preston Barnes, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.

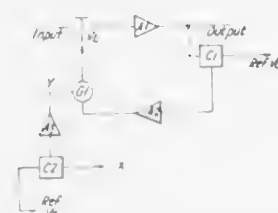
Filed June 30, 1971, Ser. No. 158,279

Claims priority, application Great Britain, July 29, 1970, 36,704/70

Int. Cl. H03g 3/30

U.S. Cl. 330—29

4 Claims



An AGC circuit for loudspeaking telephones is disclosed in which the setting of the amplifier is, in effect, "frozen" during gaps in speech at the level reached in the last speech burst. This avoids the undesirable effects on AGC systems of surges due to speech commencement.

3,723,898

## FREQUENCY SYNTHESIZER

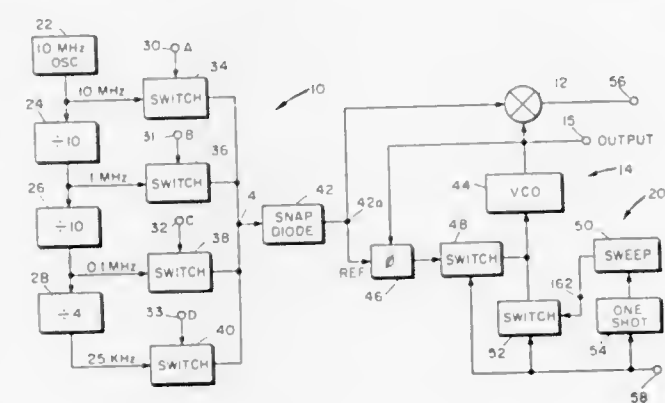
John Merle Tewksbury, Baltimore, Md., assignor to The Bendix Corporation

Filed March 31, 1972, Ser. No. 240,070

Int. Cl. H03b 3/08

U.S. Cl. 331—4

12 Claims



A swept frequency synthesizer having multiple sweep speeds where the sweep speed is dependent upon the distance between the instantaneous output frequency and the desired output frequency. A harmonic generator produces a plurality of reference frequencies. The spacing between reference

frequencies is decreased as the instantaneous output frequency approaches the desired frequency.

3,723,899

## MULTIPLE OSCILLATOR ISOLATION CIRCUIT

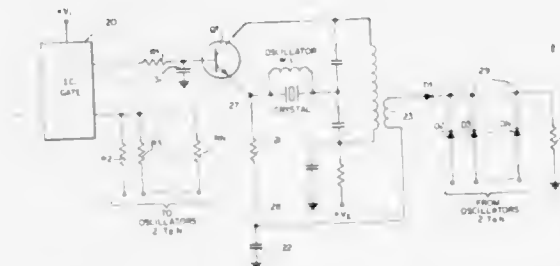
Boyd M. McClaskey, Flourtown, Pa., assignor to Narco Scientific Industries, Inc., Fort Washington, Pa.

Filed Jan. 6, 1972, Ser. No. 215,865

Int. Cl. H03b 3/00; H03k 17/76

U.S. Cl. 331—49

11 Claims



A multiple oscillator isolation circuit for driving one of such oscillators at a time, switchably connecting the output of said driven oscillator to a common buss, and isolating such driven oscillator from all the other oscillators. Each oscillator contains an active device which is connected to a control line of an IC gate, and which is in series connection with the oscillator output and an input leg of a diode gate which drives the buss, such that the energized control line both drives the oscillator and gates the oscillator output through to the common buss.

3,723,900

## MICROWAVE APPLICATOR WITH TIME-SHARING OF MAGNETRON SOURCES

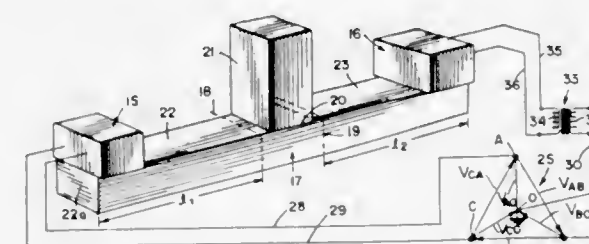
Ray M. Johnson, Danville, Calif., assignor to Microdry Corporation, San Ramon, Calif.

Filed Oct. 29, 1971, Ser. No. 193,902

Int. Cl. H03b 9/10

U.S. Cl. 331—55

6 Claims



A multimode microwave applicator or single-mode transmission line is excited by two microwave sources including magnetron oscillators. The sources are excited by full wave rectifier circuits, and in a manner so as to generate power only during portions of a cycle of the ac power supply. The respective rectifier circuits are energized by ac power sources that are displaced 90° in phase so that the sources operate in a time-shared mode to alternately transmit power to the applicator or line.

3,723,901

## ELECTRONIC CONTROL DEVICE WITH CONDITION RESPONSIVE OSCILLATOR

Jean Pierre Nicolas, Nice, France, assignor to Adolf Feller Aktiengesellschaft, Horgen, Switzerland

Filed Feb. 3, 1971, Ser. No. 112,171

Claims priority, application France, Feb. 3, 1970, 7003759; Jan. 4, 1971, 7100026

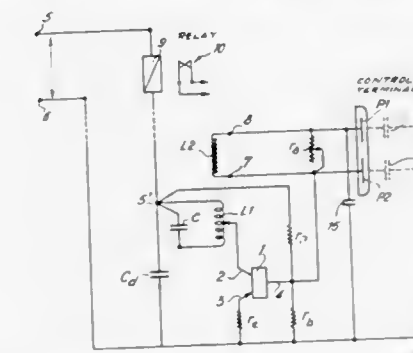
Int. Cl. H01h 47/32; H03b 5/12

U.S. Cl. 331—65

11 Claims

An electronic device intended to supply an electric control signal in response to the momentary application of an im-

pedance which may be constituted by the impedance of the human body between an input terminal and earth. The device comprising a single active amplifier element in a feedback oscillator in which the feedback circuit is completed, for example, by being touched. The active member is biased in class C so that it is virtually blocked until oscillations set in by closing the feedback circuit with the human body whereupon the active element passes into class A condition. The control



signal is formed by the average current of the active member resulting from amplification of the detected oscillations on the input electrode of the active element. This single amplifier stage produces simultaneously a feedback of the high frequency current, a detection of the peaks of this high frequency current and an amplification in direct current of the detected current, the state of oscillation continuing or not, according to a chosen mode of operation after the said impedance is no longer applied.

3,723,902

## CARBON DIOXIDE LASER EMPLOYING MULTIPLE GASES INCLUDING OXYGEN AND WATER VAPOR

Chandra K. N. Patel, Chatham, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Division of Ser. No. 814,510, March 28, 1969, Pat. No.

3,596,202, which is a continuation-in-part of Ser. Nos.

409,682, Nov. 9, 1964, abandoned, and Ser. No. 474,546, July

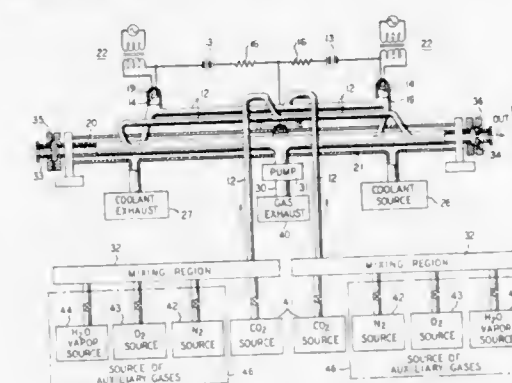
26, 1965, abandoned, and Ser. No. 495,844, Oct. 14, 1965,

abandoned. This application Nov. 30, 1970, Ser. No. 93,565

Int. Cl. H01s 3/00

U.S. Cl. 331—94.5 G

8 Claims



There is disclosed a laser providing emission of coherent radiation near 10 microns in the far infrared and utilizing transitions between vibrational-rotational levels in carbon dioxide. Also disclosed are beneficial effects from addition of oxygen and water vapor to various forms of such a laser.

3,723,903

## DYNAMIC FM CONTROL OF THE TRANSVERSE MODES OF A SELF-PULSING SEMICONDUCTOR LASER

Thomas Lee Paoli, Chatham, and Jose Ellis Ripper, North Plainfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 13, 1971, Ser. No. 142,983

Int. Cl. H01s 3/00

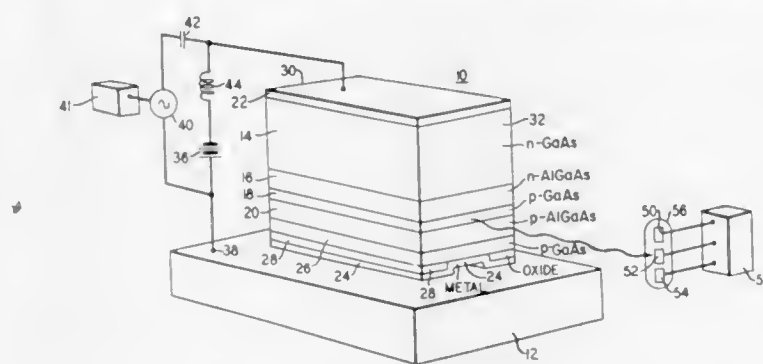
U.S. Cl. 331—94.5 M

14 Claims

A semiconductor laser at appropriate values of current above threshold, enters a nonlinear regime characterized by



(1) a continuous region in which the output radiation self-pulses simultaneously in two competing transverse modes and/or (2) a bistable region in which the output radiation self-pulses in either of two noncompeting transverse modes, but not both. A preselected one of these transverse modes is made to



dominate by adding to the pump power a control signal at a frequency approximately equal to the pulsing frequency of the preselected mode. Alternatively, the laser is modulated (i.e., switched between different sets of modal families) by modulating the frequency of the control signal between two pulsing frequencies corresponding to different modal families.

3,723,904

#### FILM MOUNT AND MASK FOR A PAIR OF PANORAMIC STEREOSCOPIC IMAGES

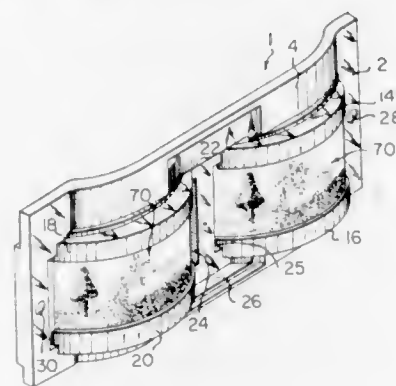
Robert V. Bernier, Saugus, Calif., assignor to TRW Inc., Cleveland, Ohio

Filed Oct. 13, 1971, Ser. No. 188,896

Int. Cl. G09f 1/12

U.S. Cl. 40—152

10 Claims



A film mount and mask for a panoramic stereoscopic camera in which processed film strip has stereoscopic pairs of film frames cut and mounted in a holder providing a mask for each frame and means comprising a boss provided for each film frame in the mount to register with a notch in the film for positioning purposes, and to prevent the film frame from moving towards either extremity when heated in a projector, each film frame being held in a cylindrical plane by means of a mask, with means formed into the mount to accept either clips, or plastic feet in the case of a plastic mask, to secure the film frames tight against the curved focal plane formed in the mount, said plane being identical as to focal radius with the curved film bed in the panoramic stereoscopic camera in which the film was exposed.

3,723,905

#### DUAL-GATE MOS-FET OSCILLATOR CIRCUIT WITH AMPLITUDE STABILIZATION

John Franklin Sterner, Piscataway, and George Draper Hanchett, Summit, both of N.J., assignors to RCA Corporation

Filed June 21, 1971, Ser. No. 154,825

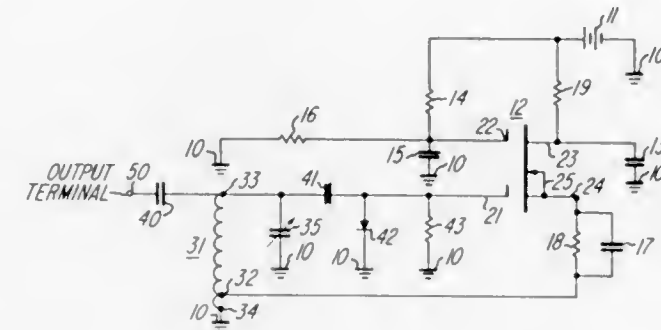
Int. Cl. H03b 3/02, 5/12

U.S. Cl. 331—109

3 Claims

An oscillator circuit includes a dual-gate MOS field-effect

transistor arranged in a Hartley oscillator configuration and



3,723,906

#### UHF OSCILLATOR

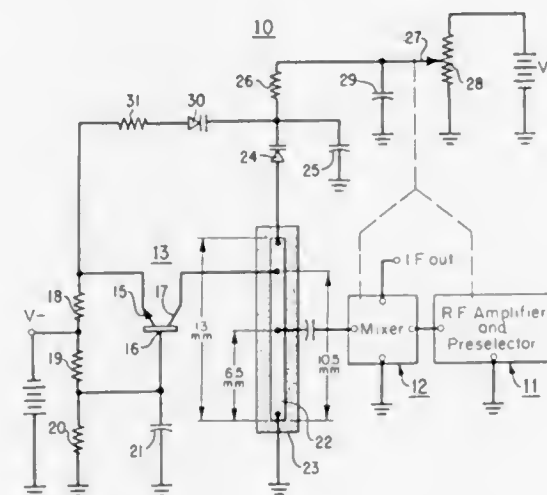
Arne R. Pedersen, Chicago, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Feb. 26, 1971, Ser. No. 119,324

Int. Cl. H03b 5/18

U.S. Cl. 331—117 D

3 Claims



A UHF transistor oscillator for a television tuner employs a voltage dependent variable capacitance (varactor) element in the feedback circuit coupled between the output and input circuits of the transistor. An adjustable control circuit, which connects the varactor to a source of D.C. potential, serves to vary the capacitance exhibited by varactor in the feedback circuit while simultaneously changing the reactive contribution of the varactor to the transistor input circuit.

3,723,907

#### SYNC OSCILLATOR

Edwin J. Tajchman, Denver, and James D. Brandt, Lakewood, both of Colo., assignors to Computer Image Corporation, Denver, Colo.

Filed Aug. 24, 1970, Ser. No. 66,464

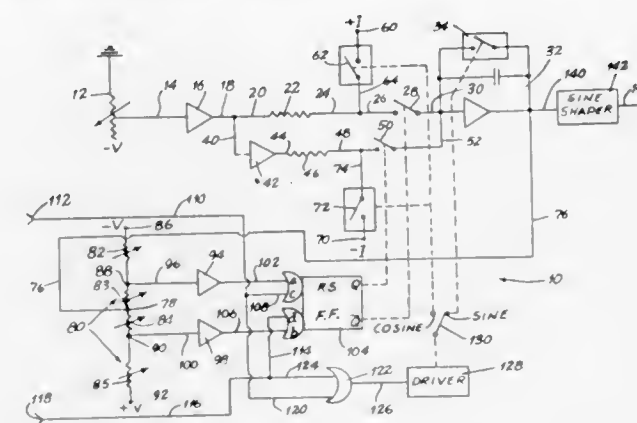
Int. Cl. H03k 3/02

U.S. Cl. 331—143

11 Claims

An oscillator for generating a triangular waveform by alternately switching positive and negative DC signals to the input of an integrator in response to output signals from a flip-

flop, the flip-flop being responsive to selective peak values of the integrator output, and means for synchronizing the oscilla-



tor to begin oscillating in response to a sync pulse in any one of several phases.

3,723,908

#### PHASE STABILIZED AC POWER SUPPLY FOR REACTIVE LOADS

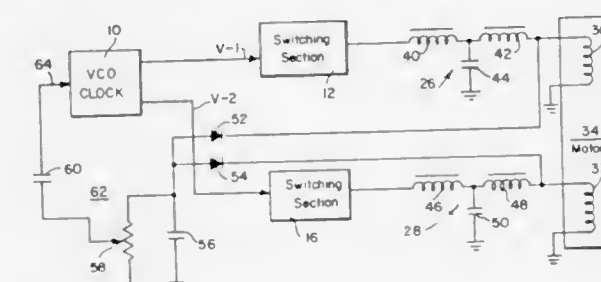
Peter Laakmann, Los Angeles, Calif., assignor to Hugh Aircraft Company, Culver City, Calif.

Filed Sept. 2, 1971, Ser. No. 177,241

Int. Cl. H03b 3/04, 3/14

U.S. Cl. 331—177 R

11 Claims



An AC power supply comprising a voltage controlled oscillator for synchronizing power switching sections which drive a load, such as a synchronous motor; a feedback circuit coupled between the load and the control input terminal of the voltage controlled oscillator adjusts the frequency thereof so as to cause a damping of oscillations caused by load variations.

3,723,909

#### DIFFERENTIAL PULSE CODE MODULATION SYSTEM EMPLOYING PERIODIC MODULATOR STEP MODIFICATION

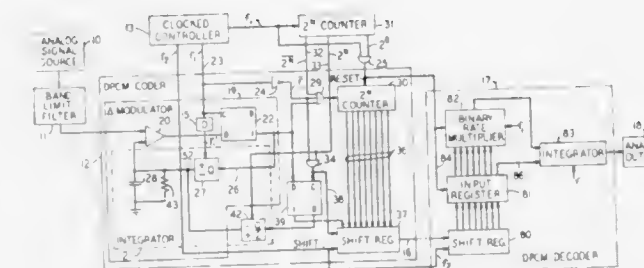
Joseph Henry Condon, 190 Kent Place Blvd., Summit, N.J.

Filed June 21, 1971, Ser. No. 154,996

Int. Cl. H03k 13/22

U.S. Cl. 331—11 D

19 Claims



In a differential pulse code modulation system, the integration of a pulse train representing a delta modulation coded format of an analog signal is modified by injection of at least one current of a magnitude corresponding to a predetermined

fractional delta modulation step and of a polarity which indicates whether or not a delta modulation pulse was present in a predetermined phase of each recurring differential pulse code modulation accumulating period of the system. In a system coder, the initiation of the injected signal also causes the addition of a corresponding least significant bit to the accumulator output transmitted to a decoder. That least significant bit is utilized in the decoder to produce a corresponding current for injection into the equivalent integrating system of the decoder.

3,723,910

#### MIXING CIRCUIT UTILIZING LINEAR RESISTANCES

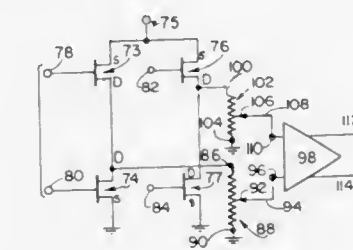
James D. Cannon, Tucson, Ariz., assignor to Motorola Inc., Franklin Park, Ark.

Filed May 20, 1971, Ser. No. 145,256

Int. Cl. H03c 1/54

U.S. Cl. 332—31 T

8 Claims



The mixing circuit employs the linear portions of the voltage-current characteristics of a plurality of field-effect transistors to amplitude modulate a first signal, having a first frequency, with a second signal having a second frequency thus providing an amplitude modulated signal. A differential amplifier is connected to the field-effect transistors and to the source of the first signal so that the common-mode rejection characteristic thereof is utilized to eliminate the undesired component at the first frequency from the amplitude modulated signal. As a result, virtually only the desired signal components having frequencies equal to the sum and difference of the first and second frequencies occur at the output of the amplifier.

3,723,911

#### TRAINING ADAPTIVE LINEAR FILTERS

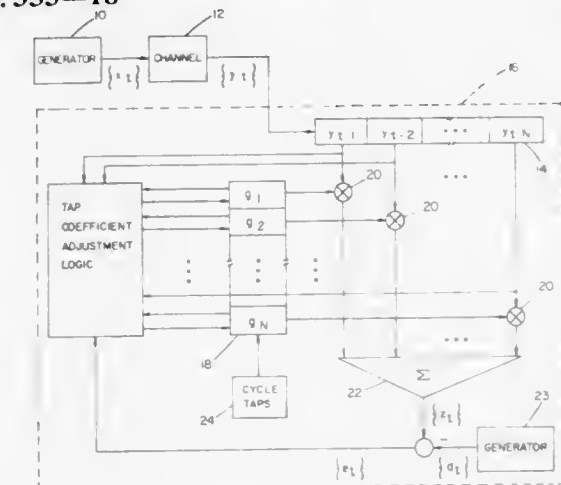
George D. Forney, Jr., Lexington, Mass., assignor to Codex Corporation, Newton, Mass.

Filed Sept. 13, 1971, Ser. No. 179,653

Int. Cl. H04b 3/04

U.S. Cl. 333—18

5 Claims



Adaptive linear transversal filter is trained with a periodic training sequence having period exactly equal to the number of variable parameters of the filter to be set in the training mode. After training, tap coefficients may be cycled in a closed loop to a preferred position.



**3,723,912**  
**CONSTANT RESISTANCE BRIDGED-T CIRCUIT USING TRANSMISSION LINE ELEMENTS**

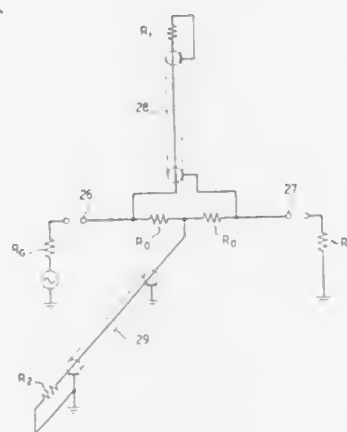
Raymond Allen Thatch, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed March 27, 1972, Ser. No. 238,178

Int. Cl. H03h 7/14

U.S. Cl. 333—20

7 Claims



A wave-shaping network of the type in which a portion of the signal is delayed and subtracted from the signal is constructed in the constant resistance bridged-T form. Delay lines terminated in resistors form the bridging and shunting members. The result is a more accurate network that allows sharp frequency cutoff with significant noise improvement.

A triaxial structure in which the output shield of the above-ground delay line also serves as the inner conductor of a transmission line greatly reduces unwanted capacitance effects. A microstrip construction is also disclosed.

**3,723,913**  
**QUADRATURE HYBRID COUPLER USING ONE-PORT, LINEAR CIRCUIT ELEMENTS**

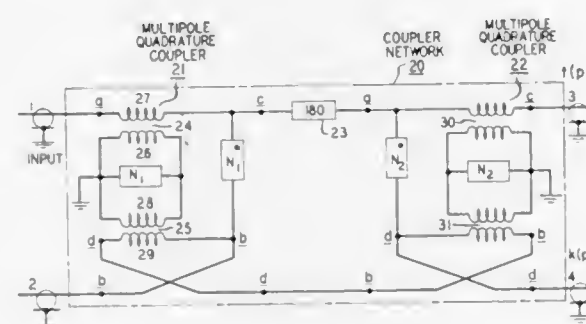
Harold Seidel, Warren, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 30, 1972, Ser. No. 257,874

Int. Cl. H01p 5/14; H03h 7/42

U.S. Cl. 333—11

13 Claims



A new class of quadrature hybrid coupler is disclosed comprising a pair of baluns and a pair of symmetrical dual networks made up of simple, reactive elements. One conductor of each balun is connected in parallel with one of the networks and grounded at one end. The other network is connected between the other ends of the two other balun conductors. The four ends of the two other balun conductors constitute the four coupler ports. The two networks are fully defined to produce a quadrature coupler having an arbitrary power division character as a function of frequency.

**3,723,914**  
**LUMPED CONSTANT QUADRATURE COUPLER WITH IMPROVED PARASITIC SUPPRESSION**

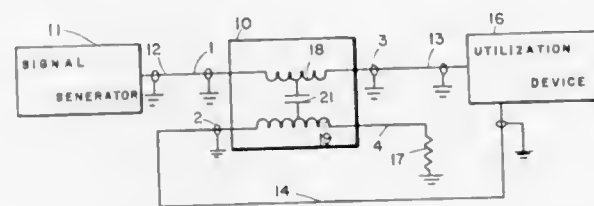
Joseph D. Cappucci, 99 Birchwood Terrace, Wayne, N.J.

Filed Jan. 26, 1972, Ser. No. 221,012

Int. Cl. H01p 5/12, 5/14, 3/08

U.S. Cl. 333—11

8 Claims



A lumped constant quadrature hybrid coupler having a wide band of directivity is disclosed. The coupler is constructed from lumped constant elements including a pair of closely magnetically coupled conductors with a lumped capacitor connecting them at a central portion. Each of the two respective ends of each of the pair of conductors serve as one of the four ports of the resulting coupler. Three printed circuit embodiments are disclosed which incorporate the teachings of this invention.

**3,723,915**  
**ACOUSTIC SURFACE WAVE DEVICE**

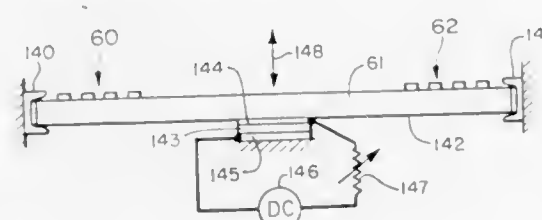
Robert Adler, Northfield; Adrian J. DeVries, Elmhurst, both of Ill., and Fleming Dias, Palo Alto, Calif., assignors to Zenith Radio Corporation, Chicago, Ill.

Division of Ser. No. 817,093, April 17, 1969, Pat. No. 3,582,540. This application May 10, 1971, Ser. No. 141,911

Int. Cl. H03h 7/36, 9/00, 9/30

U.S. Cl. 333—30 R

1 Claim



A variable transmission apparatus for translating signals between a source and a load comprises a substrate propagative of acoustic surface waves. An input transducer coupled to a surface of the substrate and responsive to applied signals serves to launch acoustic waves. An output transducer is coupled to a portion of the surface spaced from the input transducer and, in response to the launched waves, derives output signals having a delay, relative to the input signals, that corresponds to the spacing between the transducers. Means are included for flexing the substrate to alter the surface wave phase velocity.

**3,723,916**  
**SURFACE WAVE MULTIPLEX TRANSDUCER DEVICE WITH GAIN AND SIDE LOBE SUPPRESSION**

Jeffrey M. Speiser, and Harper John Whitehouse, both of San Diego, Calif., assignors to the United States of America as represented by the Secretary of the Navy

Filed Oct. 1, 1971, Ser. No. 185,628

Int. Cl. H03h 7/30

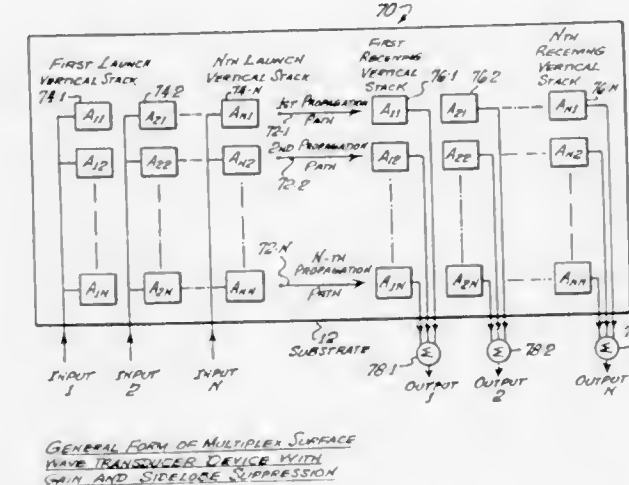
U.S. Cl. 333—30

7 Claims

A surface wave multiplex transducer device, having N propagation paths, comprising a substrate and N-n composite launch vertical stacks of transducers, where N = 3 and 0 < n < N-1, each stack consisting of N transducers whose inputs are connected together, disposed upon the substrate in a parallel relationship and capable of transmitting N parallel

surface waves across the substrate. Included are N-n composite receiving vertical stacks of transducers, each stack consisting of N transducers whose outputs are connected together, the j-th receiving stack being identical to the corresponding j-th launch stack, the receiving vertical stacks being disposed upon the substrate in a parallel relationship to

have even characteristic functions reciprocal to one another of the degree 2n (n=1, 2, 3, ...) and in which between each two equal partial filters there are connected four-pole circuits which are dimensioned in such a way that the electrical properties of the entire network, except for one additional phase,



the launch vertical stacks of transducers, so as to receive the N parallel launched surface waves. The (N-n)N launch and the (N-n)N receiving stacks of transducers are so coded that the response of the j-th receiving stack to an impulse applied to the k-th launch stack is an impulse if the numbers j and k are equal and zero if j and k are unequal.

**3,723,917**  
**CIRCUIT ARRANGEMENT FOR RECEIVING HIGH-FREQUENCY ELECTRIC SIGNALS**

Gerrit Wolf, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 771,549, Oct. 29, 1972, abandoned.

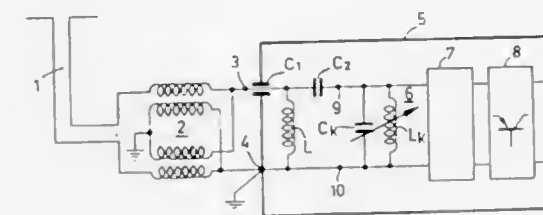
This application April 5, 1971, Ser. No. 131,483

Claims priority, application Netherlands, Nov. 25, 1967, 6716071

Int. Cl. H03h 7/38

U.S. Cl. 333—32

7 Claims



A circuit which steps up a substantially pure antenna resistance to a high value which is constant across a wide frequency band. The circuit features a parallel resonant circuit coupled to the antenna and fixed tuned to a frequency at one of the band limits. A series reactance couples the fixed tuned circuit to a circuit which is tunable across the band and is the input of an R.F. amplifier.

**3,723,918**  
**SEPARATING FILTER NETWORK ACTIVE AS A QUARTZ BAND-STOP FILTER**

Heinz Krause, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Sept. 18, 1970, Ser. No. 73,547

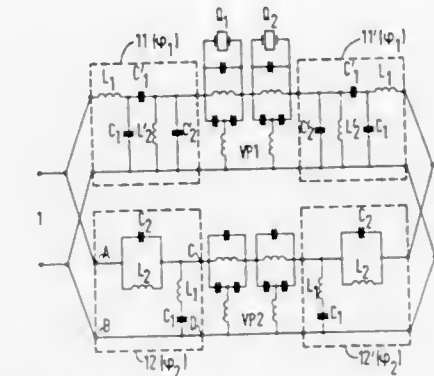
Claims priority, application Germany, Sept. 26, 1969, P 19 48 802.9

Int. Cl. H03h 7/14, 9/00

U.S. Cl. 333—72

5 Claims

A network consisting of an all-pass circuit which consists of two equal frequency separating networks whose partial filters



agree with the prescribed electrical properties of the interposed four-pole circuits. The interposed four-pole circuits are constructed with respect to their transmission properties as equal all-pass or low-pass sections of which the one lying in the band-pass or low-pass path, is rendered a band stop circuit by quartz elements.

**3,723,919**  
**ACOUSTIC SURFACE WAVE FILTERS WITH REFLECTION SUPPRESSION**

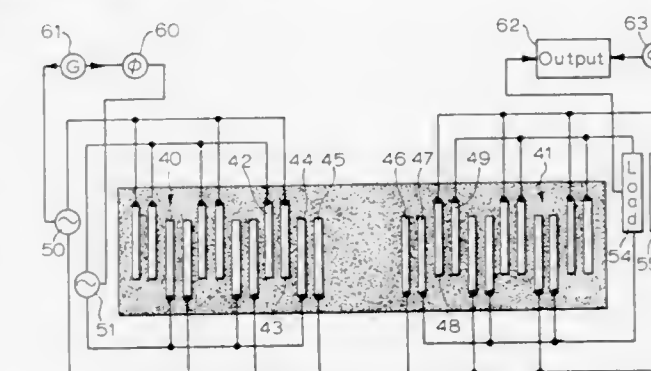
Robert Adler, Northfield, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed March 20, 1972, Ser. No. 235,990

Int. Cl. H03h 9/20, 9/30

U.S. Cl. 333—72

4 Claims



A surface-wave integratable filter includes an input transducer for launching acoustic surface waves along a path in a propagating medium. An output transducer responds to those surface waves by developing output signals. One or both transducers takes the form of an iterative series of conductive ribbons disposed laterally across the path. The ribbons are spaced apart by a distance of one-fourth the wavelength of the acoustic energy. A first source or load is connected exclusively across one of a first pair of successive ribbons and one of an adjacent pair of successive ribbons. A second source or load similarly is connected exclusively across the others of the ribbons in those first and second pairs. The center-to-center distance between the ribbons across which each source or load is connected is one-half the acoustic wavelength.

**3,723,920**  
**CRYSTAL FILTER ASSEMBLY**

Desmond F. Sheahan, San Carlos, and George C. Callander, Palo Alto, both of Calif., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed June 24, 1971, Ser. No. 156,275

Int. Cl. H03h 7/10, 9/00

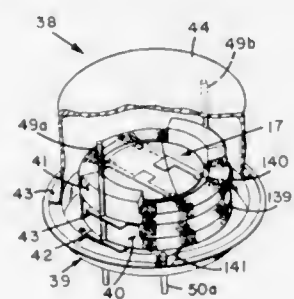
U.S. Cl. 333—72

17 Claims

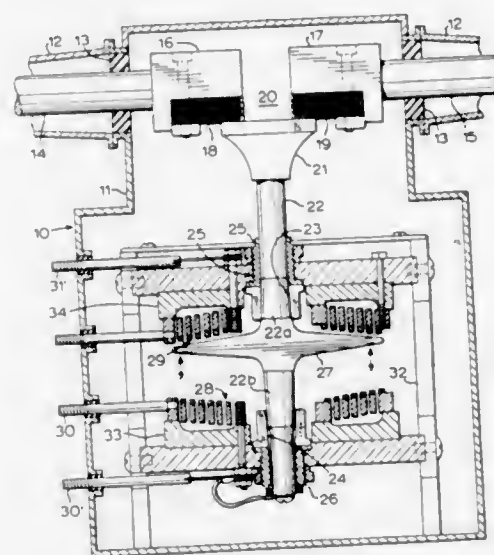
In this filter, each one of two coupled resonators is formed on a different crystal wafer. Each wafer is accurately posi-



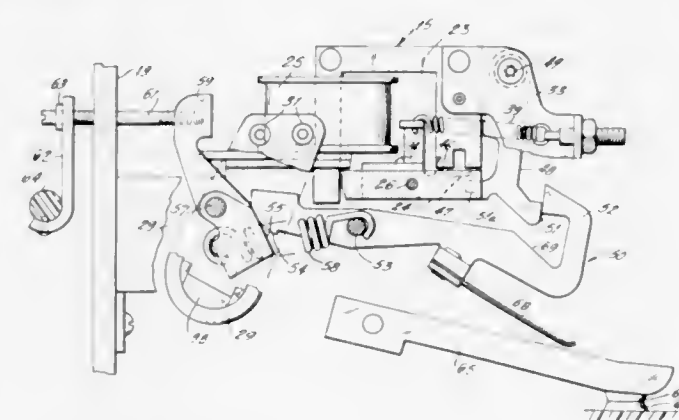
tioned with respect to one longitudinal groove in the periphery of a ceramic ring. The wafer is supported in the central opening in the ring with wires which are soldered to metalized areas of the ring and to resonator lead patterns on the wafer to form a resonator assembly. Each resonator is tuned to operate at a predetermined frequency by locating the associated resonator assembly in a masking jig with respect to the one groove on the ring to accurately align the resonator electrode patterns with holes in the jig. A metal film is evaporated onto a resonator electrode to adjust the resonant frequency of the associated resonator to be equal to the predetermined frequency. In a packaged filter the resonator assemblies and electrically conductive spacers are alternately stacked on a header



**3,723,922**  
**SPLIT HUB LOCKING DEVICE**  
Theodor Loewen, 102 Willowridge Road, Weston, Ontario, Canada  
Filed July 6, 1972, Ser. No. 269,472  
Int. Cl. H01h 3/28  
U.S. Cl. 335-68  
6 Claims



**3,723,924**  
**SHUNT TRIP AND UNDERVOLTAGE DEVICE**  
Howard R. Shaffer, Glenside, Pa., and Albert Strobel, Cherry Hill, N.J., assignors to I-T-E Imperial Corporation, Philadelphia, Pa.  
Filed Oct. 4, 1971, Ser. No. 186,346  
Int. Cl. H01h 9/20  
U.S. Cl. 335-169  
9 Claims

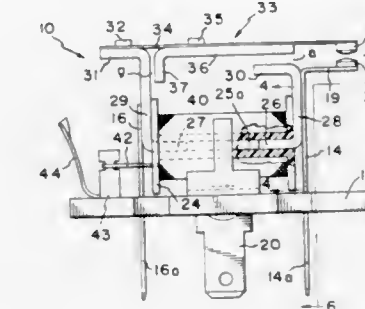


Undervoltage and shunt trip units for a multi-phase molded case circuit breaker are each constructed with a primary latch operated by the armature of an electromagnet. The primary latch acts through a secondary latch to hold an intermediate member in latched position, wherein the latter holds an actuator in its inactive position. When the latches are released to release the intermediate member, a coiled tension spring acting directly upon the actuator moves the latter to a tripping position to trip the contact latching mechanism of the circuit breaker. Another spring, separate from the actuator operating spring, biases the magnet armature away from the magnet yoke so that adjustment of the armature spring will not alter the force with which the actuator is moved to its tripping position.

**3,723,925**  
**ELECTROMAGNETIC RELAY**  
Ralph W. Alten, East Detroit, Mich., assignor to Essex International Inc., Fort Wayne, Ind.  
Filed May 30, 1972, Ser. No. 257,586  
Int. Cl. H01h 45/00  
U.S. Cl. 335-187  
12 Claims

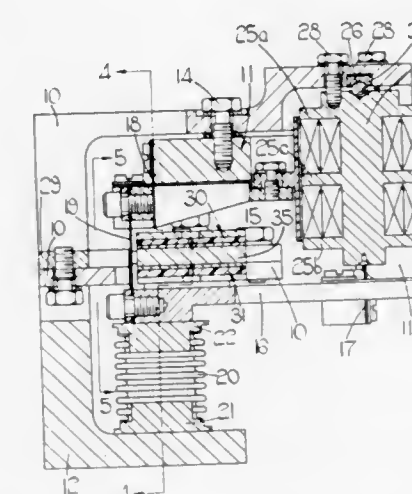
An electromagnetic relay comprises an energizable and deenergizable magnetically associated relay coil within which is mounted a pair of magnetic, electrically isolated, core parts connected in a relay controlled circuit, a terminal mounted on one core part and connected in the controlled circuit, and an

armature mounted at one end on the other core part and carrying an electrical contact at its other end which is movable into engagement with the terminal to provide a current path between the armature and the terminal in response to the



energization of the coil. The armature also is movable into and out of engagement with the one core part to provide between the armature and terminal a second current path parallel with the first current path to minimize heating.

**3,723,926**  
**FLUID PRESSURE TRANSDUCERS**  
Alan Thomas, Stratford-on-Avon, and Ronald Alfred Heath, Harborne, Birmingham, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England  
Filed March 22, 1972, Ser. No. 237,023  
Claims priority, application Great Britain, March 26, 1971, 8,216/71  
Int. Cl. H01f 7/08  
U.S. Cl. 335-268  
5 Claims

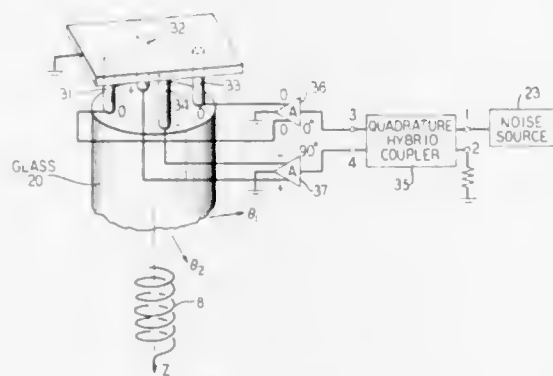


An electromagnetic force applying device includes a core with two recesses each having two windings therein, the two windings in one recess being wound in the same sense and the two windings in the other recess being wound in opposite senses. A tubular armature surrounds the core and windings and is displaced axially of the core when current is passed through both windings.

**3,723,927**  
**MAGNETIC HOLDING MEANS IN A SURFACE PLATE DIMENSIONAL MEASURING APPARATUS**  
Alexander G. Blakey, Jack S. Adams, and James J. Swarts, all of San Diego, Calif., assignors to General Dynamics Corporation, San Diego, Calif.  
Continuation-in-part of Ser. No. 821,587, May 5, 1969, abandoned. This application April 6, 1970, Ser. No. 25,713  
Int. Cl. H01f 7/20  
U.S. Cl. 335-285  
6 Claims

The apparatus utilizes a surface plate with special inserts imbedded in its surface in a geometric pattern and associated fixtures and inspection tools for the purpose of dimensionally

**3,723,921**  
**MULTIMODE WAVEGUIDE WITH REDUCED DISPERSION**  
Harrison Edward Rowe, Rumson, and Dale Travis Young, Middletown, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.  
Filed May 14, 1971, Ser. No. 143,521  
Int. Cl. H01p 3/12, 1/16; G02b 5/14  
U.S. Cl. 333-95 R  
4 Claims



Transmission performance of a multimode waveguide is optimized (i.e., pulse dispersion is minimized) by optimizing the coupling among the different modes. More specifically, in a waveguide supportive of modes having group velocities  $v_1$  and  $v_2$ , and wherein the coupling mechanism comprises random discontinuities having an essentially white spectrum, optimum coupling is defined by an optimum coupling length  $L_{opt}$  given by

$L_{opt} = k \cdot f$ ,  
where  $f$  is the midband signal frequency and  
 $k$  is a constant equal to

$$\frac{1}{\pi f^2 \left( \frac{1}{v_2} - \frac{1}{v_1} \right)}$$

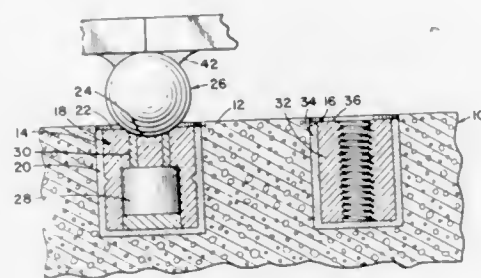
A vacuum circuit breaker includes separable contact structure including a contact movable from a closed circuit position to an open circuit position; a motor for moving the contact from the closed circuit position to the open circuit position with a velocity sufficient to prevent arc restriking after a current zero; a shaft connected to and movable with the movable contact; a pair of inner and outer support hubs having respective aligned openings for slidably receiving the shaft in the respective closed circuit and open circuit positions of the movable contact; the shaft having a taper at its outer end and the outer support hub having a taper of smaller taper angle whereby the shaft is wedged into the opening of the outer hub as it approaches the open circuit position so that kinetic energy of the shaft is frictionally dissipated and the shaft comes to rest in the open circuit position of the movable contact; the outer support hub being constructed as a split sleeve, each sleeve section providing an axially extending cantilever spring adapted to engage the shaft taper frictionally.

**3,723,923**  
**RELAY SWITCH**  
Masaru Suzuki, Chiryu, Japan, assignor to Kabushiki-Kaisha Tokai Rika Denki Seisakusho, Aichi-ken, Japan  
Filed Dec. 15, 1971, Ser. No. 208,158  
Claims priority, application Japan, Dec. 21, 1970, 45/128780; Dec. 21, 1970, 45/128781  
Int. Cl. H01h 51/27  
U.S. Cl. 335-81  
3 Claims

A relay switch comprising an electromagnet, which can shift the contact of a movable conductor plate or switch arm from engagement with one stationary contact to another stationary



measuring specimen parts. The inserts are permanent or electromagnetic and have a recess in the exposed surface of the insert. The recess shape may be spherical, conical, or other geometric shape. Fixtures and inspection tools have matching



protuberances of the same geometric shape in a mating precision pattern under their bases, and are precisely located on the surface plate when the protuberances are aligned with the recesses in the magnetic inserts.

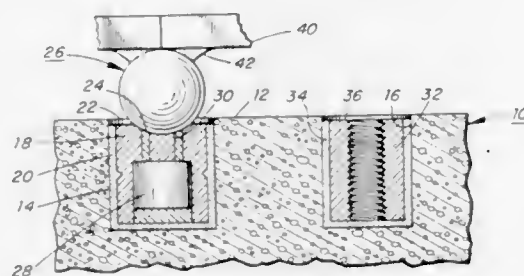
3,723,928

# **MAGNETICALLY HELD MEASURING AND LOCATING FIXTURES**

Alexander G. Blakey; Jack S. Adams, and James J. Swarts, all of San Diego, Calif., assignors to General Dynamics Corporation, San Diego, Calif.  
Continuation-in-part of Ser. No. 821,587, May 5, 1969, abandoned. This application March 19, 1971, Ser. No. 126,021

Int. Cl. H01f 7/20

U.S. Cl. 335—285



Fixtures for use in measuring and locating systems utilizing surface plates and methods of assembling the fixtures are disclosed. A plate having a plurality of recesses of uniform sizes and shapes spaced across the surface is provided. Fixture bodies carrying gages or locating means are bonded to one or more support members which are shaped to seat in the recesses. The fixtures may be easily removed and replaced, with the recesses providing precise realignment. Preferred recess members and support members are also described in detail.

3,723,929

# **BIMETALLIC CIRCUIT OVERLOAD PROTECTOR**

Clement P. Sitar, Addison, Ill., assignor to Furnas Electric Company, Batavia, Ill.

Filed April 7, 1972, Ser. No. 242,091

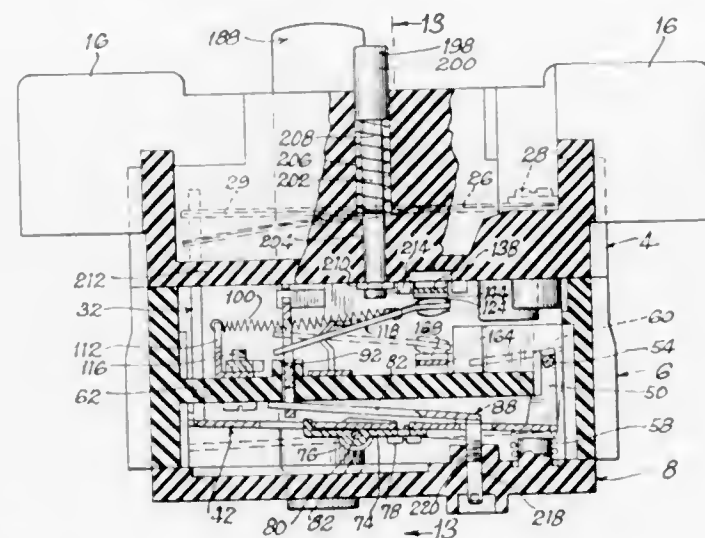
Int. Cl. H01h 71/16

U.S. Cl. 337—38

25 Claims

A thermal overload protector for electrical circuits usable in single and multiphase circuits. A bimetallic element actuates a snap action switch in response to excess current in a heater connected in the circuit. An adjusting cam engages a switch element to permit adjustment of the operating value over a range while a reset cam can be actuated to provide for manual or automatic reset. Part of the switch operating linkage can be formed from a bimetal to provide an ambient compensating element. Also included are screws acting on the ac-

tuating linkage to permit precise adjustment during manufacture to compensate for such manufacturing tolerances as may



exist. The protector may be constructed in either a normally closed or a transfer contact configuration.

3,723,930

# **OIL IMMERSIBLE CURRENT LIMITING FUSE ASSEMBLY**

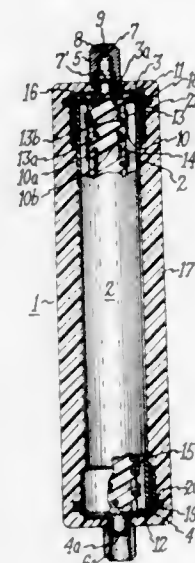
Robert E. Koch, Pittsfield, Mass., assignor to General Electric Company, New York, N.Y.

Filed Feb. 10, 1972, Ser. No. 225,232

Int. Cl. H01h 85/02

U.S. Cl. 337—158

14 Claims



An oil immersible current limiting fuse assembly is provided by encapsulating a current limiting fuse in a homogeneous, molded epoxy material and providing resilient seal means adjacent the axial ends of the assembly, between the epoxy encapsulation and the fuse. The fuse assembly is further characterized by incorporating a vent passageway through one of the fuse terminals, which is effective to vent gas from the interior of the fuse during its manufacture in order to assure the maintenance of a fluid-tight sealing relationship between the fuse and the encapsulating epoxy.

3,723,931

# **PROTECTORS FOR ELECTRIC CIRCUITS**

Angelo Urani, St. Louis, Mo., assignor to McGraw-Edison Company, Elgin, Ill.

Filed July 19, 1971, Ser. No. 163,889

Int. Cl. H01h 37/74

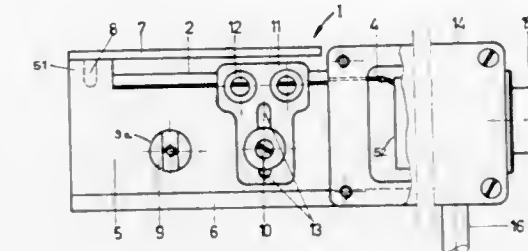
U.S. Cl. 337—342

13 Claims

A fuse carrier has a circuit-closing member that can be moved by the switch-actuating plunger of a fuse which is held

by clips on that fuse carrier. A stop on that fuse carrier lies in the path of a protuberance on one terminal of that fuse, and thereby maintains a minimum distance between that terminal and that circuit-closing member. That stop also coacts with an abutment, within an elongated recess in the fuseholder for that fuse carrier, to keep that fuse carrier from being inserted into

guiding a number of threads over the friction body, and means for changing the spacing between the friction body and other



parts of the transducer or for altering the contact pressure between at least one of the threads and the friction body.

3,723,934

# **PHOTOSENSITIVE TRANSDUCER**

Alfred Kubitzek, 8022 Grunwald, and Kurt Borowski, 8 Munich 90, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

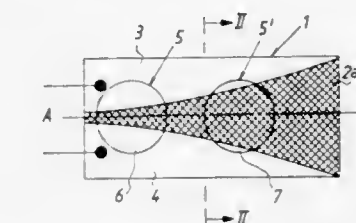
Filed March 23, 1971, Ser. No. 127,238

Claims priority, application Germany, March 26, 1970, P 20 14 871.4

Int. Cl. H01c 7/08

U.S. Cl. 338—15

6 Claims



A photosensitive transducer for determining the orientation of light beams having a predetermined diameter has a straight row of transducer portions of identical size but of different sensitivity. Such transducer portions may include differently dimensioned parts of a trumpet-shaped photoconductive layer, or identically dimensioned parts of a photoconductive layer overlapped by filters of different light transmissivity.

3,723,935

# **TEMPERATURE SENSOR**

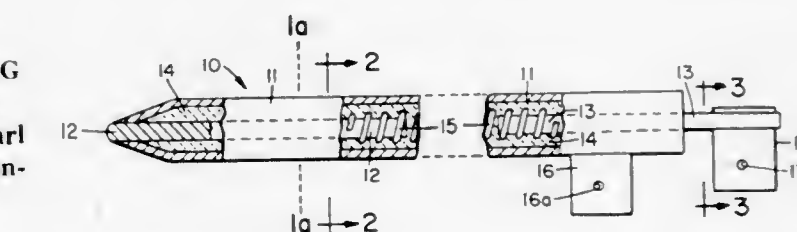
John F. Frazier, Painted Post, and Garo M. Ziver, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Feb. 17, 1972, Ser. No. 227,095

Int. Cl. H01c 7/02

U.S. Cl. 338—28

10 Claims



A temperature sensor comprising a coil of wire of a high temperature resistant material having a relatively high temperature coefficient of electrical resistance; and a hollow sheath of a high temperature oxidation resistant material having high thermal conductivity, and at least one flat outer side for improved thermal transfer when such flat side is disposed against or in physical contact with a surface of a plate or sheet of a vitreous material providing a cooking surface. The sheath surrounds the coil with a space provided between the sheath

that recess while it is in its inverted position. A surface adjacent one of the clips and an open area adjacent the other of the clips on the fuse carrier coact with the protuberance on the one terminal of the fuse to keep that fuse from being fully seated within those clips unless that fuse is correctly oriented relative to the circuit-closing member.

3,723,932

# **THERMAL PROTECTIVE ASSEMBLY**

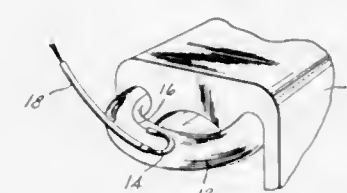
Homer R. Miller, Rochester, and Giacinto Vallone, Brockport, both of N.Y., assignors to General Electric Company, Bridgeport, Conn.

Filed Feb. 1, 1971, Ser. No. 111,459

Int. Cl. H01h 37/32

U.S. Cl. 337—405

5 Claims



A thermal protective assembly for an electrical component such as a motor has a field winding which uses a heat meltable alloy formed into a bent shape and connected in series with and resting on the field. The alloy receives conductive heat from the windings and is designed to melt before the I<sup>2</sup>R heating from a malfunction breaks the circuit. The bent form of the alloy is chosen to create an open circuit and ensure no puddling to bridge the opening on melting of the alloy. Additional means is provided to insulate the alloy from the field windings and to cover it from the ambient whereby it responds only to conductive heat.

3,723,933

# **TRIBO-ELECTRICAL TRANSDUCER FOR MONITORING THE MOVEMENT OF THREAD-LIKE STRUCTURES**

Erich Loepfe, Zollikonberg; Walter Keller, Kempten, and Karl Zweifel, Grut, all of Switzerland, assignors to Aktiengesellschaft Gebrüder Loepfe, Wetzikon, Switzerland

Filed Sept. 30, 1971, Ser. No. 185,212

Claims priority, application Switzerland, April 29, 1971, 6321/71

Int. Cl. G01h 1/22

U.S. Cl. 338—2

14 Claims

A tribo-electric transducer for monitoring the movement of thread-like structures, comprising a friction body against which bear the traveling threads, at least one electrode body arranged at the friction body and a housing consisting of an electrically conductive material serving as the screening for the friction body and the electrode body. The invention contemplates the provision of guide means for simultaneously



and coil, and a compacted powder of an electrical insulating material having a relatively high thermal conductivity surrounds the coil. In one embodiment, the sheath is electrically connected to one end of the coil by a conductor comprising a rod or wire of a high temperature oxidation resistant material having high electrical conductivity. An electrically conductive terminal is also electrically connected to the sheath, preferably at the end thereof opposite said one end of the coil. The second end of the coil is electrically connected to a similar conductor to which another electrically conductive terminal is electrically connected. In another embodiment, both ends of the coil are electrically connected to conductors which extend through the ends of the sheath and are provided with terminals for electrical connections to be made to the coil. In such embodiment no electrical connections are made to the sheath.

3,723,936

## MICRO-TORQUE POTENTIOMETER

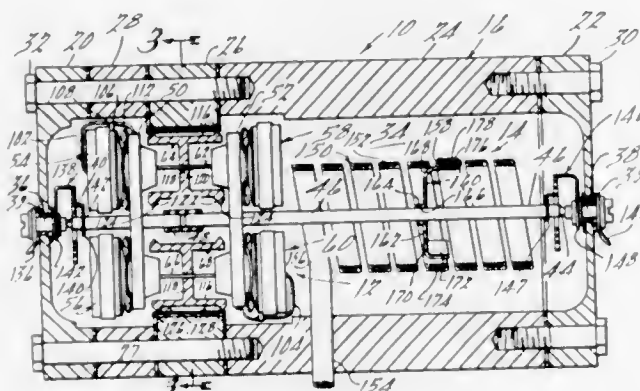
Herbert J. Zurstadt, Grosse Pointe Park, Mich., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed March 2, 1970, Ser. No. 15,503

Int. Cl. H01c 13/00, 15/00

U.S. Cl. 338—40

15 Claims



A potentiometer requiring extremely low torque input for the operation thereof preferably having a contact roller of magnetic material engaging an elongated resistive element, a taut-band suspension for the contact roller, and a magnet establishing a magnetic field resulting in an engagement force between the contact roller and the resistive element. The potentiometer of this invention is particularly suitable for use as an electrical output for a multi-convolution Bourdon tube.

3,723,937

## PRECISION POTENTIOMETER WITH INDICATOR

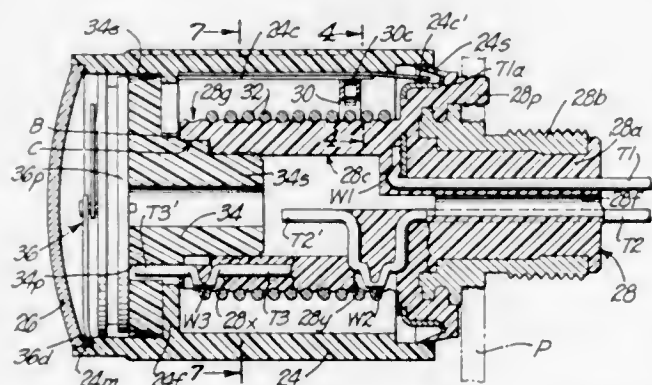
Sydney W. Frey, Jr., Upland; Donald L. Gaa, and Robert W. Tetamore, both of Riverside, all of Calif., assignors to Bourns, Inc., Riverside, Calif.

Filed Oct. 26, 1971, Ser. No. 192,119

Int. Cl. H01c 5/00

U.S. Cl. 338—143

9 Claims



A simplified rotary precision potentiometer of improved accuracy with indicator for indicating the setting of the movable

contact, the indicator not requiring setting or phasing with the contact after assembly, and the indicator accurately indicating the low (zero), maximum (high) and intermediate settings, and with the resistance element an exact multiple of 360 degrees between its electrical ends.

3,723,938

## NON-LINEAR POTENTIOMETER WITH CONDUCTOR ARRAY

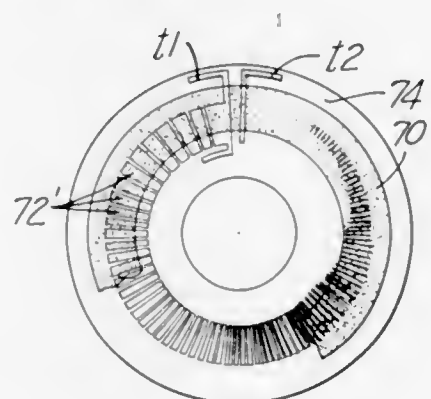
Eugene R. Gramm, Ontario, Calif., assignor to Bourns, Inc., Riverside, Calif.

Filed Dec. 22, 1969, Ser. No. 886,807

Int. Cl. H01c 9/02

U.S. Cl. 338—162

10 Claims



A potentiometer for accurately varying the electrical resistance exhibited between two terminals thereof as a specified non-linear mathematical function of the unit-by-unit extent of movement of a movable contact along an elongate resistance element which overlies an array of discrete conductor members whose areal extent and areal disposition under and in bridging contact with the film are such that the specific mathematical function is simulated in variation of the exhibited resistance. In circular-track elements, representative functional relationships include 90° sine, 180° sine, 360° sine, 20db log, single-sided square, and double-sided square.

3,723,939

## GROUNDING MEANS FOR MOUNTING BRIDGES OF ATTACHMENT PLUG RECEPTACLES AND THE LIKE

Harold E. Schleicher, West Hartford, Conn., assignor to Arrow-Hart, Inc., Hartford, Conn.

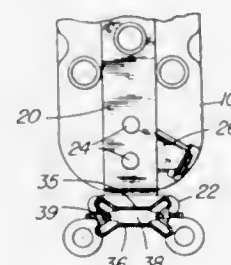
Continuation of Ser. No. 100,014, Dec. 21, 1970, abandoned.

This application Oct. 26, 1971, Ser. No. 192,595

Int. Cl. H01v 3/06

U.S. Cl. 339—141 R

8 Claims



An electric wiring device having a metal supporting member for mounting the device in an electrically grounded box. A resilient connecting member stamped from thin sheet metal into a generally elongated shape with a central elongated opening emerging at its ends into lobe-shaped openings, providing opposite arms stretching from one end of the connecting member to the other in position to resiliently engage opposite sides of a screw bolt inserted through said central opening for securing said connecting member to the grounded box, and means securing and electrically connecting the connecting member to the supporting member.

3,723,940

## ELECTRICAL CONTACT ASSEMBLY

James H. Leonard, Cedar Rapids, Iowa, assignor to Square D Company, Park Ridge, Ill.

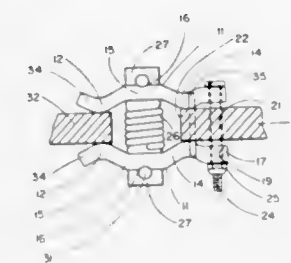
Continuation of Ser. No. 58,906, July 28, 1970, abandoned.

This application Nov. 18, 1971, Ser. No. 200,249

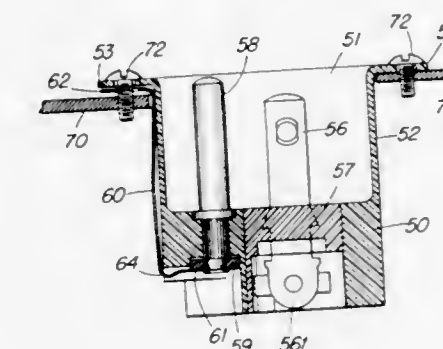
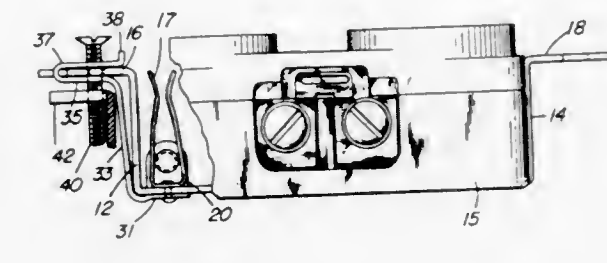
Int. Cl. H01r 13/62

U.S. Cl. 339—64 M

9 Claims



The assembly comprises a plurality of aligned pairs of spaced apart contact fingers directly attached at one end on opposite sides of a conductive bar without the use of intermediate connectors or alignment frames. The contact fingers of adjacent pairs are biased toward each other intermediate of their ends by a tension spring disposed between the pairs and secured to a pair of connecting links each having outwardly extending pins overlying the outer surfaces of adjacent fingers. The free ends of the contact fingers are convex toward each other and the convex portions of each pair of contact fingers are arranged to grip directly on opposite sides of a second conductive bar.



clip. The screw threads into the usual lug on the outlet or wall box or mounting plate to secure the device in position.

3,723,941

## MOUNTABLE SPRING WIRE GROUNDING CLIP

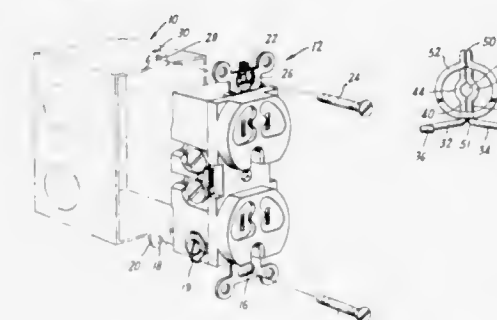
Walter C. Schumacher, 45 Ramblewood Dr., Warwick, and Robert C. Cressman, 34 Tanglewood Dr., East Greenwich, both of R.I.

Filed May 24, 1971, Ser. No. 146,136

Int. Cl. H01r 3/06

U.S. Cl. 339—14 R

1 Claim



Grounding connection between the mounting strap of a wiring device and the metal housing in which the device is mounted by the strap is achieved by means of a spring clip designed for use with the mounting strap to ensure continuity of electrical connection between the strap and metal housing.

3,723,942

## GROUNDING CLIP ELECTRIC RECEPTACLES

John J. Dennison, Southington, Conn., assignor to Arrow-Hart, Inc., Hartford, Conn.

Continuation-in-part of Ser. No. 135,034, April 19, 1971,

abandoned. This application March 3, 1972, Ser. No. 231,565

Int. Cl. H01r 3/06

U.S. Cl. 339—14 R

14 Claims

A bent leaf-spring type clip member is secured to the mounting bridge or the grounded contact terminal of an electric receptacle or connector and bent up around one end of the bridge or body of the device in position to press constantly against the shank of the mounting screw as it passes through

an aperture in the plaster ear portion of the bridge member or mounting flange of the device and through an aperture in the

## METHODS OF SECURING FLAT INTEGRATED CIRCUITS TO PRINTED WIRING BOARDS AND A SUPPORT DEVICE THEREFOR

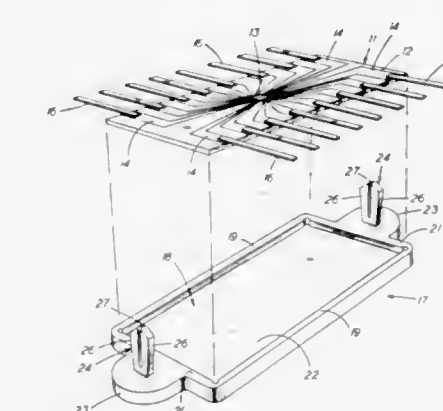
Robert E. Hotze, Westerville, Ohio, assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Feb. 10, 1971, Ser. No. 114,197

Int. Cl. H01r 13/54; H05k 1/02

U.S. Cl. 339—17 CF

12 Claims



A flat integrated circuit package, having leads extending in cantilever from the edge of a substrate, is held in engagement with a printed wiring board by a support device which is temporarily attached to the board. The board is passed adjacent to a wave-soldering device to facilitate the soldering of areas where the ends of the cantilevered leads are pressed by the support device into overlapping engagement with land areas of printed wiring on the board. The support device supports the package in such a manner that the integrated circuit is protected and shielded from molten solder and heat emanating therefrom during the period when the board is passed adjacent to the soldering device.



3,723,944

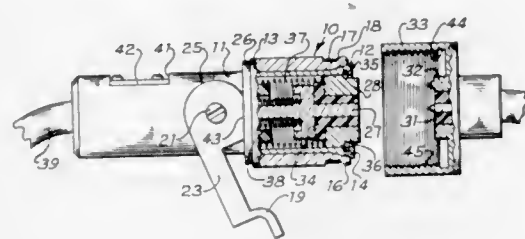
**QUICK-DISCONNECT ELECTRICAL CONNECTOR**

Richard H. Gauchat, and Nathan W. Sabel, both of Indianapolis, Ind., assignors to The United States of America as represented by the Secretary of the Navy

Filed March 5, 1971, Ser. No. 121,423

Int. Cl. H01r 13/54, 13/62

U.S. Cl. 339—45 R



A quick-disconnect electrical connector having a tubular body with an outwardly extending tapered surface and a barrel having a plurality of resilient fingers surrounding said tapered surface. Cam means are provided for moving said barrel relative to said tubular body whereby said fingers are outwardly extended. A pair of electrical contacts are provided inside said tubular body for engaging with contacts in a mating connector.

3,723,945

**LOCKING MEANS FOR FLUORESCENT LAMPS**

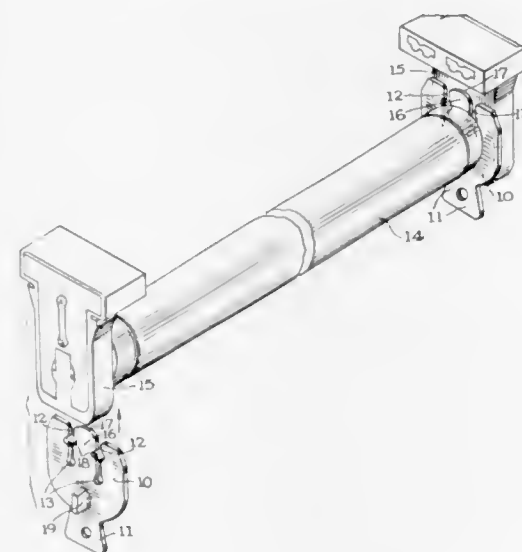
Lewis Detch, 2133 Chalfant Street, Pittsburgh, Pa.

Filed April 3, 1972, Ser. No. 240,519

Int. Cl. H01r 33/10

U.S. Cl. 339—54

9 Claims



A locking means for fluorescent lamps which will serve to prevent a lamp from becoming disengaged from the lamp holder in the presence of vibration or shock, such locking means being in the form of a relatively thin wafer-like member for insertion between the lamp end and the adjacent surface of the lamp holder and having open-ended slot means which terminate inwardly of the member in apertures for locking engagement with the bi-pins of the lamp upon insertion of the member into locking position with respect thereto, and the edge walls of said slot means having, intermediate the open ends thereof and said apertures, depressions or notches into which the said bi-pins may snap during their passage through said slot means upon either insertion or withdrawal of the member, thereby to apprise the user of the position of the member as to its seated (locking) or unseated (freeing) position with respect to the said bi-pins.

3,723,946

**CABLE CONNECTOR**

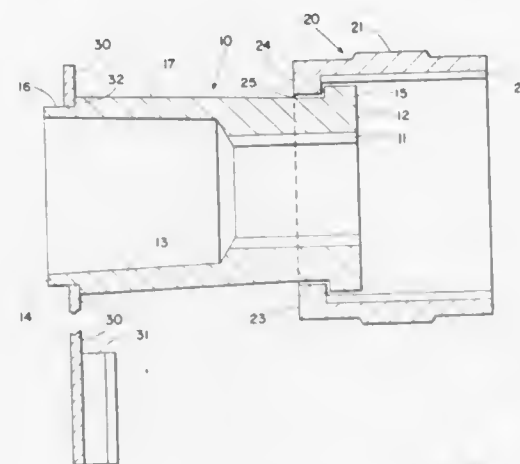
William Paul Weatherup, and Francis Robert Campbell, both of Ottawa, Ontario, Canada, assignors to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Oct. 18, 1971, Ser. No. 189,909

Int. Cl. H01r 13/54; F16b 37/00; F16l 19/02

1 Claim U.S. Cl. 339—89 R

1 Claim



A connector for threaded engagement with a cable — particularly a coaxial cable — has a captive nut which is moved axially on the connector and becomes frictionally or otherwise into engagement with the outer surface of the cable. The nut can then be used to screw the connector onto the cable. A typical example is for the connector to have a tapered outer surface and the nut is jammed onto the taper by axial movement. After screwing on the connector the nut is freed by a small axial movement.

3,723,947

**ELECTRIC ACCESSORY CONNECTOR FOR CAP LAMP BATTERY**

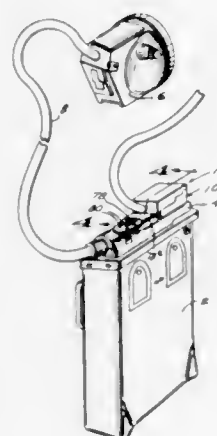
Homer A. Lozeau, Worcester, Mass., assignor to Koehler Manufacturing Company, Marlboro, Mass.

Filed May 14, 1971, Ser. No. 143,417

Int. Cl. H01r 13/54

U.S. Cl. 339—91 R

8 Claims



Electric connector means for a miner's cap lamp battery includes a plug receptacle component supported on the battery and connected to the positive and negative electrodes of the battery. A plug component is slidably engageable with the receptacle and includes positive and negative contacts for contacting recessed contacts in the receptacle. The negative contact of the receptacle is internally housed in a concealed position to be engaged by a negative contact of the accessory plug only when the plug is in a fully advanced position. A trap plate and spring arrangement protects the negative contact from tampering by an object inserted through the slideway of the plug contact.

3,723,948

**ELECTRICAL COMPONENT**

Gerald A. Wyatt, Shoreview, and Gail A. Anderson, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

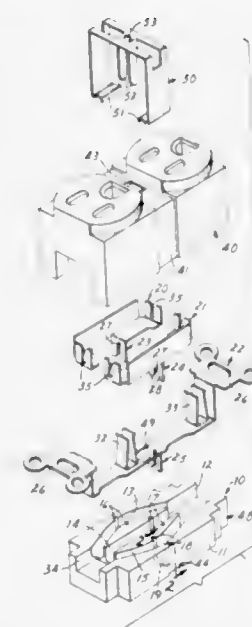
Continuation of Ser. No. 73,414, Sept. 18, 1970, abandoned.

This application Nov. 8, 1971, Ser. No. 196,290

Int. Cl. H01r 9/08

U.S. Cl. 339—99 R

7 Claims



An electrical connector or circuit component capable of being rapidly attached to insulated wires and having a base member channelled to receive mutually electrically insulated wire conductors, e.g., insulated copper wires carried in a non-metallic sheath, such as used to carry current in machines or buildings, conductive contact elements capable of being forcefully applied to wire conductors to make electrical contact without preliminary stripping of the insulation or severing of the wire conductor, an insulating body member retaining the elements and including parts thereon characterizing the circuit component, and holding means to hold together the base and body.

3,723,949

**PHONO PLUG AND METHOD OF MAKING**

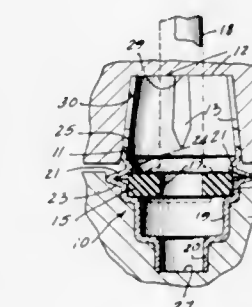
William H. Wallo, Chicago, Ill., assignor to Wall-Able Manufacturing Corporation, Chicago, Ill.

Filed July 2, 1971, Ser. No. 159,269

Int. Cl. H01r 17/06

U.S. Cl. 339—177 R

11 Claims



A pin-carrying washer is seated on a shoulder facing toward the mouth end within and intermediate the length of the plug shell and is locked in place by a clamping shoulder crimped radially inwardly in the shell spaced from the seating shoulder. An annular radially outwardly projecting rib between the seating and clamping shoulders reinforces the shell and serves as a finger grip.

A method of making the phono plug comprises initially constructing the shell outwardly from the seating shoulder of a diameter slightly larger than the diameter of the washer, in-

serting the washer through the mouth end of the shell onto the seating shoulder, retaining the shell about the seating shoulder and therebelow against deformation, and collapsing material of the shell wall radially inwardly to provide the clamping shoulder, as by applying axial force to the shell wall toward the seating shoulder.

3,723,950

**JUNCTION BLOCK AND METHOD OF MAKING SAME**

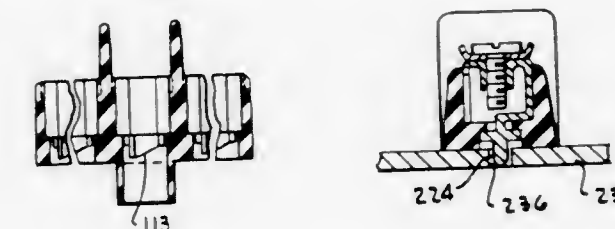
Rodger T. Lovrenich, 2285 West Temperance Rd., Temperance, Mich.

Filed Jan. 6, 1971, Ser. No. 104,435

Int. Cl. H01r 9/00

U.S. Cl. 339—198 R

2 Claims



The method of making a barrier strip wherein an insulator body is formed of a thermo plastic material, the insulator body having a stressing wall therein; and an electrically conductive metal conductor clip is formed with a resilient pre-stressing section; assembling the conductor clip with the insulator body in such fashion that the clip pre-stressing section is placed under a distorting force by engaging it with the stressing wall of the insulator body; heating the assembly to place the insulator body in a pliable state so that the stored force in the pre-stressing section of the conductor clip is relieved by the movement of the clip into the pliable plastic body; and cooling the assembly to provide a close mechanical interlock between the insulator body and the conductor clip. A novel barrier strip assembly results from the above method.

**ERRATUM**

For Class 340—347 DD see:  
Patent No. 3,722,107

3,723,951

**ACOUSTICAL DETECTOR CIRCUIT**

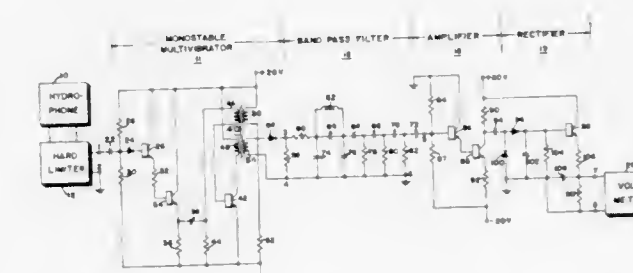
Louis J. Kush, Jr., and Walter L. Baker, both of State College, Pa., assignors to The United States of America as represented by the Secretary of the Navy

Filed June 5, 1963, Ser. No. 286,149

Int. Cl. G01s 9/66

U.S. Cl. 340—3 R

2 Claims



2. An apparatus for use in underwater active-acoustic echolocation systems to provide a measure of the variable ratio of self-noise to reverberation signals during listening intervals between successive search-pulse transmission instants, said apparatus comprising, in combination:

hydrophone means for reception of target-echo signals in a background of reverberation and self-noise signals;

a limiter circuit for conversion of said signals to a rectangu-



lar-waveform signal having the same zero-axis crossing characteristics as the signal received by said hydrophone means;

multi-vibrator means adapted to provide, in response to triggering action of said rectangular-waveform signal whenever it changes polarity in preselected sense, a train of short pulses of fixed duration and amplitude;

said train of pulses presenting a frequency-variational characteristic evidenced by an A.C. ripple signal which in a predetermined frequency band is of magnitude increasing with self-noise/reverberation signal ratio;

means including a band-pass filter for passing only said predetermined frequency band of A.C. ripple signal; and means responsive to said A.C. ripple signal in said predetermined frequency band to provide a measure of said self-noise/reverberation signal ratio.

3,723,952

# **APPARATUS FOR DIFFERENTIATING BETWEEN SIDE LOBE AND MAIN LOBE RETURNS IN DEPTH SOUNDING SYSTEMS**

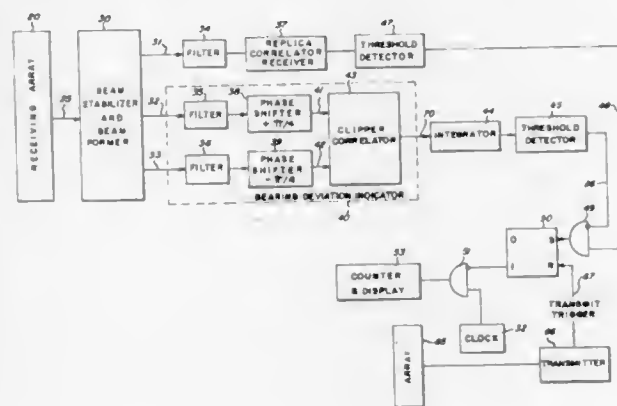
George M. Walsh, Middletown, R.I., assignor to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 754,659, Aug. 22, 1968, abandoned. This application May 26, 1970, Ser. No. 41,700

Int. Cl. G01s 9/68

U.S. Cl. 340—3 R

9 Claims



The apparatus includes means for acoustically illuminating the ocean bottom, and a receiving arrangement. The receiving arrangement comprises means for extracting an acoustic echo signal out of noise, and means for generating a signal magnitude proportional to the phase difference between echo signal arrivals at two spatially separated points. A logic arrangement gates through extracted echo signals when the phase difference signal magnitude is less than a predetermined quantity. This permits identification of the received echo returns in term of their angle of arrival. Consequently, all side lobe returns may be excluded. The apparatus further comprises means for measuring the time of arrival of gated through extracted acoustic signals in order to complete the depth sounding function.

3,723,953

# **DEVICE FOR PRODUCING BEARING TRACES IN DIRECTION FINDING APPARATUS**

Kurt Scheer, Bremen, Germany, assignor to Fried. Kupp Gesellschaft mit beschränkter Haftung, Essen, Germany

Filed Dec. 14, 1970, Ser. No. 97,998

Claims priority, application Germany, Dec. 12, 1969, P 19 62 336.0

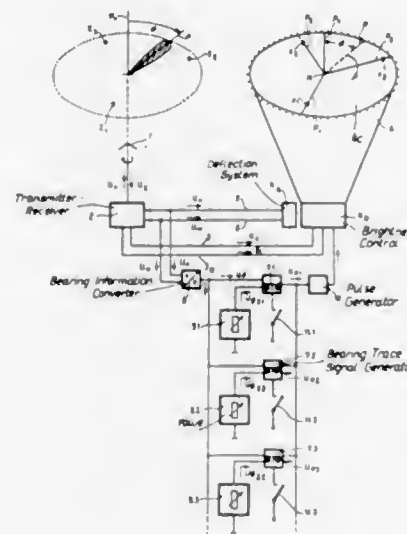
Int. Cl. G01s 9/66, 3/00

U.S. Cl. 340—3 R

8 Claims

An improved apparatus for producing one or a plurality of bearing traces associated with arbitrarily selectable directions in a panoramic display on the screen of a cathode-ray tube indicator for a direction finding system operating according to the reflected beam method (radar or sonar devices) with synchronous rotation of the direction of the radar or sonar beams (bearing direction) and the direction of deflection of

the cathode-ray beam through the aid of bearing direction signals, including a reference direction, e.g., forward, signal and angle of rotation signal in the form of an alternating voltage signal, contained in a bearing information channel transmitting these signals from the transmitter-receiver of the system to the deflection system of the cathode-ray tube. The desired bearing traces are produced by feeding the bearing direction signals to a digital or analog integrating means which converts the angle of rotation signal into a measured bearing angle value which corresponds to the momentary angle of rotation, relative to the reference direction. The measured bearing angle value signal is fed to at least one bearing trace signal generator which compares the measured bearing angle value with a preset desired bearing angle value supplied by an



associated comparison value generator, and emits a bearing trace signal whenever there is coincidence between the measured bearing angle value and the preset bearing angle value. The bearing trace signals are in turn fed to the brightness control circuitry of the cathode-ray tube to cause the desired bearing traces to be produced on the screen. A plurality of bearing traces can be produced either by providing a plurality of parallelly connected bearing trace generators, each of which compares the measured bearing angle value with a different preset bearing angle value, or by connecting a storage device to the output of a single bearing trace signal generator which circulates stored data in synchronism with the momentary bearing angle and has its output also connected to the brightness control circuitry of the cathode-ray tube.

3,723,954

# **REVERBERATION FILTER SYSTEM**

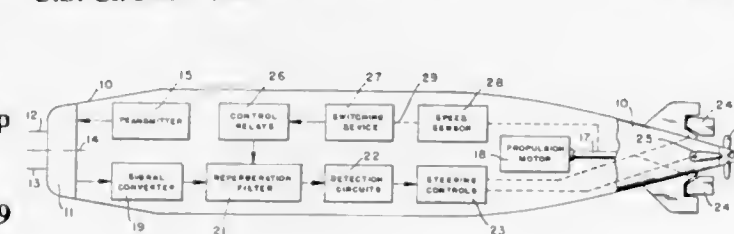
Arthur Nelkin, and John H. Thompson, both of Pittsburgh, Pa., assignors to The United States of America as represented by the Secretary of the Navy

Filed Aug. 24, 1956, Ser. No. 606,177

Int. Cl. G01s 9/66

U.S. Cl. 340—3 R

5 Claims



1. In a target-detection system carried by a propulsive craft, in combination, means for projecting target search signals, means for receiving resultant target echo signals accompanied by spurious reverberation signals, a reverberation-suppression filter system having a substantially constant attenuation-bandwidth characteristic but adjustable as to effective frequency limits thereof and connected to isolate the target echo signals from said reverberation signals, means constructed and ar-

ranged to adjust the frequency limits of said filter system in response to and in accordance with the varying speed of said propulsive craft, and means for utilizing the substantially reverberation-free echo signals.

3,723,955

# **BEAM FORMER**

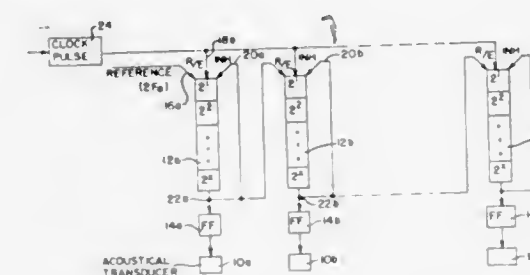
James Francis Lyons, Mineola, and Tullio DeFilippis, North Woodmere, both of N.Y., assignors to Control Data Corporation, Minneapolis, Minn.

Filed Nov. 15, 1965, Ser. No. 507,963

Int. Cl. H04b 11/00

U.S. Cl. 340—5 R

10 Claims



Apparatus for producing a beam of radiated energy comprises an array of transducers, a source of reference pulses for determining the frequency of the energy to be transmitted, a frequency divider connected to each of the transducers, and a source of clock pulses connected to the frequency dividers which determine the phase delay between the signals coupled to the respective transducers as a function of clock pulse frequency. Each of the frequency dividers includes an enabling input and an inhibit input with the output of each divider being coupled to its own inhibit input and the enabling input of the next adjacent divider. The reference pulses are coupled to the enabling input of the frequency divider associated with the first transducer. Where desired to shift the beam between 0° and 180°, the phase of the voltage applied to every other transducer element is shifted an additional 180° beyond that provided by the frequency divider.

3,723,956

# **ACOUSTIC CONTROL TRANSMITTER**

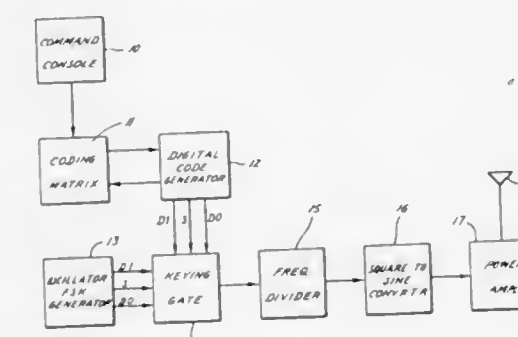
Richard Jan Carman, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed Aug. 5, 1970, Ser. No. 61,339

Int. Cl. H04b 11/00

U.S. Cl. 340—5 R

5 Claims



A transmitter which produces a secure acoustic command signal. The acoustic command signal preferably includes a predetermined number of time slots each including a space tone of one frequency followed by a data tone of another frequency. When a binary code is transmitted by the acoustic command signal, a data tone of a second frequency is transmitted, which represents a binary 1, and a data tone of a third frequency is transmitted, which represents a binary 0. The transmitter preferably includes a signal generator for generating a plurality of different frequency acoustic signals to pro-

vide the three different tone signals which make up the acoustic command signal, and a code generator for generating three different control pulses in a coded sequence in response to an operator command to provide a desired sequence of transmission of the space tones and data tones. The outputs of the signal generator and the code generator are combined in a gate circuit to provide the desired acoustic command signal, and means is provided for radiating the acoustic command signal for receipt by a remote receiver.

3,723,957

# **ACOUSTIC NAVIGATION SYSTEM**

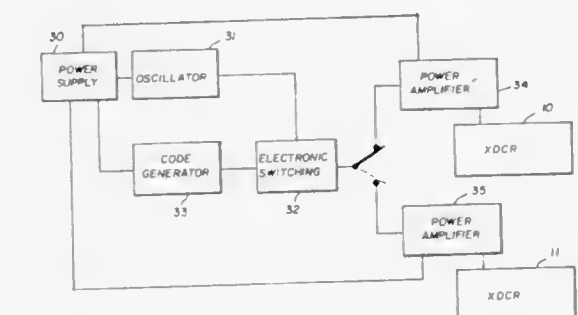
Melvin H. Damon, 27 Courtenay Circle, Pittsford, N.Y.

Filed Nov. 20, 1970, Ser. No. 91,315

Int. Cl. G01s 3/00

U.S. Cl. 340—5 R

10 Claims



A pair of transducer arrays are aimed underwater at a small angle to each other, and a source of acoustic energy is switched back and forth between the transducers under the control of a code generator to produce a pair of rotating beams that have a complementary code. Analogs of the beams are displayed aurally aboard a vessel for distinguishing the two beams by their code signals and detecting the bisecting plane between the beams by a steady tone signal.

3,723,958

# **ACOUSTIC IMAGING SYSTEM**

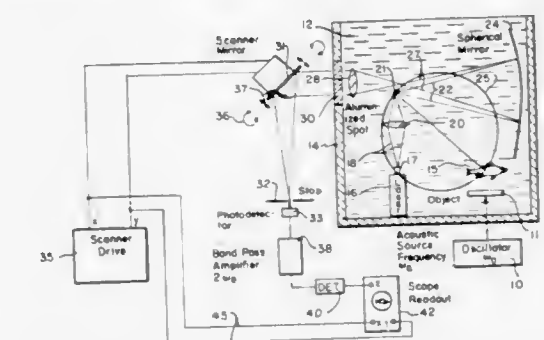
Lee O. Heflinger, Torrance, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Aug. 9, 1971, Ser. No. 170,124

Int. Cl. H04n 3/02

U.S. Cl. 340—5 MP

7 Claims



An acoustic imaging system which is particularly useful at low sound levels. A light beam is made to pass twice through a region where the light can interact with the acoustic wave perturbed by the object. As a result a light image is created which is modulated at twice the acoustic frequency. Thus, a portion of the light has a frequency which is raised while another portion of the light has its frequency decreased by the acoustic frequency. Therefore, the modulated light may readily be segregated from the unmodulated light, for example, by a suitable bandpass filter. Because the scattered light does not disturb the image it is feasible to use a higher light intensity so that an optical image is obtainable even at low acoustic intensity. Furthermore, the resolution is improved because the system has a large aperture.



3,723,959

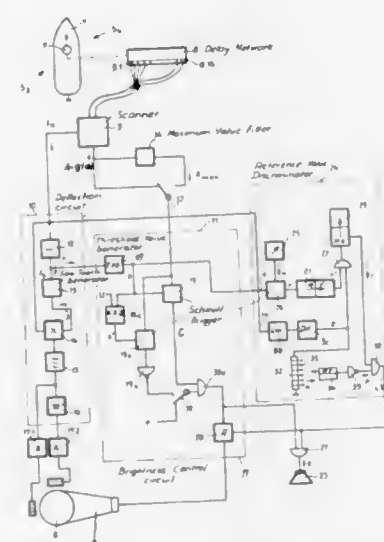
## APPARATUS FOR INDICATING ACOUSTICAL OR ELECTROMAGNETIC SIGNALS

Herbert Gritsch, Achim; Herwig Meyerhoff, Bremen; Enno Bruns, Bremen, and Gerd Hemme, Bremen, all of Germany, assigns to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Germany

Filed Nov. 16, 1970, Ser. No. 89,693  
Int. Cl. G01s 3/00

U.S. Cl. 340—6 R

23 Claims



An improved apparatus for providing a polar coordinate indication at an image frequency which produces still pictures, e.g. on a cathode-ray tube, of a scanning function  $A = g(x)$  furnished by an electronic scanner by scanning received acoustical or electromagnetic signals, e.g. from sonar or radar system, wherein  $A$  is the signal intensity and the independent variable  $x$  is the angle of incidence  $\phi$ ; the frequency for some other parameter of the received signal, wherein the independent variable  $x$  is indicated by the angular deflection of the indication and the signal intensity  $A$  is represented by the radial deflection of the indication. Various alternative types of representations of the scanning function utilizing this scheme are provided. According to one type of representation the course or shape of the scanning function curve may be indicated with respect to a zero reference circle, preferably with the area beneath the curve also indicated or brightened in the case of a cathode-ray tube indicating device. According to a further type of representation the maximum values of all or selected scanned signals are determined and indicated as radial lines or spokes. Apparatus is also provided for simultaneously presenting both of these types of indications or indications representing different types of scanning functions in different sectors of the image field of the polar indication.

3,723,960

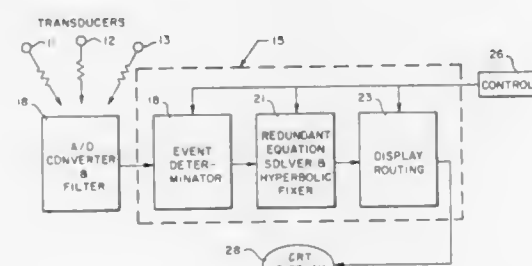
## AUTOMATIC TARGETING SYSTEM

Jack R. Harris, Holland, Pa., assignor to The United States of America as represented by the Secretary of the Navy  
Filed Feb. 26, 1971, Ser. No. 119,246

Int. Cl. G01s 5/18

U.S. Cl. 340—6 R

7 Claims



Method and apparatus for locating a target utilizing three or more acoustic sensors connected by a radio link to a general

purpose digital computer. The respective sensor outputs are correlated in order to identify a common acoustic source; then the times of arrival of a discrete sound emanated by the source are compared for determining the coordinates of the source. The source coordinates are then displayed on a plan position indicator.

3,723,961

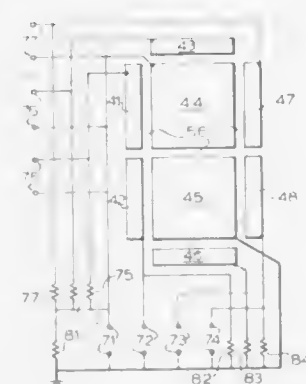
## MESSAGE CHARACTER DISPLAY APPARATUS

Joseph T. McNaney, 8548 Boulder Drive, La Mesa, Calif.  
Filed June 29, 1971, Ser. No. 157,901

Int. Cl. G08b 5/36

U.S. Cl. 340—380

7 Claims



Message character display apparatus is described herein which uses an array of light conductors wherein light emitting ends thereof are divided into a predetermined array of character forming segments with which a number of different characters may be formed. When characters are presented they are viewed through a window of the apparatus which is used to support the light emitting ends of the array of conductors and, in combination with the array of conductors, is moulded to form a single unit of light conducting material. Mouldings of the window and character forming light conductors are shown and described in various character display apparatus embodiments of the invention.

3,723,962

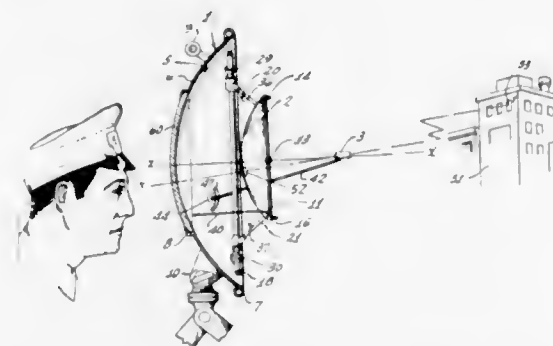
## APPARATUS FOR INDICATING THE DIRECTION TO A SOUND PULSE SOURCE

Fred Hotchner, 13400 Sherman Way, North Hollywood, Calif.  
Filed Oct. 9, 1970, Ser. No. 79,493

Int. Cl. G01s 3/00

U.S. Cl. 340—16 R

24 Claims



Apparatus including a reflector constituting a part of a spherical, cylindrical or other concave reflecting surface and a thin film detector of concentric or flat planar shape located in the focusing zone of the reflector between the center of curvature and the reflecting surface. The detector is provided with means, such as a high cracking lacquer coating which will be fractured in the focal zone of the sound pulse, to provide a line-of-sight locating point which, in a three-element device, is combined with the center of curvature of the reflector to give the line-of-sight direction to the source of the sound pulse, the

focal point for any sound source falling on a line drawn through the center of curvature of the reflector to that source. Instead of the center of curvature, means indicating a line or plane therethrough may be used with the lacquer fracture point to determine the direction to the sound source. In a two-element device the detector may comprise a photographic film on which there appears an inverted image of the field of view whereby the location of the fracture point on the image indicates the direction to the sound source, in which case the center of curvature and the line or plane therethrough are unnecessary.

3,723,963

## AIRCRAFT GYROHORIZON INDICATOR WITH SIGNAL LAMP POSITIONAL ATTITUDE INDICATING MEANS

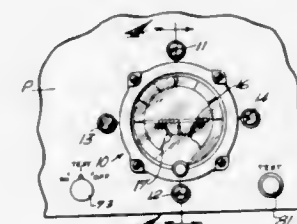
Ralph Hernandez, Jr., Miami, Fla., assignor to Aircraft Instruments, Inc., Miami Beach, Fla.

Filed April 3, 1969, Ser. No. 813,252

Int. Cl. G08g 5/00

U.S. Cl. 340—27

2 Claims U.S. Cl. 340—53



A combination gyrohorizon instrument for aircraft which visually indicates in addition to the dial display presentation of the instrument, by means of signal lamps appropriately placed with respect to the instrument dial, departures from straight and level flight that exceed reasonable limits of pitch and bank. The signal lamps, indicating "nose up", "nose down", "left wing down" and "right wing down" are in circuits energized by a first switching means controlled by the relative rotational position of the inner and outer gimbals of the instrument for sensing departure beyond reasonable safety limits in one direction or the other in the pitch axis, i.e., either "nose up" or "nose down" flight, and a second switch means controlled by the relative rotational position of the outer gimbal and the instrument casing for sensing departure beyond reasonable limits in the roll axis, i.e., either "left wing down" or "right wing down" flight.

3,723,964

## ENGINE CONDITION MONITORING APPARATUS

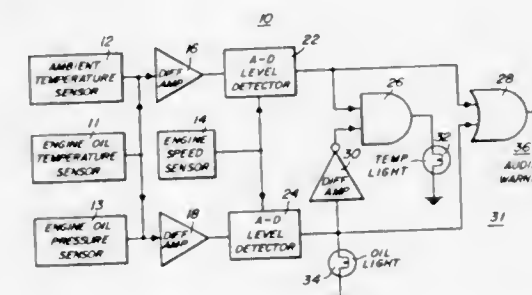
Melvin A. Lace, Prospect Heights, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 17, 1971, Ser. No. 209,324

Int. Cl. G08b 19/00

U.S. Cl. 340—52 F

5 Claims



An internal combustion engine having an oil pressure lubricating system is provided with engine condition indicator apparatus to continuously monitor engine oil temperature and oil pressure during engine operation. Ambient temperature and engine oil temperature readings are compared to obtain a

corrected temperature reading; engine oil temperature and oil pressure readings are also compared to obtain a corrected pressure reading. The corrected oil temperature and oil pressure signals are then compared to engine speed signals and electrical responses obtained respectively when the signals are of greater magnitude than the engine speed signals. Indicator means are provided to indicate occurrences of these electrical responses.

3,723,965

## CONTROL UNIT FOR MONITORING ELECTRONIC CONTROL SYSTEMS FOR BRAKING DEVICES IN WHEELED VEHICLES

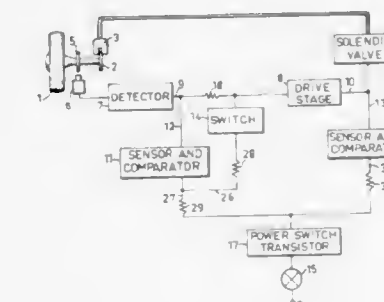
Gosta Holger Granlund, Goteborg, Sweden, assignor to Saab-Scania Aktiebolag, Linköping, Sweden

Filed March 8, 1971, Ser. No. 122,018

Claims priority, application Sweden, March 13, 1970, 3350/70

Int. Cl. B60t 8/10

3 Claims



An arrangement for controlling and monitoring electronic control systems for the brakes of wheeled vehicles (motor cars) includes speed sensors, one for each controlled wheel, the output of each sensor being applied to a detector for detecting relative changes in speed of the wheel. The detector controls a number of solenoid valves to regulate the brake pressures for the individual wheels such that locking and skidding of any wheel is prevented. A delay circuit samples or senses the signal occurring in the output of the detector, which output is supplied to a driving stage driving the associated solenoid valve. The output of the delay circuit activates a comparator when the output of the detector results in a reduction or release of the braking power of one or more of the wheels of the vehicle during a period exceeding a normal transient period of the regulating system. When the comparator is activated, it energizes a switch provided for the associated driving stage such that the polarity of the output of this stage changes and results in switching on again the solenoid valve to open a braking-fluid connection to the normal, ordinary braking system of the vehicle. When the comparator is energized, a buzzer or signal lamp is also energized.

3,723,966

## INTERROGATING TIRE PRESSURE INDICATOR

Rolf K. Mueller, Brighton, and William G. Wolber, Southfield, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Sept. 14, 1970, Ser. No. 71,706

Int. Cl. B60c 23/02

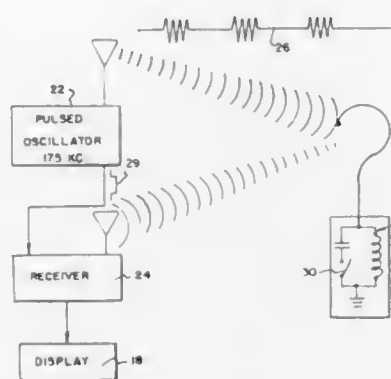
U.S. Cl. 340—58

8 Claims

A tire pressure indicating arrangement in which a passive transponder element is used as the tire pressure condition responsive sensor at each tire and an active transmitter is used to interrogate either successively or simultaneously each



transponder, each of which is in turn adapted to transpond back to a receiver in response to the transmitter signal in the



event tire pressure declines to an unsafe level. The receiver signal is then used to activate an alarm or indicating device.

3,723,967

### INDUCTION-KEYED DOOR-LOCK AND POWER CONTROL CIRCUIT FOR AUTOMOTIVE VEHICLES AND THE LIKE

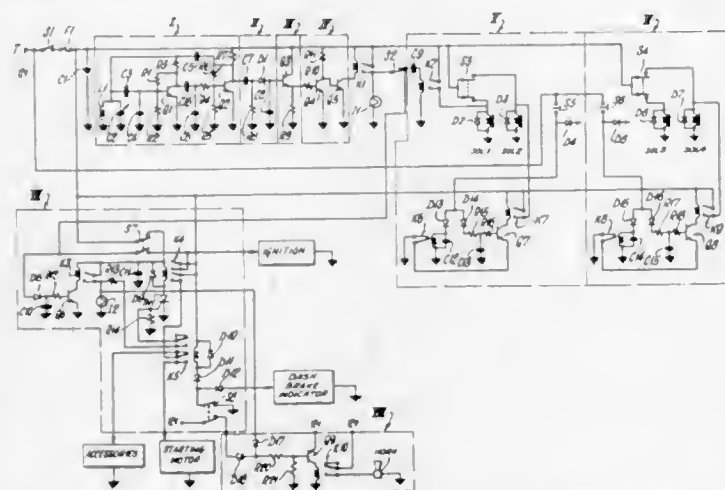
Carl E. Atkins, Montclair, and Paul A. Carlson, New Providence, both of N.J., assignors to Wagner Electric Corporation, Newark, N.J.

Filed March 24, 1971, Ser. No. 127,463

Int. Cl. B60r 25/04, 25/10

U.S. Cl. 340—63

24 Claims



A control circuit actuable by an inductive keying circuit, the inductor of which must be placed in a predetermined spatial relationship with the inductor in a tank circuit in the control circuit to effect keying. The energization and de-energization of a relay is thus controlled, and this relay in turn controls at least one door-unlocking solenoid. Circuitry is provided for automatically energizing each door-locking solenoid when the associated vehicle door is sequentially open and closed, and for manually energizing each of the locking and unlocking solenoids. Power control circuitry is also provided to prevent engine start-up by an unauthorized person who has broken into the vehicle, to energize an alarm circuit in such event when the unauthorized person actuates the starting switch, and to enable engine start-up by actuation of the starting switch within a predetermined length of time after an authorized person has unlocked the vehicle.

3,723,968

### PARKING BRAKE ALARM

Wilfred J. Kelly, 84 Pavilion Ave., Providence, R.I.

Continuation of Ser. No. 650,715, July 3, 1967, abandoned.

This application June 18, 1970, Ser. No. 48,925

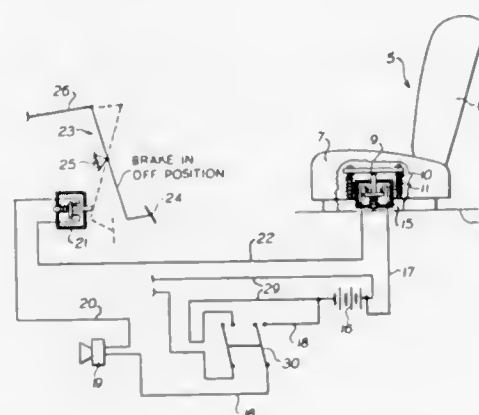
Int. Cl. B60q 5/00; B60t 17/22

U.S. Cl. 340—69

1 Claim

An alarm effective to indicate that a vehicle parking brake is off when the driver moves from the driving position, if at

that time, the parking brake is not on. A pressure sensitive means, mounted for example in the base of the driver's seat, is operatively connected to an alarm so that a signal is issued by the alarm upon movement from the driving position, with the proviso that means are provided for making the alarm insensitive to such movement if the parking brake is on. The alarm is



an auxiliary electrical circuit connected in parallel with the ignition system. A switch is provided for selectively and simultaneously opening and closing the vehicle electrical system and the auxiliary circuit, so that the auxiliary circuit can be deenergized, and, if deenergized, the ignition system is deenergized and remains deenergized until the alarm system is activated by closing of the switch.

3,723,969

### METHOD OF AND APPARATUS FOR READING CHARACTERS FORMED BY A PLURALITY OF AREAS

Kurt Thaddey, Buchs/Zurich, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

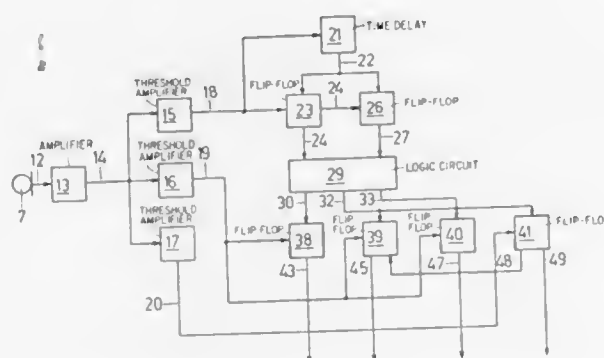
Filed July 30, 1970, Ser. No. 59,650

Claims priority, application Switzerland, Aug. 7, 1969, 12100/69

Int. Cl. G06k 9/18

U.S. Cl. 340—146.3 Z

5 Claims



The invention provides a method of and apparatus for reading characters formed by a plurality of areas, or perforations of equal size arranged at intersections of the rows and columns of a notional matrix. The number and arrangement of the areas to form a character is chosen so that only three rows forming a character need be scanned, each row having one, two or four areas to uniquely identify that character. Each character is scanned by a photosensitive device which produces, for each row scanned, a signal whose magnitude is proportional to the total number of areas in a row. The signal is coded in a four position binary code to provide a binary representation of the scanned character. The first and third positions of the code are assigned to the values derived from scanning the first and third of the three rows and the second and fourth code positions assigned to the value of the signal produced on scanning the second of the three rows. If the maximum number of areas in a row occurs in the second row, the fourth position assumes a binary value '1' while the second position assumes a binary value '0.'

3,723,970

### OPTICAL CHARACTER RECOGNITION SYSTEM

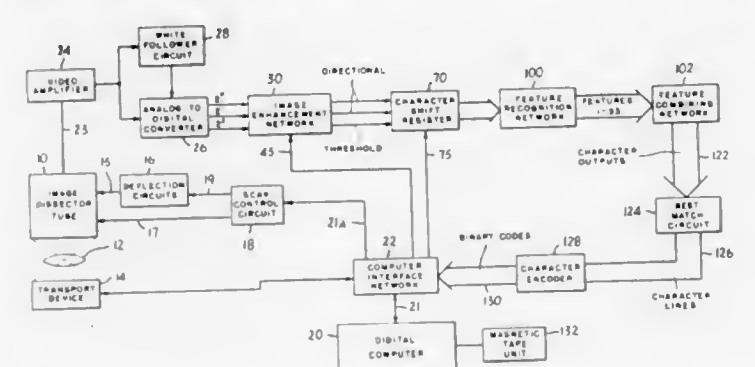
Milton Stoller, West Hartford, Conn., assignor to Scan-Optics, Inc., East Hartford, Conn.

Filed Jan. 4, 1971, Ser. No. 103,646

Int. Cl. G06k 9/12

U.S. Cl. 340—146.3 MA

19 Claims



As described herein, a program controlled image dissector tube scans the printed information recorded on a storage medium to provide analog information signals. The analog signals are converted into digital data signals representative of the segmental brightness of the scanned storage medium and thereafter accumulated in an image enhancement network. In the image enhancement network, selected arrays of the signals are scanned to develop directional and threshold digital data bits representative of the character information contained in each of the arrays. These digital data bits are, in turn, accumulated to provide arrays of the digital data bits representative of entire characters. The presence or absence of selected digital data bits in each of the arrays is then detected and the detected digital data bits combined to provide a character representative signal.

3,723,971

### SERIAL LOOP COMMUNICATIONS SYSTEM

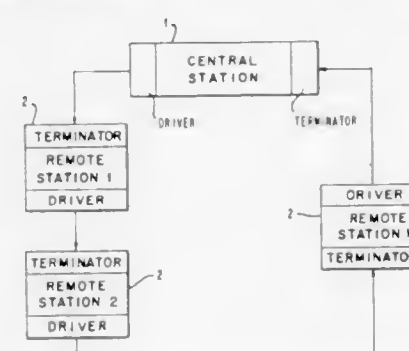
William K. Betts, and Alexander P. Sawtschenko, both of Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 14, 1971, Ser. No. 207,862

Int. Cl. H04q 9/00

U.S. Cl. 340—163 R

5 Claims



A communications system including a central station connected in a series loop with a plurality of remote stations and in which under control of said central station, the remote stations in the order of their physical position transmit data to the central station.

3,723,972

### DATA COMMUNICATION SYSTEM

Ashwani K. Chadda, 200 St. Andrews Boulevard, Winter Park, Fla.

Continuation of Ser. No. 874,301, Nov. 5, 1969. This application Nov. 24, 1971, Ser. No. 216,316

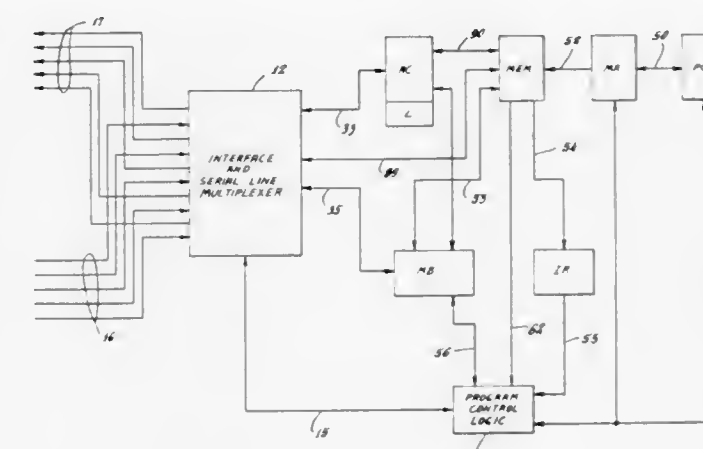
Int. Cl. G06f 3/04

U.S. Cl. 340—172.5

17 Claims

The disclosed data communication system is adapted to handle data flow to and from a plurality of individual data sta-

tions. The system assembles bits of data characters randomly and asynchronously transmitted by periodically sampling input lines in succession for input bits. The input bits are assembled and stored at selected times during each bit transmis-



sion. Fully assembled characters are transferred to a new storage location for eventual transmission to a central station. The system is also adapted to transmit data characters back to appropriate ones of the individual data stations at acceptable rates.

3,723,973

### DATA COMMUNICATION CONTROLLER HAVING DUAL SCANNING

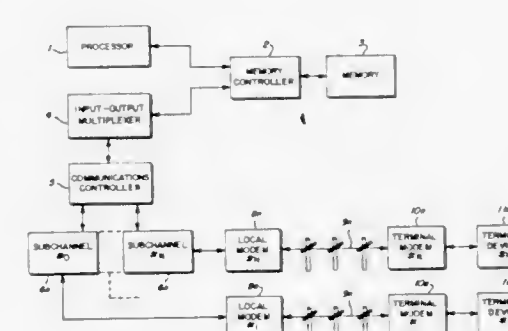
James A. Kennedy, Phoenix, Ariz., assignor to Honeywell Information Systems Inc.

Filed Sept. 30, 1970, Ser. No. 76,787

Int. Cl. G06f 3/00

U.S. Cl. 340—172.5

1 Claim



A data communications controller connected to a plurality of subchannels scans all subchannels when a priority switch is open. When the priority switch is closed a selector switch can be used to choose one of several combinations of subchannels which are awarded priority over other subchannel being scanned.

3,723,974

### DATA COLLECTION APPARATUS AND METHOD

Klaus E. Holtz, Adalbertstrasse 104, Munich, Germany

Filed March 8, 1971, Ser. No. 121,657

Int. Cl. G06f 3/00

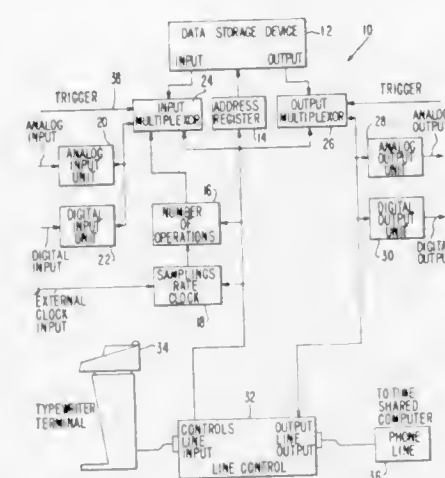
U.S. Cl. 340—172.5

11 Claims

Apparatus and a method of collecting data from analog or digital sources wherein the data is initially stored in accordance with a particular program and then read out to a time-share computer remote from the data collection station. Any one of a number of different programming languages can be used to effect the storage and read-out of the data and communication with the time-share computer can be accom-



plished under existing transmission facilities in a format acceptable to the computer. A typewriter terminal can be utilized



with the apparatus and can communicate with the computer without interference from the apparatus.

3,723,975

## OVERDUE EVENT DETECTOR

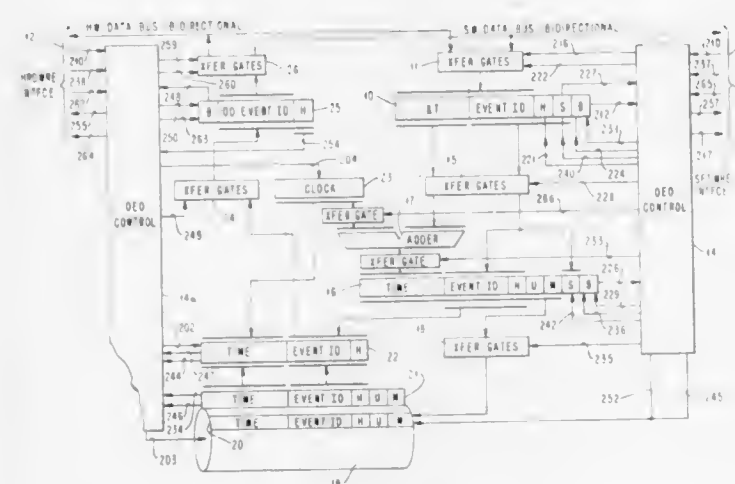
Hobart L. Kurtz, Jr., Wappingers Falls; Glenn H. Smith, Hyde Park, and Charles H. Wolff, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 28, 1971, Ser. No. 157,134

Int. Cl. G06f 9/00, 11/04

U.S. Cl. 340—172.5

6 Claims



An event detector for providing signals to general purpose digital computer hardware and/or software when excessive time passes prior to event occurrence. The detector includes storage means to record pluralities of sensitive events together with a time by which the event must be completed and clocking and comparator means to calculate target times and detect overruns.

3,723,976

## MEMORY SYSTEM WITH LOGICAL AND REAL ADDRESSING

Joseph A. Alvarez, Monrovia, and Robert P. Barner, Jr., Rockville, both of Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 20, 1972, Ser. No. 219,362

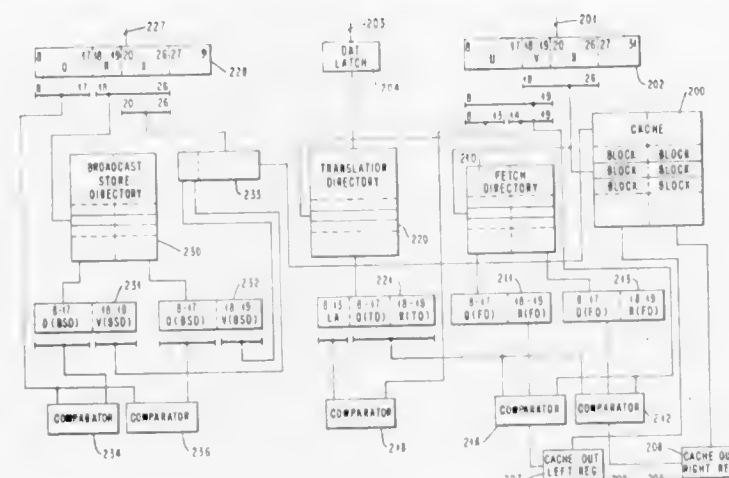
Int. Cl. G06f 3/00

U.S. Cl. 340—172.5

11 Claims

A memory system is disclosed for use in a multiprocessing environment where each processor has associated with it a buffer memory and means are provided for one buffer to retain a modified copy of data. The contents of the buffer memory may be accessed by either real or logical addresses.

Address translation means are provided to translate logical addresses. A fetch directory is provided to keep track of the data in cache. The fetch directory entries are accessed by both logical and real portions of the desired data address. Means are



provided to insure that only one copy of data is maintained in the buffer although it may be entered at several cache locations dependent upon the logical address which last fetched the data.

3,723,977

## GAS DISCHARGE PANEL WITH PHOTOCONDUCTIVE MATERIAL

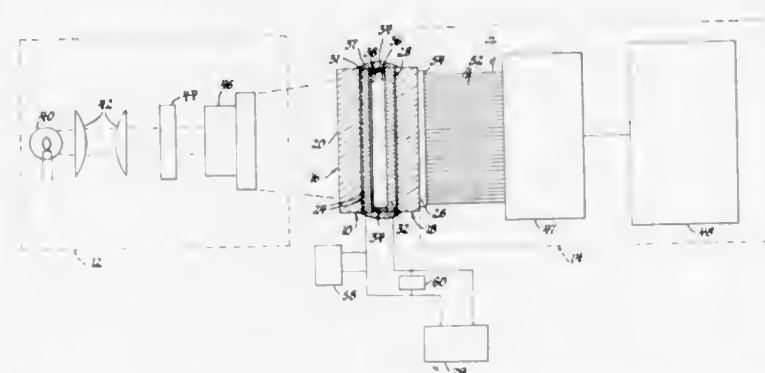
Robert F. Schaefele, Okemos, Mich., assignor to Owens-Illinois, Inc.

Filed Dec. 8, 1969, Ser. No. 882,933

Int. Cl. G11c 11/28; H01j 15/00; H05b 41/00

U.S. Cl. 340—173 PL

25 Claims



A data conversion and storage system incorporating a gas discharge panel having a light responsive element for sensing external light. When the panel is illuminated by projecting light onto the panel, the light responsive element combines with the electric field generated by an AC power source to cause selective glow discharges to occur. In this way, the image is converted by the panel to digital form with the glow discharges having a pattern corresponding to the image. After the image is removed, this information is stored until erased and also non-destructive transfer can be made to a readout device.

3,723,978

## BEAM ADDRESSABLE MEMORY APPARATUS

Kent N. Maffitt, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed March 1, 1971, Ser. No. 119,630

Int. Cl. G11c 11/26

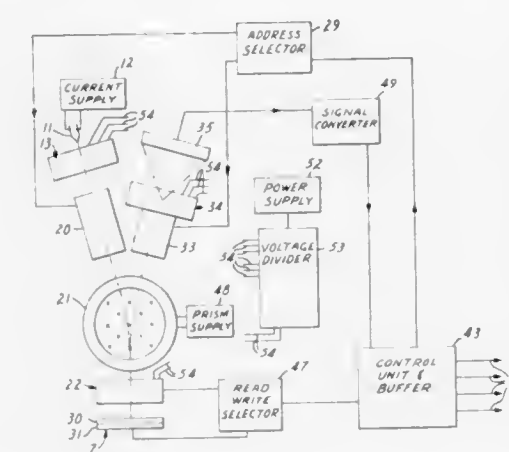
U.S. Cl. 340—173 CR

10 Claims

Beam addressable memory apparatus including an electron gun having a compound electrostatic immersion gun lens, a first set of electrostatic deflection plates, and a compound electrostatic immersion objective lens for writing charged bits of information on a storage media. During the reading mode,

the storage media is negatively biased to mirror and spacially modulate the electron beam. The mirrored beam is passed back through the objective lens, a second set of electrostatic

environment as the magnetic disks and read/write heads. All active elements are kept at a substantially uniform temperature



deflection plates, and a projector lens onto a detector array for producing simultaneous digital electrical signals corresponding to the bit pattern on the media.

3,723,979

## ASSOCIATIVE MEMORY SYSTEM

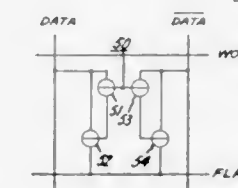
Joseph L. Mundy, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 1, 1971, Ser. No. 194,678

Int. Cl. G11c 15/00

U.S. Cl. 340—173 AM

10 Claims



An associative memory system is disclosed for grouping events in  $n$  dimensional space wherein each event is represented by an  $n$  bit word. As a specific example of the comparison and grouping capabilities of this associative memory system, an encoding and decoding system is disclosed wherein the separation of a plurality of messages can be made a maximum and the number of tolerable errors set to any desired value. Specifically, to decode, the output current, during an associative search of the memory, is proportional to the separation between the search message and the stored, error-free message. Adjustable threshold sensing of the output current enables one to select the maximum amount of tolerable error. To encode, an associative search is made for the coded version of a message utilizing the uncoded version of the message.

3,723,980

## TEMPERATURE COMPENSATION SYSTEM FOR A MAGNETIC DISK MEMORY UNIT

Andrew Gabor, 371 Cordell Drive, Danville, Calif.

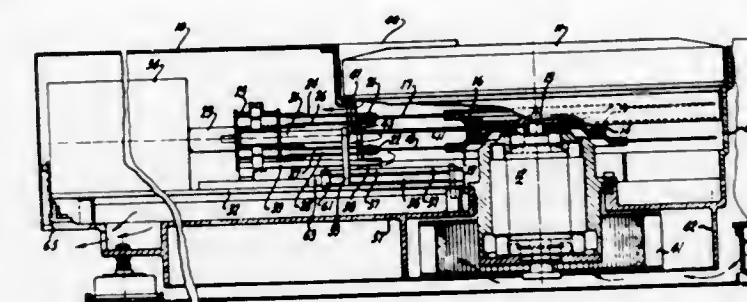
Filed Nov. 15, 1971, Ser. No. 198,882

Int. Cl. G11b 5/40

U.S. Cl. 340—174.1 B

9 Claims

A temperature compensation system for a magnetic disk memory unit which is removable from a disk drive unit in which the transducer which is part of the track positioning system is located in the same temperature and mechanical en-



by proper air flow and temperature changes are compensated for by the use of similar materials in similar locations.

3,723,981

## PNEUMATIC ACCESSING OF TAPE BANDS

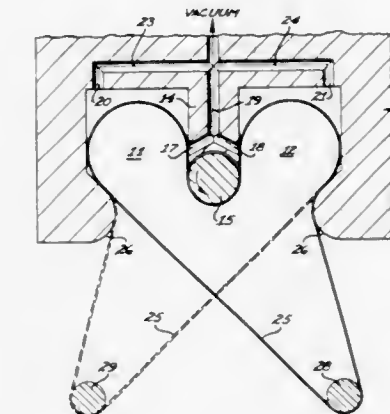
Klaus K. Stange, Phoenix, Ariz., assignor to Honeywell Information Systems, Inc., Oklahoma City, Okla.

Filed July 17, 1962, Ser. No. 219,519

Int. Cl. G11b 15/38

U.S. Cl. 340—174.1 C

29 Claims



An endless loop or barn of magnetic tape is selectively withdrawn from its bin into a chamber wherein it is caused to move by a rotating capstan.

3,723,982

## SYSTEM FOR TRANSMISSION, STORAGE AND/OR MULTIPLEXING OF INFORMATION

William R. Frazier, Jr., Indialantic, Fla., assignor to General Dynamics Corporation, Rochester, N.Y.

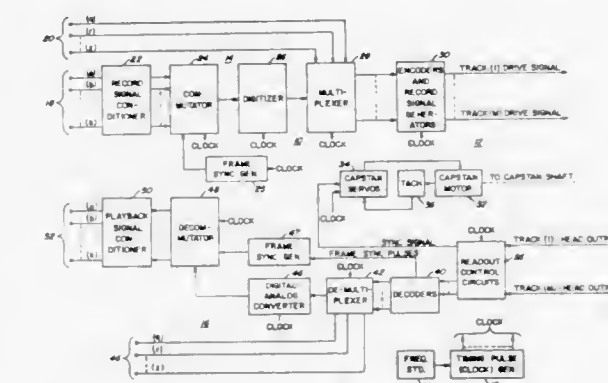
Division of Ser. No. 685,353, Nov. 24, 1967, Pat. No.

3,588,836. This application Feb. 2, 1971, Ser. No. 112,003

Int. Cl. G11b 5/62

U.S. Cl. 340—174.1 G

19 Claims



A system is described for transmission, storage (as by recording) and for multiplexing of both digital and analog information. The recording system includes apparatus for con-



verting analog information into digital information having a predetermined format. Each track of the recording apparatus receives a series of encoded format words containing a plurality of ternary NRZ pulses, each represented by any one of three voltage levels; positive, negative or zero volts during a bit interval, such that the average level of each word is zero volts. The spectrum of a signal composed of a serial sequence of these format words is capable of being recorded on a magnetic tape recording track with a much higher pulse packing density than heretofore possible with conventional NRZ or other binary recording techniques. The playback apparatus which forms part of the recording system includes circuitry responsive to the zero average property of the recorded words, and controls the timing of the readout of the recorded information so as to provide precise time coherence between all of the recorded channels. The latter circuitry also controls the system for deskewing the signals recorded simultaneously on parallel tracks on the tape during playback, thereby further enhancing the capability of this system to record information with extremely high pulse packing density. Both recording and playback is controlled by a common accurate clock so as to further insure coherence between signals recorded on all channels. Also included in the recording system is an input/output section which translates input analog information into digital form for recording in the various channels at rates and with the format compatible for recording with the system. The input/output section also rearranges the digital information read from the magnetic record into its original analog or digital form, as the case may be.

3,723,983

## HIGH DENSITY THIN FILM REGISTER

Heinz Lienhard, Palo Alto, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Continuation of Ser. No. 761,054, Sept. 20, 1968, abandoned.

This application March 19, 1971, Ser. No. 126,309

Int. Cl. G11c 11/14, 19/00

U.S. Cl. 340—174 MC

5 Claims



Improved magnetic thin film geometry for use in shift registers, etc., wherein the thin film strips, and thus the magnetic domains, have a preselected width to length (W/L) ratio, film thickness (T), and value of coercive force ( $H_c$ ). The geometry provides storage and transfer of stable magnetic domains with well-defined boundaries, and decreased interaction and spurious nucleation, while allowing relatively high packing densities. The parameters are chosen as to maximize  $(H_N - H_W)$  where  $H_W$  is the magnetic domain nucleation field,  $H_N$  is the magnetic domain wall threshold field, and  $H_N - H_W$  is the operational margin of the film strip. By suitably selecting the above parameters, optimum packing density and speed of domain wall motion, with stable domain storage conditions, are realized.

3,723,984

## STORAGE DEVICE FOR THE STORAGE OF WORD-ORGANIZED INFORMATION

Gerrit Hilbertus Schouten, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 20, 1971, Ser. No. 164,276

Claims priority, application Netherlands, July 22, 1970, 7010815

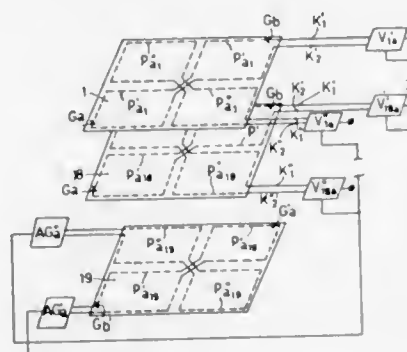
Int. Cl. G11c 5/08

U.S. Cl. 340—174 RC

1 Claim

A storage device for the storage of word-organized information, comprising magnetic storage elements which are arranged in a plurality of planes in rows and columns in an

identical manner, each of said magnetic storage elements being coupled to a first drive winding which is provided per row, to a second drive winding which is provided per column, and to an inhibit and a sense windings which are provided per plane. Each sense winding is provided with a read amplifier connected thereto. Each of these read amplifiers is provided with a control terminal to which a sense generator is connected for sampling the signals which are induced in the sense windings. Furthermore, an additional surface is provided comprising magnetic storage elements which are arranged in rows



and columns in an identical manner as in said planes and which are individually associated with word locations. The storage elements of the additional plane are coupled to a first drive winding which is provided per row and to a second drive winding which is provided per column in order to set the storage elements to one particular remanence state in the case of writing and to set them to the other remanence state in the case of reading of words in the corresponding word locations. For reading the information the storage elements of the additional plane are coupled to a sense winding which is connected to the sense generator in order to apply starting pulses thereto.

3,723,985

## ELECTRICALLY CONTROLLABLE STEERING ARRANGEMENT FOR MAGNETIC SINGLE-WALL DOMAIN PROPAGATION PATHS

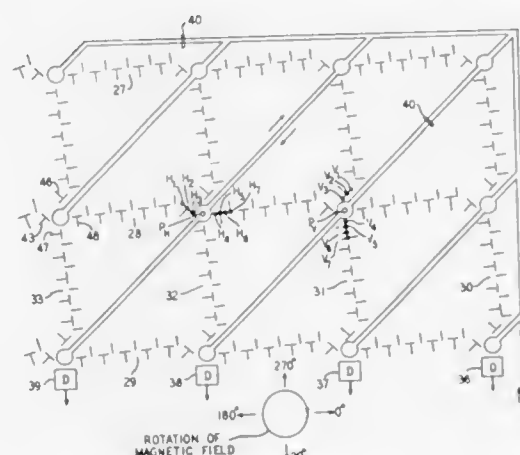
Roy Stephen Krupp, Rumson, and Lawrence Andrew Tomko, Middletown, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 27, 1971, Ser. No. 212,005

Int. Cl. G11c 11/14, 19/00

U.S. Cl. 340—174 TF

10 Claims



An electrically controllable transfer circuit located at the intersection of plural magnetic single-wall domain field access propagation paths is provided with electric current pulses that are differently phased with respect to an in-plane rotating magnetic field for determining the direction of domain propagation through the intersection. A plurality of such path intersections are interconnected to form row and column shift

registers of a two-dimensional shift register. All of the transfer circuits are connected to be driven together to realize propagation in two different directions in each field access cycle.

3,723,986

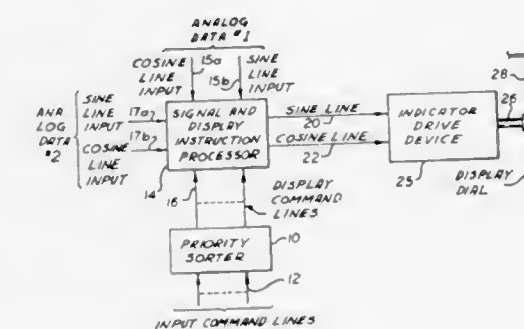
## TELEMETERING SYSTEM FOR DISPLAYING ANALOG AND DIGITAL DATA

Joseph Carlstein, East Meadow, N.Y., assignor to Vernitron Corporation, New York, N.Y.

Filed Oct. 1, 1969, Ser. No. 863,754

Int. Cl. G08c 19/04

U.S. Cl. 340—177 R



This system displays both analog and digital data such as quantities and messages with predetermined display priorities assigned to the several messages or types of data. In operation, commands pass through a priority sorter to a signal and display processor which in turn passes currents of predetermined magnitudes and polarities to an electromagnetic indicator drive device. The drive device has two stator windings which generate magnetic fields 90° apart and drive a rotor coupled to an indicator, bearing prerecorded data thereon, for display and readout purposes.

3,723,987

## METHOD AND APPARATUS FOR MONITORING FLUID FLOW SYSTEMS

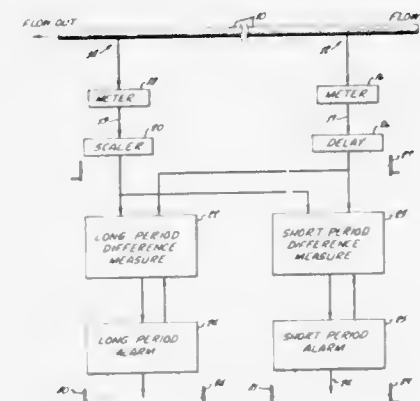
Larry F. Barone, Jr., Santa Ana, Paul E. Patterson, Bell, and Ross A. Shade, Santa Ana, all of Calif., assignors to Mobil Oil Corporation by said Patterson; ADEC Corporation, Irvine, Calif., by said Barone and said Shade.

Filed March 22, 1971, Ser. No. 126,506

Int. Cl. G08b 21/00

U.S. Cl. 340—242

5 Claims



A system for detecting leakage in a long pipeline employs meters to generate digital flow signals at stations adjacent inputs and outputs of the pipe system. A scaler function equal to the difference in the input and output flow of the system, as indicated by the meters, is computed when the system is known to be in a leak-free condition. The scaler function is combined with one of the meter representations of system input or out-

put to provide a dynamic balance of input and output, as indicated by the meters. Subsequent deviation from balanced condition is employed to actuate an alarm. Signals from the upstream station are delayed by the amount of time required for a flow disturbance to propagate between input and output stations so as to eliminate effects of such disturbance upon the input-output comparison. Input and output flows are compared concomitantly for both short and long periods to enable rapid detection of large leaks and also detection of much smaller leaks.

3,723,988

## ANISOTROPIC THIN FILM PLATED WIRE LINE SENSOR

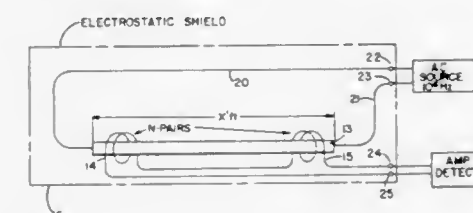
Vahram S. Kardashian, Plymouth Village, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 4, 1971, Ser. No. 195,690

Int. Cl. G08b 13/24

U.S. Cl. 340—258 R

4 Claims



An electrically conductive wire is plated with a thin film of a magnetically anisotropic substance. A plurality of coils are placed around the wire at different points along its length. Either the wire or the coils are energized by an alternating current, and the signal developed on the other is monitored to detect intrusion of a magnetic body into the vicinity.

3,723,989

## ELECTRONIC PLANTER MONITOR

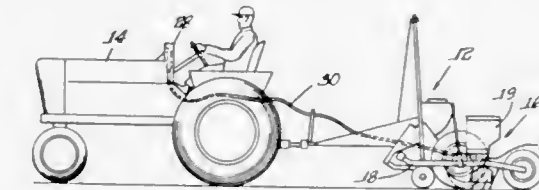
George H. Fathauer, and David F. Fathauer, both of Decatur, Ill., assignors to Dickey-John Corporation, Chatham, Ill.

Filed Feb. 12, 1970, Ser. No. 10,930

Int. Cl. G08b 21/00

U.S. Cl. 340—259

21 Claims



A seed planting apparatus is disclosed for planting seeds concurrently in a plurality of rows including bin assemblies or hoppers for releasing a plurality of seeds along a path of travel and at a preselected rate. The apparatus includes a detecting circuit associated with each bin assembly or hopper for electrically detecting the plurality of seeds. A source of light is mounted on one side of the path of travel and a photocell is mounted on the other side of the path of travel optically aligned with the source of light. The photocell emits an electri-



cal signal when a seed passes between the photocell and source of light. A monitoring device is also included and is responsive to the electrical signal for monitoring the plurality of seeds.

### 3,723,990 STRAND MONITOR

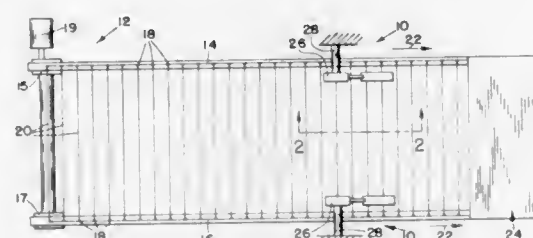
Frederick W. Paul, Holden, Mass., assignor to Crompton & Knowles Corporation, Worcester, Mass.

Filed Aug. 25, 1971, Ser. No. 174,759

Int. Cl. D03d 51/30

U.S. Cl. 340—259

5 Claims



A monitor for spaced parallel strands which are conveyed in a direction perpendicular to the longitudinal axes of the strands. The monitor includes a stationary switch which has a switch arm to which is attached a shoe which spans at least two adjacent strands and bears against said strands as they pass by the shoe in which case the switch arm will be in a detecting position and will move to an indicating position when a broken or slack strand passes by said shoe.

### 3,723,991 OVERSIZE FILAMENT THICKNESS DETECTOR, PARTICULARLY EXCESSIVE THREAD THICKNESS AND KNOT DETECTOR FOR YARNS

Hermann Schwartz, Adliswil, Switzerland, assignor to Siegfried Peyer, Bach, Switzerland

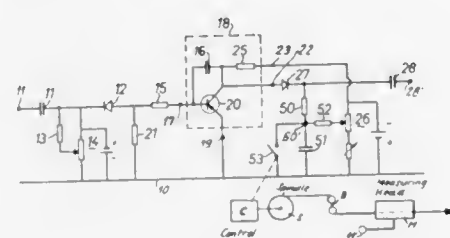
Filed Oct. 1, 1970, Ser. No. 77,189

Claims priority, application Switzerland, Oct. 31, 1969, 16253/69

Int. Cl. B65h 63/06

U.S. Cl. 340—259

10 Claims



An output signal proportional in amplitude to excessive thread thickness, or knots, and proportional in time to the length of the excessive thickness is obtained from a transducer and applied to a first threshold detector providing a pulse if the excessive thickness exceeds a certain level and to a timing circuit providing a gradually rising signal proportional to time of persistence of the excessive thickness. To compensate for speed variations during start-up of the apparatus, for example after shut-down due to elimination of an excessive thickness of excessive length, a wave shaping signal transfer circuit is incorporated in the timing circuit, consisting for example of an R-C network having a charge-time characteristic similar to the acceleration function of the spooling equipment.

## DESIGNS

MARCH 27, 1973

### 226,544 CAP

Nicholas Veltri, 1183 Elmwood Ave., Buffalo, N.Y. 14202

Filed Nov. 11, 1971, Ser. No. 198,078

Term of patent 14 years

Int. Cl. D2—03

U.S. Cl. D2—247



### 226,545

#### STOOL OR SIMILAR ARTICLE

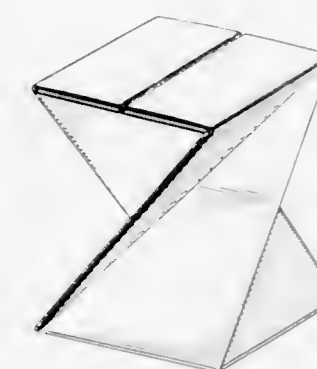
Alfred D. Hollingsworth, 1575 Old Topanga Canyon Road, Topanga Canyon, Calif. 90240

Filed May 14, 1971, Ser. No. 143,736

Term of patent 14 years

Int. Cl. D6—02

U.S. Cl. D6—34



### 226,546

#### END FRAME UNIT FOR A TABLE AND BENCH COMBINATION

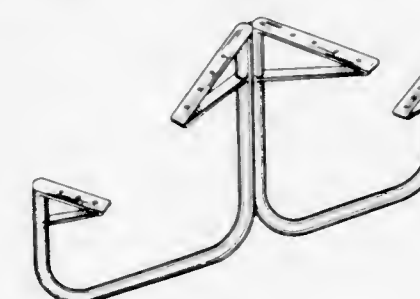
Marvin J. Priefert and William D. Priefert, both of R.R. 1, Mount Pleasant, Tex. 75455

Filed July 12, 1971, Ser. No. 161,408

Term of patent 14 years

Int. Cl. D6—02

U.S. Cl. D6—192



### 226,547

#### HANGER FOR DISPLAY PACKAGE

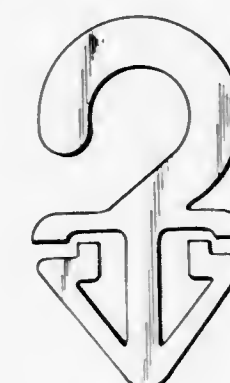
Naoyuki Iso, 3 of 27 Oimatsu-cho, Nishinomiya, Hyogo, Japan

Filed Dec. 1, 1971, Ser. No. 203,939

Term of patent 14 years

Int. Cl. D6—08

U.S. Cl. D6—252



### 226,548

#### CUTTING TOOL

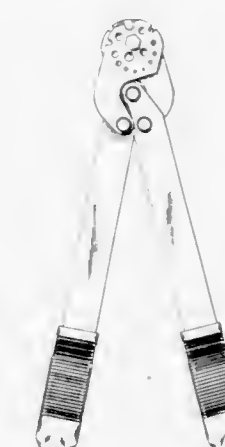
Oscar B. Burgeson, Bristol, Conn., assignor to The Stanley Works, New Britain, Conn.

Filed May 11, 1971, Ser. No. 142,437

Term of patent 14 years

Int. Cl. D8—05

U.S. Cl. D8—58



### 226,549

#### HOUSING FOR ELECTRIC SHEARS

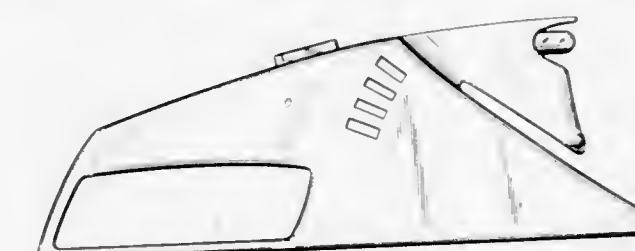
Robert N. Freedman, Great Neck, N.Y., assignor to Endura Appliance Corporation

Filed Jan. 21, 1971, Ser. No. 108,691

Term of patent 14 years

Int. Cl. D8—03

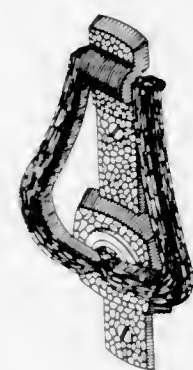
U.S. Cl. D8—61





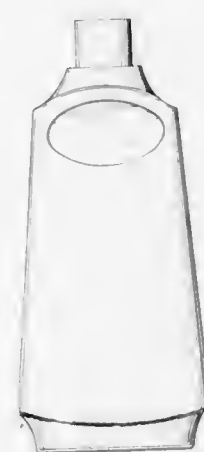
**226,550**  
**ESCUTCHEON PLATE WITH PUSHBUTTON**  
**FOR DOORBELLS**  
 Lawrence P. Mellyn, Gloucester, R.I., assignor to  
 General Electric Company  
 Filed Mar. 27, 1972, Ser. No. 238,748  
 Term of patent 14 years  
 Int. Cl. D8—09

U.S. Cl. D8—181



**226,551**  
**BOTTLE**  
 Richard L. Weckman, Perrysburg, Ohio, assignor to  
 Owens-Illinois, Inc., Toledo, Ohio  
 Filed Oct. 1, 1971, Ser. No. 185,926  
 Term of patent 14 years  
 Int. Cl. D9—07

U.S. Cl. D9—44



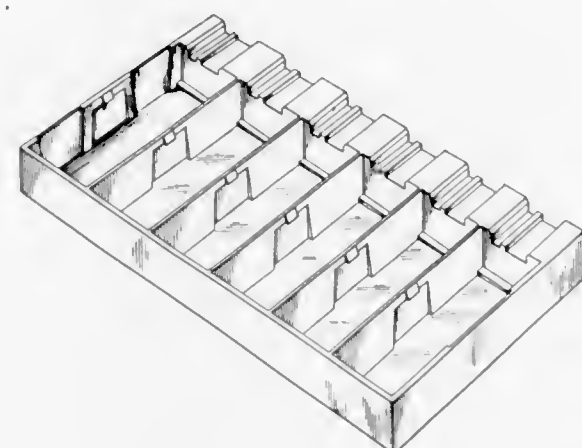
**226,552**  
**CARAFE**  
 Wayne M. Smythe, 11967 E. Rivera Road,  
 Santa Fe Springs, Calif. 90670  
 Filed Apr. 23, 1971, Ser. No. 137,113  
 Term of patent 14 years  
 Int. Cl. D9—07

U.S. Cl. D9—117



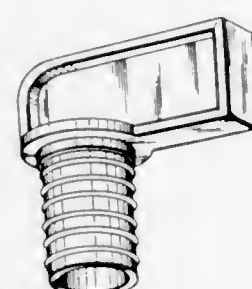
**226,553**  
**DISPENSER FOR RAZOR BLADE CARTRIDGES**  
 Martin Glaberson, Ardsley, N.Y., assignor to Warner-  
 Lambert Company, Morris Plains, N.J.  
 Filed Oct. 22, 1971, Ser. No. 191,959  
 Term of patent 14 years  
 Int. Cl. D9—03

U.S. Cl. D9—189



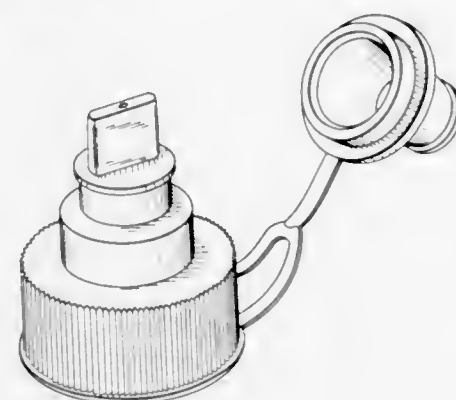
**226,554**  
**CONTAINER STOPPER OR THE LIKE**  
 Louis Brodsky, Parlin, N.J., assignor to E. R. Squibb &  
 Sons, Inc., New York, N.Y.  
 Filed May 19, 1971, Ser. No. 145,102  
 Term of patent 14 years  
 Int. Cl. D9—07

U.S. Cl. D9—264



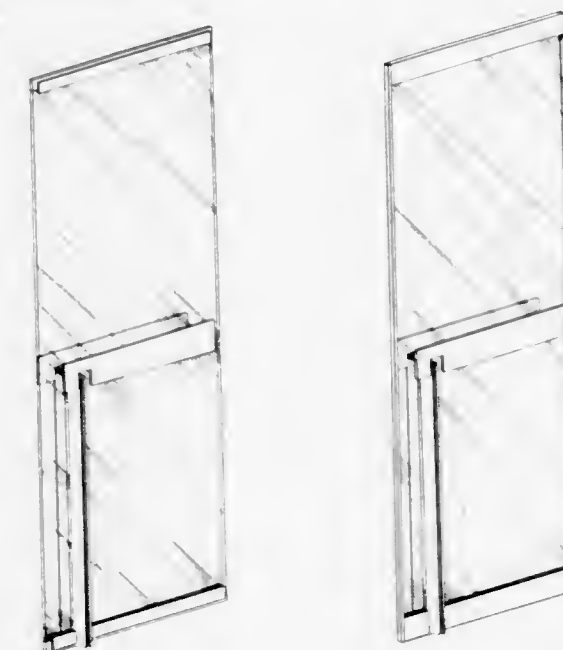
**226,555**  
**BOTTLE CAP**  
 Heinz Weber, Dorval, Montreal, Canada, assignor to  
 Quality Oil Corporation, Dorval, Montreal, Canada  
 Filed Apr. 2, 1971, Ser. No. 130,871  
 Term of patent 14 years  
 Int. Cl. D9—07

U.S. Cl. D9—278



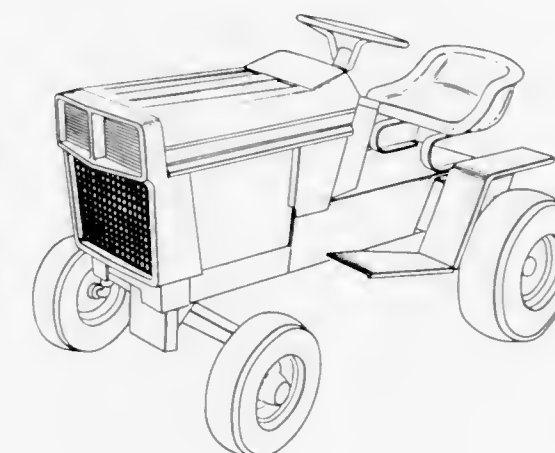
**226,556**  
**DOOR**  
 William J. Horgan, Jr., 1299 Folkstone Drive,  
 Pittsburgh, Pa. 15216  
 Continuation-in-part of design applications Ser. No.  
 10,892, Mar. 8, 1968, Ser. Nos. 13,607 and 13,608,  
 both July 18, 1968, Ser. No. 19,456, Oct. 8, 1969, Ser.  
 Nos. 20,194 and 20,195, both Nov. 20, 1969, Ser. No.  
 19,657, Oct. 21, 1969, Ser. No. 20,029, Nov. 10, 1969,  
 Ser. Nos. 21,815, 21,816 and 21,811, all Mar. 9, 1970.  
 This application June 1, 1970, Ser. No. 23,254  
 Term of patent 14 years  
 Int. Cl. D25—02

U.S. Cl. D13—1 M



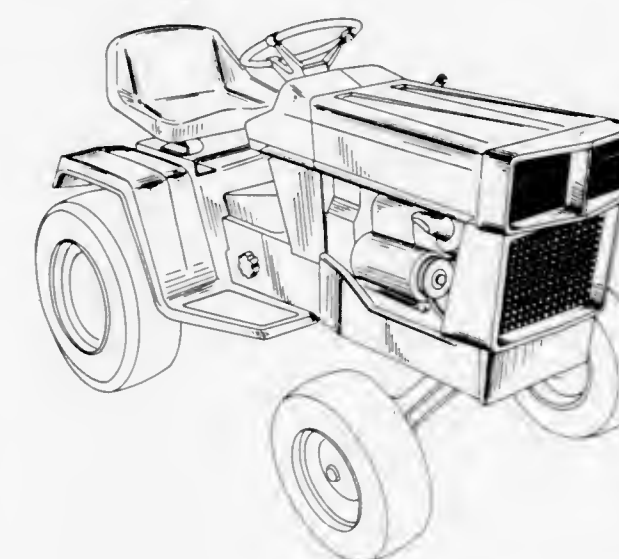
**226,557**  
**TRACTOR**  
 Robert A. Skyer, Palatine, George E. Bowman, Country  
 Club Hills, and David A. Fulghum, La Grange, Ill.,  
 assignors to International Harvester Company, Chicago,  
 Ill.  
 Filed Jan. 20, 1972, Ser. No. 219,598  
 Term of patent 14 years  
 Int. Cl. D12—09

U.S. Cl. D14—3 A



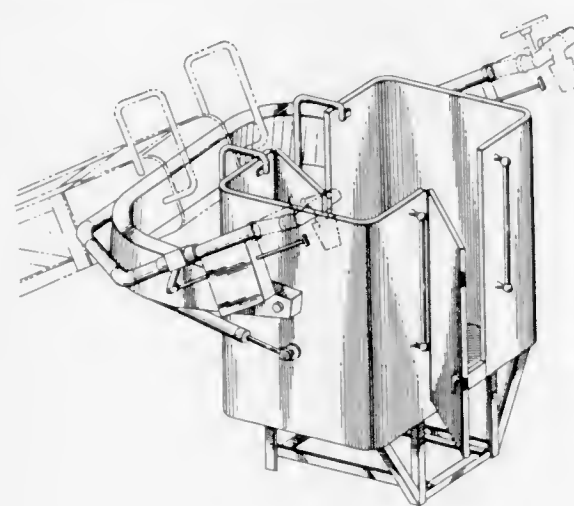
**226,558**  
**TRACTOR**  
 Robert A. Skyer, Palatine, George E. Bowman, Country  
 Club Hills, James W. Zurek, Lombard, Rudolph A.  
 Boehm, Downers Grove, and Joseph P. Deschamps,  
 Naperville, Ill., assignors to International Harvester  
 Company, Chicago, Ill.  
 Filed Jan. 20, 1972, Ser. No. 219,597  
 Term of patent 14 years  
 Int. Cl. D12—09

U.S. Cl. D14—3 A

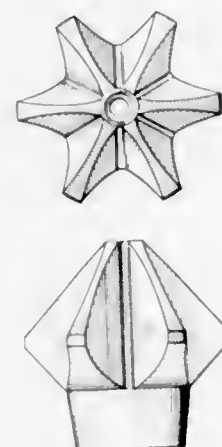




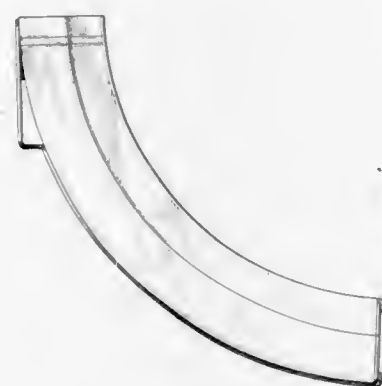
226,559  
**PLATFORM AND SUPPORT YOKE FOR  
 AN AERIAL TOWER**  
 Thomas C. Sutphen, Columbus, Ohio, assignor to Sutphen  
 Fire Equipment Company, Amlin, Ohio  
 Filed Feb. 22, 1971, Ser. No. 117,872  
 Term of patent 14 years  
 Int. Cl. D12—13  
 U.S. Cl. D14—6 A



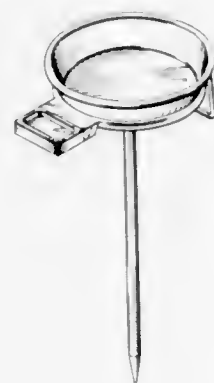
226,561  
**HANDLE FOR PLUMBING FITTINGS**  
 Lloyd K. Jones and Martin W. Downey, Morgantown,  
 W. Va., assignors to Rockwell Manufacturing Com-  
 pany, Pittsburgh, Pa.  
 Filed Oct. 30, 1970, Ser. No. 25,742  
 Term of patent 14 years  
 Int. Cl. D23—01  
 U.S. Cl. D23—28



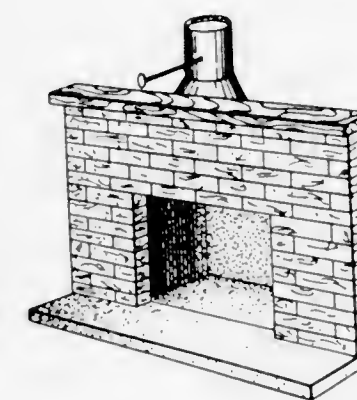
226,560  
**AMMUNITION MAGAZINE**  
 Leroy James Sullivan, Orange, Calif., assignor to J. Robert  
 Egan, Newport Beach, John Wayne, Beverly Hills,  
 and Robert L. Gaddis, Marie Lyon Gaddis, and Leroy  
 James Sullivan, Huntington Beach, Calif., fractional  
 part interest to each  
 Filed Dec. 9, 1970, Ser. No. 26,378  
 Term of patent 14 years  
 Int. Cl. D22—03  
 U.S. Cl. D22—7



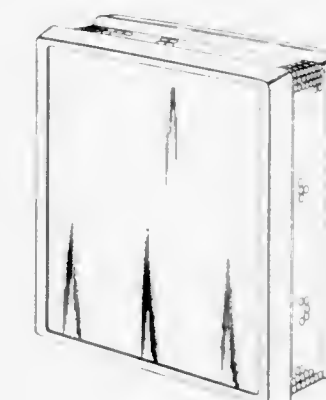
226,562  
**PORTABLE WASHING STAND**  
 Roman Zakaski, South Charleston, W. Va., assignor to  
 Monty Enterprises, Inc.  
 Filed Mar. 19, 1971, Ser. No. 126,388  
 Term of patent 7 years  
 Int. Cl. D23—02  
 U.S. Cl. D23—48



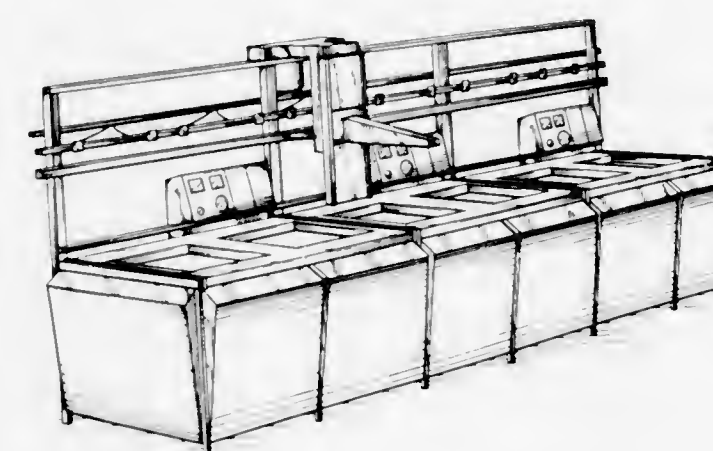
226,563  
**PREFABRICATED FIREPLACE**  
 William G. Hardt, 19 Shady Lane,  
 Lake Geneva, Wis.  
 Filed Nov. 22, 1971, Ser. No. 201,250  
 Term of patent 14 years  
 Int. Cl. D23—03  
 U.S. Cl. D23—94



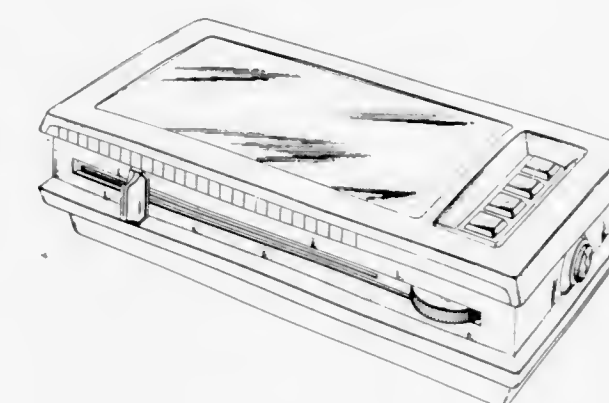
226,565  
**SUBSCRIBER TERMINAL CENTRAL UNIT**  
 Peter P. Klepa and Thomas J. Hermann, Los Angeles,  
 Calif., assignors to Hughes Aircraft Company, Culver  
 City, Calif.  
 Filed July 6, 1971, Ser. No. 160,266  
 Term of patent 7 years  
 Int. Cl. D14—02  
 U.S. Cl. D26—5 C



226,564  
**MODULAR AUTOMATIC ELECTROPLATING  
 EQUIPMENT**  
 Rudolf John Garbely, Bloomfield, and Anthony R. Diorio,  
 Wayne, N.J., assignors to Sel-Rex Corporation, Nutley,  
 N.J.  
 Filed May 7, 1968, Ser. No. 11,813  
 Term of patent 14 years  
 The portion of the term of the patent subsequent to  
 Sept. 27, 1984, has been disclaimed  
 Int. Cl. D15—09  
 U.S. Cl. D26—1 N



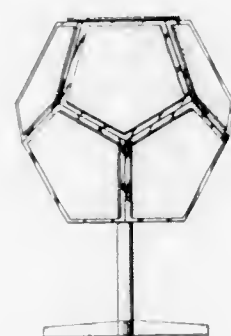
226,566  
**SUBSCRIBER TERMINAL CONSOLE**  
 Peter P. Klepa and Thomas J. Hermann, Los Angeles,  
 Calif., assignors to Hughes Aircraft Company, Culver  
 City, Calif.  
 Filed July 6, 1971, Ser. No. 160,267  
 Term of patent 7 years  
 Int. Cl. D14—02  
 U.S. Cl. D26—5 C





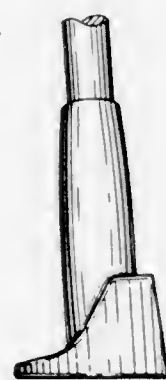
226,567  
**DODECAHEDRON LOUDSPEAKER  
 ENCLOSURE UNIT**  
 George W. Sioles, 267 Palos Verdes Drive W.,  
 Palos Verdes Estates, Calif. 90274  
 Filed May 1, 1972, Ser. No. 249,466  
 Term of patent 7 years  
 Int. Cl. D14—01

U.S. Cl. D26—14 G



226,568  
**PUTTER**  
 J. E. Luther Morris, 5925 W. Cataline Drive,  
 Phoenix, Ariz. 85033  
 Filed Mar. 17, 1971, Ser. No. 125,455  
 Term of patent 14 years  
 Int. Cl. D21—02

U.S. Cl. D34—5 GC



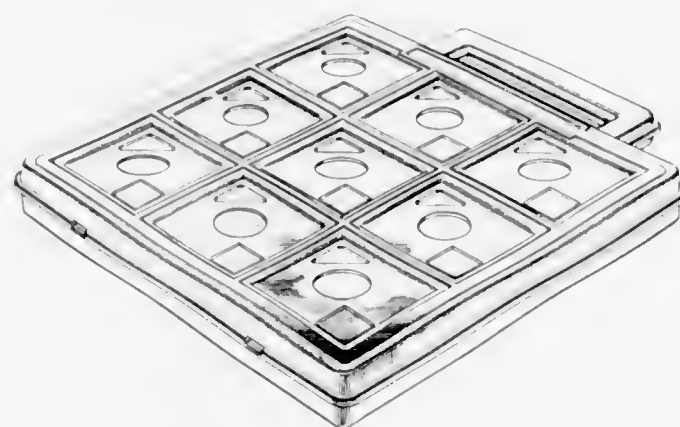
226,569  
**HOOP ROLLER**  
 Salvatore D. Timpani, 119 Furlong Road,  
 Brighton, N.Y. 14623  
 Filed Apr. 12, 1971, Ser. No. 133,467  
 Term of patent 14 years  
 Int. Cl. D21—01

U.S. Cl. D34—5 HP



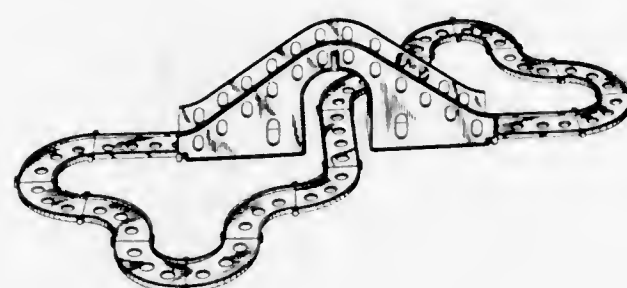
226,570  
**GAME BOARD**  
 Roy M. Neece, Fort Worth, Tex., assignor to  
 Tempo-Toy, Fort Worth, Tex.  
 Filed Nov. 5, 1971, Ser. No. 196,261  
 Term of patent 7 years  
 Int. Cl. D21—01

U.S. Cl. D34—5 SS



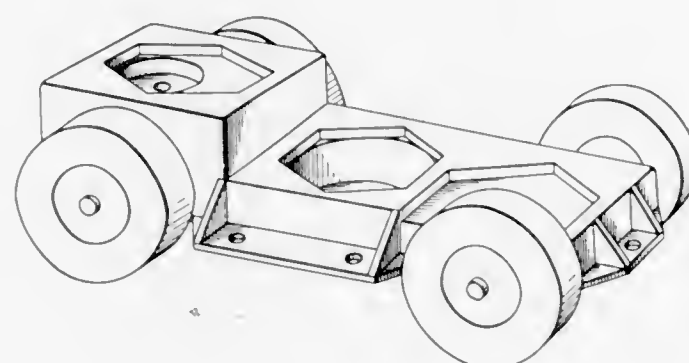
226,571  
**TOY TRACKWAY**  
 Norman Spiegel, New York, N.Y., assignor to  
 Nasta Industries, Inc.  
 Filed Dec. 14, 1970, Ser. No. 26,495  
 Term of patent 14 years  
 Int. Cl. D21—01

U.S. Cl. D34—15 MM



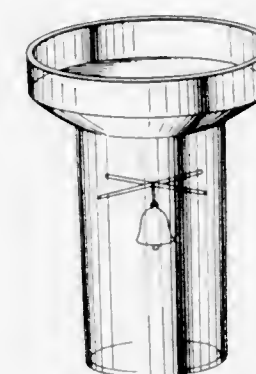
226,572  
**VEHICLE TOY**  
 David E. Munn, Framingham, Thomas M. Mello, West  
 Roxbury, and Robert Maddestra, Hyde Park, Mass.,  
 assignors to Damon Corporation, Needham, Mass.  
 Filed Mar. 29, 1971, Ser. No. 129,324  
 Term of patent 14 years  
 Int. Cl. D21—01

U.S. Cl. D34—15 AJ



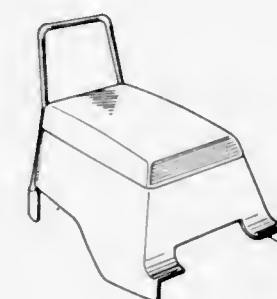
226,573  
**BEVERAGE GLASS**  
 Donald E. Casad, General Delivery,  
 Auberry, Calif. 93602  
 Filed Dec. 30, 1971, Ser. No. 214,526  
 Term of patent 14 years  
 Int. Cl. D7—01

U.S. Cl. D36—8 B



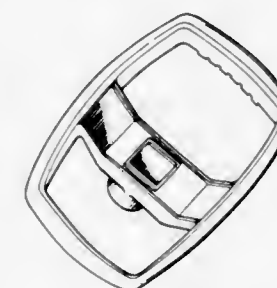
226,574  
**RIDING MOWER BODY**  
 Mario F. Fernandez and Robert L. Rydeen, St. Paul,  
 Minn., assignors to Toro Manufacturing Corporation,  
 Minneapolis, Minn.  
 Filed Aug. 30, 1971, Ser. No. 176,436  
 Term of patent 14 years  
 Int. Cl. D15—03

U.S. Cl. D40—1 R



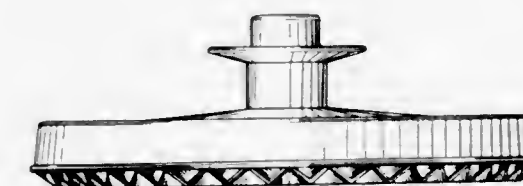
226,575  
**STEERING WHEEL FOR RIDING MOWERS**  
 Mario F. Fernandez and Robert L. Rydeen, St. Paul,  
 Minn., assignors to Toro Manufacturing Corporation,  
 Minneapolis, Minn.  
 Filed Aug. 30, 1971, Ser. No. 176,434  
 Term of patent 14 years  
 Int. Cl. D12—16

U.S. Cl. D40—1 A



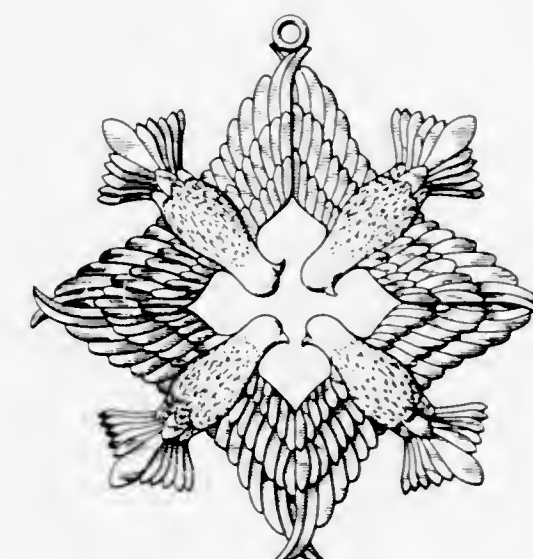
226,576  
**CONTAINER CLOSURE OR THE LIKE**  
 James B. Swett, Barrington, and Jack V. Croyle, Woon-  
 socket, R.I., assignors to Dart Industries Inc., Los  
 Angeles, Calif.  
 Filed Mar. 9, 1971, Ser. No. 122,641  
 Term of patent 14 years  
 Int. Cl. D7—02

U.S. Cl. D44—1 B



226,577  
**PENDANT OR THE LIKE**  
 Charlotte Linnea Schwarz, Bridgeport, Conn., assignor to  
 Wallace Silversmiths, Inc.  
 Filed Feb. 9, 1972, Ser. No. 225,018  
 Term of patent 14 years  
 Int. Cl. D11—01

U.S. Cl. D45—17





226,578

**COMBINED LAMP SHADE AND CHAIN THEREFOR**

Emmett L. O'Neill, 2515 Chelsea Drive, Oakland, Calif. 94611, and Emmett R. Anderson, 12510 Jolene Court, Saratoga, Calif.

Filed Apr. 28, 1971, Ser. No. 138,407

Term of patent 14 years

Int. Cl. D26—05

U.S. Cl. D48—16



226,579

**NECKLACE**

Victor Manuel, 491 NW. 44th Ave., Fort Lauderdale, Fla. 33313

Filed Aug. 10, 1971, Ser. No. 170,675

Term of patent 14 years

Int. Cl. D11—01

U.S. Cl. D45—16 A



226,580

**POCKET LIGHTER**

Peter Weissmann, Schnaittach, Germany, assignor to Consul Gesellschaft mit beschränkter Haftung, Nürnberg, Germany

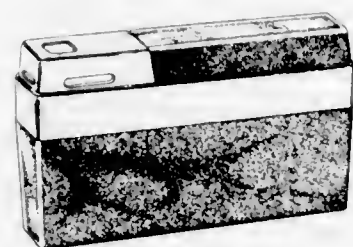
Filed Aug. 25, 1971, Ser. No. 175,039

Claims priority, application Germany Mar. 31, 1971

Term of patent 14 years

Int. Cl. D27—05

U.S. Cl. D48—27 R



226,581

**CIGARETTE LIGHTER**

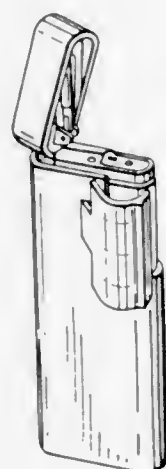
Kenjiro Goto, Tokyo, Japan, assignor to Mansei Kogyo Kabushiki Kaisha, Kawaguchi-shi, Saitama, Japan

Filed Dec. 27, 1971, Ser. No. 212,851

Term of patent 14 years

Int. Cl. D27—05

U.S. Cl. D48—27



226,582

**COMBINED LANTERN AND INSECT KILLER AND POST THEREFOR**

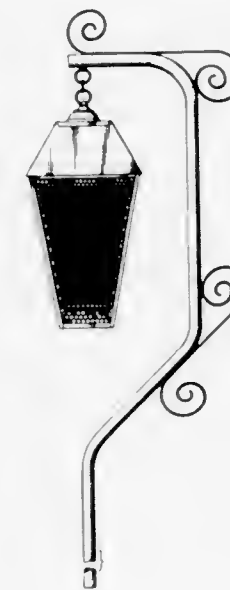
Robert E. Iannini, Milford, N.H., assignor to Rid-O-Ray Inc., Milford, N.H.

Filed May 17, 1971, Ser. No. 144,397

Term of patent 14 years

Int. Cl. D26—03; D22—06

U.S. Cl. D48—31



226,584

**COMBINED ASHTRAY AND CIGARETTE LIGHTER OR SIMILAR ARTICLE**

Samuel J. Koch, % Korex Industries, 821 Malcolm Road, Burlingame, Calif.

Filed Sept. 17, 1971, Ser. No. 181,654

Term of patent 14 years

Int. Cl. D27—03

U.S. Cl. D85—2 L



226,585

**HOT COMB**

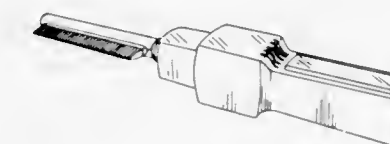
William J. Rakocy, Clifton, N.J., assignor to North American Phillips Corporation, New York, N.Y.

Filed Jan. 14, 1972, Ser. No. 218,056

Term of patent 14 years

Int. Cl. D28—03

U.S. Cl. D86—8



226,583

**HAND PIECE FOR A COMBINED SKIN STIMULATING AND CLEANING DEVICE**

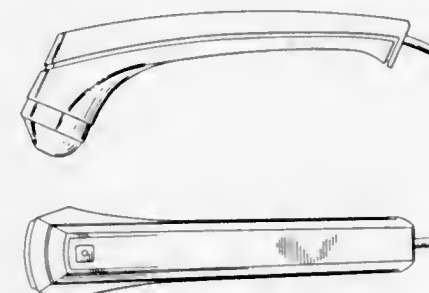
Medard W. Welch, 1111 Sheridan Road, Winnetka, Ill. 60093

Filed Jan. 20, 1971, Ser. No. 108,253

Term of patent 14 years

Int. Cl. D24—05, 99

U.S. Cl. D83—1



226,586

**HEATER HOUSING FOR ELECTRIC HAIR CURLERS**

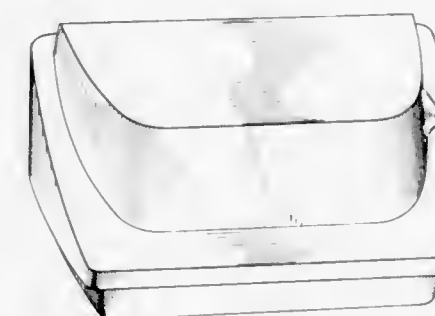
Clifford E. Grube, Niles, Ill., assignor to Associated Mills, Incorporated

Filed Dec. 28, 1970, Ser. No. 26,667

Term of patent 14 years

Int. Cl. D28—03

U.S. Cl. D86—10 E





226,587

**HAIR CURLER**

Erik Keldmann, Jerslev, Denmark, assignor to Bristol-Myers Company, New York, N.Y.

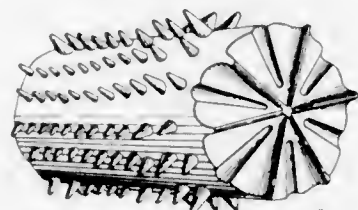
Filed Feb. 10, 1971, Ser. No. 114,410

Claims priority, application Denmark Aug. 17, 1970

Term of patent 14 years

Int. Cl. D28—03

U.S. Cl. D86—10 E



226,590

**SHAVER**

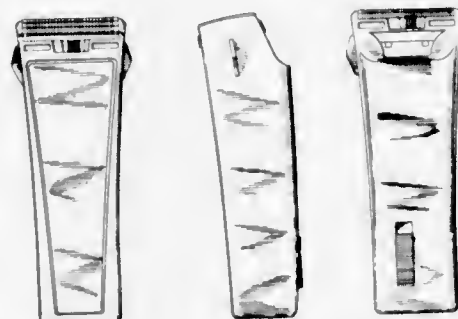
Hermann R. Schaefer, Bridgeport, Conn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed July 1, 1971, Ser. No. 26,567

Term of patent 14 years

Int. Cl. D28—03

U.S. Cl. D95—3 A



226,591

**GREASE APPLICATOR**

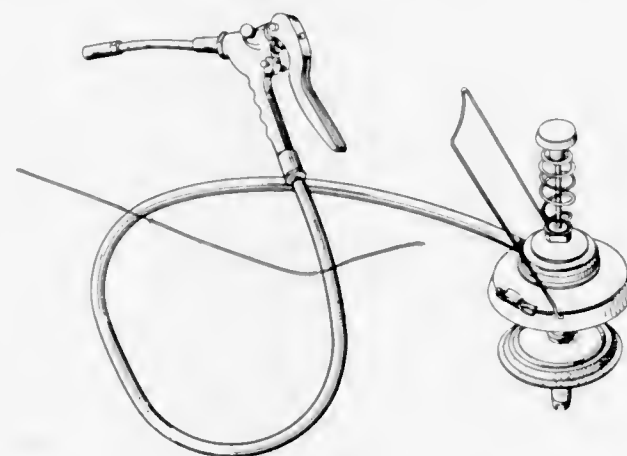
Eric Le Cheminant, 47-49 Henderson St., Turrella, New South Wales, Australia

Filed Mar. 15, 1971, Ser. No. 124,635

Term of patent 7 years

Int. Cl. D8—05

U.S. Cl. D52—2 A



226,588

**CASE FOR ELECTRIC SKIN HYGIENE BRUSH**

John L. Benty, Scotch Plains, N.J., and Dominic Defano, Palatine, Ill., assignors to Clairol Incorporated, New York, N.Y.

Filed May 27, 1971, Ser. No. 147,723

Term of patent 7 years

Int. Cl. D28—99

U.S. Cl. D87—10



226,589

**AUXILIARY MOTORCYCLE SEAT**

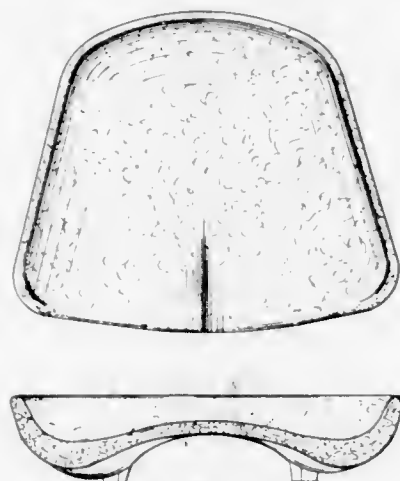
Paul W. Svehla, 3985 La Crescenta Road, El Sobrante, Calif. 94803, and Samuel R. McQuisten, 933 Oxford St., Berkeley, Calif. 94707

Filed July 15, 1971, Ser. No. 163,130

Term of patent 14 years

Int. Cl. D12—11

U.S. Cl. D90—16



226,592

**ADHESIVE LABEL DISPENSER**

William L. Noack, Whittier, Calif., assignor to Avery Products Corporation, San Marino, Calif.

Filed Apr. 29, 1971, Ser. No. 138,855

Term of patent 14 years

Int. Cl. D20—99

U.S. Cl. D52—2 C



226,593

**PAIR OF SPECTACLES**

Anthony Shindler, Brookline, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Sept. 14, 1970, Ser. No. 24,976

Term of patent 14 years

Int. Cl. D16—06

U.S. Cl. D57—1 F



226,594

**RAILROAD SWITCH REFLECTORIZED SEMAPHORE**

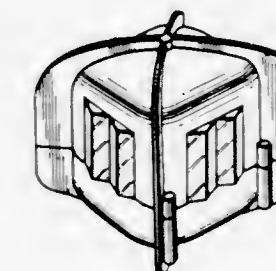
William A. Teasel, 251 Strathmoor, and Wallace A. Stanley, 24665 Waldon Road E., both of Birmingham, Mich.

Filed Mar. 5, 1971, Ser. No. 121,610

Term of patent 14 years

Int. Cl. D29—99

U.S. Cl. D72—1 G





# LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 27TH DAY OF MARCH, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Aaland, Harold H.; and Ma, James L. Sulfur trioxide vapor for duct conditioning. 3,722,178, Cl. 55-4.000.
- AB Hagglund & Soner: *See—*
- Sjostrom, John Olov Hilding; and Sundkvist, Lars Erik, 3,722,720.
- Abe, Hiroyuki: *See—*
- Kosugi, Takashi; Abe, Hiroyuki; and Sudo, Hisao, 3,723,822.
- Abex Corporation: *See—*
- Coakley, James L., 3,723,025.
- ACF Industries, Incorporated: *See—*
- Holt, Jan D.; and Smith, Garth R., 3,722,429.
- Ackermann, Hans; and Creutzburg, Gerhard, to Ciba-Geigy Corporation. Brighteners of the bis-s-triazinylaminostilbene series. 3,723,425, Cl. 260-240.00b.
- Ackilli, Joseph Anthony: *See—*
- Cahn, Arno; Ackilli, Joseph Anthony; and Carroll, Frank Emery, 3,723,356.
- Aeme-Cleveland Corporation: *See—*
- Schubert, Karl P., 3,722,048.
- Schubert, Karl P., 3,722,334.
- Acraloc Corporation: *See—*
- Worline, Paul W., 3,722,558.
- Acushnet Company: *See—*
- Cochran, Alastair J.; Jepson, John W.; Woolley, Edward R.; and Lynch, Francis Des., 3,722,887.
- Adachi, Takeshi, to Nippon Gakki Seizo Kabushiki Kaisha. Bass tone producing device for an electronic musical instrument. 3,723,633, Cl. 84-1.010.
- Adams, Charles De Witt: *See—*
- Schlatter, Rudolph; and Adams, Charles De Witt, 3,723,505.
- Adams, David K.; and Ho, Raymond Y.-C., to Stanford Research Institute. Multiple resonator active filter. 3,723,773, Cl. 307-295.000.
- Adams, Frank H.: *See—*
- Pharis, Joe M.; and Adams, Frank H., 3,723,302.
- Adams, Frank S., to Procter & Gamble Company. The Chloromethylation process. 3,723,548, Cl. 260-651.0ha.
- Adams, Harold Elwood: *See—*
- Kern, William John; Bouton, Thomas Chester; and Adams, Harold Elwood, 3,723,575.
- Adams, Jack S.: *See—*
- Blakey, Alexander G.; Adams, Jack S.; and Swarts, James J., 3,722,360.
- Blakey, Alexander G.; Adams, Jack S.; and Swarts, James J., 3,723,927.
- Blakey, Alexander G.; Adams, Jack S.; and Swarts, James J., 3,723,928.
- Addmaster Corporation: *See—*
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- Alexander, Robert H.; and Ballard, Paul E., to GTE Sylvania Incorporated. Apparatus and method for producing four piece lead wire assemblies. 3,722,046, Cl. 29-25.190.
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- Allen, Gordon Y. R. Alarm circuit for monitoring the primary winding of a neutralizing transformer and its grounding connection. 3,723,813, Cl. 317-18.00b.
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Baiborodov, Pavel Petrovich; Uvarova, Alexandra Vasilievna; Gerasimov, Ivan Konstantinovich; Ezhkov, Alexandr Borisovich; and Kolbin, Nikolai Arkadievich, to Sredneaziatzky Nauchno-Issledovatel'skiy i Proektny Institut Tsvetnoi Metallurgii. Method of producing high purity antimony from antimony trioxide obtained by burning refined metal. 3,723,267, Cl. 204-105.00r.

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Barone, Bruno J.; and Croce, Louis J., to Petro-Tex Chemical Corporation. Promotion of the oxidation of mononuclear aromatic compounds. 3,723,518, Cl. 260-524.00r.  
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- phosphor and color television display tubes containing said phosphor. 3,723,787, Cl. 313-92.0ph.
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- Boback, Andrew Henry; and Scovil, Henry Evelyn Derrick, to Bell Telephone Laboratories, Incorporated. Single wall domain arrangement including fine-grained, field access pattern. 3,723,716, Cl. 235-176.000.
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- Boehmig, Robert L. Method of building construction. 3,722,169, Cl. 52-745.000.
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- Carlson, Reuben C., to Zenith Radio Corporation. Multi-band television tuner arrangement. 3,723,882, Cl. 325-357.000.
- Carlstein, Joseph, to Vernitron Corporation. Telemetering system for displaying analog and digital data. 3,723,986, Cl. 340-177.00r.
- Carlton Machine Tool Company, The: *See—*  
Lehmkuhl, Robert A., 3,723,016.
- Carman, Richard Jan, to Cameron Iron Works, Inc., mesne. Acoustic control transmitter. 3,723,956, Cl. 340-5.00r.
- Carmichael, Keith Stewart; and Lester, Joseph Thomas, Jr., to Du Pont de Nemours, E. I., and Company. Noneverting bottom for thermoplastic bottles. 3,722,726, Cl. 215-1.00c.
- Carney, William V., to Porta Systems Corporation. Switching apparatus. 3,723,679, Cl. 200-50.00b.
- Carpenter, Eugene C., to Outboard Marine Corporation. Hydraulic power trim and power tilt system for a marine propulsion device. 3,722,455, Cl. 115-41.0ht.
- Carpenter, John L., to Container Corporation of America. Cushioned shipping folder. 3,722,668, Cl. 206-46.0fr.
- Carpenter, Robert E.; and Peterson, Curtis R., to Ashland Oil, Inc. High pressure continuous process for polyesters from dicarboxylic acid anhydrides and monocarboxylic acids. 3,723,390, Cl. 260-75.00m.
- Carroll, Frank Emery: *See—*  
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- Carson, Don B.; and Hennemuth, William R., to Universal Oil Products Company. Fluid contacting apparatus. 3,723,072, Cl. 23-288.00r.
- Carson, Don B.; and Hennemuth, William R., to Universal Oil Products Company. Fluid contacting method for fluid-solid contacting. 3,723,300, Cl. 208-146.000.
- Carter, Carl W., and Johnson, Lloyd E., to Caterpillar Tractor Company. Gear train for gas turbine engines. 3,722,213, Cl. 60-39.16r.
- Carter, Herbert S.: *See—*  
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- Carter, John R.: *See—*  
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- Cartwright, Cyril A.: *See—*  
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- Cary, Thomas Francis. Camper and cabinet construction therefor. 3,722,946, Cl. 296-23.0mc.
- Case, J. I., Company: *See—*  
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- Bushmeyer, Richard W.; and Miller, Charles D., 3,723,129.
- Engelmann, Roger F., 3,722,524.
- Casper, Lee A., to Iron Mountain, Inc. Heat sealing apparatus and method. 3,723,212, Cl. 156-69.000.
- Cass, Robert A.: *See—*  
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- Castrucci, Paul P.; Grochowski, Edward G.; Hess, Martin S.; and Zachos, Elias B., to International Business Machines Corporation. Epitaxial middle diffusion isolation technique for maximizing microcircuit component density. 3,723,200, Cl. 148-175.000.
- Caterpillar Tractor Company: *See—*  
Barnes, Dwaine R., 3,722,057.
- Bartholomew, Paul E., 3,723,021.
- Borer, Herbert W.; and Shaft, Arthur R., 3,722,864.
- Butterfield, Max E.; Hoerr, Richard H.; McLees, Alan L.; and Proksch, Frederick D., 3,722,618.
- Carter, Carl W.; and Johnson, Lloyd E., 3,722,213.

- Knell, Harvey A.; Olthoff, James A.; Scoggin, Barry A.; and Smith, Roger M., 3,722,114.
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- Olson, George E., 3,723,022.
- Catropia, Frank A.: *See—*  
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- C.A.V. Limited: *See—*  
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- Cavalier Corporation: *See—*  
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- Cavanaugh, R. J.: *See—*  
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- Cavil, David T., to Outboard Marine Corporation. Bi-directional voltage control for permanent magnet alternator. 3,723,844, Cl. 320-59.000.
- CCI Aerospace Corporation: *See—*  
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- Celanese Corporation: *See—*  
Bohrer, Thomas Carl; Ecker, George Franklin; and Chen, David Hsiao Tsung, 3,723,592.
- Boom, Abraham A., 3,723,289.
- Druin, Melvin L.; Ferment, George R.; and Rao, Velliyur N. P., 3,723,150.
- Katnin, Ilmar L., 3,723,607.
- Rakus, Julius P.; Penoyer, John A.; and Kowalski, Michael, 3,723,241.
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- Cetrulo, Frank A., Jr., to National Factors, Inc. Driving lug structure for endless track. 3,722,963, Cl. 305-38.000.
- Chaddha, Ashwani K. Data communication system. 3,723,972, Cl. 340-172.500.
- Challandes, Claude, to Centre Electronique Horloger S.A. Universal timepiece. 3,722,207, Cl. 58-42.500.
- Chandler, Ronald W., and Hammond, Jack B., to Tetradene Corporation. Volumetric flow rate measurement of a flowing stream. 3,722,276, Cl. 73-194.00e.
- Chandre, Arthur J.; and Moericke, Dieter, to Rex Chainbelt Inc. Rail anchor applicator. 3,722,422, Cl. 104-17.00a.
- Chang, Henry M., to First Dynamics, Inc. Combination food container and implement for extracting the contents. 3,722,779, Cl. 229-1.50c.
- Chang, Milton M. T.: *See—*  
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- Chapman Industries, Inc.: *See—*  
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- Chapp, John P., to Monsanto Company. Herbicidal compositions and methods. 3,723,087, Cl. 71-92.000.
- Chapuis, Marcel, to Stanadyne, Inc. Fuel injector. 3,722,801, Cl. 239-533.000.
- Charewicz, Francis J., to General Electric Company. Low voltage secondary lightning arrester sparkgap assembly. 3,723,819, Cl. 317-61.000.
- Charles, Daniel R., to Thomson-CSF. Flat cathode-ray tube for direct viewing spot display. 3,723,786, Cl. 313-70.00r.
- Charles Supper Company: *See—*  
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- Charnley, John, to Thackray, Chas., F., Limited. Acetabular sockets. 3,722,002, Cl. 3-1.000.
- Chase, Myron C., to Weatherby/Nasco, Inc. Injection training aid. 3,722,108, Cl. 35-17.000.
- Chatterjee, Pronoy K.; and Kwok, Michael C., to Personal Products Company. Water-insoluble fluid-absorptive and retentive materials and methods of making the same. 3,723,413, Cl. 260-232.000.
- Chaupt, Jean, to Compagnie Generale d'Electricite. Semiconductor system redundant control arrangement. 3,723,847, Cl. 321-27.00r.
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- Chen, Tien Chi; and Ho, Irving T., to International Business Machines Corporation. Fast modulo threshold operator binary adder for multi-number additions. 3,723,715, Cl. 235-175.000.
- Chen, Wei L.; and Carter, John R., to Singer Company, The. Ground range computer. 3,723,719, Cl. 235-190.000.
- Cheng, Wai Ming; Davies, James Francis; and Stutard, Leonard Wallace, to Lever Brothers Company. Detergent compositions. 3,723,326, Cl. 252-107.000.
- Cherednichenko, Genrikh Moiseevich: *See—*  
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- De Vries, Louis, to Ford Motor Company. Indicator mechanism. 3,722,458, Cl. 116-129.000.
- Chiang, James A., to Ford Motor Company. Indicator mechanism. 3,722,458, Cl. 116-129.000.
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- Chidzhavadze, Grigory Yasonovich: *See—*  
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- Chiesa, Luigi, to Morenar S.A. Automatic coin or token operated apparatus for taking and developing photographs. 3,722,384, Cl. 95-14.000.
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- Chiola, Vincent; Smith, James S.; and Vanderpool, Clarence D. Electric incandescent lamps having refractory metal phosphate and phosphide coatings for refractory metal leads. 3,723,792, Cl. 313-318.000.
- Chitester, John Alvin; and Jonas, Frank D., to Oxford Pendaflex Corporation. Extensible drawer support. 3,722,964, Cl. 308-3.800.
- Chivers, Thomas E., to General Mills, Inc. Process for making candy floss. 3,723,134, Cl. 99-134.000.
- Chopin, Jean; and Eloy, Jacques, to Automobiles Peugeot. Post-combustion reactor for exhaust gases of an internal combustion engine. 3,722,221, Cl. 60-282.000.
- Chow, Sui-Wu; and Matzner, Markus, to Union Carbide Corporation. Alkali metal mercaptides as urethane-isocyanurate catalysts. 3,723,367, Cl. 260-2.5ab.
- Chupp, John P., to Monsanto Company. Preparation of 1,4-substituted-imidazolin-2-ones. 3,723,455, Cl. 260-309.600.
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- Churn, Michael C., to Mobil Oil Corporation. Lubricant useful in metal working. 3,723,313, Cl. 252-33.300.
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- Langauer, Theodor, 3,723,614.
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- Dexter, Martin; Spivack, John D.; and Steinberg, David Herbert, 3,723,503.
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- Zergenyi, Janos; and Habicht, Ernst, 3,723,619.
- Cichy, Paul; and Anderson, Robert O., to Carborundum Company. The. Skull melting furnace with removable bottom and process for furnace operation. 3,723,631, Cl. 13-9.000.
- Cincinnati Milacron, Inc.: *See—*  
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- Clark, John B. Direct reading aberration-free compensator with adjustable sensitivity for use in white light interferometry. 3,723,009, Cl. 3561.07.000.
- Clark, John Patrick: *See—*  
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- Clark, Raymond; and Knutson, Dale A., to Applied Power Industries, Inc. Steering system. 3,722,367, Cl. 91-367.000.
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- Clary, John G.; and Wirtz, Larry K., to Addmaster Corporation. Keyboard switch assembly with wire conductor matrix contact array. 3,723,673, Cl. 200-1.00r.
- Clay, Howard W., to Sterling Radiator Company, Inc. Automatic assembling and welding machine. 3,723,702, Cl. 219-124.000.
- Clay, John P.; and Lintvedt, Vernon L., to General Dynamics Corporation. Insulation material. 3,723,231, Cl. 161-53.000.
- Clayson N.V.: *See—*  
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- Coakley, James L., to Abex Corporation. Variable bypass for fluid power transfer systems. 3,723,025, Cl. 417-299.000.
- Coburn, Ronald L.; and Roth, Oyvind, to International Business Machines Corporation. Digital tachometer with symmetrical output. 3,723,748, Cl. 250-233.000.
- Cochran, Alastair J.; Jepson, John W.; Woolley, Edward R.; and Lynch, Francis Des., to Acushnet Company. Correlated set of clubs with indicator line. 3,722,887, Cl. 273-77.00a.
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- Colchester, John Edward; and Blundell, Thomas, to Imperial Chemical Industries Limited. Manufacture of bipyridylum salts. 3,723,444, Cl. 260-295.0am.
- Cole, Colin Francis; and Powell, Stanley, to British Titan Limited. Treatment of titanium dioxides. 3,723,149, Cl. 106-300.000.
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- Collins, Howard William, to International Rectifier Corporation. Solid state relay circuit with optical isolation and zero-cross firing. 3,723,769, Cl. 307-252.00a.
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- Collom, Cletus J., to Weltronc Company. Tens and units timer for a welding system. 3,723,772, Cl. 307-293.000.
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- Conklin, Thomas H.: *See—*  
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- Conner, Elmer W. Anti-jackknifing device for tractor-trailer trucks. 3,722,918, Cl. 280-432.000.
- Conner, Rex C.; and Ferstandig, Louis L., to Halocarbon Products Corporation. Prime mover system utilizing trifluoroethanol as working fluid. 3,722,211, Cl. 60-36.000.
- Connolly, Edward A., to Fraser Sweatman, Inc. Protective cap. 3,722,533, Cl. 137-382.000.
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- Conta, Renato; and Mariani, Giuseppe, to Olivetti, Ing. C., & C., S.p.A. Machine for checking and correcting elements of hybrid integrated circuits by memorizing data. 3,723,694, Cl. 219-69.00v.
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- Cooke, David A., to United States of America, Navy. Torpedo homing system. 3,722,446, Cl. 114-23.000.
- Coombs, Robert V., to Sandoz-Wander, Inc. 11 $\beta$ -methyl-17 $\alpha$ -propadienyl steroids. 3,723,483, Cl. 260-397.450.
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- Cooper, Jerry W., to Dayco Corporation. Drive sprocket. 3,722,962, Cl. 305-35.0eb.
- Cooper, John A.: *See—*  
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- Copping, Christopher; and Uri, Norbert, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defence in her Britannic Majesty's Government of The, mesne. Reduction of oxidative degradation and the catalysis of peroxide decomposition. 3,723,384, Cl. 260-45.75n.
- Corbett, Thomas J. Grass-catching and bagging apparatus for rotary lawn-mowers. 3,722,192, Cl. 56-202.000.
- Cordes, Charles P. Metal drum stick. 3,722,350, Cl. 84-422.000.
- Cordner, Michael A.; and Grimm, Duane H., to Sundstrand Corporation. Hydromechanical transmission. 3,722,324, Cl. 74-687.000.
- Corey, Albert E.; Donermeyer, Donald D.; Fantl, Joel; and Williams, Charles R., to Monsanto Company. Poly(vinyl acetate-dialkyl maleate acrylic acid) textile sizes. 3,723,381, Cl. 260-33.8ua.
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- Wise, Warren M., 3,723,281.
- Cornsweet, Tom N., to Stanford Research Institute. Method and apparatus for discriminating against masking reflections. 3,723,648, Cl. 178-6.800.
- Correia, Yves, to Pechiney-Saint-Gobain. Stabilization of saturated halogenated aliphatic hydrocarbons. 3,723,331, Cl. 252-165.000.
- Corsmeier, Robert J., to General Electric Company. Fastening device and cooperating tool means. 3,722,058, Cl. 29-200.00d.
- Costa, Peter F.; and Coughlan, Edward H., to Polaroid Corporation. Folding camera. 3,722,389, Cl. 95-39.000.
- Cotton, Truman W., to Mabry, Ray W. Contact lens edge finishing machine. 3,722,143, Cl. 51-5.000.
- Cotton, Ronald K.; and Rae, Barney O., to Cutler-Hammer, Inc. Motor control system. 3,723,841, Cl. 318-574.000.
- Couche, Raymond Arthur. Process for extracting oil from palm fruits and olives. 3,723,487, Cl. 260-412.400.
- Coughlan, Edward H.: *See—*  
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- Coulson, Dale Robert, to Du Pont de Nemours, E. I., and Company. Bis (2,3-dimethylenebutyl)-cyanomethane compounds and their preparation. 3,723,500, Cl. 260-465.80r.
- Courchesne, Germain. Combined intake and exhaust ventilator. 3,723,395, Cl. 98-33.000.
- Cowland, Frederick Claud, to Plessey Handel und Investments A.G. Percutaneous myo-electrode system. 3,722,005, Cl. 3-1.100.
- CPC International Inc.: *See—*  
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- Craig, Alan D.; and Lukach, Carl A., to Hercules Incorporated. Propellant charge for caseless ammunition. 3,723,203, Cl. 149-19.000.
- Craig, Dwin Richardson, to Balac, Joseph F. and Tolosa, Felix P. Malleable exposure slit for a continuous strip photographic printer. 3,722,980, Cl. 355-83.000.
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- Cramer, Howard A., to Lowrance Electronics Mfg., Corporation. Trolling motor with steering means. 3,723,839, Cl. 318-15.000.
- Cramer, Roy A., Jr. Method and apparatus for storing and dispensing effervescent beverages. 3,722,756, Cl. 222-212.000.
- Crane Packing Company: *See—*  
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- Crawford Fitting Company: *See—*  
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- Cressman, Robert C.: *See—*  
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- Crick, Virlon, to United States of America, Air Force. Independent self adjusting vibration damper. 3,723,023, Cl. 416-219.000.
- Crissman, Roy G.: *See—*  
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- Croce, Louis J.: *See—*  
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- Cromie, Harry W., to Baxter Laboratories, Inc. Disc for heart valves. 3,722,004, Cl. 3-1.000.
- Crompton & Knowles Corporation: *See—*  
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- Cronin, Timothy H.; and Hess, Hans-Jurgen E., to Pfizer Inc. Piperazine isoquinoline bronchodilators. 3,723,434, Cl. 260-268.00c.
- Crooke, Robert Curtis; and Hilsabeck, Carl E., to Global Marine Inc. Load indicator for mooring line. 3,722,268, Cl. 73-143.000.
- Crooks, James W., to Allis-Chalmers Corporation. Power shift planetary transmission. 3,722,300, Cl. 74-15.630.
- Crooks, James W., to Allis-Chalmers Corporation. Power shift planetary and countershaft transmission. 3,722,301, Cl. 74-15.630.
- Croon, Alexander. Travel case. 3,722,564, Cl. 150-39.000.
- Crosslen, Louis John, to Mayer, Frank, and Associates, Inc. Theft-proof merchandise display having a hanging-type holder. 3,722,699, Cl. 211-169.000.
- Crouse, William G.; and Jones, John E., to International Business Machines Corporation. Method and device for reading and decoding a high density self-clocking bar code. 3,723,710, Cl. 235-61.11e.
- Crovetti, Aldo J.: *See—*  
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- Crowder, Wylly Kenneth. Pneumatic systems transit. 3,722,427, Cl. 104-155.000.
- Cullen, John S. Desiccant capsule and package embodying the same. 3,722,188, Cl. 55-384.000.
- Cummings, Gilbert A., to Peters & Co., Inc. Shelf. 3,722,700, Cl. 211-153.000.
- Cumpu-Sort Systems, Inc.: *See—*  
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- Cunha, Harold; Dickman, William M.; and Robbins, Daniel H., to Itek Corporation. Copying apparatus having cassette and cutting means. 3,722,999, Cl. 355-45.000.
- Cunningham, James E.: *See—*  
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- Cuorato, John; and Stull, Charles V., to I-T-E Imperial Corporation. Telescoping outdoor switchboard and aisle sections. 3,723,824, Cl. 317-120.000.
- Cupler, John A., II. Method for conducting machining and assembly operations. 3,722,078, Cl. 29-557.000.
- Curran, John R., to Foxboro Company, The. Cage valve assembly. 3,722,860, Cl. 251-332.000.
- Currey, John E.; and Ruthel, Walter W., to Hooker Chemical Corporation. Catholyte recirculation in diaphragm chlor-alkali cells. 3,723,266, Cl. 204-98.000.
- Curtis, Lawrence A.; and Bonsky, Elmer C., to T.A.D. Avanti Inc. Telephone answering system. 3,723,656, Cl. 179-2.00a.
- Curtiss-Wright Corporation: *See—*  
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- Cutler-Hammer, Inc.: *See—*  
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- Cyba, Henryk A., to Universal Oil Products Company. Novel flame retardant compositions of matter. 3,723,383, Cl. 260-41.00b.
- Cycle Equipment Company: *See—*  
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- Daga, Giorgio Abbate; Cerrocchi, Lino; and Fracassi, Pietro, to Montecatini Edison S.p.A. and Guardigli S.p.A. System for protecting electrolytic cells against short circuits. 3,723,285, Cl. 204-228.000.
- Dahlgren, Jens Karl Adolf, to Stenberg-Flygt AB. Pumping device with self centering spherical seating surfaces. 3,722,757, Cl. 222-385.000.
- Dahlinger, Rodney J., to Hughes Aircraft Company. High efficiency current feedback control system. 3,723,756, Cl. 307-106.000.
- Dahlquist, John A.; and Brodie, Ivor, to Photophysics, Inc. Liquid toning apparatus. 3,722,453, Cl. 118-246.000.
- Dahlquist, John A., to Photophysics, Inc. Data terminal system having improved means for producing and delivering flexible record sheets. 3,722,995, Cl. 355-13.000.
- Dahms, Harald. Photoelectric endpoint detection. 3,723,062, Cl. 23-230.00r.
- Dai Nippon Togyo Co., Ltd.: *See—*  
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- Dambrine, Francis; and Gross, Gilles, to Fives Lille-Cail. Calcining phosphate minerals. 3,723,597, Cl. 263-32.00r.
- Damm, Charles C.: *See—*  
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- Damon, Melvin H., to Electronic Navigation Industries Incorporated. Acoustic navigation system. 3,723,957, Cl. 340-5.00r.
- Dan River Inc.: *See—*  
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- Dand, Harvey Stewart, to McDonnell Douglas Corporation. Store release mechanisms. 3,722,944, Cl. 294-83.000.
- Daniels, Charles R.; and Kinzer, Kenneth D., to Ferromagnetics, Inc. High voltage power supply for copying apparatus or the like. 3,723,850, Cl. 321-47.000.
- Dano Modules, Inc.: *See—*  
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- Dapprich, William R. Carburetor utilizing surface tension and capillary action. 3,722,837, Cl. 261-34.00a.
- Dargatz, Theodore A.; and Hirschberg, Erwin E., to Eclipse Fuel Engineering Co. Puffer-proof valve. 3,722,853, Cl. 251-110.000.
- Darko, Laszlo L., to Ciba-Geigy Corporation. 2-Hydroxy and 2-carbamoyloxy derivatives of 1,1,1-trichloro-3-carbamoyloxyalkanes in a composition and method for effecting muscle relaxation. 3,723,624, Cl. 424-300.000.
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- Davidson, Arthur R.; Haubner, John E.; and White, George A., to Lamb-Weston, Inc. Apparatus for processing edible foodstuffs. 3,722,401, Cl. 99-407.000.
- Davidson, William E., to General Electric Company. Steam nozzle iron. 3,722,117, Cl. 38-77.830.



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- Davies, James Francis. *See—*  
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- Davis, Earl K.; and Hansen, Kent W., to Motorola, Inc. Glasses for encapsulating semiconductor devices. 3,723,835, Cl. 317-234.00r.
- Davis, Pauls; and Vogt, Herwart C., to BASF Wyandotte Corporation. Chloronitrosylated polymers and a process for the preparation thereof. 3,723,404, Cl. 260-94.9gb.
- Davis, Robert H., to Mobil Oil Corporation. Lubricant for metal working. 3,723,314, Cl. 252-33.400.
- Davis, Wayne Edward, to Manville-Johns Corporation. Programmable irrigation computer. 3,723,753, Cl. 307-41.000.
- Dawidowicz, Jan, to Warner-Lambert Company. Guard bar for safety razors. 3,722,090, Cl. 30-32.000.
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- Haley, John S.; and Cooper, Jerry W., 3,722,961.
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- De Priester, Donald Jack, Horney, David C.; and Mangels, Robert H., to Hon Industries Inc. Power driven material handling truck. 3,722,613, Cl. 180-52.000.
- De Simone, David N.; and Catroppa, Frank A., to United States of America, Navy. Dual visor headgear. 3,721,994, Cl. 2-6.000.
- De Viney, Terrence E., to Square D Company. Magnet controller. 3,723,825, Cl. 317-123.000.
- De Vries, Gerrit. *See—*  
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- Deeds, Douglas, and Rosengrant, Barry L., to Architectural Pottery. Fiberglass filing cabinet. 3,722,972, Cl. 312-305.000.
- Deegan, James J. *See—*  
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- Deering Milliken Research Corporation. *See—*  
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- Delcker, Raymond Whyte; Greason, William Wallace, III; Hayden, Paul Ross; and Weiner, David William, to Bell Telephone Laboratories, Incorporated. Multifunctional scanner-counter circuit. 3,723,661, Cl. 179-18.0fg.
- Delobelle, Emile Jean, to Pneumatiques Caoutchouc Manufacture et Plastiques Kleber Colombes. Radial-ply pneumatic tire. 3,722,567, Cl. 152-354.000.
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- Dennison, John J., to Arrow-Hart, Inc. Grounding clip electric receptacles. 3,723,942, Cl. 339-14.00r.
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- Densmore, Richard M. Segmented retaining ring assembly. 3,722,374, Cl. 92-128.000.
- Dent, Robert K. Method of swage joining a metallic tube to an insert. 3,722,076, Cl. 29-516.000.
- D'Ercole, Anthony C.; Ferris, James E.; and Schwardt, David N., to Eastman Kodak Company. Cartridge opening device. 3,722,055, Cl. 29-200.00d.
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- DeVries, Jaap. *See—*  
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- Dexter, Martin; Spivack, John D.; and Steinberg, David H., to Ciba-Geigy Corporation. Metal derivatives of 3,5-di-t-butyl-4-hydroxyphenylpropionic acid. 3,723,489, Cl. 260-429.700.
- Dexter, Martin; Spivack, John D.; and Steinberg, David Herbert, to Ciba-Geigy Corporation. 3,5-Dialkyl-4-hydroxyphenylalkanoic acid esters of 3-hydroxy-2,2-dimethylpropyl 3-hydroxy-2,2-dimethylpropionate. 3,723,503, Cl. 260-473.00s.
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- Dickman, John D.; and Siddall, John B., to Zeecon Corporation. Certain ethers and amines of 1,2,3-benzothiazole. 3,723,447, Cl. 260-304.000.
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- Dobinson, Frank, to Monsanto Company. Aromatic amide-hydrazide copolymer. 3,723,380, Cl. 260-32.6nt.
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- Donaldson, Darrell J.; and Daigle, Donald J., to United States of America, Agriculture. Process for stabilizing organophosphorus solutions and imparting rot and flame resistance to organic textile materials. 3,723,057, Cl. 8-116.00p.
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- Doyle, William Carter, Jr., to Gulf Research & Development Company. S-acyl derivatives of 3-mercapto-2-chloropropyl N, N-dialkylthiolecarbamates. 3,723,493, Cl. 260-455.00a.
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- Flickinger, Daniel N. Amplifier system. 3,723,896, Cl. 330-30.00r.
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- Flowers, Thad T.; and Stuart, William L., to Springs Mills, Inc. Magnetically positioned guide means. 3,722,772, Cl. 226-196,000.
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- Godfrey, Wesley L., to United States of America, Atomic Energy Commission. Method of reducing the release of mobile contaminants from granular solids, 3,723,338, Cl. 252-301.10w.
- Godley, Fred Darroll, to Modular Wall Systems, Inc. Building roof structure and method, 3,722,171, Cl. 52-745.000.
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- Goffe, William L., to Xerox Corporation. Electrophotographic process, 3,723,110, Cl. 96-1.0pc.
- Goffe, William L., to Xerox Corporation. Polychromatic electrosolographic imaging process, 3,723,113, Cl. 96-1.200.
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- Goldman, Jerome L., to Lash Systems, Inc. Stabilizing device for lighters on hatch covers of cargo vessels, 3,722,736, Cl. 220-97.00h.
- Goldman, Jerome Lee, to Lash Systems, Inc. Lighter-ship stabilizing system, 3,722,449, Cl. 114-75.
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- Gordon, Richard O., to Harnischfeger Corporation. Hoist-testing apparatus and control system therefor, 3,722,267, Cl. 73-133.00r.
- Gorog, Istvan, to RCA Corporation. Optically-scanned liquid-crystal projection display, 3,723,651, Cl. 178-7.50d.
- Goto, Eizo, to Tokyo Shibaura Electric Co., Ltd. Spark chamber apparatus for detecting radiations, 3,723,788, Cl. 313-93.000.
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- Grahl, Darwin R., to Parker-Hannifin Corporation. Coupling joint for plastic covered metal tube, 3,722,923, Cl. 285-55.000.
- Grahn, Arne Y., to Poly-Choke Company, Incorporated, The. Universal tool sharpening fixture, 3,722,148, Cl. 51-225.000.
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- Granberg, Mauritz; and Mueller, Hubert W., Jr., to Sperry Rand Corporation. Digital vector generator utilizing intensity control as a function of vector angle and velocity, 3,723,802, Cl. 315-18.000.
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- Greenberg, Charles B.; and Crissman, Roy G., to PPG Industries, Inc. Wet chemical method of producing transparent metal films, 3,723,155, Cl. 117-35.00s.

- Greenwood, Roger, to International Telephone and Telegraph Corporation. Pressure responsive switch with parallel contact blades bent apart by axial force applied by diaphragm, 3,723,684, Cl. 200-83.00r.
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- Heaney, Donald F.: See—  
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- Heckenlaible, Harry R. Hook unit for pickup trucks. 3,722,910, Cl. 280-179.00r.
- Hecker, Klaus J., to United States of America, Navy. Image correlator with image shift detection capability. 3,723,799, Cl. 315-11.000.
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- Heinrich, Frank-Armin; Prause, Dieter; and Sost, Rolf, to Bosch, Robert, Elektronik G.m.b.H. Facsimile transmission method and apparatus. 3,723,641, Cl. 178-6.000.
- Heinzl, William. Sewing thimble. 3,722,763, Cl. 223-101.000.
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- Herter, George L., to Herter's Inc. Polyethylene shotshell case. 3,722,412, Cl. 102-43.00p.
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- Housayama, Akira, to Tsunoda Jitensha Kabushiki Kaisha. Folding bicycle. 3,722,913, Cl. 280-287.000.
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- Massie, Stephen N.; and Illingworth, George E., to Universal Oil Products Company. Solvent extraction with a sultone solvent. 3,723,303, Cl. 208-325.000.
- Massie, Stephen N., to Universal Oil Products Company. Stabilization of organic substances. 3,723,316, Cl. 252-50.000.
- Massie, Stephen N., to Universal Oil Products Company. Oxidation of alkyl aromatic compounds. 3,723,517, Cl. 260-524.00r.
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- Masuyama, Takeshi; Matsuoka, Michio; and Nishi, Tsuyoshi, to Matsushita Electric Industrial Co., Ltd. Non-linear resistors of bulk type. 3,723,175, Cl. 117-201.000.
- Material Flow Inc.: See—  
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- Mathes, Alfred. Lubricating device for pneumatic tools. 3,722,625, Cl. 184-55.00a.
- Mathews Mining Company: See—  
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- Mathews, Ted C., to Mathews Mining Company. Ore separation. 3,722,676, Cl. 209-74.000.
- Matier, William L.; and Comer, William T., to Johnson, Mead, & Company. Sulfamoyl azide composition process for lowering blood pressure. 3,723,627, Cl. 424-321.000.
- Matlack, James R.: See—  
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- Matousek, Stephen: See—  
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- Matsumoto, Hiroshi, to Tokyo Kakin Kogyo Co., Ltd. Core wire material for welding of spheroidal graphite cast iron. 3,723,100, Cl. 75-123.00b.
- Matsuoka, James T.; and Cantarutti, Armindo, to Intercole Automation, Inc. Internal mixer. 3,723,039, Cl. 425-204.000.
- Matsuoka, Michio: See—  
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- Tatsuzawa, Yoshinobu, 3,723,653.
- Yasumatsuya, Noboru, 3,723,804.
- Matthews, Dean A., to Allis-Chalmers Corporation. Tilt cylinder anticavitation circuit. 3,722,723, Cl. 214-674.000.
- Matthews, Ralph W.; and Semeniak, Nicholas W., to Allis-Chalmers Corporation. Pressure biased power take-off valve. 3,722,542, Cl. 137-596.100.
- Matthews, Richard A., to Moore, Samuel, and Company. Composite tubing and method for making the same. 3,722,550, Cl. 138-137.000.
- Matthias, Guenther; Kasper, Werner; and Schulz, Gerhard, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of carboxylic esters. 3,723,509, Cl. 260-488.00r.
- Matzner, Markus: See—  
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- Maulini, Maurizio; Aiola, Franco; and Rueff, Herbert, to Azionaria Costruzioni Macchine Automatiche A.C.M.A. S.p.A. Rapid paper wrapping machine for soap-like articles. 3,722,175, Cl. 53-209.000.
- Maurer, Friedrich, Sohne: See—  
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- Maurer, James Irvin, to Oxy Metal Finishing Corporation, mesne. Scale reducing agent in zinc phosphatizing compositions. 3,723,334, Cl. 252-181.000.
- Maus, Fritz: See—  
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- Mazur, Joseph N.; Ratkay, Edward J.; and Hodgson, Robert F., to Commercial Shearing & Stamping Company. Sectional control valves. 3,722,540, Cl. 137-596.000.
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- Mc Cann, Farrell A., to Northrop Corporation. Charged particle beam scanning apparatus with video switching network. 3,723,800, Cl. 315-12.000.
- Mc Gann, Laurence: See—  
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- McCall, Donald F., to General Motors Corporation. Hinged welding shoe. 3,723,696, Cl. 219-73.000.
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- McClaskey, Boyd M., to Narco Scientific Industries, Inc. Multiple oscillator isolation circuit. 3,723,899, Cl. 331-49.000.
- McClure, John W., to Avco Corporation. Power absorber. 3,722,638, Cl. 188-280.000.
- McConville, Thomas P., to Westgate-California Foods, Inc. Process for killing salmonella in fish meal. 3,723,136, Cl. 99-158.000.
- McCorr Corporation: See—  
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- McCord, Robert S.; Nail, Donald H.; and Sheratte, Martin B., to McDonnell Douglas Corporation. Functional fluids of increased fire resistance. 3,723,319, Cl. 252-78.000.
- McCormick, Robert J.; and Fitzgerald, Charles E., to Dow Chemical Company, The. Inset coverall lid for containers. 3,722,731, Cl. 220-60.000.
- McCrickered, John T.; and Chang, Milton M. T., to Northrop Corporation. Holographic method and apparatus for checking the optical characteristics of transparent members. 3,723,010, Cl. 356-124.000.
- McDermott, Richard L.; and Mueller, Scott A., to Airco, Inc., mesne. Process gas forecooling system. 3,722,226, Cl. 62-13.000.
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- McIlwain, Irwin D.: See—  
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- McKee, Arthur G., & Company: See—  
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- McLean, Michael B., to Johnson Service Company. Frequency to voltage converter. 3,723,771, Cl. 307-261.000.
- McLean, Robert E.; and Farkas, Joseph J., to Rival Manufacturing Company. Can opener with removable plate which carries the cutting element thereon. 3,722,089, Cl. 30-4.00r.
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- McMaster, Harold A., to Guardian Industries Corporation. Apparatus for conveying glass sheets through adjacent bending and tempering stations. 3,723,085, Cl. 65-182.00a.
- McMillan, Robert D., Jr., to Airco, Inc. Rolling seal spirometer. 3,722,506, Cl. 128-2.080.
- McMinn, Robert E., to Black, Sivals & Bryson, Inc. Apparatus for separating oil and gas from a foaming crude oil stream. 3,722,184, Cl. 55-174.000.
- McNaney, Joseph T. Message character display apparatus. 3,723,961, Cl. 340-380.000.
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- McNulty, Patrick J.; Swithenbank, Colin; Viste, Kenneth L.; and Von Meyer, William C., to Rohm & Haas Company. 2-Halophenyl-4, 4-dialkyl-5-halo-5-dihalomethyl-oxazolines. 3,723,452, Cl. 260-307.00f.
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- McWhirt, Bobby Dwayne: See—  
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- Mead Corporation, The: See—  
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- Mee, John D.; and Heseltine, Donald W., to Eastman Kodak Company. Preparation of formylmethylene compounds and corresponding photographic dyestuffs. 3,723,419, Cl. 260-240.600.
- Meier, Eugen, to Aktiengesellschaft Brown, Boveri & Cie. Quench-gap assembly for lightning arresters. 3,723,821, Cl. 317-69.000.
- Meier, William A.; and Wojcik, Edward P., to Signode Corporation. Fastener stack. 3,722,669, Cl. 206-56.00k.
- Meier Windhorst, Christian August, to Artos Dr.-Ing. Meier-Windhorst Kommanditgesellschaft. Process and apparatus for continuously refining running lengths of materials. 3,722,233, Cl. 68-5.00d.
- Melard Manufacturing Corporation: See—  
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- Mendoza, Phyllis E. Checking and canceling device. 3,722,997, Cl. 355-64.000.
- Meraz, Daniel, Jr., to United States of America, Navy. Method of making a steel, graphite, phenolic asbestos laminate. 3,723,214, Cl. 156-87.000.
- Mercier, Jacques H. Pressure vessel. 3,722,548, Cl. 138-30.000.



- Merck & Co., Inc.: *See—*  
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- Meurer, Peter Lorenz; Dorn, Friedrich Wilhelm; and Harnisch, Heinz, to Knapsack Aktiengesellschaft. Production of phosphorus, 3,723,608, Cl. 423-322.000.
- Mevissen, Ernst A., to Dravo Corporation. Sealing device, 3,722,895, Cl. 277-34.300.
- Meyer, Charles F.; Wiecezorek, Robert A.; and Waters, Richard A., to Square D Company. Reed relay type permanent nor memory circuit, 3,723,767, Cl. 307-238.000.
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- Meyerson, Stanley. Watch bracelet end connection structure, 3,722,040, Cl. 24-265.00b.
- Michaels, Edwin B.; and Lee, John W. Preparation of hexachlorophene, 3,723,540, Cl. 260-619.00a.
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- Michaud, Jean-Francois; and Delapierre, Gilles, to Commissariat a l'Energie Atomique. Capacitive movement measuring device, 3,723,866, Cl. 324-61.00r.
- Michel, Eberhard, to Siemens Aktiengesellschaft. Steam generator for pressurized water nuclear reactor, 3,722,479, Cl. 122-34.000.
- Michels, Charles E., to Reliance Electric Company, mesne. Package wrapping apparatus with package actuated web severing tool, 3,722,177, Cl. 53-390.000.
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- Miczek, Gerhard, to Fisher-Klosterman, Inc. Gas scrubbing method and apparatus, 3,722,185, Cl. 55-238.000.
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- Mikami, Nobunao, to Kabushiki Kaisha Ricoh. Optical system of the real image type for finders having aspheric surfaces, 3,722,979, Cl. 350-54.000.
- Mikheev, Nikolai Borisovich; Gracheva, Maia Arkadievna; Bogomolova, Ljubov Grigorievna; and Levin, Valentin Ilich, to Institut Biofiziki. Stabilizer for radioactive colloidal solutions, 3,723,612, Cl. 424-1.000.
- Miles, Gilbert de Wayne, to Colgate-Palmolive Company. Dispensing attachment for pressurized containers, 3,722,753, Cl. 222-146.00a.
- Milke, George, to Hoesch Aktiengesellschaft. Method of and apparatus for locating leak areas of pipe lines, especially underground pipe lines, 3,722,261, Cl. 73-40.50r.
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- Miller, Edward J., to Martin-Marietta Corporation. Electrical power inverter with sinusoidal output, 3,723,848, Cl. 321-45.00r.
- Miller, George A., to Rohm & Haas Company. Ethylene-bis-dithiocarbamate bis-chlorostannanes, 3,723,488, Cl. 260-429.700.
- Miller, Harold L., to Vemco Products, Inc. Overhead door operator release, 3,722,141, Cl. 49-139.000.
- Miller, Homer R.; and Vallone, Giacinto, to General Electric Company. Thermal protective assembly, 3,723,932, Cl. 337-405.000.
- Miller, Larry. Camping furniture, 3,722,011, Cl. 5-118.000.
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- Miller, Ralph La Rue, to Bell Telephone Laboratories, Incorporated. Transmission of signals containing harmonically related signals to overcome effects of fading, 3,723,877, Cl. 325-30.000.
- Miller, Richard G., to PPG Industries, Inc. Transparent metal films and wet chemical method of producing the same, 3,723,158, Cl. 117-47.00a.
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- Miller, Robert E., Jr.; and Balchunas, Anthony J., to Miller, Robert E., & Co., Inc. Barbed T-nut, 3,722,565, Cl. 151-41.730.
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- Miyashita, Tsuneo, to Nippon Kokan Kabushiki Kaisha. Method of blowing such fluid as reducing gas into a furnace, 3,722,814, Cl. 239-1.000.
- Miyatsuka, Hajime, to Fuji Photo Film Co., Ltd. Electrophotographic photosensitive zinc oxide powder mixture, 3,723,115, Cl. 96-1.800.
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- Peill, Jurgen Eberhard; Gerritse, Alf; Osmera, Miroslav S.; and Andersen, Christian Karmark, to Nordisk Ventilator Co., Aktieselskab. System for the ventilation of buildings. 3,722,396, Cl. 98-33.000.
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- Skubic, Leroy F., to Paltier Corporation, The. Panel retainer for portable tiering rack. 3,722,928, Cl. 287-20.924.
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- Sloane, Howard J., to Beckman Instruments, Inc. Optical scattering filter. 3,722,977, Cl. 350-1.000.
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- Smekens, Jan C. Tire chain applicator. 3,722,330, Cl. 81-15.800.
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- Smith, Hugh B.: See—
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- Kaiser, Carl; and Zirkle, Charles L., 3,723,441.
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- Smith, Russell T. Control of refrigerant migration to compressor during shutdown. 3,722,228, Cl. 62-206.000.
- Smith, Tom E., to Jaybee Manufacturing Corporation. Self-latching hinge. 3,722,030, Cl. 16-142.000.
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- Societe Anonyme Gambin S.A.: See—
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- Societe Civile Auguil: See—
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Tassie, Douglas P.; and Clark, Burton P., to General Electric Company. Machine gun feeding means. 3,722,356, Cl. 89-9.000.  
Tatsuta, Sumitaka; and Ueno, Wataru, to Fuji Photo Film Co., Ltd. Method for the production of a photographic element. 3,723,159, Cl. 117-47.00a.  
Tatsuzawa, Yoshinobu, to Matsushita Electric Industrial Co., Ltd. Television telephone system. 3,723,653, Cl. 179-2.0tv.  
Tauscher, Henry, to Impact, Inc. Rotary power device. 3,723,033, Cl. 418-173.000.  
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Taylor, Ted R.; and Ferguson, James L., to International Liquid Xtal Company. Temperature indicator using the Smectic C phase of a liquid crystal. 3,723,346, Cl. 252-408.000.  
Taylor, William D., to Rubbermaid Incorporated. Tilt-open drawer construction. 3,722,975, Cl. 312-348.000.  
Teach, Eugene G.; and Arneklev, Duane R., to Stauffer Chemical Company. Meta-thiocarbamyl phenylene amides and ureas and their utility as herbicides. 3,723,474, Cl. 260-347.200.  
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Thatch, Raymond Allen, to Bell Telephone Laboratories, Incorporated. Constant resistance bridged-T circuit using transmission line elements. 3,723,912, Cl. 333-20.000.  
Theobald, Paul R.; and Bailey, Joseph T., to American Lava Corporation. Alumina palladium composite. 3,723,176, Cl. 117-212.000.  
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Thurk, Gerhard; and Beier, Helmut, to Siemens Aktiengesellschaft. High voltage circuit breaker. 3,723,685, Cl. 200-148.00e.

Tidwell, Calvin M.; and Henneberg, Val G., to Petro-Tex Chemical Corporation. Isomerization of butene-1 to cis-butene-2. 3,723,564, Cl. 260-683.200.

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Tobinick, Sidney; and Semenoff, Arnold, to Aqua Therm Products Corporation. Water bed having attached pillow. 3,722,012, Cl. 5-348.0wb.

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- Wilson, Fred A., and Sprague, Lindol H., to Dover Corporation. Cap and locking means therefor. 3,722,549, Cl. 138-89.000.
- Wilson, Harold P., to Vulcan Materials Company. Electrolytic production of stannic oxide sol. 3,723,273, Cl. 204-180.00p.
- Wilson, Robert G.: See—  
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- Winberg, Paul N.; and Winberg, Robert W. Intermediate clamp for contour seamer. 3,722,437, Cl. 112-121.120.
- Winberg, Robert W.: See—  
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- Winstead, Thomas W. Method for reclaiming the selva of foamed thermoplastic web. 3,723,582, Cl. 264-37.000.
- Winter, Gerhard: See—  
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- Wirth, Joseph G., to General Electric Company. Certain fluorescent 2-(2-hydroxy-phthalimidomethyl-phenyl)-benzothiazol. 3,723,449, Cl. 260-304.000.
- Wirtz, Larry K.: See—  
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- Wissler, Bernhard; and Dietsche, Erich, to Dietsche, Roman, Firma. Brush. 3,723,015, Cl. 401-278.000.
- Withrow, David A., to Production Machinery Corporation. Apparatus and method for leveling metal strip. 3,722,251, Cl. 72-294.000.
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- Wittern, Francis A.; and Woodley, Warren D., said Woodley assor. to Fawn Engineering Corporation. Husbandry apparatus. 3,722,475, Cl. 119-51.110.
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- Wojcik, Edward P.: See—  
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- Woodling, George V. Anti-friction orbital and rotary device. 3,723,032, Cl. 418-61.000.
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APPLICANTS TO WHOM  
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Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

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- Lloyd, Calvin D. Method of bonding a member to a thin plate. T908,002, 3-27-73, Cl. 29-470.3.
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- McConnell, Richard L., B. A. Weemes, and F. Joyner. Cross-linked polyolefins. T908,008, 3-27-73, Cl. 260-88.250.
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- Deschamps, Joseph P.: See—  
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- Diorio, Anthony R.: See—  
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- Downey, Martin W.: See—  
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- Egan, Robert: See—  
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- Fernandez, Mario F., and R. L. Rydeen, to Toro Manufacturing Corp. Riding mower body. 226,574, 3-27-73, Cl. D40-1.
- Fernandez, Mario F., and R. L. Rydeen, to Toro Manufacturing Corp. Steering wheel for riding mowers. 226,575, 3-27-73, Cl. D40-1.
- Freedman, Robert N., to Endura Appliance Corp. Housing for electric shears. 226,549, 3-27-73, Cl. D8-61.
- Fulghum, David A.: See—  
Skyer, Robert A., Bowman, and Fulghum. 226,557.
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Sullivan, Leroy J. 226,560.
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- Garbely, Rudolph J., and A. R. Diorio. Modular automatic electroplating equipment. 226,564, 3-27-73, Cl. D26-1.
- General Electric Co.: See—  
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- Glaberson, Martin, to Warner-Lambert Co. Dispenser for razor blade cartridges. 226,553, 3-27-73, Cl. D9-189.
- Goto, Kenjiro, to Mansel Kogyo Kabushiki Kaisha. Cigarette lighter. 226,581, 3-27-73, Cl. D48-27.
- Grube, Clifford E., to Associated Mills Inc. Heater housing for electric hair curlers. 226,586, 3-27-73, Cl. D86-10.
- Hardt, William G. Prefabricated fireplace. 226,563, 3-27-73, Cl. D23-94.
- Hermann, Thomas J.: See—  
Klepa, Peter P., and Hermann. 226,565.
- Klepa, Peter P., and Hermann. 226,566.
- Hollingsworth, Alfred D. Stool or similar article. 226,545, 3-27-73, Cl. D6-34.
- Horgan, William J., Jr. Door. 226,556, 3-27-73, Cl. D13-1.
- Hughes Aircraft Co.: See—  
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- Keldmann, Erik, to Bristol-Myers Co. A hair curler. 226,587, 3-27-73, Cl. D86-10.
- Klepa, Peter P., and T. J. Hermann, to Hughes Aircraft Co. Subscriber terminal central unit. 226,565, 3-27-73, Cl. D26-5.
- Klepa, Peter P., and T. J. Hermann, to Hughes Aircraft Co. Subscriber terminal console. 226,566, 3-27-73, Cl. D26-5.
- Koch, Samuel J. Combined ashtray and cigarette lighter or similar article. 226,584, 3-27-73, Cl. D85-2.
- Le-Cheminant, Eric. Grease applicator. 226,591, 3-27-73, Cl. D52-2.
- Maddestra, Robert: See—  
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- Priefert, Marvin J., and W. D. End frame unit for a table and bench combination. 226,546, 3-27-73, Cl. D6-192.
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- Fernandez, Mario F., and Rydeen. 226,575.
- Schaefer, Hermann R., to Sperry Rand Corp. Shaver. 226,590, 3-27-73, Cl. D95-3.
- Schwarz, Charlotte L., to Wallace Silversmith, Inc. Pendant or the like. 226,577, 3-27-73, Cl. D45-17.
- Shindler, Anthony. Pair of spectacles. 226,593, 3-27-73, Cl. D57-1.
- Stoles, George W. Dodecahedron loudspeaker enclosure unit. 226,567, 3-27-73, Cl. D26-14.
- Skyer, Robert A., G. E. Bowman, and D. A. Fulghum, to International Harvester Co. Tractor. 226,557, 3-27-73, Cl. D14-3.
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- Smythe, Wayne M. Carafe. 226,552, 3-27-73, Cl. D9-117.
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- Sutphen Fire Equipment Co.: See—  
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- Sutphen, Thomas C., to Sutphen Fire Equipment Co. Platform and support yoke for an aerial tower. 226,559, 3-27-73, Cl. D14-6.
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- Teasel, William A., and W. A. Stanley. Railroad switch reflectorized semaphore. 226,594, 3-27-73, Cl. D72-1.
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- Fernandez, Mario F., and Rydeen. 226,575.
- Veltri, Nicholas. Cap. 226,544, 3-27-73, Cl. D2-247.
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- Weckman, Richard L., to Owens-Illinois, Inc. Bottle. 226,551, 3-27-73, Cl. D9-44.
- Weissmann, Peter, to Consul Gesellschaft mit beschränkter. Pocket lighter. 226,580, 3-27-73, Cl. D48-27.
- Welch, Medard W. Hand piece for a combined skin stimulating and cleaning device. 226,583, 3-27-73, Cl. D83-1.
- Zakaski, Roman S., to Monty Enterprises, Inc. Portable washing stand. 226,562, 3-27-73, Cl. D23-48.
- Zurek, James W.: See—  
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# CLASSIFICATION OF PATENTS

ISSUED MARCH 27, 1973

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2	81PE	3,722,038	CLASS 37	174	3,722,184	106	3,722,247	60	3,723,096
2	3,721,992	201C	3,722,114	238	3,722,185	176	3,722,248	123CB	3,723,099
3R	3,721,993	265B	3,722,040	304	3,722,186	187	3,722,249	126R	3,723,100
6	3,721,994	283	3,722,041	323	3,722,187	224	3,722,250	128R	3,723,101
10	3,721,995	CLASS 28	3,722,116	384	3,722,188	294	3,722,251	129	3,723,102
19	3,721,996	1-6	3,722,042	389	3,722,189	306	3,722,252	134F	3,723,103
46	3,721,997	CLASS 29	3,722,043	CLASS 40	3,722,190	338	3,722,253	134H	3,723,104
74	3,721,998	25.11	3,722,044	21R	3,722,191	383	3,722,254	170	3,723,106
114	3,721,999	25.16	3,722,045	132D	3,722,192	447	3,722,255	171	3,723,107
227	3,722,000	25.17	3,722,046	140	3,722,193	470	3,722,256	214	3,723,108
269	3,722,001	25.19	3,722,047	152	3,722,194	475	3,722,257	CLASS 81	3,723,327
CLASS 3	3,722,002	34D	3,722,048	CLASS 42	3,722,195	CLASS 73	3,722,258	3.1R	3,723,328
1	3,722,003	37R	3,722,049	16	3,722,196	6	3,722,259	9.22	3,723,329
1.1	3,722,004	38A	3,722,050	54	3,722,197	19	3,722,260	10	3,723,330
CLASS 4	3,722,005	129.5	3,722,051	89	3,722,198	37.7	3,722,261	15.8	3,723,331
131	3,722,006	149.5NM	3,722,052	CLASS 43	3,722,199	40.5R	3,722,262	57.38	3,723,332
166	3,722,007	155R	3,722,053	58.89	3,722,200	59	3,722,263	CLASS 82	3,723,333
255	3,722,008	163.5	3,722,054	77	3,722,201	67.85	3,722,264	29	3,723,334
CLASS 5	3,722,009	182	3,722,055	6.5	3,722,202	88.5R	3,722,265	34A	3,723,335
8	3,722,010	182.7	3,722,056	15	3,722,203	117.3	3,722,266	CLASS 83	3,723,336
67	3,722,011	194	3,722,057	42.03	3,722,204	132	3,722,267	4	3,723,337
93	3,722,012	200A	3,722,058	42.1	3,722,205	133R	3,722,268	57	3,723,338
118	3,722,013	200D	3,722,059	44.98	3,722,206	143	3,722,269	63	3,723,339
247	3,722,014	200J	3,722,060	CLASS 44	3,722,207	146	3,722,270	137	3,723,340
348WB	3,722,015	202D	3,722,061	1R	3,722,208	170A	3,722,271	203	3,723,341
CLASS 8	3,722,016	203B	3,722,062	CLASS 46	3,722,209	178R	3,722,272	278	3,723,342
21C	3,722,017	203D	3,722,063	1K	3,722,210	194EM	3,722,273	413	3,723,343
26	3,722,018	205R	3,722,064	75	3,722,211	194B	3,722,274	418	3,723,344
116P	3,722,019	237	3,722,065	178	3,722,212	194E	3,722,275	422	3,723,345
116.3	3,722,020	271	3,722,066	206	3,722,213	228	3,722,276	CLASS 84	3,723,346
CLASS 9	3,722,021	423	3,722,067	244A	3,722,214	228	3,722,277	1.01	3,723,347
8R	3,722,022	427	3,722,068	247	3,722,215	231M	3,722,278	1.24	3,723,348
310B	3,722,023	433	3,722,069	CLASS 47	3,722,216	304R	3,722,279	291	3,723,349
CLASS 12	3,722,024	471.1	3,722,070	34.13	3,722,217	355R	3,722,280	318	3,723,350
120.5	3,722,025	471.3	3,722,071	58	3,722,218	362SC	3,722,281	342	3,723,351
1	3,722,026	472.3	3,722,072	CLASS 49	3,722,219	382	3,722,282	380	3,723,352
9	3,722,027	472.9	3,722,073	30	3,722,220	422R	3,722,283	422R	3,723,353
32	3,722,028	473.3	3,722,074	139	3,722,221	454	3,722,284	454	3,723,354
CLASS 14	3,722,029	516	3,722,075	248	3,722,222	517R	3,722,285	CLASS 86	3,723,355
71	3,722,030	527.4	3,722,076	CLASS 51	3,722,223	CLASS 74	3,722,286	CLASS 89	3,723,356
CLASS 15	3,722,031	557	3,722,077	5	3,722,224	3.52	3,722,287	11	3,723,357
1.5	3,722,032	578	3,722,078	50R	3,722,225	5	3,722,288	36A	3,723,358
114	3,722,033	581	3,722,079	56	3,722,226	5.6	3,722,289	36H	3,723,359
167R	3,722,034	603	3,722,080	73R	3,722,227	10.33	3,722,290	147	3,723,360
231	3,722,035	604	3,722,081	170T	3,722,228	10.8	3,722,291	CLASS 90	3,723,361
236R	3,722,036	605	3,722,082	225	3,722,229	15.63	3,722,292	7	3,723,362
257.1	3,722,037	606	3,722,083	241S	3,722,230	61	3,722,293	11C	3,723,363
329	3,722,038	607	3,722,084	391	3,722,231	96	3,722,294	11D	3,723,364
340	3,722,039	610	3,722,085	CLASS 52	3,722,232	112	3,722,295	17	3,723,365
CLASS 16	3,722,040	620	3,722,086	36	3,722,233	125.5	3,722,296	24B	3,723,366
42	3,722,041	622	3,722,087	79	3,722,234	219	3,722,297	CLASS 91	3,723,367
50	3,722,042	626	3,722,088	81	3,722,235	220	3,722,298	3	3,723,368
91	3,722,043	629	3,722,089	121	3,722,236	230.17M	3,722,299	4A	3,723,369
129	3,722,044	CLASS 30	3,722,090	122	3,722,237	230.8	3,722,300	170R	3,723,370
142	3,722,045	4R	3,722,091	133	3,722,238	425	3,722,301	375R	3,723,371
153	3,722,046	40	3,722,092	169	3,722,239	459	3,722,302	380	3,723,372
CLASS 17	3,722,047	90.9	3,722,093	211	3,722,240	483PB	3,722,303	504	3,723,373
1G	3,722,048	124	3,722,094	224	3,722,241	512	3,722,304	506	3,723,374
11	3,722,049	CLASS 32	3,722,095	252	3,722,242	512	3,722,305	CLASS 92	3,723,375
32	3,722,050	2	3,722,096	278	3,722,243	520	3,722,306	5R	3,723,376
48	3,722,051	3	3,722,097	400	3,722,244	524	3,722,307	97	3,723,377
CLASS 19	3,722,052	5	3,722,098	608	3,722,245	527	3,722,308	128	3,723,378
282	3,722,053	17	3,722,099	684	3,722,246	535	3,722,309	168	3,723,379
CLASS 21	3,722,054	22	3,722,100	704	3,722,247	544	3,722,310	CLASS 93	3,723,380
2.5	3,722,055	40R	3,722,101	720	3,722,248	560	3,722,311	8R	3,723,381
91	3,722,056	CLASS 33	3,722,102	726	3,722,249	606R	3,722,312	35H	3,723,382
103	3,722,057	126.7R	3,722,103	742	3,722,250	675	3,722,313	CLASS 95	3,723,383
CLASS 23	3,722,058	174D	3,722,104	745	3,722,251	681	3,722,314	10C	3,723,384
230B	3,722,059	CLASS 34	3,722,105	CLASS 53	3,722,252	687	3,722,315	13	3,723,385
230R	3,722,060	1	3,722,106	54	3,722,253	751	3,722,316	14	3,723,386
253R	3,722,061	82	3,722,107	62	3,722,254	752B	3,722,317	22	3,723,387
260	3,722,062	CLASS 35	3,722,108	182	3,722,255	CLASS 75	3,722,318	31AC	3,723,388
262	3,722,063	17	3,722,109	209	3,722,256	5R	3,722,319	31DS	3,723,389
267C	3,722,064	28.5	3,722,110	376	3,722,257	10R	3,722,320	31R	3,723,390
277R	3,722,065	30	3,722,111	390	3,722,258	10V	3,722,321	39	3,723,391
283	3,722,066	48B	3,722,112	CLASS 55	3,722,259	21	3,722,322	45	3,723,392
288F	3,722,067	CLASS 36	3,722,113	4	3,722,260	CLASS 72	3,722,323	53EB	3,723,393
288R	3,722,068	2.5AL	3,722,114	46	3,722,261	16	3,722,324	62	3,723,394
293	3,722,069	11.5	3,722,115	67	3,722,262	97	3,722,325		
73PF	3,722,070			128	3,722,263				



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95	3,722,394	410	3,722,442	2.05F 3,722,505	39	CLASS 150	92	3,722,609	66B	3,723,251
				2.08 3,722,506	39	3,722,564	386	3,722,610	66R	3,723,252
				2.1R 3,722,507		CLASS 151	1	3,723,246	80	3,723,253
IPC	3,723,110	54	CLASS 113	3,722,508	41.73	3,722,565		3,723,247	109	3,723,255
IC	3,723,111		CLASS 114	3,722,509		CLASS 152		3,723,248		
1.2	3,723,112	160	3,722,445	140N 3,722,510	169	3,722,566		3,722,611	16	3,722,651
1.4	3,723,114	16R	3,722,446	142 3,722,511	354	3,722,567			82	3,722,654
1.6	3,723,116	23	3,722,447	147 3,722,512	374	3,722,568			133	3,722,655
1.8	3,723,115	55	3,722,448	220 3,722,513	429	3,722,569				
27	3,723,121	75	3,722,449	334R 3,722,514		CLASS 156				
29	3,723,117	102	3,722,451	465 3,722,515		CLASS 157				
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48R	3,723,122		CLASS 115	15B 3,722,515		CLASS 160				
48	3,723,123		34R 3,722,454	17R 3,722,516		CLASS 161				
	3,723,124		41HT 3,722,455			CLASS 162				
56.2	3,723,125		41R 3,722,456			CLASS 163				
61M	3,723,127		CLASS 116	114 3,722,457		CLASS 164				
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84R	3,723,128		129 3,722,459			CLASS 166				
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33	3,722,397					CLASS 169				
115R	3,722,397		CLASS 117	12.2P 3,723,170		CLASS 170				
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2F	3,723,130		33.3 3,723,154			CLASS 172				
83	3,723,131		36.2 3,723,156			CLASS 173				
92	3,723,132		46CB 3,723,157			CLASS 174				
105	3,723,133		47A 3,723,158			CLASS 175				
134	3,723,134		50 3,723,159			CLASS 176				
140R	3,723,135		54 3,723,155			CLASS 177				
158	3,723,136		56 3,723,161			CLASS 178				
166	3,723,137		71M 3,723,162			CLASS 179				
323.8	3,722,399		72 3,723,163			CLASS 180				
353	3,722,400		76P 3,723,164			CLASS 181				
407	3,722,401		93.1PF 3,723,165			CLASS 182				
467	3,722,402		93.31 3,723,166			CLASS 183				
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16	3,722,407		201 3,723,175			CLASS 190				
18	3,722,408		212 3,723,176			CLASS 191				
23	3,722,410		217 3,723,177			CLASS 192				
43P	3,722,411		227 3,723,178			CLASS 193				
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49.2	3,722,412		5 3,722,462			CLASS 195				
67	3,722,413		6 3,722,463			CLASS 196				
70.2P	3,722,414		48 3,722,464			CLASS 197				
70.2R	3,722,415		123 3,722,465			CLASS 198				
	3,722,416		212 3,722,466			CLASS 199				
	3,722,417		246 3,722,467			CLASS 200				
78	3,722,418		301 3,722,468			CLASS 201				
95	3,722,420		315 3,722,469			CLASS 202				
101	3,722,421		414 3,722,470			CLASS 203				
			637 3,722,471			CLASS 204				
						CLASS 205				
17A	3,722,422		1 3,722,472			CLASS 206				
17R	3,722,423		28 3,722,473			CLASS 207				
23FS	3,722,424		3 3,722,474			CLASS 208				
88	3,722,425		51.11 3,722,475			CLASS 209				
	3,722,426		61 3,722,476			CLASS 210				
155	3,722,427		82 3,722,477			CLASS 211				
			120 3,722,478			CLASS 212				
365	3,722,428		93A 3,722,553			CLASS 213				
369BA	3,722,429		115 3,722,554			CLASS 214				
			123 3,722,555			CLASS 215				
						CLASS 216				
1	3,723,138		8.01 3,722,480			CLASS 217				
39.6	3,723,140		8.07 3,722,493			CLASS 218				
47R	3,723,141		46R 3,722,481			CLASS 219				
52	3,723,142		66 3,722,482			CLASS 220				
53	3,723,143		90.14 3,722,483			CLASS 221				
54	3,723,144		90.27 3,722,484			CLASS 222				
90	3,723,145		102 3,722,485			CLASS 223				
110	3,723,146		117A 3,722,486			CLASS 224				
176	3,723,147		140MP 3,722,487			CLASS 225				
287PR	3,723,148		148E 3,722,488			CLASS 226				
300	3,723,149		149D 3,722,489			CLASS 227				
307	3,723,150		179L 3,722,490			CLASS 228				
308Q	3,723,151		198D 3,722,491			CLASS 229				
310	3,723,152		198R 3,722,492			CLASS 230				
						CLASS 231				
58	3,722,430		7 3,722,494			CLASS 232				
153	3,722,431		9 3,722,495			CLASS 233				
						CLASS 234				
17	3,722,432		13 3,722,496			CLASS 235				
	3,722,433		14 3,722,497			CLASS 236				
8R	3,722,433		38 3,722,498			CLASS 237				
			292 3,722,499			CLASS 238				
79A	3,722,434					CLASS 239				
121.11	3,722,435		63 3,723,179			CLASS 240				
121.12	3,722,436					CLASS 241				
199	3,722,438		1C 3,722,501			CLASS 242				
205	3,722,441		1R 3,722,502			CLASS 243				
254	3,722,439		2F 3,722,502			CLASS 244				

## CLASSIFICATION OF PATENTS

74	3,722,676	130	3,722,745	46.11	3,722,804	3,723,345	268C	3,723,434	633	3,723,543	
80.5	3,722,675	205	3,722,746	73	3,722,805	389A	3,723,347	270R	3,723,435	3,723,544	
144	3,722,677		CLASS 222	291	3,722,806	408	3,723,348	281	3,723,436	635Y	3,723,545
156	3,722,678	48	3,722,748	CLASS 242			3,723,349	285CN	3,723,437	644	3,723,546
164	3,722,679	56	3,722,747	18R	3,722,807	429B	3,723,348	285	3,723,438	645	3,723,547
		61	3,722,749	46.4	3,722,808	429C	3,723,350	293.54	3,723,439	651HA	3,723,548
11	3,723,304	94	3,722,750	55.19R	3,722,809	454	3,723,351	293.57	3,723,440	653.3	3,723,549
22	3,723,305	132	3,722,751	67.4	3,722,810	459	3,723,352	293.66	3,723,442	656R	3,723,550
33	3,723,306	145	3,722,752	86	3,722,811	478	3,723,353	293.68	3,723,443	666A	3,723,551
38	3,723,307	146HA	3,722,753	107.4	3,722,812	511	3,723,354	295AM	3,723,444	666B	3,723,552
38	3,723,308	183	3,722,754	129	3,722,813	513	3,723,355	295.5R	3,723,445	668A	3,723,553
44	3,723,309	193	3,722,755	129.5	3,722,814	513	3,723,356	304	3,723,447	668D	3,723,554
53	3,723,310	212	3,722,756	158.4R	3,722,815	513	3,723,357	306.8D	3,723,448	668F	3,723,555
96	3,722,680	385	3,722,757	181	3,722,816	545	3,723,357	306.8R	3,723,450	674A	3,723,556
108	3,722,681	396	3,722,758	181	3,722,817	546	3,723,358	307F	3,723,451	676R	3,723,557
123	3,722,682	402.22	3,722,759	181	3,722,818		CLASS 254		3,723,452	677AD	3,723,558
132	3,722,683	396	3,722,759	181	3,722,819	10.5	3,722,862	309	3,723,453	677B	3,723,559
167	3,722,684	402.22	3,722,760	181	3,722,820	64	3,722,861	309.6	3,723,455	677H	3,723,560
169	3,722,685	409	3,722,761	181	3,722,821	105	3,722,863	310.7	3,723,457	683D	3,723,562
170	3,722,686	568	3,722,762	181	3,722,822	124	3,722,864	309R	3,723,458	683.2	3,723,563
219	3,722,687		CLASS 223	46.59	3,723,725		CLASS 259	325	3,723,459	683.2	3,723,564
242	3,722,688	26	3,722,769	468	3,723,728		CLASS 246	6	3,723,460	824R	3,723,566
	3,722,689	101	3,722,783		CLASS 248	4	3,722,832	64	3,723,461	825	3,723,567
	3,722,690	16	3,722,783		CLASS 244	66	3,722,831	72	3,723,462	835	3,723,568
304	3,722,691	5R	3,722,764	43	3,722,841	105	3,722,834	326.15	3,723,463	836	3,723,569
314	3,722,692	42.1E	3,722,765	124	3,722,842	178R	3,722,835	326.5F	3,723,464	860	3,723,570
320	3,722,693	42.1F	3,722,766	300	3,722,843		CLASS 260	327B	3,723,465	866	3,723,571
321	3,722,694		CLASS 225	302	3,722,844	2EP	3,723,361	327E	3,723,466	873	3,723,572
435	3,722,696	49	3,722,767	346	3,722,845	2.5AB	3,723,367	328	3,723,467	879	3,723,573
451	3,722,697	105	3,722,768	357	3,722,846	2.5AC	3,723,364	333	3,723,468	899	3,723,574
525	3,722,698		CLASS 226	407	3,722,847	2.5AS	3,723,365	340.5	3,723,469	900	3,723,575
		25	3,722,769	197	3,722,848	2.5AW	3,723,363	340.7	3,723,470	949	3,723,576
153	3,722,700	45	3,722,770	219R	3,722,849	2.5BF	3,723,366	343.3	3,723,471	954	3,723,577
169	3,722,699	51	3,722,771		CLASS 250	2.5B	3,723,362	343.5	3,723,472	974	3,723,580
177	3,722,701	62	3,722,772	41.95B	3,723,729	17.2	3,723,368	345.2	3,723,473		CLASS 261
178R	3,722,702	100	3,722,775	41.9C	3,723,730	22CB	3,723,369	346.2R	3,723,474	1	3,722,836
	3,722,703	60	3,722,776	43.54R	3,723,731	22TN	3,723,370	346.6	3,723,475	3A	3,722,837
183	3,722,704	195	3,722,777	43.5R	3,723,732	28.5AV	3,723,371	347.2	3,723,476	72R	3,722,838
	CLASS 212	196	3,722,772	43.5R	3,723,733	29.1R	3,723,372	347.7	3,723,477	111	3,722,839
15	3,722,705		CLASS 228	49.5T	3,723,733	29.4AU	3,723,374	347.7	3,723,477		CLASS 264
44	3,722,706	4	3,722,777	71.5R	3,723,734	29.4R	3,723,377	347.8	3,723,478	5	3,723,581
59R	3,722,707	13	3,722,778		3,723,735	29.6HN	3,723,376	348C	3,723,479	37	3,723,582
	CLASS 213	1.5C	3,722,779	83.1	3,723,736	29.6A	3,723,375	368	3,723,480	30	3,723,583
151	3,722,708	17G	3,722,780	83.3H	3,723,737	30.8DM	3,723,373	373	3,723,482	45	3,723,584
	CLASS 214	28R	3,722,781		3,723,738	31.8M	3,723,379	397.4	3,723,483	53	3,723,585
1BA	3,722,710	39	3,722,782		3,723,739	32.6NT	3,723,380	397.45	3,723,484	45	3,723,586
1BB	3,722,712	40	3,722,783	83.6R	3,723,740	33.8UA	3,723,381	408	3,723,485	61	3,723,587
1BC	3,722,709	43	3,722,784	84	3,723,741	37SB	3,723,382	410.9R	3,723,486	83	3,723,588
1BD	3,722,711	40	3,722,785	106	3,723,742	37SB	3,723,382	412.4	3,723,487	101	3,723,589
8.5A	3,722,713	54R	3,722,786	108R	3,723,743	41B	3,723,383	429.7	3,723,488	104	3,723,590
10.5R	3,722,714		3,722,787	203R	3,723,744	45.75N	3,723,384	438.1	3,723,489	237	3,723,591
17D	3,722,715	92.3	3,722,787	203	3,723,745	45.75R	3,723,385	448.2B	3,723,491	289	3,723,592
38B	3,722,716		CLASS 231	218R	3,723,746	46.5UA	3,723,386	448.8R	3,723,492	290R	3,723,593
83.22	3,722,717	2E	3,722,788	218	3,723,747	47UP	3,723,387	455A	3,723,493		CLASS 266
100	3,722,718		CLASS 233	233	3,723,748	47C	3,723,388		3,723,494	1S	3,722,868
310	3,722,719	26	3,722,790		CLASS 251	47R	3,723,386	462A	3,723,495	20	3,722,869
317	3,722,720		3,722,791	52	3,722,850	47R	3,723,386	465E	3,723,496	29	3,722,871
315	3,722,721		CLASS 234	54	3,722,851	75NP	3,723,392	465A	3,723,498	34R	3,722,872
522	3,722,722	38	3,722,792	61.2	3,722,852	75M	3,723,390	465.8R	3,723,499	64R	3,722,874
674	3,722,723		CLASS 235	110	3,722,853		3,723,391	465.9	3,723,500	140	3,722,876
776	3,722,724	50A	3,722,793	127	3,722,854	77.5A	3,723,394	465.9	3,723,501		CLASS 267
	CLASS 215	60TK	3,722,794	151	3,722,855	77.5B	3,723,393	471C	3,723,502	57	3,722,877
1C	3,722,725	61.11E	3,723,710	152	3,722,856	78R	3,723,396	473S	3,723,503	31	3,722,878
9	3,722,726	62F	3,722,795	203	3,722,857	78.5CL	3,723,395	479R	3,723,504	62R	3,722,875
11B	3,722,728	70B	3,722,796	309	3,722,858	80.72	3,723,398	482C	3,723,505	140	3,722,876
41	3,722,729	92EA	3,723,711	315	3,722,859	80.73	3,723,399	484R	3,723,506		CLASS 270
	CLASS 219	151.31	3,723,712	332	3,722,860	80.8	3,723,397	486H	3,723,507	57	3,722,877
62E	3,723,693	151.35	3,723,713		CLASS 252	82.1	3,723,400	488B	3,723,508		CLASS 271
69E	3,723,690	152	3,723,714	8.5A	3,723,311	83.3	3,723,401	488B	3,723,509	31	3,722,878
69V	3,723,694	156	3,723,715	33.3	3,723,312	91.3VA	3,723,401	497R	3,723,510	47	3,722,879
73	3,723,696	177	3,723,716	33.3	3,723,313	93.7	3,723,402	501.14	3,723,511	31	3,722,878
78	3,723,699	181	3,723,717	33.4	3,723,314	94.9GB	3,723,404	501.15	3,723,512	51	3,722,880
78	3,723,699	185	3,723,718	49.8	3,723,315		3,723,405	513.7	3,723,513		CLASS 272
85	3,723,697	190	3,723,719	50	3,723,316	94.9B	3,723,403	519	3,723,514	60	3,722,881
98	3,723,698		CLASS 236	51.5R	3,723,317	112.5	3,723,406	523A	3,723,515	73	3,722,882
	3,723,700	1C	3,722,813	67	3,723,318	123.5	3,723,407	524R	3,723,516	85	3,722,883
100	3,723,701	14	3,722,811	78	3,723,319	209R	3,723,408		3,723,517		CLASS 273
124	3,723,702	15A	3,722,812	88	3,723,320		3,723,409	526S	3,723,519	1E	3,722,884
242	3,723,704		CLASS 239	89	3,723,321	210AB	3,723,411	543P	3,723,520	1R	3,722,885
243	3,723,705	1	3,722,814	90	3,723,322	210R	3,723,410		3,723,521	1.5R	3,722,886
274	3,723,706	2R	3,722,815	89	3,723,323		3,723,412	552R	3,723,522	77A	3,722,887
276	3,723,707	17	3,722,816	106	3,723,324	232	3,723,413	558D	3,723,523	126R	3,722,888
385	3,723,708	77	3,722,817	107	3,723,325	239BD	3,723,414	559S	3,723,524	176F	3,722,889
388	3,723,709	85	3,722,818	107	3,723,326	239B	3,723,416	563R	3,723,525	186A	3,722,890
	CLASS 220	102	3,722,819	111	3,723,327	239A	3,723,415		3,723,526		CLASS 274
46R	3,722,730	129	3,722,820	121	3,723,328	239.55R	3,723,417		3,723,527	4F	3,722,892
60	3,722,731	133	3,722,821	121	3,723,329	240TC	3,723,420	564R	3,723,528	22	3,722,891
66	3,722,732	265.17	3,722,797	153	3,723,330	240B	3,723,423	583N	3,723,529	23R	3,722,893
82R	3,722,733	428.5	3,722,798	165	3,723,331	240E	3,723,422	584R	3,723,530		CLASS 277
834	3,722,734	443	3,722,799	171	3,723,332	240F	3,723,421	586B	3,723,532	9	3,722,894
97B	3,722,735	447	3,722,800	175	3,723,333	240R	3,723,423	586R	3,723,533	34.3	3,722,895
97E	3,722,736	533	3,722,801	181	3,723,334	240B	3,723,423	590	3,723,534	87	3,722,896
113	3,722,737	658	3,722,802	182	3,723,335	243R	3,723,42				



## CLASSIFICATION OF PATENTS

36R	3,722,904	88ET	3,723,754	31	3,723,817	CLASS 330	63	3,723,967	72	3,723,020		
39	3,722,905	88.3	3,723,755	36TD	3,723,818	4.9	3,723,893	69	3,723,968	147	3,723,021	
47.4	3,722,906	106	3,723,756	61	3,723,819	29	3,723,894	146.3MA	3,723,970	175	3,723,022	
95A	3,722,907	114	3,723,757	69	3,723,821		3,723,895	146.3Z	3,723,969			
124B	3,722,908	117	3,723,758	71	3,722,970		3,723,897	163R	3,723,971	219	3,723,023	
150SB	3,722,909	203	3,723,759	101DH	3,723,822		3,723,896	172.5	3,723,972			
179R	3,722,910		3,723,760		3,723,823		3,723,892		3,723,973			
	3,722,911	208	3,723,761	120	3,723,824		3,723,898		3,723,974	286	3,723,026	
287	3,722,912	228	3,723,762	123	3,723,825		3,723,899		3,723,975	299	3,723,027	
	3,722,913	229	3,723,763	135R	3,723,826		3,723,900		3,723,976	313	3,723,028	
407	3,722,914	233	3,723,764	137	3,723,827		3,723,901	173AM	3,723,977	356	3,723,029	
415A	3,722,915		3,723,765	141R	3,723,828		3,723,902	173CR	3,723,978	420	3,723,030	
421	3,722,916	235A	3,723,766	141S	3,723,829		3,723,903	173PL	3,723,979	475		
423R	3,722,917	238	3,723,767	234R	3,723,830		3,723,904	174MC	3,723,983			
432	3,722,918	252UA	3,723,768		3,723,831		3,723,905	174RC	3,723,984	15	3,723,031	
	3,722,919	252L	3,723,769		3,723,832		3,723,906	174TF	3,723,985	61	3,723,032	
446B	3,722,920	256	3,723,770		3,723,833		3,723,907	174.1B	3,723,980	159	3,723,033	
473	3,722,921	261	3,723,771		3,723,834		3,723,908	174.1C	3,723,981	268	3,723,034	
		293	3,723,772		3,723,835			174.1G	3,723,982			
CLASS 282		295	3,723,773		3,723,836		CLASS 332	177R	3,723,986			
29B	3,722,922	296	3,723,774	235R	3,723,837		11D	3,723,909	242	3,723,987	11	3,723,594
CLASS 285		304	3,723,775	258	3,723,838		31T	3,723,910	258R	3,723,988	50	3,723,595
55	3,722,923	318	3,723,776		3,723,839		CLASS 333		259	3,723,989	175	3,722,867
	3,722,924		3,723,777	CLASS 308	15	3,723,840	11	3,723,913		3,723,990	200	3,723,597
	3,722,925	3.8	3,722,964	432	3,723,841			3,723,914		3,723,991	244	3,723,598
261	3,722,926	122	3,722,965	574	3,723,842		18	3,723,911	347DD	3,722,107	263	3,723,599
317	3,722,927	187	3,722,966	602	3,723,843		20	3,723,912	380	3,723,961		3,723,600
		187.1	3,722,967	612	3,723,843		30R	3,723,915			297	3,723,601
CLASS 287		191	3,722,968		3,723,844		30	3,723,916	CLASS 350		305	3,723,602
20.92A	3,722,928	193	3,722,969	59	3,723,844		32	3,723,917			307R	3,723,603
53SS	3,722,929		3,722,970	CLASS 320	32	3,723,918	72	3,723,918			307R	3,723,604
54E	3,722,930		3,722,971	CLASS 321	1.5	3,723,845		3,723,919	54	3,722,977	307	3,723,605
93	3,722,931	5	3,723,777	15	3,723,846		95R	3,723,920	96WG	3,722,978	321	3,723,606
103D	3,722,932	8.9	3,723,778	18	3,723,847			3,723,921	135	3,722,979	322	3,723,607
189.36A	3,722,933	13	3,723,779	27R	3,723,848			3,723,922	147	3,722,980	366	3,723,608
		51	3,723,780	45R	3,723,849			3,723,923	180	3,722,981	372	3,723,609
CLASS 289		68D	3,723,781	47	3,723,850			3,723,924	311	3,722,982	444	3,723,610
CLASS 292		93	3,723,782	8	3,723,851			3,723,925		3,722,983		3,723,611
63	3,722,935	126	3,723,783	20	3,723,852			3,723,926	176	3,722,984		3,723,612
64	3,722,936	196	3,723,784	21	3,723,853			3,723,927		3,722,985	495	3,723,613
79	3,722,937		3,723,785	CLASS 323	38	3,723,854		3,723,928	17	3,722,986	607	3,723,614
92	3,722,938		3,723,786	158	3,723,855			3,723,929	125	3,722,987		3,723,615
		107	3,722,971	342	3,723,856			3,723,930	137	3,722,988		3,723,616
CLASS 293		305	3,722,972	405	3,723,857			3,723,931	231	3,722,989	1	3,723,617
88	3,722,939	325	3,722,973	CLASS 324	2	3,723,858		3,723,932	17C	3,723,990	7	3,723,618
CLASS 294		330	3,722,974	15	3,723,859			3,723,933	27	3,722,991	15	3,723,619
1R	3,722,940	348	3,722,975	20CR	3,723,860			3,723,934		3,722,992	18	3,723,620
66R	3,722,941		3,723,782	28RS	3,723,861			3,723,935	3	3,722,993	47	3,723,621
74	3,722,942	30	3,723,783	34R	3,723,862			3,723,936	10	3,722,994	180	3,723,622
82R	3,722,943	32	3,723,784	37	3,723,863			3,723,937	13	3,722,995	225	3,723,623
83	3,722,944	47	3,723,785	40	3,723,864			3,723,938	45	3,722,996	248	3,723,624
87.2	3,722,945	63	3,723,786	41	3,723,865			3,723,939	53	3,722,997	285	3,723,625
CLASS 296		70R	3,723,787	51	3,723,866			3,723,940	64	3,722,998	267	3,723,626
23MC	3,722,946	92PH	3,723,788	52	3,723,867			3,723,941	83	3,722,999	269	3,723,627
26	3,722,947	93	3,723,789	61R	3,723,868			3,723,942		3,723,000	300	3,723,628
35A	3,722,948	108R	3,723,790	73AT	3,723,869			3,723,943	84	3,723,001	311	3,723,629
97C	3,722,949	221	3,723,791	73PC	3,723,870			3,723,944		3,723,002	324	3,723,630
		237	3,723,792	77B	3,723,871			3,723,945		3,723,003	342	3,723,631
CLASS 297		318	3,723,793	99R	3,723,872			3,723,946	28	3,723,004		3,723,632
218	3,722,950	355	3,723,794	141	3,723,873			3,723,947	29	3,723,005	71	3,723,633
390	3,722,951		3,723,795	158T	3,723,874			3,723,948	30	3,723,006	129	3,723,634
440	3,722,952		3,723,796	CLASS 325	13	3,723,875		3,723,949	31	3,723,007	139	3,723,635
445	3,722,953	3.5	3,723,797	30	3,723,876			3,723,950	45R	3,723,008	192	3,723,636
452	3,722,954	11	3,723,798	32	3,723,877			3,723,951	54	3,723,009	204	3,723,637
453	3,722,955	12	3,723,799	38A	3,723,878			3,723,952	64M	3,723,010		3,723,638
		13C	3,723,800	38R	3,723,879			3,723,953	89R	3,723,011		3,723,639
CLASS 298		18	3,723,801	64	3,723,880			3,723,954	91R	3,723,012		3,723,640
2	3,722,956	22	3,723,802	115	3,723,881			3,723,955	99R	3,723,013	245	3,723,641
CLASS 299		27GD	3,723,803	357	3,723,882			3,723,956	177R	3,723,014	262	3,723,642
86	3,722,957		3,723,804	476	3,723,883			3,723,957	198R	3,723,015	331	3,723,643
CLASS 301		39.51	3,723,805	477	3,723,884			3,723,958		3,723,016	393	3,723,644
37N	3,722,958	83	3,723,806	CLASS 328	5	3,723,885		3,723,959		3,723,017	435	3,723,645
105B	3,722,959	95	3,723,807	58	3,723,886			3,723,960	14R	3,723,939		3,723,646
		211	3,723,808	76	3,723,887			3,723,961		3,723,940		3,723,647
CLASS 303		241P	3,723,809	134	3,723,888			3,723,962		3,723,941		3,723,648
21AF	3,722,960		3,723,810	CLASS 329	50	3,723,890		3,723,963		3,723,942		3,723,649
			3,722,976	103	3,723,891			3,723,964		3,723,943		3,723,650
CLASS 305			3,722,977		3,723,892			3,723,965		3,723,944		3,723,651
25	3,722,961	3	3,722,978		3,723,893			3,723,966		3,723,945		3,723,652
35EB	3,722,962		3,723,811		3,723,894			3,723,967		3,723,946		3,723,653
38	3,722,963	2R	3,723,812		3,723,895			3,723,968		3,723,947		3,723,654
		14A	3,723,813		3,723,896			3,723,969		3,723,948		3,723,655
CLASS 307		16	3,723,814		3,723,897			3,723,970		3,723,949		3,723,656
10BP	3,723,752	18B	3,723,815		3,723,898			3,723,971		3,723,950		3,723,657
10R	3,723,751	18D	3,723,816		3,723,899			3,723,972		3,723,951		3,723,658
38	3,723,749		3,723,817		3,723,900			3,723,973		3,723,952		3,723,659
41	3,723,753		3,723,818		3,723,901			3,723,974		3,723,953		3,723,660
64	3,723,750	20	3,723,819		3,723,902			3,723,975		3,723,954		3,723,661

## CLASSIFICATION OF DESIGNS

D 2—	247	226,544	189	226,553	D23—	28	226,561		226,569	D48—	17	226,577	D72—	226,594
D 6—	34	226,545	264	226,554		48	226,562		226,571		16	226,578	D85—	226,584
	192	226,546	278	226,555		94	226,563		226,572		27	226,580	D86—	226,585
	252	226,547		226,570	D04—	1	226,564	D36—	8	226,573		226,581		226,586
D 8—	58	226,548		226,556	D13—	5	226,565	D40—	1	226,574		226,582	D87—	226,587
	61	226,549		226,557	D14—	3	226,566		226,575		31	226,583		226,588
D 9—	181	226,550		226,558		14	226,567	D44—	2	226,584		226,589		226,589
	44	226,551		226,559	D22—	6	226,568	D45—	16	226,579		226,590		226,590
	117	226,552		226,560		5	226,569							

## DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

29—	470.3 T908,002	117—	119.6 T908,010	453	T908,004	521 T908,009	264—	109 T908,008	424—	273 T908,005
40—	106.1 T908,006	260—	74 T908,011	486R	T908,001	615A T908,003		209 T908,007		



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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

## PATENTS

1 : 3,722,067	3,722,345	3,722,812	3,723,450	3,723,927	3,723,341
3,722,498	3,722,346	3,722,813	3,723,462	3,723,928	3,723,345
3,723,065	3,722,355	3,722,816	3,723,467	3,723,937	3,723,364
2 : 3,722,323	3,722,360	3,722,840	3,723,474	3,723,938	3,723,373
3,723,534	3,722,366	3,722,847	3,723,501	3,723,958	3,723,374
4 : 3,723,201	3,722,374	3,722,850	3,723,539	3,723,961	3,723,378
3,723,738	3,722,400	3,722,854	3,723,589	3,723,962	3,723,379
3,723,770	3,722,415	3,722,856	3,723,591	3,723,980	3,723,434
3,723,830	3,722,416	3,722,862	3,723,613	3,723,983	3,723,520
3,723,835	3,722,445	3,722,881	3,723,626	3,723,987	3,723,521
3,723,836	3,722,453	3,722,890	3,723,642	3,722,137	3,723,543
3,723,851	3,722,470	3,722,892	3,723,648	3,722,146	3,723,543
3,723,910	3,722,472	3,722,910	3,723,656	3,722,593	3,723,655
3,723,973	3,722,481	3,722,921	3,723,664	3,722,679	3,723,682
3,723,981	3,722,482	3,722,924	3,723,666	3,722,903	3,723,698
5 : 3,722,297	3,722,483	3,722,929	3,723,668	3,723,036	3,723,815
3,723,988	3,722,489	3,722,943	3,723,669	3,723,939	3,723,835
6 : 3,722,015	3,722,496	3,722,944	3,723,673	3,723,942	3,723,889
3,722,017	3,722,497	3,722,946	3,723,684	3,723,944	3,723,897
3,722,030	3,722,503	3,722,947	3,723,703	3,723,961	3,723,909
3,722,034	3,722,505	3,722,953	3,723,704	3,723,974	3,723,912
3,722,052	3,722,513	3,722,972	3,723,715	3,723,983	3,723,927
3,722,060	3,722,536	3,722,977	3,723,718	3,723,988	3,723,931
3,722,061	3,722,562	3,722,978	3,723,719	3,723,990	3,723,937
3,722,068	3,722,570	3,722,983	3,723,729	3,723,997	3,723,944
3,722,072	3,722,579	3,722,995	3,723,730	3,724,000	3,723,944
3,722,081	3,722,582	3,722,996	3,723,733	3,724,012	3,723,944
3,722,083	3,722,584	3,722,997	3,723,742	3,724,148	3,723,987
3,722,084	3,722,602	3,723,010	3,723,743	3,724,212	3,723,997
3,722,085	3,722,605	3,723,025	3,723,745	3,724,351	3,724,036
3,722,096	3,722,616	3,723,045	3,723,755	3,724,470	3,724,036
3,722,097	3,722,652	3,723,096	3,723,756	3,724,500	3,724,036
3,722,117	3,722,664	3,723,098	3,723,758	3,724,504	3,724,036
3,722,122	3,722,667	3,723,101	3,723,766	3,724,505	3,724,036
3,722,142	3,722,671	3,723,102	3,723,769	3,724,534	3,724,036
3,722,149	3,722,676	3,723,136	3,723,773	3,724,538	3,724,036
3,722,158	3,722,687	3,723,137	3,723,779	3,724,575	3,724,036
3,722,160	3,722,695	3,723,210	3,723,780	3,724,693	3,724,036
3,722,163	3,722,713	3,723,214	3,723,798	3,724,725	3,724,036
3,722,178	3,722,716	3,723,229	3,723,799	3,724,748	3,724,036
3,722,183	3,722,742	3,723,231	3,723,800	3,724,804	3,724,036
3,722,186	3,722,751	3,723,258	3,723,808	3,724,818	3,724,036
3,722,219	3,722,764	3,723,283	3,723,827	3,724,870	3,724,036
3,722,225	3,722,778	3,723,307	3,723,856	3,724,927	3,724,036
3,722,264	3,722,791	3,723,319	3,723,870	3,724,938	3,724,036
3,722,268	3,722,792	3,723,324	3,723,891	3,724,985	3,724,036
3,722,280	3,722,793	3,723,337	3,723,900	3,724,992	3,724,036
3,722,284	3,722,797	3,723,359	3,723,904	3,725,228	3,724,036
3,722,293	3,722,798	3,723,361	3,723,908	3,725,276	3,724,036
3,722,300	3,722,799	3,723,431	3,723,916	3,725,278	3,724,036
3,722,332	3,722,803	3,723,447	3,723,920	3,725,330	3,724,036

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3,722,511	3,722,940	21 : 3,722,125	3,722,157	30 : 3,723,931	3,723,845
3,722,621	3,722,990	3,722,166	3,722,166	3,723,937	3,723,873
3,722,688	3,723,021	3,722,200	3,722,192	3,723,947	3,723,877
3,722,689	3,723,022	3,722,228	3,722,228	3,723,989	3,723,889
3,722,698	3,723,033	3,722,515	3,722,257	3,723,989	3,723,894
3,722,789	3,723,043	3,722,549	3,722,266	3,723,990	3,723,902
3,722,841	3,723,072	3,722,930	3,722,321	3,723,990	3,723,903
3,722,882	3,723,078	3,722,963	3,722,329	3,723,990	3,723,905
3,722,908	3,723,129	3,723,074	3,722,371	3,723,990	3,723,912
3,723,133	3,723,131	3,723,793	3,722,378	3,723,990	3,723,913
3,723,321	3,723,146	3,723,820	3,722,404	3,723,990	3,723,914
3,723,380	3,723,256	3,722,133	3,722,427	3,723,990	3,723,921
3,723,687	3,723,294	3,722,224	3,722,432	3,723,990	3,723,921
3,723,868	3,723,297	3,722,449	3,722,443	3,723,990	3,723,967
3,723,963	3,723,300	3,722,736	3,722,451	3,723,990	3,723,985
3,723,982	3,723,301	3,722,916	3,722,458	3,723,990	3,723,985
13 : 3,722,077	3,723,302	3,722,957	3,722,494	3,723,990	3,723,985
3,722,100	3,723,303	3,723,058	3,722,525	3,723,990	3,723,985
3,722,169	3,723,306	3,723,286	3,722,525	3,723,990	3,723,985
3,723,310	3,723,310	3,723,544	3,722,573	3,723,990	3,723,985
3,722,435	3,723,316	3,722,599	3,722,573	3,723,990	3,723,985
3,722,448	3,723,368	3,722,078	3,722,619	3,723,990	3,723,985
3,722,514	3,723,376	3,722,103	3,722,622	3,723,990	3,723,985
3,722,626	3,723,383	3,722,281	3,722,637	3,723,990	3,723,985
3,722,706	3,723,407	3,722,285	3,722,645	3,723,990	3,723,985
3,722,766	3,723,412	3,722,286	3,722,683	3,723,990	3,723,985
3,722,905	3,723,439	3,722,287	3,722,743	3,723,990	3,723,985
3,722,945	3,723,473	3,722,288	3,722,781	3,723,990	3,723,985
14 : 3,722,254	3,723,517	3,722,289	3,722,834	3,723,990	3,723,985
3,722,303	3,723,532	3,722,290	3,722,891	3,723,990	3,723,985
15 : 3,722,941	3,723,535	3,722,353	3,722,901	3,723,990	3,723,985
16 : 3,722,508	3,723,552	3,722,417	3,723,001	3,723,990	3,723,985
3,723,230	3,723,554	3,722,421	3,723,009	3,723,990	3,723,985
17 : 3,721,999	3,723,556	3,722,442	3,723,053	3,723,990	3,723,985
3,722,010	3,723,557	3,722,452	3,723,060	3,723,990	3,723,985
3,722,021	3,723,560	3,722,561	3,723,148	3,723,990	3,723,985
3,722,043	3,723,561	3,722,653	3,723,163	3,723,990	3,723,985
3,722,050	3,723,579	3,722,710	3,723,166	3,723,990	3,723,985
3,722,057	3,723,602	3,722,980	3,723,167	3,723,990	3,723,985
3,722,062	3,723,606	3,723,164	3,723,236	3,723,990	3,723,985
3,722,070	3,723,647	3,723,207	3,723,240	3,723,990	3,723,985
3,722,102	3,723,662	3,723,220	3,723,282	3,723,990	3,723,985
3,722,112	3,723,689	3,723,292	3,723,334	3,723,990	3,723,985
3,722,114	3,723,702	3,723,390	3,723,366	3,723,990	3,723,985
3,722,119	3,723,724	3,723,410	3,723,390	3,723,990	3,723,985
3,722,155	3,723,725	3,723,708	3,723,393	3,723,990	3,723,985
3,722,162	3,723,735	3,723,714	3,723,404	3,723,990	3,723,985
3,722,167	3,723,736	3,723,879	3,723,451	3,723,990	3,723,985
3,722,168	3,723,741	3,723,898	3,723,497	3,723,990	3,723,985
3,722,200	3,723,785	3,723,976	3,723,528	3,723,990	3,723,985
3,722,205	3,723,857	3,724,026	3,723,567	3,723,990	3,723,985
3,722,209	3,723,882	3,722,051	3,723,667	3,723,990	3,723,985
3,722,213	3,723,906	3,722,109	3,723,683	3,723,990	3,723,985
3,722,217	3,723,915	3,722,111	3,723,692	3,723,990	3,723,985
3,722,227	3,723,919	3,722,126	3,723,700	3,723,990	3,723,985
3,722,232	3,723,929	3,722,187	3,723,772	3,723,990	3,723,985
3,722,248	3,723,949	3,722,262	3,723,858	3,723,990	3,723,985
3,722,292	3,723,964	3,722,389	3,723,925	3,723,990	3,723,985
3,722,298	3,723,989	3,722,399	3,723,936	3,723,990	3,723,985
3,722,304	3,724,006	3,722,441	3,723,950	3,723,990	3,723,985
3,722,310	3,724,063	3,722,488	3,723,966	3,723,990	3,723,985
3,722,312	3,724,127	3,722,596	3,723,977	3,723,990	3,723,985
3,722,324	3,724,151	3,722,597	3,724,024	3,723,990	3,723,985
3,722,336	3,724,314	3,722,641	3,724,036	3,723,990	3,723,985
3,722,337	3,724,477	3,722,658	3,724,036	3,723,990	3,723,985
3,722,349	3,724,537	3,722,694	3,724,036	3,723,990	3,723,985
3,722,398	3,724,668	3,722,700	3,724,036	3,723,990	3,723,985
3,722,455	3,724,727	3,722,765	3,724,036	3,723,990	3,723,985
3,722,456	3,724,889	3,722,855	3,724,036	3,723,990	3,723,985
3,722,509	3,724,897	3,722,860	3,724,036	3,723,990	3,723,985



## GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

3,723,261	3,722,161	3,723,538	3,722,836	3,722,956	3,722,917
3,723,266	3,722,196	3,723,548	3,722,837	3,723,055	3,722,958
3,723,272	3,722,216	3,723,575	3,722,848	3,723,395	3,723,041
3,723,281	3,722,218	3,723,635	3,722,859	3,723,709	3,723,044
3,723,288	3,722,251	3,723,636	3,722,868	3,722,555	3,723,063
3,723,308	3,722,255	3,723,646	3,722,880	3,722,143	3,723,066
3,723,356	3,722,283	3,723,677	3,722,895	3,722,235	3,723,071
3,723,357	3,722,305	3,723,698	3,722,906	3,722,558	3,723,145
3,723,385	3,722,334	3,723,717	3,722,933	3,722,744	3,723,180
3,723,417	3,722,341	3,723,757	3,722,934	3,722,808	3,723,219
3,723,419	3,722,405	3,723,784	3,722,968	3,722,936	3,723,291
3,723,421	3,722,426	3,723,825	3,722,982	3,723,004	3,723,296
3,723,422	3,722,433	3,723,831	3,723,070	3,723,050	3,723,309
3,723,435	3,722,439	3,723,884	3,723,079	3,723,147	3,723,365
3,723,449	3,722,460	3,723,888	3,723,094	3,723,176	3,723,515
3,723,477	3,722,499	3,723,896	3,723,138	3,723,193	3,723,518
3,723,481	3,722,518	3,723,943	3,723,155	3,723,244	3,723,529
3,723,489	3,722,522	3,722,184	3,723,158	3,723,388	3,723,550
3,723,503	3,722,523	3,722,223	3,723,182	3,722,367	3,723,564
3,723,584	3,722,540	3,722,580	3,723,196	3,722,376	3,723,843
3,723,585	3,722,546	3,722,591	3,723,212	3,722,422	3,723,876
3,723,588	3,722,550	3,722,606	3,723,217	3,722,457	3,723,883
3,723,624	3,722,553	3,722,811	3,723,273	3,722,468	3,723,956
3,723,631	3,722,560	3,723,086	3,723,279	3,722,524	3,722,065
3,723,640	3,722,571	3,723,293	3,723,293	3,722,541	3,722,115
3,723,650	3,722,577	3,723,295	3,723,295	3,722,542	3,722,116
3,723,659	3,722,648	3,723,298	3,723,298	3,722,543	3,722,362
3,723,663	3,722,665	3,723,299	3,723,299	3,722,598	3,723,206
3,723,670	3,722,711	3,723,312	3,723,312	3,722,644	3,723,305
3,723,679	3,722,718	3,723,351	3,723,351	3,722,656	3,723,595
3,723,720	3,722,731	3,723,352	3,723,352	3,722,699	3,723,598
3,723,723	3,722,735	3,723,369	3,723,369	3,722,707	3,722,356
3,723,776	3,722,738	3,723,796	3,723,371	3,723,048	3,722,220
3,723,778	3,722,754	3,723,839	3,723,375	3,723,181	3,722,240
3,723,790	3,722,767	3,723,861	3,723,398	3,723,188	3,722,299
3,723,805	3,722,780	3,722,147	3,723,438	3,723,188	3,722,402
3,723,837	3,722,805	3,722,252	3,723,452	3,723,323	3,722,408
3,723,846	3,722,832	3,722,401	3,723,458	3,723,358	3,722,414
3,723,855	3,722,843	3,722,430	3,723,459	3,723,676	3,722,473
3,723,865	3,722,871	3,722,849	3,723,488	3,723,686	3,722,474
3,723,892	3,722,907	3,723,104	3,723,523	3,723,739	3,722,623
3,723,895	3,722,914	3,723,652	3,723,526	3,723,750	3,722,674
3,723,932	3,722,923	3,723,675	3,723,526	3,723,767	3,722,819
3,723,935	3,722,939	3,723,693	3,723,553	3,723,771	3,722,825
3,723,955	3,722,957	3,721,994	3,723,590	3,723,841	3,722,900
3,723,957	3,722,966	3,722,000	3,723,617	3,723,844	3,722,955
3,723,975	3,722,969	3,722,004	3,723,621	3,723,844	3,722,967
3,723,979	3,722,973	3,722,020	3,723,690	3,723,513	3,723,038
3,723,986	3,722,984	3,722,029	3,723,695	3,722,014	3,723,130
3,722,101	3,722,101	3,722,038	3,723,732	3,722,053	3,723,205
3,722,171	3,722,171	3,722,042	3,723,737	3,722,140	3,723,377
3,722,295	3,722,295	3,722,045	3,723,774	3,722,270	3,723,571
3,722,442	3,722,442	3,722,046	3,723,783	3,722,271	3,723,782
3,722,961	3,722,961	3,722,054	3,723,792	3,722,276	3,723,811
3,723,962	3,722,962	3,722,087	3,723,794	3,722,317	3,722,011
3,723,983	3,723,983	3,722,088	3,723,807	3,722,354	3,722,076
3,723,992	3,723,992	3,722,144	3,723,812	3,722,410	3,722,099
3,723,994	3,723,994	3,722,194	3,723,818	3,722,506	3,722,431
3,723,997	3,723,997	3,722,195	3,723,824	3,722,527	3,722,601
3,723,997	3,723,997	3,722,206	3,723,840	3,722,530	3,722,680
3,723,997	3,723,997	3,722,206	3,723,840	3,722,569	3,722,705
3,723,997	3,723,997	3,722,306	3,723,899	3,722,585	3,722,769
3,723,997	3,723,997	3,722,307	3,723,924	3,722,587	3,722,904
3,723,997	3,723,997	3,722,319	3,723,945	3,722,588	3,723,338
3,723,997	3,723,997	3,722,343	3,723,951	3,722,589	3,723,423
3,723,997	3,723,997	3,722,394	3,723,954	3,722,592	3,723,727
3,723,997	3,723,997	3,722,407	3,723,960	3,722,594	3,722,086
3,723,997	3,723,997	3,722,419	3,723,960	3,722,595	3,722,177
3,723,997	3,723,997	3,722,447	3,723,960	3,722,603	3,722,191
3,723,997	3,723,997	3,722,510	3,723,960	3,722,604	3,722,267
3,723,997	3,723,997	3,722,575	3,723,960	3,722,607	3,722,294
3,723,997	3,723,997	3,722,576	3,723,960	3,722,608	3,722,300
3,723,997	3,723,997	3,722,581	3,723,960	3,722,609	3,722,301
3,723,997	3,723,997	3,722,631	3,723,960	3,722,660	3,722,322
3,723,997	3,723,997	3,722,697	3,723,960	3,722,815	3,722,335
3,723,997	3,723,997	3,722,759	3,723,960	3,722,851	3,722,352
3,723,997	3,723,997	3,722,788	3,723,960	3,722,852	

## DESIGN PATENTS

4 : 226,568	226,578	17 : 226,557	33 : 226,575	226,549	44 : 226,550
6 : 226,545	226,584	226,558	33 : 226,582	226,553	226,576
226,552	226,589	226,583	34 : 226,554	226,569	48 : 226,546
226,560	226,592	226,586	226,564	226,571	226,570
226,565	226,548	226,572	226,585	226,551	54 : 226,561
226,566	226,577	226,593	226,588	226,559	226,562
226,567	226,590	226,594	226,544	226,556	55 : 226,563
226,573	226,579	226,574			

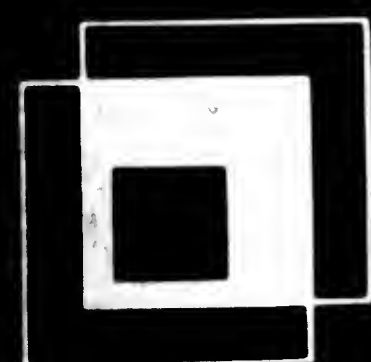
DEFENSIVE PUBLICATIONS APPLICATIONS  
[Notice of Dec. 16, 1969, 869 O.G. 6877]

10 : T908,004	17 : T908,002	34 : T908,010	47 : T908,001	51 : T908,008
10 : T908,011	26 : T908,003	36 : T908,006	T908,005	



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